RSX–11M/RSX–11S
Information Directory
and Master Index
Order No. AA–2593H–TC
RSX-11M/RSX-11S
Information Directory
and Master Index
Order No. AA-2593H-TC

RSX-11M Version 4.2
RSX-11S Version 4.2
# Contents

## Preface

### Chapter 1 Overview of the RSX-11M and RSX-11S Documentation Sets

1.1 Getting Started ............................................. 1-1  
1.2 How the RSX-11M Manuals Are Organized .................. 1-1  
1.3 Intended Reading Audiences for RSX-11M Manuals .......... 1-3  
1.4 RSX-11M Documentation Descriptions ..................... 1-5  
1.4.1 Volume 1: Introduction .................................. 1-5  
  1.4.1.1 RSX-11M Software Product Description ............. 1-5  
  1.4.1.2 RSX-11M/RSX-11S Information Directory and Master Index 1-5  
  1.4.1.3 RSX-11M/RSX-11S Release Notes .................... 1-5  
  1.4.1.4 Introduction to RSX-11M ......................... 1-5  
1.4.2 Volume 2: Operation .................................... 1-6  
  1.4.2.1 RSX-11M System Generation and Installation Guide .... 1-6  
  1.4.2.2 RSX-11M/M-PLUS MCR Operations Manual ............ 1-6  
  1.4.2.3 RSX-11M Command Language Manual ................ 1-6  
  1.4.2.4 RSX-11M/M-PLUS Batch and Queue Operations Manual 1-6  
  1.4.2.5 RSX-11M/M-PLUS Indirect Command Processor Manual 1-6  
1.4.3 Volume 3: Utilities ..................................... 1-6  
  1.4.3.1 RSX-11M/M-PLUS Utilities Manual .................. 1-7  
  1.4.3.2 EDT Editor Manual ................................. 1-7  
1.4.4 Volume 4: Program Development .......................... 1-7  
  1.4.4.1 RSX-11M/M-PLUS Guide to Program Development .... 1-8  
  1.4.4.2 PDP-11 MACRO-11 Language Reference Manual ....... 1-8  
  1.4.4.3 IAS/RSX-11 System Library Routines Reference Manual 1-8  
  1.4.4.4 RSX-11M/M-PLUS and Micro/RSX Debugging Reference Manual 1-8  
  1.4.4.5 RSX-11M/M-PLUS and Micro/RSX Task Builder Manual 1-8  
  1.4.4.6 RSX-11M/M-PLUS and Micro/RSX Executive Reference Manual 1-9  
1.4.5 Volume 5: I/O Development ................................ 1-9  
  1.4.5.1 RSX-11M/M-PLUS and Micro/RSX I/O Operations Reference Manual 1-9  
  1.4.5.2 RSX-11M Guide to Writing an I/O Driver ............ 1-9  
  1.4.5.3 RSX-11M/M-PLUS I/O Drivers Reference Manual ...... 1-9
1.4.6 Volume 6: System Management and Maintenance .......................... 1-9
  1.4.6.1 RSX-11M/M-PLUS System Management Guide ........................ 1-10
  1.4.6.2 RSX-11M/M-PLUS Error Logging Manual ............................. 1-10
  1.4.6.3 RSX-11M/M-PLUS and Micro/RSX Crash Dump Analyzer Reference Manual ............................. 1-10
1.4.7 Volume 7: PDP-11 Record Management Services ....................... 1-11
  1.4.7.1 RSX-11M/M-PLUS RMS-11: An Introduction .......................... 1-11
  1.4.7.2 RSX-11M/M-PLUS RMS-11 User's Guide ............................ 1-11
  1.4.7.3 RSX-11M/M-PLUS RMS-11 Utilities ................................. 1-11
  1.4.7.4 RSX-11M/M-PLUS RMS-11 Macro Programmer's Guide ............... 1-12
1.4.8 RSX-11M Mini-Reference ............................................. 1-12
1.4.9 EDT Editor Reference Card ........................................... 1-12
1.4.10 PDP-11 Programming Card ........................................... 1-12
1.5 The RSX-11S Documentation Set ........................................ 1-13
1.6 How the RSX-11S Manuals Are Organized ................................ 1-13
1.7 Intended Reading Audiences for RSX-11S Manuals ....................... 1-13
1.8 RSX-11S Documentation Descriptions ................................... 1-15
  1.8.1 Volume 1: Introduction ............................................. 1-15
    1.8.1.1 RSX-11S Software Product Description ......................... 1-15
    1.8.1.2 RSX-11M/RSX-11S Information Directory and Master Index ... 1-15
    1.8.1.3 RSX-11M/RSX-11S Release Notes ................................ 1-15
  1.8.2 Volume 2: Operation ................................................. 1-16
    1.8.2.1 RSX-11M System Generation and Installation Guide ............ 1-16
    1.8.2.2 RSX-11S System Generation and Installation Guide .......... 1-16
    1.8.2.3 RSX-11M/M-PLUS MCR Operations Manual ....................... 1-16
    1.8.2.4 RSX-11M/M-PLUS Indirect Command Processor Manual ........... 1-16
  1.8.3 Volume 3: Program Development ..................................... 1-16
    1.8.3.1 RSX-11M/M-PLUS Guide to Program Development ................. 1-17
    1.8.3.2 PDP-11 MACRO-11 Language Reference Manual .................. 1-17
    1.8.3.3 IAS/RSX-11 System Library Routines Reference Manual ...... 1-17
    1.8.3.4 RSX-11M/M-PLUS and Micro/RSX Debugging Reference Manual ... 1-17
    1.8.3.5 RSX-11M/M-PLUS and Micro/RSX Task Builder Manual .......... 1-17
    1.8.3.6 RSX-11M/M-PLUS and Micro/RSX Executive Reference Manual ... 1-18
  1.8.4 Volume 4: I/O Development ........................................... 1-18
    1.8.4.1 RSX-11M Guide to Writing an I/O Driver ....................... 1-18
    1.8.4.2 RSX-11M/M-PLUS and Micro/RSX I/O Operations Reference Manual ............................. 1-18
    1.8.4.3 RSX-11M/M-PLUS I/O Drivers Reference Manual ............... 1-18
  1.8.5 Volume 5: System Management and Maintenance ........................ 1-18
    1.8.5.1 RSX-11M/M-PLUS System Management Guide ....................... 1-19
    1.8.5.2 RSX-11M/M-PLUS and Micro/RSX Crash Dump Analyzer Reference Manual ............................. 1-19
Chapter 2  THE RSX-11M/RSX-11S Master Index

2.1  Introduction to the Master Index ..................................... 2-1
2.1.1  Format of the Master Index .................................. 2-1
2.1.2  Manuals Included in the Master Index ........................... 2-1

Figures

1-1  Suggested Reading Sequence for RSX-11M Manuals .................... 1-2

Tables

1-1  RSX-11M Documentation Set Kit Number QJ628-GZ .................. 1-3
1-2  RSX-11S Documentation Set Kit Number QJ642-GZ .................. 1-14
2-1  Index Titles for the RSX-11M Documentation Set .................... 2-1
Preface

Manual Objectives
The RSX-11M/RSX-11S Information Directory and Master Index introduces the RSX-11M and RSX-11S documentation sets. It includes an overview of all the RSX-11M and RSX-11S manuals and a Master Index that will be useful for referring to topics throughout the documentation. The descriptions of the manuals are intentionally brief; refer to the prefaces of the individual manuals for additional information. Read the Information Directory before you read other manuals in either documentation set or use the operating systems.

Intended Audience
The RSX-11M/RSX-11S Information Directory and Master Index is intended for all users of the RSX-11M and RSX-11S operating systems. No previous knowledge of these operating systems is required.

Structure of This Manual
The first chapter of this manual briefly describes the manuals in each documentation set. It identifies the kinds of users that are likely to be interested in particular manuals, and suggests a sequence for reading them. The second chapter of this manual is a Master Index which includes index entries for all the manuals in the documentation set.

Associated Manuals
The next manual you should read in this documentation set is the RSX-11M/RSX-11S Release Notes, which will give you important information on the RSX-11M/RSX-11S software and documentation.
Chapter 1
Overview of the RSX-11M and RSX-11S Documentation Sets

1.1 Getting Started

Your kit contains an RSX-11M/RSX-11S baseline system that is ready to run on your PDP-11 processor. You will use this baseline system to generate an RSX-11M or RSX-11S operating system, tailored to your own particular hardware and software requirements.

Before beginning system generation, you should become familiar with your hardware configuration and with this documentation set. You should also read the RSX-11M/RSX-11S Release Notes and either the RSX-11M System Generation and Installation Guide or the RSX-11S System Generation and Installation Guide, as appropriate. You will then be prepared to choose among the options offered during system generation.

Figure 1-1 outlines a suggested sequence for reading the manuals in your documentation set. The sequence begins with introductory and more general manuals and then proceeds to advanced manuals that assume a greater understanding of the system.

1.2 How the RSX-11M Manuals Are Organized

The RSX-11M manuals are organized into seven volumes:

- Introduction
- Operation
- Utilities
- Program Development
- I/O Development
- System Management and Maintenance
- PDP-11 Record Management Services

Each volume consists of one or more three-ring binders, and each binder contains one or more manuals. Refer to Table 1-1 for a complete list of the manuals.

The EDT Editor Reference Card and the PDP-11 Programming Card are packaged separately; the RSX-11M Mini-Reference is also separate, packaged in its own small binder.
Figure 1-1: Suggested Reading Sequence for RSX-11M Manuals

RSX-11M/RSX-11S INFORMATION DIRECTORY AND MASTER INDEX
RSX-11M/RSX-11S RELEASE NOTES

INTRODUCTION TO RSX-11M

RSX-11M COMMAND LANGUAGE MANUAL

RSX-11M/RSX-11S RELEASE NOTES

RSX-11M/M-PLUS MCR OPERATIONS MANUAL
RSX-11M/M-PLUS INDIRECT COMMAND PROCESSOR MANUAL

RSX-11M/M-PLUS UTILITIES MANUAL
RSX-11M/M-PLUS BATCH AND QUEUE OPERATIONS MANUAL
EDT EDITOR MANUAL

RSX-11M/M-PLUS GUIDE TO PROGRAM DEVELOPMENT
PDP-11 MACRO-11 LANGUAGE REFERENCE MANUAL
RSX-11M/M-PLUS AND MICRO/RSX TASK BUILDER MANUAL
RSX-11M/M-PLUS AND MICRO/RSX DEBUGGING REFERENCE MANUAL

IAS/RSX-11 SYSTEM LIBRARY ROUTINES REFERENCE MANUAL

RSX-11M/M-PLUS AND MICRO/RSX EXECUTIVE REFERENCE MANUAL

RSX-11M/M-PLUS AND MICRO/RSX I/O OPERATIONS REFERENCE MANUAL
RSX-11M/M-PLUS I/O DRIVERS REFERENCE MANUAL
RSX-11M GUIDE TO WRITING AN I/O DRIVER

RSX-11M SYSTEM GENERATION AND INSTALLATION GUIDE
RSX-11S SYSTEM GENERATION AND INSTALLATION GUIDE
RSX-11M/M-PLUS SYSTEM MANAGEMENT GUIDE

RSX-11M/M-PLUS ERROR LOGGING MANUAL
RSX-11M/M-PLUS AND MICRO/RSX CRASH DUMP ANALYZER REFERENCE MANUAL

RMS-11: AN INTRODUCTION
RMS-11 USERS GUIDE
RMS-11 UTILITIES
RMS-11 MACRO PROGRAMMER'S GUIDE

1-2 Overview of the RSX-11M and RSX-11S Documentation Sets
1.3 Intended Reading Audiences for RSX-11M Manuals

Table 1-1 lists the intended reading audience for each document in your set. The audience is divided into the loosely defined groups listed as follows (and indicated in Table 1-1 by an X in one or more of the columns):

US  The user: anyone who types at a terminal on an RSX-11M or RSX-11S operating system

AP  The applications programmer: anyone who uses the PDP-11 MACRO-11 assembly language or a high-level language to develop programs for user applications

SP  The system programmer: anyone who uses PDP-11 MACRO-11 to maintain, modify, and develop software used by the applications programmer or the user

SM  The system manager: the person familiar with and responsible for overall operation of an RSX-11M or RSX-11S system and its associated hardware

Table 1-1: RSX-11M Documentation Set Kit Number QJ628-GZ

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Overview of the RSX-11M and RSX-11S Documentation Sets 1-3
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<td>RSX-11M/M-PLUS and Micro/RSX Task Builder Manual</td>
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1-4 Overview of the RSX-11M and RSX-11S Documentation Sets
1.4 RSX-11M Documentation Descriptions

The following sections provide brief descriptions of the volumes and the individual manuals in the RSX-11M documentation set. For a complete description of any manual, read its preface.

1.4.1 Volume 1: Introduction

This volume includes manuals that introduce the RSX-11M documentation set and operating system.

1.4.1.1 RSX-11M Software Product Description

The Software Product Description (SPD) concisely describes the software features and system environment of RSX-11M. It identifies the required and optional hardware and software, and the available training credits and additional services. The SPD includes information on installation requirements and software product support, and gives ordering information.

1.4.1.2 RSX-11M/RSX-11S Information Directory and Master Index

This manual orients the reader to the RSX-11M documentation set. It includes descriptions of the manuals, a suggested sequence for reading the manuals, the intended reading audience for each, and a Master Index to the documentation set. The Master Index is composed of all the topics in the indexes for the individual manuals, without abridgement, and identifies the manual(s) and page number(s) you need for information on a particular topic.

1.4.1.3 RSX-11M/RSX-11S Release Notes

This manual is crucial, as it summarizes the new software features for RSX-11M Version 4.2; RSX-11S Version 4.2; and RMS-11 Version 2.0; and contains an overview of new device support. The RSX-11M/RSX-11S Release Notes provides information about the operating system that is not documented in other manuals in the documentation set. Be sure to read the RSX-11M/RSX-11S Release Notes before generating and using your system.

1.4.1.4 Introduction to RSX-11M

This tutorial manual is a simple, step-by-step introduction to the RSX-11M operating system for new users. In an interactive terminal session, new users can log in and practice using the DIGITAL Command Language (DCL), the interactive text editor (EDT), and the program development facilities on prepared demonstration files. After guiding the user through the practice session, the manual discusses some general system concepts and features. It has a glossary that defines system terms in some detail.

Overview of the RSX-11M and RSX-11S Documentation Sets 1–5
1.4.2 Volume 2: Operation

The operation volume contains manuals that explain how to generate and install your RSX-11M Version 4.2 system. These manuals also describe the Monitor Console Routine (MCR), the DIGITAL Command Language (DCL), the Indirect Command Processor, and batch and queue operations.

1.4.2.1 RSX-11M System Generation and Installation Guide

This manual is a step-by-step guide to the system generation (SYSGEN) procedure. It includes instructions for copying the distribution kit onto the system disk and generating an RSX-11M system tailored to your needs. Annotated examples of system generations are given.

1.4.2.2 RSX-11M/M-PLUS MCR Operations Manual

MCR is a command line interpreter, an interface for communication between you and the RSX-11M operating system. This manual describes MCR commands and their formats and tells you how to use MCR. File ownership and file protection are explained. An alphabetical list of MCR and Task Termination Notification program (TKTN) messages is given in an appendix.

1.4.2.3 RSX-11M Command Language Manual

The DIGITAL Command Language (DCL) is a command line interpreter that provides direct, transparent access to most common MCR and utility functions. This manual is organized by system functions; it gives full descriptions of all DCL commands, with examples and notes on their usage.

1.4.2.4 RSX-11M/M-PLUS Batch and Queue Operations Manual

This manual explains the use of the Queue Manager (QMG) to control print and batch queue functions, and describes in detail the QMG commands that control these functions. The manual also explains the Batch Processor and describes batch commands and syntax. Error messages are explained in the appendix; a glossary of terms is also included.

1.4.2.5 RSX-11M/M-PLUS Indirect Command Processor Manual

The Indirect Command Processor (Indirect) allows you to process files that contain Indirect, MCR, DCL, or utility commands. These commands are executed as though they had been entered from a terminal. This manual describes the Indirect commands, symbols, and functions, and presents actual examples.

1.4.3 Volume 3: Utilities

This volume contains two manuals, the RSX-11M/M-PLUS Utilities Manual and the EDT Editor Manual. The RSX-11M/M-PLUS Utilities Manual describes utilities that allow you to manipulate different kinds of files and their contents and to perform operations on supported media. The EDT Editor Manual describes the function and operation of the interactive text editor EDT.
1.4.3.1 RSX-11M/M-PLUS Utilities Manual

This manual explains each utility's use, describes its commands and switches, and gives detailed command formats and syntax rules. It describes the functions and operations of the following RSX-11M utility programs:

- Line Text Editor (EDI)—A line-oriented, interactive editor used to create and maintain text and source files.
- Peripheral Interchange Program (PIP)—Copies files and performs file control functions.
- File Transfer Utility Program (FLX)—File transfer and format conversion program that transfers files among DOS-11, RT-11, and Files-11 volumes.
- Disk Volume Formatter Utility (FMT)—Formats and verifies several types of Files-11 disks.
- Bad Block Locator Utility (BAD)—Determines the number and location of bad blocks on a volume.
- Backup and Restore Utility (BRU)—Backs up files from a Files-11 volume to one or more backup volumes, and retrieves them as needed.
- Disk Save and Compress Utility Program (DSC)—Copies Files-11 disk files to tape or disk, and from DSC-created tape back to disk. (The DSC Utility functions in much the same way as the BRU utility.)
- File Structure Verification Utility (VFY)—Verifies the consistency and validity of the file structure on a Files-11 volume.
- Librarian Utility Program (LBR)—A library maintenance program that creates and modifies library files.
- File Dump Utility Program (DMP)—A file listing program that allows you to examine the contents of a single file or a volume of files.
- File Compare Utility (CMP)—Compares two text files, record by record, and lists the differences between them.
- Source Language Input Program (SLP)—A noninteractive editing program that is used to maintain and edit source files.
- Object Module Patch Utility (PAT)—Updates, or patches, relocatable binary object modules.
- Task/File Patch Program (ZAP)—A patch utility that examines and directly modifies locations in a task image file or data file.

1.4.3.2 EDT Editor Manual

This manual explains how to use the interactive text editor (EDT) to create and edit ASCII text files. It explains the command line, keypad editing, line editing, nokeypad editing, and the redefining of keys. It also includes sample editing sessions.

1.4.4 Volume 4: Program Development

The first manual in this volume gives an overview of the program development process. The remaining manuals further explain the process by describing the MACRO-11 assembly language, I/O operations, system library routines, the On-Line Debugging Tool, the Task Builder, and the Executive.
1.4.4.1 RSX-11M/M-PLUS Guide to Program Development

This manual is a step-by-step guide to program development for the beginning MACRO-11 programmer. The manual describes the hardware and software necessary for program development and explains how to create, assemble, task build, debug, and maintain MACRO-11 programs. It also introduces the use of the Librarian Utility Program (LBR) for creating and maintaining user, macro, and object libraries. A brief description of FORTRAN program development is included to help orient the FORTRAN programmer. Examples are given for all steps in the program development process.

This guide is intended to be used together with other, more advanced manuals until you become familiar with the program development process; then it can serve as a refresher.

1.4.4.2 PDP-11 MACRO-11 Language Reference Manual

This manual describes how to use the MACRO-11 Assembler to code MACRO-11 programs. It includes descriptions of MACRO-11 features, directives for conditional assembly and program sectioning, and user-defined and system macro libraries. It also documents RSX-11M operating procedures and error messages. Before reading the MACRO-11 Language Reference Manual, you should be familiar with your PDP-11 processor and the related terminology, as presented in the PDP-11 Processor Handbook.

1.4.4.3 IAS/RSX-11 System Library Routines Reference Manual

This manual describes register handling and arithmetic routines, input and output data conversion routines, output formatting routines, and dynamic memory management and virtual memory management routines. For the more experienced programmer, a list of summary procedures is included.

1.4.4.4 RSX-11M/M-PLUS and Micro/RSX Debugging Reference Manual

This manual describes the use of the On-Line Debugging Tool (ODT) for debugging user tasks, and the Executive Debugging Tool (XDT) for debugging privileged tasks. Actual ODT command sequences are given, followed by explanatory text. The manual also describes procedures for debugging supervisor-mode libraries.

Before reading this manual, you should be familiar with the MACRO-11 assembly language and the Task Builder.

1.4.4.5 RSX-11M/M-PLUS and Micro/RSX Task Builder Manual

This manual describes the concepts and capabilities of the RSX-11M/M-PLUS and Micro/RSX Task Builder (TKB), the linker that produces executable task images (programs that are ready to be installed and run). It contains both programmer reference and operating information, including Task Builder allocation of virtual address space, resolution of global symbols, overlaying capability, the building of shared regions, instruction- and data-space tasks, supervisor-mode libraries, multiuser tasks, and cluster libraries.

Before reading this manual, you should be familiar with the procedures described in the RSX-11M/M-PLUS MCR Operations Manual and the RSX-11M Command Language Manual, and the programming concepts discussed in the RSX-11M/M-PLUS Guide to Program Development.
1.4.4.6 RSX-11M/M-PLUS and Micro/RSX Executive Reference Manual

This manual describes the Executive services available for user tasks and the Executive (system) directives you need to obtain them. You must know how to develop user programs in MACRO-11 or in a high-level language such as FORTRAN to be able to use the Executive services.

1.4.5 Volume 5: I/O Development

This volume consists of manuals that describe the writing and function of I/O drivers on an RSX-11M system.

1.4.5.1 RSX-11M/M-PLUS and Micro/RSX I/O Operations Reference Manual

This manual provides reference material on RSX-11M File Control Services (FCS). It explains how to use FCS to create, use, and delete files under program control. You should be familiar with MACRO-11 or FORTRAN program development procedures before using FCS.

The manual also describes the following:

- The Get Command Line subroutine (GCML)—Provides a device-independent interface for user programs retrieving command lines from either a terminal or a disk file.
- The Command String Interpreter (CSI)—Parses command lines containing file specifications and switches.
- The Table-Driven Parser (TPARS)—Parses command lines at two levels: a syntactical level and a semantic level. It is generated by parse tables created by the user.

Descriptions of ANSI magnetic tape support, unlabeled tape support, and the MAG SET command are included.

1.4.5.2 RSX-11M Guide to Writing an I/O Driver

This guide is an aid in writing an I/O driver to service a peripheral device for which DIGITAL does not supply a driver. It includes information on incorporating a user-written driver in a system, and on debugging a driver with the Executive Debugging Tool (XDT). A summary of Executive routines that a driver can call is provided.

Before you read this manual, you should fully understand the operation of the device for which you require a driver. You must also be familiar with your PDP-11 processor, its peripheral devices, and the software supplied with the RSX-11M system.

1.4.5.3 RSX-11M/M-PLUS I/O Drivers Reference Manual

This manual describes the functions of all DIGITAL-supplied I/O drivers. It provides the data needed by the experienced programmer who wants the advantages in space and time of interfacing with I/O drivers directly.

This manual describes the Files-11 Ancillary Control Processor (F11ACP) and the Magnetic Tape Ancillary Control Processor (MTAACP) and documents the queue I/O requests performed by these processors.

1.4.6 Volume 6: System Management and Maintenance

This volume consists of three manuals that describe how to operate your system correctly and effectively. The manuals describe system management programs and RSX-11M/M-PLUS Error Logging system. They also explain how to use diagnostic software and how to retrieve information to determine the causes of system crashes.

Overview of the RSX-11M and RSX-11S Documentation Sets 1-9
This manual documents the following programs that the system manager can use to test, monitor, maintain, and customize an RSX-11M/M-PLUS operating system:

- The Account File Maintenance Program (ACNT)—Creates and maintains accounts on multiuser protection systems.
- The Console Logger (CODRV and COT)—Handles I/O to the console output device and records system messages at a terminal and/or in a log file.
- The I/O Exerciser (IOX)—Detects and diagnoses I/O problems on tape and disk units.
- The Bad Block Replacement Control Task (RCT)—Performs bad block handling and recovery on Mass Storage Control Protocol (MSCP) devices.
- The Resource Monitoring Display (RMD)—Displays information about the tasks currently active on the system and the system's available resources.
- The system shutdown task (SHUTUP)—Shuts down the system in an orderly fashion.
- The Virtual Monitor Console Routine (VMR)—A subset of MCR commands that you can use to alter a system image file.
- The Shuffler (SHF)—Compresses space in system-controlled partitions when a memory allocation failure occurs.

The manual includes information on pool monitoring support and the PMT program; how to set up and run the Queue Manager; how to extend and alter DCL; and how to write command line interpreters (CLIs). The Serial Despooler is described in an appendix.

This manual explains the RSX-11M/M-PLUS Error Logging system, a combination of tasks that collect and report information about hardware-related events on an RSX-11M system. The Error Logging system allows you to generate event reports in brief or full format, including information on the state of the system or hardware when the event occurred.

The manual includes chapters on the following:

- The Error Log Task (ERRLOG) and the Error Log Interface (ELI)—ERRLOG gathers error information from the Executive and drivers and writes the information into the Error Log File, and ELI sends user commands to ERRLOG.
- The Report Generator (RPT)—Generates Error Log Reports from the Error Log File.
- The Control File Language compiler (CFL)—Updates and modifies DIGITAL-supplied control file modules, or adds error-logging support for non-DIGITAL devices.

This manual explains how to use the Crash Dump Analyzer (CDA) to determine the causes of system crashes. It contains operating instructions, descriptions of CDA switches and error messages, examples of CDA output listings, and an explanation of how to interpret the output listings. The manual also includes system symbolic and data structure macro definitions.
1.4.7 Volume 7: PDP-11 Record Management Services

This volume is composed of a set of manuals that describe the PDP-11 Record Management Services (RMS-11). For information on where the RMS-11 files and utilities can be found on the RSX-11M distribution kit, see the RSX-11M System Generation and Installation Guide.

1.4.7.1 RSX-11M/M-PLUS RMS-11: An Introduction

This manual introduces the major concepts of RMS-11: record formats, file organizations, and record access modes. It introduces the RMS-11 operations and utility programs, and defines the key terms necessary to understand RMS-11 capabilities and functions.

The manual is intended for all users of RMS-11, including both MACRO-11 and high-level language programmers. Nonprogramming users, programming users who are new to RSX-11M/M-PLUS, and RSX-11M/M-PLUS programmers who are new to RMS-11 should find this document especially useful.

The manual does not provide reference or usage information. You should read this manual before reading the other RMS-11 documents.

1.4.7.2 RSX-11M/M-PLUS RMS-11 User's Guide

This manual is a guide to using RMS-11 in file and task design for application programs written in either MACRO-11 or high-level languages. It is intended for application programmers who want to achieve optimal performance either with a newly written application or with an existing application that no longer performs satisfactorily.

The manual first presents general design considerations to help users select the appropriate file organization for their applications. Then the details of file structure, design, and processing are discussed for each of the three RMS-11 file organizations: sequential, relative, and indexed. Finally, the manual describes techniques that can be used to optimize application program performance, regardless of file organization.

Note that only MACRO-11 programmers can use the full set of RMS-11 capabilities. Subsets of those capabilities are, however, available to high-level language programmers. Programmers who are writing applications in high-level languages should consult their language documentation for details on RMS-11 support.

1.4.7.3 RSX-11M/M-PLUS RMS-11 Utilities

This reference manual describes the utility programs supported by RMS-11. It is intended for users such as high-level language programmers and nonprogramming users (system managers and operators, for example), who either do not require or do not have access to the full set of RMS-11 capabilities.

The RMS-11 utility programs are as follows:

- RMS-11 File Design Utility (RMSDES)—An interactive utility for designing and creating sequential, relative, and indexed files.
- RMS-11 Indexed File Load Utility (RMSIFL)—Reads records from an RMS-11 file of any kind of organization and loads them into an indexed file, optimizing all indexes, both primary and alternates (if any).
- RMS-11 File Conversion Utility (RMSCNV)—Reads records from an RMS-11 file of any organization and loads them into another RMS-11 file of any organization. Note that RMSCNV, unlike RMSIFL, optimizes only the primary index when it loads an indexed file.
• RMS-11 File Display Utility (RMSDSP)—Produces a concise description of any RMS-11 file, including backup files.
• RMS-11 File Back-Up Utility (RMSBCK)—Transfers the contents of an RMS-11 file to another file, on another device, to preserve it in case the original file is lost or damaged.
• RMS-11 File Restoration Utility (RMSRST)—Restores files that were backed up by RMSBCK so that they can be accessed by user programs.

The manual also documents RMSDEF, which has been superseded by RMSDES.

1.4.7.4 RSX-11M/M-PLUS RMS-11 Macro Programmer’s Guide

This document is a reference manual describing the macros and symbols that make up the interface between a MACRO-11 program and the RMS-11 operation routines. It is intended for both MACRO-11 programmers and for high-level language programmers who want to use the full set of RMS-11 capabilities in a MACRO-11 subprogram.

The manual presents such programming considerations as how to use RMS-11 macros and symbols in a MACRO-11 program, how to use the directory and file operations to process directories and files, and how to use the stream operations and record or block operations to process records or blocks. Detailed reference information is provided on each RMS-11 operation macro, including the control blocks it uses, the options that can be specified in each control block field, and the values returned in control block fields. A summary of each control block, field, value, and mask is also provided.

In addition, the manual describes the RMS-11 completion codes, fatal error codes, and assembly-time messages.

1.4.8 RSX-11M Mini-Reference

This small manual is a convenient reference for all system users. It includes sections on the Monitor Console Routine (MCR), the DIGITAL Command Language (DCL), the Task Builder (TKB), the RSX-11M utilities, the On-Line Debugging Tool (ODT), the Error Logging System, the Batch Processor, the Queue Manager (QMG), the I/O error codes, the directive error codes, the Executive directive summary, the RMS-11 utilities, and the RMS-11 error codes. The manual also includes Radix-50 conversion tables and the ASCII character set.

1.4.9 EDT Editor Reference Card

This reference card describes keypad editing for the DIGITAL VT52 and VT100 video terminals. It presents common keyboard functions and gives instructions for beginning and ending an editing session. Keypad diagrams for the VT52 and VT100 terminals are included.

1.4.10 PDP-11 Programming Card

This card includes programming information on the following topics:
• PDP-11 addressing modes
• Single-operand instructions
• Double-operand instructions
• Processor register addresses
• Device register addresses
• 7-bit ASCII code
• Bootstrap loader starting addresses and device vectors

1.5 The RSX-11S Documentation Set

Included with the RSX-11S software is the RSX-11S documentation set. This set of manuals describes the host operating system as well as the RSX-11S operating system. It is important that you thoroughly read the RSX-11M/RSX-11S Release Notes before reading other manuals in the documentation set and before generating your system.

This section briefly describes the RSX-11S manuals. See Table 1-2 for the manuals’ order numbers and intended audiences, and the section following for descriptions of their contents.

1.6 How the RSX-11S Manuals Are Organized

The RSX-11S manuals are organized into five volumes:
• Introduction
• Operation
• Program Development
• I/O Development
• System Management and Maintenance

1.7 Intended Reading Audiences for RSX-11S Manuals

Table 1-2 lists the intended reading audience for each document in your set. The audience is divided into the loosely defined groups listed as follows (and indicated in Table 1-2 by an X in one or more of the columns):

US The user: anyone who types at a terminal on an RSX-11M or RSX-11S operating system.
AP The applications programmer: anyone who uses the MACRO-11 assembly language or a high-level language to develop programs for user applications.
SP The system programmer: anyone who uses MACRO-11 to maintain, modify, and develop software used by the applications programmer or the user.
SM The system manager: the person familiar with and responsible for overall operation of an RSX-11M or RSX-11S system and its associated hardware.
Table 1-2: RSX-11S Documentation Set Kit Number QJ642-GZ

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Overview of the RSX-11M and RSX-11S Documentation Sets
1.8 RSX-11S Documentation Descriptions

The following are brief descriptions of the volumes and the individual manuals in the RSX-11S documentation set. For a complete description of any manual, read its preface.

The RSX-11S Software Product Description and the RSX-11S System Generation and Installation Guide are found only in the RSX-11S documentation set and therefore have not been previously described in this manual.

1.8.1 Volume 1: Introduction

This volume includes manuals that introduce the RSX-11S documentation set and operating system, as well as information about the host operating system.

1.8.1.1 RSX-11S Software Product Description

The Software Product Description (SPD) concisely describes the functional characteristics and system environment of RSX-11S. It identifies the required and optional hardware and software, and identifies the available training credits and additional services. The SPD includes information on installation requirements and software product support, and gives ordering information.

This document is intended for all RSX-11S users.

1.8.1.2 RSX-11M/RSX-11S Information Directory and Master Index

This manual orients the reader to the RSX-11S and RSX-11M documentation sets. It includes descriptions of the manuals, a suggested sequence for reading the manuals, the intended reading audience for each, and a Master Index to the documentation set. The Master Index is composed of all the topics in the indexes for the individual manuals, without abridgement, and tells you which manuals and page numbers have the information you need on a particular topic.

1.8.1.3 RSX-11M/RSX-11S Release Notes

This manual is crucial, as it summarizes the new software features for RSX-11M Version 4.2 and RSX-11S Version 4.2, as well as RMS-11 Version 2.0. The Release Notes tell you which manuals to refer to for complete information on these new features. Incompatibilities between the current and previous versions of RSX-11M and RSX-11S are discussed; and procedures are described for applying corrections to files on the source disk for reporting any problems with the new software. Be sure to read the Release Notes before generating and using your system.
1.8.2 Volume 2: Operation

The operation volume explains how to generate and install your RSX–11S Version 4.2 system. It also documents the Monitor Console Routine (MCR).

1.8.2.1 RSX–11M System Generation and Installation Guide

This manual is a step-by-step guide to the system generation procedure. It outlines procedures for bootstrap-loading a baseline system, and explains the SYSGEN questions and the results that occur from your responses. Annotated examples of system generations are given.

RSX–11S SYSGEN Phase I is a subset of RSX–11M SYSGEN Phase I. This manual includes a description of the Phase I questions.

1.8.2.2 RSX–11S System Generation and Installation Guide

This manual describes the RSX–11S operating system and explains how to use a host system for generating an RSX–11S operating system. It also describes RSX–11S supplied software and the distribution kit. Error messages are included in an appendix. Before reading this manual, you should be familiar with the introductory manuals in the documentation set and, in particular, with the system generation procedures for the host system.

This manual is intended for use by system programmers and system managers.

1.8.2.3 RSX–11M/M–PLUS MCR Operations Manual

This manual describes the Monitor Console Routine (MCR). MCR is a command line interpreter, an interface for communication between you and the RSX–11M system. This manual describes MCR commands and their formats and tells you how to use MCR. File ownership and file protection are explained. An alphabetical list of MCR and TKN (Task Termination Notification program) messages is given in an appendix.

RSX–11S uses a subset of MCR called Basic MCR. This manual gives descriptions of the MCR commands; the RSX–11S System Generation and Installation Guide includes summary descriptions.

1.8.2.4 RSX–11M/M–PLUS Indirect Command Processor Manual

The Indirect Command Processor (Indirect) allows you to process files that contain Indirect, MCR, DCL, or utility commands. These commands are executed as though they had been entered from a terminal. The Indirect chapter describes the Indirect commands, symbols, and functions, and presents actual examples.

1.8.3 Volume 3: Program Development

The first manual in this volume gives an overview of the program development process. The remaining manuals further explain the process by describing the MACRO–11 assembly language, I/O operations, system library routines, the On-Line Debugging Tool, the Task Builder, and the Executive.
1.8.3.1 RSX-11M/M-PLUS Guide to Program Development

This manual is a step-by-step guide to program development for the beginning MACRO-11 programmer. The manual describes the hardware and software necessary for program development and explains how to create, assemble, task build, debug, and maintain MACRO-11 programs. It also introduces the use of the Librarian Utility Program (LBR) for creating and maintaining user, macro, and object libraries. A brief description of FORTRAN program development is included to help orient the FORTRAN programmer. Examples are given for all steps in the program development process.

This guide is intended to be used together with other, more advanced manuals until you become familiar with the program development process. At this point, the manual can serve as a refresher.

1.8.3.2 PDP-11 MACRO-11 Language Reference Manual

This manual describes how to use the MACRO-11 Assembler to code MACRO-11 programs. It includes descriptions of MACRO-11 features, directives for conditional assembly and program sectioning, and user-defined and system macro libraries. It also documents RSX-11M operating procedures and error messages. Before reading the MACRO-11 Language Reference Manual, you should be familiar with your PDP-11 processor and the related terminology, as presented in the PDP-11 Processor Handbook.

1.8.3.3 IAS/RSX-11 System Library Routines Reference Manual

This manual describes register handling and arithmetic routines, input and output data conversion routines, output formatting routines, and dynamic memory management and virtual memory management routines. For the more experienced programmer, a list of summary procedures is included.

1.8.3.4 RSX-11M/M-PLUS and Micro/RSX Debugging Reference Manual

This manual describes the use of the On-Line Debugging Tool (ODT) for debugging user tasks, and the Executive Debugging Tool (XDT) for debugging privileged tasks. Actual ODT command sequences are given, followed by explanatory text. The manual also describes procedures for debugging supervisor-mode libraries.

Before reading this manual, you should be familiar with the MACRO-11 assembly language and the Task Builder.

1.8.3.5 RSX-11M/M-PLUS and Micro/RSX Task Builder Manual

This manual describes the concepts and capabilities of the RSX-11M/M-PLUS Task Builder (TKB), the linker that produces executable task images (programs that are ready to be installed and run). It contains both programmer reference and operating information, including Task Builder allocation of virtual address space, resolution of global symbols, overlaying capability, the building of shared regions, instruction- and data-space tasks, supervisor-mode libraries, multiuser tasks, and cluster libraries.

Before reading this manual, you should be familiar with the procedures described in the RSX-11M/M-PLUS MCR Operations Manual and the RSX-11M Command Language Manual, and the programming concepts discussed in the RSX-11M/M-PLUS Guide to Program Development.

Overview of the RSX-11M and RSX-11S Documentation Sets 1-17
1.8.3.6 RSX-11M/M-PLUS and Micro/RSX Executive Reference Manual

This manual describes the Executive services available for user tasks and the Executive (system) directives you need to obtain them. You must know how to develop user programs in MACRO-11 or in another high-level language such as FORTRAN to be able to use the Executive services.

1.8.4 Volume 4: I/O Development

This volume consists of manuals that describe the writing and function of I/O drivers on an RSX-11M system.

1.8.4.1 RSX-11M Guide to Writing an I/O Driver

This guide is an aid in writing an I/O driver to service a peripheral device for which DIGITAL does not supply a driver. It includes information on incorporating a user-written driver in a system, and on debugging a driver with the Executive Debugging Tool (XDT). A summary of Executive routines that a driver can call is provided.

Before you read this manual, you should fully understand the operation of the device for which you require a driver. You must also be familiar with your PDP-11 processor, its peripheral devices, and the software supplied with the RSX-11M system.

1.8.4.2 RSX-11M/M-PLUS and Micro/RSX I/O Operations Reference Manual

This manual provides reference material on RSX-11M File Control Services (FCS). RSX-11S uses a subset of FCS and its macro calls. It explains how to use FCS to create, use, and delete files under program control. You should be familiar with MACRO-11 or FORTRAN program development procedures before using FCS.

The manual also describes the following:

- The Get Command Line subroutine (GCML)—Provides a device-independent interface for user programs retrieving command lines from either a terminal or a disk file.
- The Command String Interpreter (CSI)— Parses command lines containing file specifications and switches.
- The Table-Driven Parser (TPARS)— Parses command lines at two levels: a syntactical level and a semantic level. It is generated by parse tables created by the user.

Descriptions of ANSI magnetic tape support, unlabeled tape support, and the MAG SET command are included.

1.8.4.3 RSX-11M/M-PLUS I/O Drivers Reference Manual

This manual describes the functions of all DIGITAL-supplied I/O drivers. It provides the data needed by the experienced programmer who wants the advantages in space and time of directly interfacing with I/O drivers.

This manual describes the Files-11 Ancillary Control Processor (F11ACP) and the Magnetic Tape Ancillary Control Processor (MTAACP) and documents the queue I/O requests performed by these processors.

1.8.5 Volume 5: System Management and Maintenance

This volume consists of a set of manuals that describes how to operate your system correctly and effectively. The manuals describe system management programs and the RSX-11M/M-PLUS Error Logging system, and explain how to use diagnostic software and how to retrieve information to determine the causes of system crashes.
1.8.5.1 RSX–11M/M–PLUS System Management Guide

This manual documents the following programs that the system manager can use to test, monitor, maintain, and customize an RSX–11M/M–PLUS operating system:

- The Account File Maintenance Program (ACNT)—Creates and maintains accounts on multiuser protection systems.
- The Console Logger (CODRV and COT)—Handles I/O to the console output device and records system messages at a terminal and/or in a log file.
- The I/O Exerciser (IOX)—Detects and diagnoses I/O problems on tape and disk units.
- The Bad Block Replacement Control Task (RCT)—Performs bad block handling and recovery on Mass Storage Control Protocol (MSCP) devices.
- The Resource Monitoring Display (RMD)—Displays information about the tasks currently active on the system and the system’s available resources.
- The system shutdown task (SHUTUP)—Shuts down the system in an orderly fashion.
- The Virtual Monitor Console Routine (VMR)—A subset of MCR commands that you can use to alter a system image file.
- The Shuffler (SHF)—Compresses space in system-controlled partitions when a memory allocation failure occurs.

The manual includes information on pool monitoring support and the PMT program; how to set up and run the Queue Manager; how to extend and alter DCL; and how to write command line interpreters (CLIs). The Serial Despooler is described in an appendix.

1.8.5.2 RSX–11M/M–PLUS and Micro/RSX Crash Dump Analyzer Reference Manual

This manual explains how to use the Crash Dump Analyzer (CDA) to determine the causes of system crashes. It contains operating instructions, descriptions of CDA switches and error messages, examples of CDA output listings, and an explanation of how to interpret the output listings. The manual also includes system symbolic and data structure macro definitions.
Chapter 2
THE RSX-11M/RSX-11S Master Index

2.1 Introduction to the Master Index

The Master Index is a large and comprehensive index to the entire documentation set. The indexes of the individual manuals have been compiled into the Master Index without abridgement.

The Master Index will be valuable to new users who are not sure which manual contains the information they need. It will continue to be valuable as an index to topics that are discussed (or might logically be discussed) in more than one manual.

2.1.1 Format of the Master Index

Each entry in the Master Index is followed by the title of the manual it is referencing. For example, the complete title RSX-11M/M-PLUS MCR Operations Manual is abbreviated to "MCR". The titles of all the manuals are in italics. See Table 2-1 for a list of the abbreviated titles.

2.1.2 Manuals Included in the Master Index

The following table lists all the manuals included in the Master Index and their abbreviated titles. Note that the indexes for the EDT Editor Manual and the RSX-11M/RSX-11S Release Notes are not included in the Master Index. Please refer to the individual indexes of these manuals for the information you need.

<table>
<thead>
<tr>
<th>Index Title</th>
<th>Manual Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch and Queue</td>
<td>RSX-11M/M-PLUS Batch and Queue Operations Manual</td>
</tr>
<tr>
<td>Command Language</td>
<td>RSX-11M Command Language Manual</td>
</tr>
<tr>
<td>Error Logging</td>
<td>RSX-11M/M-PLUS Error Logging Manual</td>
</tr>
<tr>
<td>Executive</td>
<td>RSX-11M/M-PLUS and Micro/RSX Executive Reference Manual</td>
</tr>
<tr>
<td>Indirect</td>
<td>RSX-11M/M-PLUS Indirect Command Processor Manual</td>
</tr>
<tr>
<td>Index Title</td>
<td>Manual Title</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Introduction</td>
<td>Introduction to RSX-11M</td>
</tr>
<tr>
<td>I/O Drivers</td>
<td>RSX-11M/M-PLUS I/O Drivers Reference Manual</td>
</tr>
<tr>
<td>MCR</td>
<td>RSX-11M/M-PLUS MCR Operations Manual</td>
</tr>
<tr>
<td>Program Development</td>
<td>RSX-11M/M-PLUS Guide to Program Development</td>
</tr>
<tr>
<td>RMS-11 Introduction</td>
<td>RSX-11M/M-PLUS RMS-11: An Introduction</td>
</tr>
<tr>
<td>RMS-11 Macro</td>
<td>RSX-11M/M-PLUS RMS-11 Macro Programmer's Guide</td>
</tr>
<tr>
<td>RMS-11 Utilities</td>
<td>RSX-11M/M-PLUS RMS-11 Utilities</td>
</tr>
<tr>
<td>System Generation (M)</td>
<td>RSX-11M System Generation and Installation Guide</td>
</tr>
<tr>
<td>System Generation (S)</td>
<td>RSX-11S System Generation and Installation Guide</td>
</tr>
<tr>
<td>System Management</td>
<td>RSX-11M/M-PLUS System Management Guide</td>
</tr>
<tr>
<td>Task Builder</td>
<td>RSX-11M/M-PLUS Task Builder Manual</td>
</tr>
<tr>
<td>Utilities</td>
<td>RSX-11M/M-PLUS Utilities Manual</td>
</tr>
<tr>
<td>Writing I/O Driver</td>
<td>RSX-11M Guide to Writing an I/O Driver</td>
</tr>
</tbody>
</table>
Master Index

A
A/D channel
  read (ICDRV/ISDRV), I/O Drivers, 19-13
A/D conversion
  control word (UDDRV), I/O Drivers, 16-5
  control word processing
    (ICDRV/ISDRV), I/O Drivers, 19-15
A/D converter
  function code list, I/O Drivers, B-7
  UDDRV, I/O Drivers, 16-8
A/D input (ICDRV/ISDRV), I/O Drivers, 19-13
AA11-K D/A converter, I/O Drivers, 23-2
AAV11-A D/A converter, I/O Drivers, 23-2
/ABAUD keyword
  SET command (MCR), MCR, 3-202
  SET command (VMR), System Management, 4-24
Abbreviation
  commands, Introduction, 1-11
  DCL, Command Language, 1-7
ABO
  See ABORT command
ABODFS, CDA, B-3, C-3
Abort
  CTRL/C (TTDRV), I/O Drivers, 2-68
  task
    CRDRV, I/O Drivers, 11-10
    DTDRV, I/O Drivers, 6-8
    LPDRV, I/O Drivers, 10-7
    tape driver, I/O Drivers, 8-16
Abort
  task (cont'd.)
    VT11/GRDRV, I/O Drivers, 21-4
TKB
  during input, Task Builder, 12-5
ABORT command, Command Language, 7-16 to 7-20, 9-2
  Debugging, 1-5
  Introduction, 1-16, 5-13
  IOX, System Management, 4-24
ABORT command (MCR), MCR, 1-6, 3-3
  error messages, MCR, 3-4
  examples, MCR, 3-4
  format, MCR, 3-3
  keywords
    /PMD, MCR, 3-4
    /TERM, MCR, 3-4
  parameters, MCR, 3-4
ABORT option, Task Builder, 12-5
Abort Task directive, Executive, 5-8
ABRT$ directive, Executive, 5-8
Absolute
  address, Debugging, 2-2
  address mode, MACRO-11, 5-7
  assembled from relative, MACRO-11, 6-19
  binary output
    controlling, MACRO-11, 6-19
  expression, MACRO-11, 3-17
  location, Debugging, 2-5, 4-4, 9-9
  program section, MACRO-11, 6-42, 6-44, 6-45
ABSOLUTE argument, MACRO-11, 8-8
Absolute Loader, System Generation (115), 2-19
Absolute program section
  See .ASECT directive
ABSPAT option, Task Builder, 12-6
ABS symbolic argument, MACRO-11, 6-19, 6-42
/AB switch
ZAP utility, Utilities, 15-2
Accepting message (LRDRV), I/O Drivers, 14-10
Access, RMS-11 Introduction, 1-1
See also Access mode
See also Block access
See also Random access
See also Sequential access
See also Shared access
direct
See Random access
requested
See FAC field in FAB
shared, I/O Operations, 2-15
RMS-11 Introduction, 2-4, 4-3
See also Access sharing
See also SHR field in FAB
read, I/O Operations, 1-13
write, I/O Operations, 1-12
stream, RMS-11 Introduction, 4-3
types, Command Language, 4-9
Access-code
grouping program section, Task Builder, 10-36, 11-60
Access control parameter (F11ACP), I/O Drivers, C-6
indexed files, RMS-11 User's Guide, 7-1
read/write, RMS-11 User's Guide, 2-6
read-only, RMS-11 User's Guide, 2-6
relative files, RMS-11 User's Guide, 4-6
sequential files, RMS-11 User's Guide, 3-6
/ACCESS keyword
INITVOLUME command, MCR, 3-100
Access mode, RMS-11 Introduction, 3-1, 3-11, 3-13 RMS-11 Macro, 4-4
See also Random access
See also Sequential access
Access mode (cont'd.)
and file organization, RMS-11 Introduction, 3-13
block, RMS-11 Introduction, 3-11, 3-12, 3-14, 4-7 RMS-11 User's Guide, 1-20, 3-6
See also BKT field in RAB
sequential, RMS-11 Introduction, 3-12
VBN, RMS-11 Introduction, 3-12
FIND operation
indexed files, RMS-11 User's Guide, 7-3
relative files, RMS-11 User's Guide, 4-8
sequential files, RMS-11 User's Guide, 3-7
GET operation
relative files, RMS-11 User's Guide, 4-10
sequential files, RMS-11 User's Guide, 3-9
key, RMS-11 Introduction, 3-12
PUT operation
indexed files, RMS-11 User's Guide, 7-6
relative files, RMS-11 User's Guide, 4-11
sequential files, RMS-11 User's Guide, 3-10
random
by key, RMS-11 User's Guide, 1-12
to indexed files, RMS-11 Introduction, 3-15
to relative files, RMS-11 Introduction, 3-15
to sequential files, RMS-11 Introduction, 3-14
record, RMS-11 Introduction, 3-11, 3-13, 4-5 RMS-11 User's Guide, 1-12
See also RAC field in RAB
FIND operations, RMS-11 Introduction, 4-6
GET operations, RMS-11 Introduction, 4-6
key, RMS-11 Introduction, 3-12

Master Index–2
Access mode
record (cont’d.)
PUT operations, RMS-11
Introduction, 4-6
RFA, RMS-11 Introduction, 3-11
sequential, RMS-11 Introduction, 3-11
RFA, RMS-11 Introduction, 3-11
sequential, RMS-11 Introduction, 3-11
blocks, RMS-11 User’s Guide, 1-20
records, RMS-11 User’s Guide, 1-12
to indexed files, RMS-11
Introduction, 3-14
to relative files, RMS-11
Introduction, 3-14
to sequential files, RMS-11
Introduction, 3-14
switching, RMS-11 Introduction, 3-13
Access sharing, RMS-11 Introduction, 2-4, 4-3
See also Shared access
read, RMS-11 Introduction, 3-5, 3-6
write, RMS-11 Introduction, 3-6
multiple
and shared access, RMS-11
User’s Guide, 2-9, 2-10
indexed files, RMS-11 User’s
Guide, 7-10
relative files, RMS-11 User’s
Guide, 4-15
sequential files, RMS-11 User’s
Guide, 3-15
Access types, MCR, 2-3, 3-94, 3-148, 3-149, 3-213
ACCOUNT symbol, Indirect, 2-17
Account
and UFD, MCR, 2-2
and UIC, MCR, 2-2
creating, MCR, 2-24
protecting, MCR, 3-241
Account file, Command Language, 3-10
Account File Maintenance Program
See ACNT
Accounting Startup Transaction Block,
System Management, 17-25
ACD
See ANCILLARY CONTROL
DRIVER command

$ACHCK routine, Writing I/O Driver, 5-2
$ACHKB routine, Writing I/O Driver, 5-2
ACHN$ directive, Executive, 5-10
ACNDF$, CDA, C-5
ACNT, Command Language, 3-3, 3-4, 3-10 MCR, 2-24, 3-240 System
Management, 1-1, 2-1
account entry
contents, System Management, 2-1
deleting, System Management, 2-9
examining, System Management, 2-5
listing, System Management, 2-8
modifying, System Management, 2-7
account file
 copying, System Management, 2-3
extending, System Management, 2-3
maximum number of entries, System Management, 2-3
RSXll.SYS, System Management, 2-3
sorting, System Management, 2-10
changing password, System Management, 2-1
copying account file, System Management, 2-3
text messages, System Management, 2-11
ESCAPE key, System Management, 2-3
invoking, System Management, 2-2
options, System Management, 2-2
Add, System Management, 2-3
Create, System Management, 2-3
Delete, System Management, 2-9
Examine, System Management, 2-5
Exit, System Management, 2-11
List, System Management, 2-8
Modify, System Management, 2-7
Sort, System Management, 2-10
password encryption, System Management, 2-1

Master Index-3
ACNT protection (cont’d.)
restoring, System Management, 2-3
ACP, Command Language, 5-3 MCR, 3-70, 3-141 Writing I/O Driver, D-1
ANSI magnetic tape, System Generation (11M), 4-29
as extension of Executive, Writing I/O Driver, D-5
as task, Writing I/O Driver, D-4
attributes, Writing I/O Driver, 0-4
DECTape, Command Language, 5-39
definition, System Generation (11M), 1-4
disk, Command Language, 5-39
enabling and disabling capacity, Writing I/O Driver, D-5
error return, I/O Drivers, C-14
IE.ABO, I/O Drivers, C-14
IE.ALC, I/O Drivers, C-14
IE.ALN, I/O Drivers, C-14
IE.BAD, I/O Drivers, C-14
IE.BDR, I/O Drivers, C-14
IE.BTP, I/O Drivers, C-15
IE.BVR, I/O Drivers, C-15
IE.BYT, I/O Drivers, C-15
IE.CKS, I/O Drivers, C-15
IE.CLO, I/O Drivers, C-15
IE.DFU, I/O Drivers, C-15
IE.DUP, I/O Drivers, C-15
IE.EOF, I/O Drivers, C-15
IE.HFU, I/O Drivers, C-16
IE.IFC, I/O Drivers, C-16
IE.IFU, I/O Drivers, C-16
IE.LCK, I/O Drivers, C-16
IE.LUN, I/O Drivers, C-16
IE.NOD, I/O Drivers, C-16
IE.NSE, I/O Drivers, C-16
IE.OFL, I/O Drivers, C-16
IE.PRI, I/O Drivers, C-17
IE.RER, I/O Drivers, C-17
IE.SNC, I/O Drivers, C-17
IE.SPC, I/O Drivers, C-17
IE.SQC, I/O Drivers, C-17
IE.WAC, I/O Drivers, C-17
IE.WAT, I/O Drivers, C-17
IE.WER, I/O Drivers, C-18
IE.WLK, I/O Drivers, C-18
example, Writing I/O Driver, D-11
Files-11, MCR, 3-94, 3-141, 3-146, 3-150, 3-208
ACP (cont’d.)
for class of devices, Writing I/O Driver, D-4
foreign, Command Language, 5-39
for foreign files, MCR, 3-151
I/O function mask, Writing I/O Driver, 4-12
I/O request flow, Writing I/O Driver, D-5
magnetic tape, Command Language, 5-39 MCR, 3-141
processing, Writing I/O Driver, D-6
QIOS function
  closing a file, I/O Drivers, C-13
  creating a file, I/O Drivers, C-12
  deleting a file, I/O Drivers, C-13
  extending a file, I/O Drivers, C-13
  opening a file, I/O Drivers, C-13
  using, I/O Drivers, C-12
QIOS interface, I/O Drivers, C-1
role of
  in I/O processing, Writing I/O Driver, 2-3
shareability, Writing I/O Driver, D-5
specifying, Command Language, 5-39
specifying APR, Task Builder, 10-5, 11-11
specifying task, Task Builder, 10-5, 11-11
type, Writing I/O Driver, D-2 to D-3
/ACP keyword
MOUNT command (MCR), MCR, 3-145
ACS
See ALLOCATE CHECKPOINT
  SPACE command
ACSUB, System Management, 17-17
/AC switch, Task Builder, 10-5
ACT
See ACTIVE command
ACTFIL option, Task Builder, 12-7
Action routine, I/O Operations, 7-5
calling, I/O Operations, 7-6
using, I/O Operations, 7-6
ACTION statement, Error Logging, 5-30
ACTIVE command, MCR, 1-7, 3-14
ACTIVE command (cont’d.)
examples, MCR, 3-14
format, MCR, 3-14
keywords
/ALL, MCR, 3-14
/TERM, MCR, 3-14
MCR, Command Language, 3-2
Active job
definition, Batch and Queue, 4-1
Active Page Register
See APR
Active task
address of TCB, CDA, 3-21
AST queue, CDA, 3-23
attribute bits, CDA, 3-22
blocking bits, CDA, 3-21
dump, CDA, 3-21
AST queue, CDA, 3-21
Offspring Control Block, CDA, 3-21
receive-by-reference queue, CDA, 3-21
receive queue, CDA, 3-21
MCR, CDA, 3-26
name, CDA, 3-21
Offspring Control Block, CDA, 3-23
partition, CDA, 3-21
receive-by-reference queue, CDA, 3-24
receive queue, CDA, 3-23
state bits, CDA, 3-22
task image, CDA, 3-21
Active Task List
See ATL
ACTIVE TASK LIST command, MCR, 1-7, 3-31
example, MCR, 3-33
format, MCR, 3-33
Activity report
IOX, System Management, 4-20, 4-42
/ACT switch, CDA, 2-4, 2-5
AD01 A/D converter, I/O Drivers, 15-1
See also AFC11/AD01
conversion number restriction, I/O Drivers, 15-11
AD11-K converter, I/O Drivers, 23-2
ADC: subroutine
read single A/D channel (LSDRV), I/O Drivers, 17-12
ADD & PRINT command
EDI utility, Utilities, 2-12, 2-28
ADD command (cont’d.)
EDI utility, Utilities, 2-11, 2-27
Addition operator, MACRO-11, 3-2, 3-5
Add option
ACNT, System Management, 2-3
Address
See also RFA
absolute, Debugging, 2-2, 5-6
assigning, Task Builder, 2-1
assignment
DRS11, I/O Drivers, 19-2
DSS11, I/O Drivers, 19-2
ICR11, I/O Drivers, 19-1
ICS11, I/O Drivers, 19-1
concepts, Task Builder, 2-12, 2-14
to 2-19
constraint
DRS11, I/O Drivers, 19-2
DSS11, I/O Drivers, 19-2
convention
IAD-IA A/D converter, I/O Drivers, 19-4
logical, Task Builder, 2-13
multicast mode (XEDRV), I/O Drivers, 13-2
pairs Ethernet XEDRV, I/O Drivers, 13-3
physical, Task Builder, 2-12
physical mode (XEDRV), I/O Drivers, 13-2
relationship (ICDRV/ISDRV), I/O Drivers, 19-7
relative, Debugging, 2-2
format, Debugging, 2-2
relocatable, Debugging, 2-2, 5-6,
9-12 Introduction, 5-5
calculating, Debugging, 2-9, 7-1
space, Task Builder, 2-13
logical, Task Builder, 2-13
physical and virtual, Task Builder, 2-14
translation, Task Builder, 2-22
virtual, Task Builder, 2-13
virtual and logical, Task Builder, 2-22
transfer, Task Builder, A-6
virtual, Task Builder, 2-12
virtual space
allocation diagram to create ODL file, Task Builder, 3-36
cotree and main tree, Task Builder, 3-40

Master Index-5
Address
virtual space (cont'd.)
disk-resident overlay, Task Builder, 3-1, 3-2, 3-3
division, Task Builder, 2-17
layout, Task Builder, 2-17
memory and overlaid task, Task Builder, 3-11 to 3-14
memory-resident overlay, Task Builder, 3-6
overlay, Task Builder, 3-5, 3-6, 3-33, 3-34, 3-35
overlay tree, Task Builder, 3-24
reducing usage, Task Builder, 3-1
Address boundary
See ZAP utility
Address checking, System Generation (11M), 4-28
Address doubleword, Writing I/O Driver, A-1
Address expression
See Expression Addressing
22-bit (LADRV), I/O Drivers, 22-36
Address mapping, Executive, 3-2
Address mode, MACRO-11, 5-1 to 5-10
absolute, MACRO-11, 5-7
autodecrement, MACRO-11, 5-5
autodecrement deferred, MACRO-11, 5-5
autoincrement, MACRO-11, 5-3
autoincrement deferred, MACRO-11, 5-4
immediate, MACRO-11, 5-6, 5-7
index, MACRO-11, 5-5
index deferred, MACRO-11, 5-6
register, MACRO-11, 5-2
register deferred, MACRO-11, 5-3
relative, MACRO-11, 5-8
relative deferred, MACRO-11, 5-9
summary, MACRO-11, B-2
Address space
logical, Executive, 3-2
virtual, Executive, 3-2
Address window
creating, Executive, 5-43
deleting, Executive, 5-69
mapping to region, Executive, 5-122
unmapping, Executive, 5-254
virtual, Executive, 3-3
Addr parameter
DIR$ macro, I/O Drivers, 1-15
ADINP: subroutine
initiate single analog output (K-series), I/O Drivers, 23-8
ADJLPS: subroutine
adjust buffer pointer (LSDRV), I/O Drivers, 17-13
use in input/output (LSDRV), I/O Drivers, 17-36
ADS: subroutine error, I/O Drivers, 17-32
ADSWP: subroutine
initiate synchronous A/D sweep (K-series), I/O Drivers, 23-8
synchronous A/D sweep (LADRV), I/O Drivers, 22-3
ADV11-A D/A converter, I/O Drivers, 23-2
ADVANCE key (EDT), Introduction, 2-6
/ADV switch, CDA, 2-4, 2-5
Adwell parameter
XRATE: subroutine
K-series, I/O Drivers, 23-30
LADRV, I/O Drivers, 22-26
A error, MACRO-11, 3-10, 3-13, 3-16, 5-10, 6-25, 6-26, 6-28, 6-29, 6-32, 6-33, 6-38, 6-40, 6-42, 6-44, 6-47, 6-51, 6-56, 7-12, 7-13, 7-14, 7-19
macro definition, MACRO-11, 7-2
summary, MACRO-11, D-1 to D-3
AFC11
channel number, identical, I/O Drivers, 15-10
sampling rate, I/O Drivers, 15-11
AFC11/AD01
AIRD/AIRDW subroutine, I/O Drivers, 15-5
AISQ/AISQW subroutine, I/O Drivers, 15-5, 15-6
ASADLN subroutine, I/O Drivers, 15-5, 15-7
ASAFLN subroutine, I/O Drivers, 15-5, 15-7
assign LUN to AD01, I/O Drivers, 15-5
assign LUN to AFC11, I/O Drivers, 15-5
asynchronous process control, I/O Drivers, 15-3
control buffer, I/O Drivers, 15-10
converter programming hint, I/O Drivers, 15-10
data buffer, I/O Drivers, 15-10
AFC11/AD01 (cont'd.)
FORTRAN interface, I/O Drivers, 15-3
values, I/O Drivers, 15-9
FORTRAN subroutine summary, I/O Drivers, 15-4
functional capacity, I/O Drivers, 15-10
gain range, I/O Drivers, 15-10
I/O status block, I/O Drivers, 15-4
input analog data, I/O Drivers, 15-5, 15-7
input random analog data, I/O Drivers, 15-10
multi-sample mode, I/O Drivers, 15-10
read sequential analog input, I/O Drivers, 15-6
read sequential input, I/O Drivers, 15-5
single-sample mode, I/O Drivers, 15-10
standard QIO$, I/O Drivers, 15-2
synchronous process control, I/O Drivers, 15-3
AFC11 A/D converter, I/O Drivers, 15-1
See also AFC11/AD01
/AFF keyword
OPENREGISTER command, MCR, 3-165
SET command (VMR), System Management, 10-54
/AF switch
PRI command, Batch and Queue, 2-6
QUE /MOD command, Batch and Queue, 2-20
/AFTER qualifier
PRINT command, Batch and Queue, 2-6
SET QUEUE command, Batch and Queue, 2-20
AID field in ALL block, RMS-11 Macro, 2-12
CLOSE operation, RMS-11 Macro, 5-3
CREATE operation, RMS-11 Macro, 5-9, 5-16
DISPLAY operation, RMS-11 Macro, 5-30
ENTER operation, RMS-11 Macro, 5-35
AID field in ALL block (cont'd.)
ERASE operation, RMS-11 Macro, 5-40
EXTEND operation, RMS-11 Macro, 5-46, 5-47
offset, RMS-11 Macro, 6-2
OPEN operation, RMS-11 Macro, 5-73
PARSE operation, RMS-11 Macro, 5-86
REMOVE operation, RMS-11 Macro, 5-102
RENAME operation, RMS-11 Macro, 5-108
SEARCH operation, RMS-11 Macro, 5-116
summary, RMS-11 Macro, 6-3
AIRD/AIRDW
AFC11/AD01 converter, I/O Drivers, 15-5
analog input (ICDRV/ISDRV), I/O Drivers, 19-39
random input analog data (UDDRV), I/O Drivers, 16-17
AISQ/AISQW
AFC11/AD01 converter, I/O Drivers, 15-5, 15-6
analog input (ICDRV/ISDRV), I/O Drivers, 19-42
sequential channel, I/O Drivers, 19-42
specified channel sequence, I/O Drivers, 19-43
read sequential analog input channel (UDDRV), I/O Drivers, 16-18
$ALBLK (Allocate block), System Library, 8-9
$$ALER program section, Task Builder, 5-55
reserved name, Task Builder, E-2
ALER module, Task Builder, 5-55
Alignment
See also ALN field in ALL block
RMSDEF utility, RMS-11 Utilities, A-14
ALL
See ALLOCATE command
ALL block, RMS-11 Introduction, 4-8
chaining to FAB, RMS-11 Macro, 2-12
declaring, RMS-11 Macro, 2-8
initializing, RMS-11 Macro, 2-9
summary, RMS-11 Macro, 6-2
All devices switch
See /ADV switch
/ALL keyword
ACTIVE command, MCR, 3-14
ASSIGN command (MCR), MCR, 3-29
ALLOCATE CHECKPOINT SPACE command, MCR, 1-6, 3-11
error messages, MCR, 3-12
examples, MCR, 3-12
format, MCR, 3-11
keyword
/BLKS, MCR, 3-11
ALLOCATE command, Command Language, 5-31 to 5-33, 9-2
ALLOCATE command (MCR), MCR, 1-8, 3-16
allocating private device, MCR, 2-13
error messages, MCR, 3-17
examples, MCR, 3-17
format, MCR, 3-16
keywords
/TERM, MCR, 3-16
/TYPE, MCR, 3-16
parameters, MCR, 3-16
Allocate Device Transaction Block, System Management, 17-27
/ALLOCATE switch
BAD utility, Utilities, 6-5
See also ALQ field in ALL block
See also ALQ field in FAB
indexed files, RMS-11 User's Guide, 6-22
DEQ, RMS-11 User's Guide, 6-26
initial, RMS-11 User's Guide, 6-22
relative files, RMS-11 User's Guide, 4-3
DEQ, RMS-11 User's Guide, 4-4
initial, RMS-11 User's Guide, 4-3
RMSDEF utility
data, RMS-11 Utilities, A-16
file, RMS-11 Utilities, A-14
RMSDES utility
areas, RMS-11 Utilities, 2-10, 2-25
RMSDSP utility
displaying, RMS-11 Utilities, 5-4
Allocation (cont'd.)
sequential files, RMS-11 User's Guide, 3-4
initial, RMS-11 User's Guide, 3-4
task memory, Task Builder, 2-6
XAB
See ALL block
ALLOCATION attribute
RMSDES utility
area section, RMS-11 Utilities, 2-44
file section, RMS-11 Utilities, 2-31
/ALLOC keyword
USER FILE DIRECTORY command, MCR, 3-280
/ALL switch, CDA, 2-4, 2-5
ALN field in ALL block
CREATE operation, RMS-11 Macro, 5-17
DISPLAY operation, RMS-11 Macro, 5-30
EXTEND operation, RMS-11 Macro, 5-47
offset, RMS-11 Macro, 6-2
OPEN operation, RMS-11 Macro, 5-79
RSTS/E, RMS-11 Macro, D-4
t summary, RMS-11 Macro, 6-4
$ALOCB routine, Writing I/O Driver, 5-3
ALPHAN symbol, Indirect, 2-10
ALQ0 field in ALL block
offset, RMS-11 Macro, 6-2
ALQ1 field in ALL block
offset, RMS-11 Macro, 6-2
ALQ field in ALL block
CREATE operation, RMS-11 Macro, 5-16, 5-21
DISPLAY operation, RMS-11 Macro, 5-30
EXTEND operation, RMS-11 Macro, 5-47
offset, RMS-11 Macro, 6-2
OPEN operation, RMS-11 Macro, 5-79
RSTS/E, RMS-11 Macro, D-4
t summary, RMS-11 Macro, 6-5
ALQ field in FAB
CREATE operation, RMS-11 Macro, 5-16, 5-21
EXTEND operation, RMS-11 Macro, 5-46, 5-47
ALQ field in FAB (cont'd.)
offset, RMS-11 Macro, 6-22
OPEN operation, RMS-11 Macro, 5-78
summary, RMS-11 Macro, 6-25
ALSCT FORTRAN subroutine, Task Builder, 5-63, 5-64, 5-65
$ALSVB (Allocate small virtual block), System Library, 8-18
/AL switch, Task Builder, 10-6
ALT
See ALTER command
ALTER command (MCR), MCR, 1-7, 3-19
examples, MCR, 3-20
format, MCR, 3-19
keywords
/PRI, MCR, 3-19
/RPRI, MCR, 3-19
/TERM, MCR, 3-19
parameters, MCR, 3-19
ALTER command (VMR), System Management, 10-8
definition, System Management, 10-8
example, System Management, 10-8
format, System Management, 10-8
keyword
/PRI, System Management, 10-8
parameters, System Management, 10-8
Alternate CLI support
UCB field, Writing I/O Driver, 4-25
Alternate index
See also Index
RMSIFL utility, RMS-11 Utilities, 3-11, 3-12
RMSDEF utility
defining, RMS-11 Utilities, A-11
RMSIFL utility
allocating file space, RMS-11 Utilities, 3-13
sorting, RMS-11 Utilities, 3-11
Alternate key files (RMSIFL)
device allocation, RMS-11 Utilities, 3-7
Alternate support (ICS11), I/O Drivers, 19-3
Alter Priority directive, Executive, 5-13
ALTMODE key, Command Language, 3-11
Altmode line terminator (half-duplex), I/O Drivers, 3-25
ALT MOD symbol, Indirect, 2-10
ALTP$ directive, Executive, 5-13
ALUN$ directive, Executive, 5-15
example, I/O Drivers, 1-17
LUN assignment, I/O Drivers, 1-4
ALUN$ directive summary, I/O Operations, C-1
ALUN$ macro, I/O Drivers, 1-14, 1-16
$$ALVC program section, Task Builder, 10-6
reserved name, Task Builder, E-2
$$ALVD program section, Task Builder, 10-6
reserved name, Task Builder, E-2
$$ALVI program section, Task Builder, 10-6
reserved name, Task Builder, E-2
$ALVRT (Allocate virtual memory), System Library, 8-16
AM11-K multiple gain multiplexer, I/O Drivers, 23-2
AMA symbolic argument, MACRO-11, 6-19
American National Standards Institute
See ANSI
Ampersand (&), Command Language, 3-15
Analog input (ICDRV/ISDRV), I/O Drivers, 19-39
example, I/O Drivers, 19-40
sequential channel, I/O Drivers, 19-42
specified channel, I/O Drivers, 19-39, 19-43
Analog output (ICDRV/ISDRV), I/O Drivers, 19-15
multichannel, I/O Drivers, 19-44
Analysis listings, CDA, 1-1, 1-6, 1-8, 3-1 to 3-57
interpreting, CDA, 4-1
Analysis routines switch
See /ALL switch
Analysis switches, CDA, 2-3 to 2-8
ANALYZE/CRASH-DUMP command, Command Language, 9-2 CDA, 1-8
eor messages, CDA, A-1
examples, CDA, 2-23
format, CDA, 2-13
input to, CDA, 2-14

Master Index-9
ANALYZE/CRASH_DUMP command
(cont'd.)
qualifiers, CDA, 2-14 to 2-23
specification, CDA, 2-14
ANALYZE/MEDIA command,
Command Language, 5-14 to
5-20, 9-3
/ANCILLARY_PROCESSOR qualifier,
Task Builder, 11-11
ANCILLARY CONTROL DRIVER
command, MCR, 1-6, 3-8
effects, MCR, 3-9
functions, MCR, 3-8
Ancillary Control Processor
See ACP
Angle bracket
left (<), Command Language, 3-14
right (>), Command Language, 3-14
CLI prompt, Command Language,
3-14
ANSI, Command Language, 5-3
file name, Command Language, 1-9
MCR, 2-5
magnetic tape, MCR, 2-5
preparing, Command Language,
5-12
/ANSI keyword
SET command (MCR), MCR, 3-203
SET command (VMR), System
Management, 10-54
ANSI magnetic tape, RMS-11 Macro,
3-2, 5-20, 5-37, 5-43, 5-77, 5-88,
5-104, 5-111, 5-118
RMSBCK utility, RMS-11 Utilities,
6-1, 6-8
RMSDSP utility, RMS-11 Utilities,
5-3
ANSI tape standard, I/O Operations,
G-1
ANSLIB.OLB, System Generation (11M),
4-59
linking tasks to, System Generation
(11M), 7-4
rebuilding user-written tasks, System
Generation (11M), 6-6
ANSLIB.OLB (ANSI Magnetic Tape
library), Program Development,
1-11
Answer speed (TTDRV)
determine, modem, I/O Drivers,
2-83
AO/AOW (ICDRV/ISDRV)
analog output
multichannel, I/O Drivers,
19-44
AO/AOW (UDDRV)
analog output, I/O Drivers, 16-19
AO/AOW routine
analog output
multichannel (ICDRV/ISDRV),
I/O Drivers, 19-44
AOP field in ALL block
CREATE operation, RMS-11 Macro,
5-17, 5-18
DISPLAY operation, RMS-11 Macro,
5-30
EXTEND operation, RMS-11 Macro,
5-47
offset, RMS-11 Macro, 6-2
OPEN operation, RMS-11 Macro,
5-79
RSTS/E, RMS-11 Macro, D-4
summary
XB$CTG mask, RMS-11 Macro,
6-6
XB$HRD mask, RMS-11 Macro,
6-7
AP command
EDI utility, Program Development,
2-17 Utilities, 2-12, 2-28
Apostrophe operator (')
See Operator
Append
file open, I/O Operations, 2-15
APPEND command, Command
Language, 4-70 to 4-71, 9-4
/APPEND qualifier
BRU utility, Utilities, 7-12
/APPEND switch
DSC utility, Utilities, 8-9
Append switch, Error Logging, 2-3,
2-8
Delete subswitch, Error Logging,
2-3, 2-8
Application, Introduction, 6-2 RMS-11
See also Designing applications
optimization, RMS-11 User's Guide,
2-11
Applications Processor
See also QMG
definition, Batch and Queue, 4-1
APR, Task Builder, 2-15
changing mapping, Executive, 5-
130
APR (cont'd.)
  getting information, Executive, 5-130
  relocatable region
    specifying, Task Builder, 5-7
  resident common
    system-owned, Task Builder, 12-13
  resident library
    system-owned, Task Builder, 12-13
  specifying for ACP, Task Builder, 10-5, 11-11
/AP switch, Error Logging, 2-3, 2-8
  PIP utility, Utilities, 3-14
  RMSCNV utility, RMS-11 Utilities, 4-5, 4-7, 4-13, 4-15
AR11, I/O Drivers, 17-2
  See also LSDRV
AR11 clock sampling rate (LSDRV), I/O Drivers, 17-33
Architecture
  control file module, Error Logging, 4-1
  error log control file, Error Logging, 4-1
Area, RMS-11 User's Guide, 6-10
  See also ALL block
    alignment
      See ALN field in ALL block
    allocation
      See ALQ field in ALL block
    bucket size
      See BKZ field in ALL block
    contiguity, RMS-11 User's Guide, 6-13
      See also XB$CTG mask in AOP field
    count
      See NOA field in SUM block
      default extension size
        See DEQ field in ALL block
    description, obtaining
      See DISPLAY operation
    extending allocation
      See EXTEND operation
    identifier
      See AID field in ALL block
    location
      See LOC field in ALL block
  multiarea indexed files, RMS-11 User's Guide, 6-12
  Area (cont'd.)
    RMSDEF utility
      defining, RMS-11 Utilities, A-13
    RMSDES utility, RMS-11 Utilities, 2-10, 2-25
      defining, RMS-11 Utilities, 2-1, 2-42
      and BUCKET_SIZE attribute, RMS-11 Utilities, 2-32
      and DATA_AREA attribute, RMS-11 Utilities, 2-40
      and INDEX_AREA attribute, RMS-11 Utilities, 2-41
      and LEVEL1_INDEX_AREA, RMS-11 Utilities, 2-41
      and SIZE attribute, RMS-11 Utilities, 2-36
    by default, RMS-11 Utilities, 2-43
    explicitly, RMS-11 Utilities, 2-43
    defining by default, RMS-11 Utilities, 2-17, 2-38
    CREATE command, RMS-11 Utilities, 2-8, 2-28
    SET ALL command, RMS-11 Utilities, 2-14
    defining explicitly, RMS-11 Utilities, 2-17
    numbering, RMS-11 Utilities, 2-8, 2-28, 2-43
    single-area indexed files, RMS-11 User's Guide, 6-11
  Area information (RMSDSP)
    displaying, RMS-11 Utilities, 5-4
  Area number (RMSDEF), RMS-11 Utilities, A-16
  A register, Debugging, 2-6, 5-3, 6-2, 9-10
  Arg1 parameter
    CALLS calling (LADRV), I/O Drivers, 22-27
    CALLS macro (K-series), I/O Drivers, 23-31
  ARGCHA routine, Executive, 1-12
  Argument
    macro call, MACRO-11, 7-4, 7-5
    macro definition, MACRO-11, 7-4, 7-5, 7-6
    dummy, MACRO-11, 7-2
    passing in macro definition, MACRO-11, 7-7
    register, Debugging, 2-6, 5-3
    separator, Debugging, 2-5, 9-8

Master Index-11
Arithmetic calculations, Debugging, 7-1
extended specifying, Task Builder, 10-16, 11-16
operator, Indirect, 2-22
See also Operator

Array
area mapped, Task Builder, 5-64
declaration
mapped, Task Builder, A-10
set for buffered sweep (K-series), I/O Drivers, 23-28
virtual, Task Builder, 12-42, 12-43
example, Task Builder, 12-42, 12-43

Arrow key, Command Language, 3-16
Arrow keys (EDT), Introduction, 2-5

Arv parameter
device-specific function (UDDRV), I/O Drivers, 16-4
ICDRV/ISDRV, I/O Drivers, 19-9
IO.CTI function (ICDRV/ISDRV), I/O Drivers, 19-21

ASADLN (APC11/AD01 converter), I/O Drivers, 15-5, 15-7

ASAFLN (APC11/AD01 converter), I/O Drivers, 15-5, 15-7

ASARLN: subroutine
assign LUN to AR0: (LSDRV), I/O Drivers, 17-14

ASCII
code set, MCR, 3-153 MACRO-11, A-1 to A-3
command option, MCR, 2-6
conversion characters, MACRO-11, 6-25, 6-26
displaying, Debugging, 4-6
number conversion
ASCII to Radix-50 ($CAT5), System Library, 4-6
ASCII with blanks to Radix-50 ($CAT5B), System Library, 4-8
decimal to binary ($CDTB), System Library, 4-4
decimal to binary double-word (.DD2CT), System Library, 4-1
octal to binary ($SCOTB), System Library, 4-5

ASCII number conversion (cont'd.)
octal to binary double-word (.OD2CT), System Library, 4-2
operator, Debugging, 2-7
byte mode, Debugging, 4-6, 9-10
word mode, Debugging, 4-6, 9-10
task name, MCR, 2-6
.ASCII directive, MACRO-11, 6-26 to 6-28
ASCII stream file
RMSCNV utility, RMS-11 Utilities, 4-3, 4-8
RMSIFL utility, RMS-11 Utilities, 3-1
.ASCIIZ directive, MACRO-11, 6-28
.ACSCPP routine, convert UIC to binary, I/O Operations, 4-8
.ASECT directive, MACRO-11, 3-11, 6-46
ASG option, Task Builder, 12-8
ASG TKB option
LUN assignment, I/O Drivers, 1-4
.ASK directive, Indirect, 2-33
.ASKN directive, Indirect, 2-35
.ASKS directive, Indirect, 2-38

ASLSLN: subroutine
assign LUN to LS0: (LSDRV), I/O Drivers, 17-13

.ASLUN routine, assign LUN, I/O Operations, 4-11, 4-16

ASN
See ASSIGN command

ASR-33, I/O Drivers, 2-3
ASR-33/35 Teletypewriter, I/O Drivers, 3-2

ASR-35, I/O Drivers, 2-3

Assembler
address mode summary, MACRO-11, B-2
character set, MACRO-11, 3-1, 3-2, 3-3
coding standard, MACRO-11, E-1 to E-16
directive, general, MACRO-11, 6-1, 6-2, 6-3
summary table, MACRO-11, 6-1, 6-2, 6-3
directive summary, MACRO-11, B-3 to B-8

Master Index-12
Assembler
error (cont’d.)
See A error
type code summary, MACRO-11, D-1 to D-5
type message, MACRO-11, 8-19, 8-20, 8-21
type specification, MACRO-11, 8-3, 8-4, 8-5
switch, MACRO-11, 8-6
listing symbols, MACRO-11, 4-1
obsolete functions, MACRO-11, I-1
operating hints, MACRO-11, F-1
operating procedures, MACRO-11, 8-1
pass 1, MACRO-11, 1-1, 1-2
pass 2, MACRO-11, 1-2
position independent code, MACRO-11, G-1
special character summary, MACRO-11, B-1
statement format, MACRO-11, 2-1
version number, MACRO-11, 6-4
work file, MACRO-11, F-1
Assembly, RMS-11 Macro, 2-20
Language, Program Development, 1-4 to 1-5
See also MACRO-11
listing
examining at a terminal, Program Development, 3-6
formatting, Program Development, 2-6
generating, Program Development, 3-4 to 3-6
page break, Program Development, 2-6
printing, Program Development, 3-8 to 3-9
spooling, Program Development, 3-8, 3-9
table of contents, Program Development, 2-6
terminal format, Program Development, 2-6
Assembly language interface (ICORV/ISORV), I/O Drivers, 19-8
ASSIGN/QUEUE command, Command Language, 9-5
DCL, System Management, 7-9
MCR, System Management, 7-9
ASSIGN/REDIRECT command, Command Language, 5-24 to 5-26, 9-5
ASSIGN/TASK command, Command Language, 5-27 to 5-28, 9-5
Assign Channel directive, Executive, 5-10
ASSIGN command, Command Language, 5-21 to 5-23, 9-4
in logical name translation, I/O Operations, 4-9
LUN assignment, I/O Drivers, 1-4
LUN redirection, I/O Drivers, 1-3
ASSIGN command (MCR), MCR, 1-6, 3-20
and logical devices, MCR, 2-12
and pseudo devices, MCR, 2-10
error messages, MCR, 3-30
examples, MCR, 3-26, 3-28, 3-29
formats, MCR, 3-25, 3-27, 3-29
keywords
/ALL, MCR, 3-29
/FINAL, MCR, 3-26
/GBL, MCR, 3-26, 3-28, 3-29
/CR, MCR, 3-26, 3-28, 3-29
/LOGIN, MCR, 3-26, 3-28
/SYSTEM, MCR, 3-26, 3-28
/TERM, MCR, 3-28, 3-29
ASSIGN command (VMR), System Management, 10-9
definition, System Management, 10-9
eexamples, System Management, 10-10
formats, System Management, 10-9
keywords
/GBL, System Management, 10-9
/SYSTEM, System Management, 10-10
parameters, System Management, 10-9
Assign LUN
to AR0: (LSDRV), I/O Drivers, 17-14
to LS0: (LSDRV), I/O Drivers, 17-13
Assign LUN directive, Executive, 5-15
Assignment operator
See Direct assignment operator
Assignments
See also Logical assignment
Assignments

device (cont'd.)
global, Command Language, 5-8
local, Command Language, 5-8
login, Command Language, 5-8
logical device, MCR, 2-12, 3-20
displaying, Command Language, 2-5, 5-86
logical name, MCR, 3-21
global, MCR, 3-21, 3-64
group, MCR, 3-21, 3-64
local, MCR, 3-21, 3-64
login, MCR, 3-21, 3-64
task, MCR, 2-12

Assignment statement
See Direct assignment statement
Assign table dump, CDA, 3-1, 3-17
logical device names, CDA, 3-17
physical device names, CDA, 3-17

/AS switch
DMP utility, Utilities, 11-3
AST, Executive, 2-5, 2-7 I/O Drivers, 1-9 MCR, 1-3, 2-16 System Generation (11M), 4-31
blocking, I/O Drivers, 1-11
disabling recognition, Executive, 5-64
enabling recognition, Executive, 5-76
event flag, using, I/O Drivers, 1-11
interrupt routine, I/O Drivers, 1-11

IO.ATA function (TTDRV), I/O Drivers, 2-20
operation (half-duplex), I/O Drivers, 3-9
processing, I/O Drivers, 1-11
queue, I/O Drivers, 1-11
recognition
disable, I/O Drivers, 1-11
enable, I/O Drivers, 1-11
service
exit routine, I/O Drivers, 1-12
termination, I/O Drivers, 1-24

service routine, Executive, 2-8 MCR, 3-3
FORTRAN, Executive, 1-20
specifying, Executive, 5-207
terminating, Executive, 5-17
specifying
Floating Point Processor
exception, Executive, 5-200
for CLI, Executive, 5-182

AST
specifying (cont'd.)
power recovery, Executive, 5-210
receive-by-reference, Executive, 5-231
receive data, Executive, 5-222
requested exit, Executive, 5-224
unsolicited input
half-duplex, I/O Drivers, 3-9, 3-34
TTDRV, I/O Drivers, 2-12, 2-17

Ast2 parameter (TTDRV)
general, I/O Drivers, 2-10
I/O.ATA function, I/O Drivers, 2-21
Asterisk (*), Command Language, 3-15, 4-6 to 4-8 MCR, 2-7
See also Autoload indicator
See also Wildcard
cross-reference
of overlaid task, Task Builder, 4-12
cross-reference listing, Task Builder, 10-12, 11-23, 11-24
EDI utility, Program Development, 2-10
PIP utility, Program Development, 3-10

Asterisk separator (*)
See Separator

Ast parameter
device-specific (half-duplex), I/O Drivers, 3-7
general (TTDRV), I/O Drivers, 2-10
I/O completion, I/O Drivers, 1-36
I/O.ATA function (TTDRV), I/O Drivers, 2-20
I/O.ATT function, I/O Drivers, 1-27
I/O.CCO function (TTDRV), I/O Drivers, 2-23
I/O.DET function, I/O Drivers, 1-28
I/O.EIO function (TTDRV), I/O Drivers, 2-26
I/O.GTS function (TTDRV), I/O Drivers, 2-33
I/O.HNG function (TTDRV), I/O Drivers, 2-35
I/O.KIL, I/O Drivers, 1-29
I/O.RAL function (TTDRV), I/O Drivers, 2-36
I/O.RLB function, I/O Drivers, 1-30
I/O.RNE function (TTDRV), I/O Drivers, 2-38

Master Index-14
Asynchronous I/O (XEDRV), I/O Drivers, 13-21
Asynchronous multiplexer (communication driver), I/O Drivers, 12-1
Asynchronous operation, RMS-11
  Introduction, 4-4
See also RB$ASY mask in ROP field
  RAB declaration, RMS-11 Macro, 2-8
  waiting for
  See WAIT operation
Asynchronous process control
  ICDRV/ISDRV, I/O Drivers, 19-35
  UDDRV, I/O Drivers, 16-15
Asynchronous System Trap
  See AST
  Asynchronous trap, I/O Drivers, 1-10, 1-11
AT., Indirect, 2-2
ATL
  See also ACTIVE TASK LIST command
  displaying task information,
  Command Language, 7-57
  task
  displaying information,
  Command Language, 7-59
  /ATL switch, CDA, 2-4, 2-5
  ATRGS directive, Executive, 5-19
At sign (@), Command Language, 3-15
  Indirect, 1-1, 2-1, 2-2
  command, Debugging, 2-5, 4-4, 9-9
  cross-reference
  of overlaid task, Task Builder, 4-12
  cross-reference listing, Task Builder, 10-12, 10-13, 11-23, 11-24
  indirect file, Task Builder, 1-11
  ODT, Program Development, 5-8
Attach
  device, I/O Drivers, 1-27
  PPDRV, I/O Drivers, 18-5
  terminal (VTDRV), I/O Drivers, 4-4
  terminal function (TTDRV), I/O Drivers, 2-20
  unmounted channel (communication driver), I/O Drivers, 12-5
  unmounted volume (DTDRV), I/O Drivers, 6-2
Attach mode, Indirect, 2-47
Attach Region directive, Executive, 5-19
(NAME directive
DSK, Task Builder, 3-28
GBL, Task Builder, 3-28
NODSK, Task Builder, 3-28
NOGBL, Task Builder, 3-28
record format, RMS-11 User's Guide, 1-18
RMSDES utility, RMS-11 Utilities, 2-29
clearing, RMS-11 Utilities, 2-6, 2-22, 2-25
individual values, RMS-11 Utilities, 2-26
sections, RMS-11 Utilities, 2-26
displaying, RMS-11 Utilities, 2-15, 2-26
individual values, RMS-11 Utilities, 2-26
sections, RMS-11 Utilities, 2-27
informational, RMS-11 Utilities, 2-1, 2-17, 2-29
resetting, RMS-11 Utilities, 2-21
RMS-11, RMS-11 Utilities, 2-1, 2-17, 2-29
setting, RMS-11 Utilities, 2-13

Attribute
RMSDES utility (cont'd.)
from a data file, RMS-11 Utilities, 2-25
from a description file, RMS-11 Utilities, 2-24
individual values, RMS-11 Utilities, 2-21
setting sections, RMS-11 Utilities, 2-21
RMSDSP utility, RMS-11 Utilities, 5-1
Attribute buffer (F11ACP)
address, I/O Drivers, C-5
Attribute list (F11ACP), I/O Drivers, C-2
Attribute size, I/O Drivers, C-4
Attribute type (F11ACP), I/O Drivers, C-3
file characteristic, I/O Drivers, C-3
file name, I/O Drivers, C-3
file owner, I/O Drivers, C-3
file protection, I/O Drivers, C-3
file type, I/O Drivers, C-3
placement control, I/O Drivers, C-4
read file header, I/O Drivers, C-4
record I/O area, I/O Drivers, C-3
revision number, I/O Drivers, C-4
statistics block, I/O Drivers, C-4
version number, I/O Drivers, C-4
Audit trail
See SLP utility
/AU switch
SLP utility, Utilities, 13-15
Autobaud detection, MCR, 3-202
Autobaud speed detection (TTDRV), I/O Drivers, 2-83
Auto-call
enabling for modem (TTDRV), I/O Drivers, 2-52
Autoconfigure, System Generation (11M), 1-2
adding devices, System Generation (11M), 4-4
description, System Generation (11M), 3-17
failure, System Generation (11M), 3-18
overriding results, System Generation (11M), 3-20, 4-3
exception, System Generation (11M), 3-21
question, System Generation (11M), 4-3

Master Index-16
Autoconfigure (cont'd.)
restrictions, System Generation (11M), 3-17
sample output, System Generation (11M), 3-19
supported hardware, System Generation (11M), 3-21
use, System Generation (11M), 3-17
with saved answer files, System Generation (11M), 3-18
Autodecrement address mode, MACRO-11, 5-5
Autodecrement deferred address mode, MACRO-11, 5-5
Autodecrement indicator, MACRO-11, 3-2
Autoincrement address mode, MACRO-11, 5-3
Autoincrement deferred address mode, MACRO-11, 5-4
Autoincrement indicator, MACRO-11, 3-2
Autoload, Task Builder, 4-1
applying indicator
cotree root, Task Builder, 4-2
.FCTR label name, Task Builder, 4-3
file name, Task Builder, 4-2
portions of ODL tree, Task Builder, 4-2
program section name, Task Builder, 4-3
segment name, Task Builder, 4-3
code sequence, Task Builder, 4-5
conventional task, Task Builder, 4-5
data segment, Task Builder, 4-6
error handling, Task Builder, 4-11
indicator, Task Builder, 4-2
efficiently placed, Task Builder, 4-6
making program section, Task Builder, 4-3
path load, Task Builder, 4-3, 4-4
specifying, Task Builder, 4-1
vector, Task Builder, 4-4, 4-5, B-15, B-16
eliminating unnecessary, Task Builder, 4-6
format
conventional task, Task Builder, 4-4
Autoloadable
file, Task Builder, 4-2
Autoloadable library
internal symbol, Task Builder, A-27
AUTOMCALL argument, MACRO-11, 8-9
AUTO module, Task Builder, 5-54
$$AUTO program section, Task Builder, 5-54, 5-55
reserved name, Task Builder, E-2
AUTOT module, Task Builder, 5-54
AVERAGE.FTN source code, Program Development, 7-3
/AVO keyword
SET command (MCR), MCR, 3-204
SET command (VMR), System Management, 10-54

B
Backing up volume
See BRU utility
See DSC utility
Backslash (\). Command Language, 3-16
ODT, Program Development, 5-5
Backslash operator (\)
See Operator
BACKSPACE key, Command Language, 3-12 Introduction, 1-8
/BACKUP_SET qualifier
BRU utility, Utilities, 7-13
Backup and Restore Utility
See BRU utility
BACKUP command, Command Language, 5-73 to 5-85, 9-5 to 9-7
error messages, Command Language, 5-83 to 5-85
qualifiers, Command Language, 5-75 to 5-82
Backup date
RMSRST utility, RMS-11 Utilities, 7-8, 7-10
BACKUP key (EDT), Introduction, 2-6
Backup operation, Command Language, 5-73
Backup set, Command Language, 5-73
Backup switch, Error Logging, 2-3, 2-9
Backus-Naur Form metalanguage, System Management, 12-6
BADBLK.SYS file, Command Language, 5-11

Master Index-17
Bad block

descriptor file, MCR, 3-102
detection, System Management, 5-1, 5-3
handling
MSCP disks, System Management, 5-3
information
DSC utility, Utilities, 8-9
initializing, MCR, 3-100, 3-102
listing
IOX, System Management, 4-26
locating, Command Language, 5-14
BAD utility, Utilities, 6-1
FMT utility, Utilities, 5-1
VFY utility, Utilities, 9-7
notification, System Management, 5-1, 5-3
processing, MCR, 3-100
BAD utility, Utilities, 6-3
BRU utility, Utilities, 7-24
recovery techniques, System Management, 5-1
removing from testing
IOX, System Management, 4-26
replacement, System Management, 5-1, 5-3 to 5-4
partial, System Management, 5-4
revectoring, System Management, 5-1, 5-4
specifying
IOX, System Management, 4-25
Bad block file header, I/O Operations, E-2
Bad Block Locator Utility
See BAD utility
Bad Block Replacement Control Task, System Management, 1-2
See also RCT
BADBLOCKS
display command, System Management, 4-26
IOX command, System Management, 4-25
parameter command, System Management, 4-25
Badge Reader hint (TDDRIV), I/O Drivers, 2-82
/BAD keyword
INITVOLUME command, MCR, 3-100
options, MCR, 3-100

/BAD keyword
options (cont'd.)
AUTO, MCR, 3-101
MAN, MCR, 3-101
NOAUTO, MCR, 3-101
OVR, MCR, 3-101
/BAD qualifier
BRU utility, Utilities, 7-13, 7-24
options, Utilities, 7-25
Bad sector, track (disk driver), I/O Drivers, 5-12
/BAD switch
DSC utility, Utilities, 8-9
FMT utility, Utilities, 5-7
BAD utility
bad block descriptor entry, Utilities, 6-4
bad block processing, Utilities, 6-3
command line, Utilities, 6-1
device support, Utilities, 6-9
device verifying, Utilities, 6-3
error message, Utilities, 6-10
indirect command file, Utilities, 6-2
INI command, Utilities, 6-4
programming consideration, Utilities, 6-5
switch, Utilities, 6-5
stand-alone, Utilities, 6-8
summary, Utilities, 6-1
task, Utilities, 6-5
Baseline system
definition, System Generation (11M), 1-5
Base number
in DCL, Command Language, 1-8
Base priority for nonprivileged tasks, System Management, 13-13
Basic MCR, System Generation (11S), 2-1, 4-2
error messages, System Generation (11S), 2-4
initialization commands, System Generation (11S), 2-2
size, System Generation (11S), 4-2
system maintenance commands, System Generation (11S), 2-3
task control commands, System Generation (11S), 2-2
BASIC-PLUS-2, Introduction, 5-10
/BASIC qualifier, Task Builder, 11-12
BASLIN symbol, Indirect, 2-10
/BA switch, Error Logging, 2-3, 2-9
DMP utility, Utilities, 11-3

Master Index-18
Baud rate
automatic detection of, MCR, 3-202
list (TTDRV), I/O Drivers, 2-57
receive, MCR, 3-254
remote terminal
setting, MCR, 3-247
setting, MCR, 3-254
split; modem support (TTDRV), I/O Drivers, 2-83
transmit, MCR, 3-254
valid; MCR, 3-254
BC, System Management, 12-27
B command, Debugging, 2-8, 3-1, 3-2, 9-11
ODT, Program Development, 5-6
B condition test argument, MACRO-11, 6-52
BCT, System Management, 12-28
BDB pool, RMS-11 Macro, 2-8
/BD switch
RMSRST utility, RMS-11 Utilities, 7-8, 7-10
BEGIN command
EDI utility, Program Development, 2-14 Utilities, 2-28
.BEGIN directive, Indirect, 2-4, 2-40
Begin-End block, Indirect, 2-4
beginning, Indirect, 2-40
ending, Indirect, 2-51
processing
terminating, Indirect, 2-54
BEGIN-END statement, Error Logging, 5-36
B error, MACRO-11, 6-37
summary, MACRO-11, D-3
BEX symbolic argument, MACRO-11, 6-11
/BF switch
SLP utility, Utilities, 13-15
Bias value, Debugging, 2-3
Trace program, Debugging, 10-3
BID field in FAB
offset, RMS-11 Macro, 6-22
summary
FB$BID code, RMS-11 Macro, 6-26
BID field in RAB
offset, RMS-11 Macro, 6-115
summary
RB$BID code, RMS-11 Macro, 6-116
Big-buffering support, System Generation (TIM), 4-59
BINARY argument, MACRO-11, 8-9, 8-11
Binary conversion
binary byte to octal ($CBTBMG), System Library, 5-9
binary date to decimal ($CDBAT), System Library, 5-2
binary to signed decimal ($CBDSG), System Library, 5-4
binary to signed octal ($CBOSG), System Library, 5-8
binary to unsigned decimal ($CBDMG), System Library, 5-3
binary to unsigned octal ($CBOMG), System Library, 5-7
double-precision binary to decimal ($CDDMG), System Library, 5-5
general purpose binary to ASCII ($CBTA), System Library, 5-10
Binary key
See also XB$BN2 mask in DTP field
See also XB$BN4 mask in DTP field
4-byte unsigned, RMS-11 User's Guide, 6-5
Binary machine code, Introduction, 5-4, 5-5
Binary operator, MACRO-11, 3-5, 3-6
See also Operator, logical evaluation of multiple, MACRO-11, 3-6
precedence with unary, MACRO-11, 3-16
Binary output controlling absolute, MACRO-11, 6-19
enabling and disabling, MACRO-11, 6-20
Binary output file size switch
See /MEMSIZE switch
Binary prompt (TTDRV), I/O Drivers, 2-12, 2-26, 2-41
Binary to ASCII conversion
UIF, I/O Operations, 4-8
BIN symbolic argument, MACRO-11, 6-11
Bit, RMS-11 Introduction, 2-1
Bit Clear
See BC
Bit Clear Test
See BCT

Master Index-19
Bit density, MCR, 3-147
diskette, MCR, 3-102
magnetic tape, MCR, 3-102
Bit map
index file, I/O Operations, E-2
BITMAP.SYS file, Command Language, 5-11
Bit Set
See B
Bit Set Test
See BST
BKS field in FAB
CREATE operation, RMS-11 Macro, 5-17
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-78
RSTS/E, RMS-11 Macro, D-3
summary, RMS-11 Macro, 6-27
BKT field in RAB, RMS-11 Macro, 4-6, 4-12, 4-13
FIND operation, RMS-11 Macro, 5-50, 5-52, 5-55
GET operation, RMS-11 Macro, 5-61, 5-65, 5-68
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-93, 5-96
READ operation, RMS-11 Macro, 5-98, 5-100
SPACE operation, RMS-11 Macro, 5-120
summary, RMS-11 Macro, 6-117
WRITE operation, RMS-11 Macro, 5-127, 5-129
BKZ field in ALL block
CREATE operation, RMS-11 Macro, 5-17
DISPLAY operation, RMS-11 Macro, 5-30
offset, RMS-11 Macro, 6-2
OPEN operation, RMS-11 Macro, 5-79
RSTS/E, RMS-11 Macro, D-3, D-4
summary, RMS-11 Macro, 6-8
Blank
ignoring in command line, I/O Operations, 7-8
Blank line, MACRO-11, 2-1
BLDLAINIT.CMD, System Generation (11M), 3-5
BLK
See BLOCK command

Master Index-20
Block
access (cont’d.)
  initialization, I/O Operations, 2-12
  READ$ macro, I/O Operations, 2-12
  WRITE$ macro, I/O Operations, 2-12
allocating
  VFY utility, Utilities, 9-8
boundary, I/O Operations, 2-6
buffer
  initialize FDB, I/O Operations, 2-18
  pool space, FSR, I/O Operations, 2-39
label, Task Builder, 2-8
length (CTDRV), I/O Drivers, 9-8
locating
  See SPACE operation
locking, I/O Operations, 2-17, 2-46
  enable, I/O Operations, 2-16
locking (FIIACP), I/O Drivers, C-6, C-8
logical, I/O Operations, 5-2 RMS-ll
  Introduction, 2-3
magnetic tape
  user definable, RMS-11
  Introduction, 2-4
reading
  See READ operation
recovering lost
  VFY utility, Utilities, 9-7
size
  block I/O, I/O Operations, 2-12
  reset, CLOSE$ macro, I/O
  Operations, 2-19
size (tape driver), I/O Drivers, 8-15
nolabel tape, I/O Drivers, 8-18
size, magnetic tape
  See BLS field in FAB
spanning, RMS-11 Introduction, 4-2
  RMS-ll User’s Guide, 1-16,
  1-19, 3-1
  variable-length records, RMS-11
  User’s Guide, 2-16
statistics
  address, I/O Operations, 3-12
tape
  override size, I/O Operations, 2-18
unlocking, I/O Operations, 2-47
verifying

Block
verifying (cont’d.)
  VFY utility, Utilities, 9-7
  virtual, I/O Operations, 5-2 RMS-ll
  Introduction, 2-3
writing
  See WRITE operation
BLOCK_SPAN attribute
  RMSDES utility, RMS-11 Utilities,
  2-37
Block access, RMS-ll Introduction, 3-11, 3-12, 3-14, 4-7 RMS-ll User’s
  Guide, 1-20, 3-6
  See also Shared access
remote, RMS-ll User’s Guide, B-3
sequential, RMS-ll Introduction,
  3-12
VBN, RMS-ll Introduction, 3-12
Block access mode
  See also BKT field in RAB
RMSCNV utility, RMS-11 Utilities,
  4-1
Block boundary
crossing, record attribute, I/O
  Operations, 3-9
fixed-length record
  PUT$ macro, I/O Operations, 3-29
FSR block buffer, I/O Operations, 3-28
RMSDEF utility, RMS-11 Utilities,
  A-9
variable-length record
  PUT$ macro, I/O Operations, 3-29
BLOCK command, MCR, 1-7, 3-34
  examples, MCR, 3-34
  format, MCR, 3-34
  keyword
  /TERM, MCR, 3-34
parameters, MCR, 3-34
Block context, RMS-ll Introduction,
  4-7 RMS-ll Macro, 4-12
readable block, RMS-ll Introduction,
  4-7
writable block, RMS-ll Introduction,
  4-7
Block-declaration macro, RMS-11
  Macro, 2-8, 2-9
Blocked record
  See FB$BLK mask in RAT field
Block I/O, I/O Operations, 2-10
  block size, I/O Operations, 2-12
  buffer, I/O Operations, 2-12

Master Index-21
Bootstrap (cont'd.)

hardware, System Generation (11M), 1-5, B-1
mapped baseline system, System Generation (11M), 4-2
procedure, System Generation (11M), B-1
software, System Generation (11M), 1-5

summary of addresses, System Generation (11M), B-2

system, MCR, 3-35
mapped, MCR, 3-36
unmapped, MCR, 3-36
unsaved, MCR, 3-36

unsaved system, System Generation (11M), 6-2

nonstandard unmapped, System Generation (11M), 6-12

Bootstrap block, I/O Operations, E-1

Bootstrap from paper tape, System Generation (11S), 2-19

B operator, MACRO-11, 3-5, 6-32

/BOT keyword

SET command (VMR), System Management, 10-55 to 10-56

BOTTOM command

EDI utility, Utilities, 2-12, 2-29

BOTTOM key (EDT), Introduction, 2-6

BPA field in FAB, RMS-11 Macro, 2-7, 3-5

CLOSE operation, RMS-11 Macro, 5-4
CREATE operation, RMS-11 Macro, 5-13
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-42
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-74
PARSE operation, RMS-11 Macro, 5-87
REMOVE operation, RMS-11 Macro, 5-104
RENAME operation, RMS-11 Macro, 5-110
SEARCH operation, RMS-11 Macro, 5-117
summary, RMS-11 Macro, 6-30

BPI

See Bit density
BPR, System Management, 7-2
BPR.TSK, System Management, 7-10
BPS field in FAB, RMS-11 Macro, 2-7, 3-5
CLOSE operation, RMS-11 Macro, 5-4
CREATE operation, RMS-11 Macro, 5-13
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-42
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-74
PARSE operation, RMS-11 Macro, 5-87
RENAME operation, RMS-11 Macro, 5-104
SEARCH operation, RMS-11 Macro, 5-117
summary, RMS-11 Macro, 6-31
/BP switch
RMSDSP utility, RMS-11 Utilities, 5-3, 5-4
BPT trap instruction, Debugging, 8-5
Branch instruction
address calculation, MACRO-11, 5-10
location, Debugging, 2-6, 9-9
offset, Debugging, 4-5, 7-1
calculating, Debugging, 4-5
Breakpoint, Debugging, 3-1, 3-3, 8-7, 9-13
address register, Debugging, 2-7, 3-1, 5-4, 9-10
clearing, Debugging, 3-2
definition, System Generation (11M), 3-8
EOS, System Generation (11M), 3-8
EOX, System Generation (11M), 3-8
inserting with OPEN, Debugging, 8-7
inserting with ZAP utility, Debugging, 8-8
instruction register, Debugging, 2-7, 5-4, 9-10
proceed count, Debugging, 3-4
Breakpoint
proceed count (cont’d.)
register, Debugging, 2-7, 5-4, 9-10
P purpose, System Generation (11M), 3-8
removing, Debugging, 2-8, 3-2, 9-11
setting, Debugging, 2-8, 3-1
XDT, Debugging, 9-2
setting in a task, Program Development, 5-6
Breakpoint register, Program Development, 5-6
BREAKPOINT TO EXECUTIVE DEBUGGING TOOL command, MCR, 1-8, 3-38
error message, MCR, 3-38
example, MCR, 3-38
format, MCR, 3-38
Breakthrough write
half-duplex, I/O Drivers, 3-16
multi-echo (half-duplex), I/O Drivers, 3-16
privileged task (TTDRV), I/O Drivers, 2-17
TTDRV, I/O Drivers, 2-16, 2-17, 2-48, 2-49
B register, Debugging, 2-7, 5-4, 9-10
Brief format report, Error Logging, 3-11
/BRIEF qualifier
SHOW QUEUE command, Batch and Queue, 2-15
BRK command, Debugging, 8-7
See BREAKPOINT TO EXECUTIVE DEBUGGING TOOL command
BRO
See BROADCAST command
BROADCAST command, Command Language, 3-30 to 3-33, 9-7
Introduction, 3-7
error messages, Command Language, 3-32
examples, Command Language, 3-31
qualifiers, Command Language, 3-31
BROADCAST command (MCR), MCR, 1-8, 3-39
and indirect command file, MCR, 3-39
error messages, MCR, 3-42
texts, MCR, 3-41
message formats, MCR, 3-41
option, MCR, 3-40

Master Index-23
/BRO keyword
SET command (MCR), MCR, 3-205
SET command (VMR), System Management, 10-56

/BR switch
PIP utility, Utilities, 3-25
QUE /LI command, Batch and Queue, 2-15

BRU64K, System Generation (11M), 2-5
See also BRUSYS
CNF, System Generation (11M), 2-5
altering CSRs, System Generation (11M), 2-5
altering vectors, System Generation (11M), 2-5

BRUSYS, System Generation (11M), 2-4
See also BRU64K
CNF, System Generation (11M), 2-5
altering CSRs, System Generation (11M), 2-5
altering vectors, System Generation (11M), 2-5

BRU utility, Command Language, 5-83
MCR, 3-116, 3-188 Utilities, 7-1
backing up target system disk, System Generation (11M), 6-9
bad block processing, Utilities, 7-24
command line, Utilities, 7-5
parameter, Utilities, 7-6
command qualifier
description, Utilities, 7-12
function, Utilities, 7-11
summary, Utilities, 7-8
data transfer, Utilities, 7-26
device information, Utilities, 7-1
device support, Utilities, 7-5
disk initialization, Utilities, 7-17
error message, Utilities, 7-34
example, Utilities, 7-28
file creation date, Utilities, 7-27
file revision date, Utilities, 7-27
file treatment, Utilities, 7-26
file header, Utilities, 7-27
file synonym, Utilities, 7-27
lost file, Utilities, 7-27
recovering disk space, System Generation (11M), 6-3
stand-alone, Utilities, 7-22
booting, Utilities, 7-23
CNF and, Utilities, 7-22
locating, Utilities, 7-23
system image copying, Utilities, 7-26

BRU utility (cont’d.)
task build, System Generation (11M), 6-3
BS, System Management, 12-27
/BS keyword
MOUNT command (MCR), MCR, 3-146
/BS switch
FLX utility, Utilities, 4-6
PIP utility, Utilities, 3-15
BST, System Management, 12-28

Bucket, RMS-11 Introduction, 4-2
fill number, RMS-11 Introduction, 4-2
populating indexed files, RMS-11 User’s Guide, 6-27
fill number, data
See DFL field in KEY block
fill number, honoring
See RB$LOA mask in ROP field
fill number, index
See IFL field in KEY block
high-key value, RMS-11 User’s Guide, 5-5, 5-6
I/O units, RMS-11 User’s Guide, 1-16
index, RMS-11 User’s Guide, 5-6
locking, RMS-11 Introduction, 4-3
and shared access, RMS-11 User’s Guide, 2-7
FIND operation, RMS-11 User’s Guide, 2-8
GET operation, RMS-11 User’s Guide, 2-8
relative files, RMS-11 User’s Guide, 4-1
RMSCNV utility, RMS-11 Utilities, 4-10
size
See BKS field in FAB
See BKZ field in ALL block

BUCKET_SIZE attribute
RMSDES utility
area section, RMS-11 Utilities, 2-43, 2-45
file section, RMS-11 Utilities, 2-32

Bucket format
indexed files, RMS-11 User’s Guide 5-2
Bucket size (cont’d.)
calculation
alternate indexes, RMS-11 User’s Guide, 6-19
primary index, RMS-11 User’s Guide, 6-15
indexed files, RMS-11 User’s Guide, 6-15
relative files, RMS-11 User’s Guide, 4-2
RMSDEF utility, RMS-11 Utilities, A-15
Bucket splitting, RMS-11 User’s Guide, 5-11
RRV, RMS-11 User’s Guide, 5-12
Buf0 parameter
SETIBF: subroutine
K-series, I/O Drivers, 23-29
LADRV, I/O Drivers, 22-24
Bufadd parameter
device-specific function
receive (LRDRV), I/O Drivers, 14-9
Buffer
attribute, address, I/O Drivers, C-5
auxiliary characteristic, zero size, I/O Drivers, 13-21
cache, RMS-11 User’s Guide, 4-15

circular
processing (UDDRV), I/O Drivers, 16-34
read counter data (ICDRV/ISDRV), I/O Drivers, 19-58
read interrupt data (ICDRV/ISDRV), I/O Drivers, 19-53
terminal input (ICDRV/ISDRV), I/O Drivers, 19-62
connect
receive counter data (ICDRV/ISDRV), I/O Drivers, 19-56
receive interrupt data (ICDRV/ISDRV), I/O Drivers, 19-51
terminal interrupt (ICDRV/ISDRV), I/O Drivers, 19-60
control (AFC11/AD01 converter), I/O Drivers, 15-10
data (AFC11/AD01 converter), I/O Drivers, 15-10
Buffer (cont’d.)
diagnostic (XEDRV), I/O Drivers, 13-19
disconnect from counter interrupt (ICDRV/ISDRV), I/O Drivers, 19-59
disconnect from digital interrupt (ICDRV/ISDRV), I/O Drivers, 19-56
display (GRDRV), I/O Drivers, 21-4
FSR block
locate mode, I/O Operations, 3-23
space allocation, I/O Operations, 2-20
full
escape sequence (TTDRV), I/O Drivers, 2-74
half-duplex, I/O Drivers, 3-26
intermediate (TTDRV), I/O Drivers, 2-80
item list 1
structure (TTDRV), I/O Drivers, 2-30
TTDRV, I/O Drivers, 2-30
item list 2
IO.BIO function (TTDRV), I/O Drivers, 2-32
structure (TTDRV), I/O Drivers, 2-32
load microcode
IO.LOD function LADRV, I/O Drivers, 22-29
management
call RLSBUF (LADRV), I/O Drivers, 22-33
device queue (LADRV), I/O Drivers, 22-32
input sweep (LADRV), I/O Drivers, 22-33
K-series, I/O Drivers, 23-32
LADRV, I/O Drivers, 22-32
LSDRV, I/O Drivers, 17-35
output sweep (LADRV), I/O Drivers, 22-33
overrun (LADRV), I/O Drivers, 22-33
task queue (LADRV), I/O Drivers, 22-32
maximum size (XEDRV), I/O Drivers, 13-21

Master Index–25
Buffer (cont’d.)
minimum size (XEDRV), I/O Drivers, 13-21
multiple, I/O Operations, 2-19
RMS-11 User’s Guide, 2-18, 3-15, 4-15
count, I/O Operations, 3-10
type, I/O Operations, 2-19
output
putting data into (LSDRV), I/O Drivers, 17-22
override checkpoint (half-duplex), I/O Drivers, 3-30
pointer, adjusting (LSDRV), I/O Drivers, 17-13
tool, private (TTDRV), I/O Drivers, 2-79
pool space, FSR, I/O Operations, 2-39
position, losing (half-duplex), I/O Drivers, 3-29
protocol/address pair (XEDRV), I/O Drivers, 13-8
read
destination address (XEDRV), I/O Drivers, 13-16
Ethernet address (XEDRV), I/O Drivers, 13-14
protocol type (XEDRV), I/O Drivers, 13-15
read character from terminal (ICDRV/ISDRV), I/O Drivers, 19-61
received character (TTDRV), I/O Drivers, 2-78
record
See also RBF field in RAB
maximum size, Task Builder, 12-25
remove from device queue (K-series), I/O Drivers, 23-26
set
characteristic (XEDRV), I/O Drivers, 13-7
destination address (XEDRV), I/O Drivers, 13-12
multicast address (XEDRV), I/O Drivers, 13-9
protocol type (XEDRV), I/O Drivers, 13-12
size, remote line (TTDRV), I/O Drivers, 2-83
special, Writing I/O Driver, 6-9
Buffer (cont’d.)
specifying number, I/O Operations, 2-20
task, checkpointing (TTDRV), I/O Drivers, 2-78
task record, I/O Operations, 3-23
locate mode, I/O Operations, 3-29
PUT$ macro, I/O Operations, 3-28
text, Program Development, 1-3
type-ahead (TTDRV), I/O Drivers, 2-78
user, RMS-11 User’s Guide, 1-14
See also UBF field in RAB
variable length (half-duplex), I/O Drivers, 3-29
width (half-duplex), I/O Drivers, 3-29
Buffer boundary, locate mode, I/O Operations, 3-24
Buffer count
default, I/O Operations, 2-20
multiple, I/O Operations, 2-19
Buffer descriptor, task, I/O Operations, 3-10
Buffer flush routine, I/O Operations, 4-32
Buffering
big, I/O Operations, 1-11
multiple
performance, I/O Operations, 1-10
record I/O, I/O Operations, 1-10
received character (half-duplex), I/O Drivers, 3-30
Buffer pool, RMS-11 Macro, 3-5
BUFFERSIZE command
IOX, System Management, 4-27
Buffer space
statistics
with PARAMETERLIST, System Management, 4-44
/BUFFERS qualifier
BRU utility, Utilities, 7-14
/BUF keyword
SET command (MCR), MCR, 3-206
SET command (VMR), System Management, 10-57
Buf parameter
GLUN$ macro, I/O Drivers, 1-21

Master Index—26
Bufptr parameter
IO:STA function (LADRV), I/O Drivers, 22-30
Bufs parameter
synchronous QIO$ function (LSDRV), I/O Drivers, 17-5
Bugcheck facility, CDA, 1-5
  Debugging, 9-4
  error code definitions, CDA, D-1
BUILD command, System Management, 15-7
Build file
  creating on SY, System Generation (11M), 5-5
  modifying to improve performance, Task Builder, F-1, F-5
See also Task builder
BYE command, MCR, 1-8, 3-43
  error message, MCR, 3-44
  example, MCR, 3-44
  keywords, MCR, 3-43
/BY switch
  DMP utility, Utilities, 11-5
Byte, RMS-11 Introduction, 2-1
.BYTE directive, MACRO-11, 6-23, 6-24
Byte location
  displaying, Debugging, 4-2, 4-3
  opening, Debugging, 4-2, 4-3
Byte mode
  changing to word mode, Debugging, 4-3
  operator
    ASCII, Debugging, 2-7, 9-10
    octal, Debugging, 2-8, 4-2, 9-11

C

C.DATI (XEDRV)
  destination address, I/O Drivers, 13-12
  multicast address, I/O Drivers, 13-10
  protocol/address buffer, I/O Drivers, 13-9
  protocol type, I/O Drivers, 13-13
  read destination address, I/O Drivers, 13-16
  Ethernet address, I/O Drivers, 13-15
  protocol type, I/O Drivers, 13-15
  set characteristic buffer, I/O Drivers, 13-8

C.DATO (XEDRV)
  destination address, I/O Drivers, 13-12
  multicast address, I/O Drivers, 13-10
  protocol/address buffer, I/O Drivers, 13-9
  protocol type, I/O Drivers, 13-13
  read
    Ethernet address, I/O Drivers, 13-15
    protocol type, I/O Drivers, 13-15
    set characteristic buffer, I/O Drivers, 13-8

C.STAT (XEDRV)
  destination address, I/O Drivers, 13-12
  multicast address, I/O Drivers, 13-10
  protocol/address buffer, I/O Drivers, 13-9
  protocol type, I/O Drivers, 13-13
  read
    destination address, I/O Drivers, 13-16
    Ethernet address, I/O Drivers, 13-15
    protocol type, I/O Drivers, 13-15
    set characteristic buffer, I/O Drivers, 13-8

C.TYP (XEDRV)
  multicast address, I/O Drivers, 13-10
  protocol/address buffer, I/O Drivers, 13-9
  protocol type, I/O Drivers, 13-13
  read
    destination address, I/O Drivers, 13-16
    Ethernet address, I/O Drivers, 13-15
    protocol type, I/O Drivers, 13-15
CALL EXIT, Executive, 5-81
CALL EXITIF, Executive, 5-78
CALL EXST, Executive, 5-82
CALL EXTTSK, Executive, 5-84
CALL FEAT, Executive, 5-86
CALL FSSPSS, Executive, 5-89
CALL GETCII, Executive, 5-96
CALL GETDDS, Executive, 5-100
CALL GETLUN, Executive, 5-103
CALL GETMCR, Executive, 5-106
CALL GETPAR, Executive, 5-111
CALL GETREG, Executive, 5-113
CALL GETTIM, Executive, 5-117
CALL GETTSSK, Executive, 5-119
CALL GMIX, Executive, 5-108
CALL GTMNCI, Executive, 5-92
CALL INASTR, Executive, 5-64
CALL macro, special purpose (K-series),
I/O Drivers, 23-31
CALL MAP, Executive, 5-122
CALL MARK, Executive, 5-125
CALL op code, standard (K-series),
I/O Drivers, 23-31
CALL PRSFCS, Executive, 5-135
CALL PRSRMS, Executive, 5-139
CALL PWRUP, Executive, 5-210
CALL QIO, Executive, 5-143
CALL RCST, Executive, 5-149
CALL RCTLOG, Executive, 5-159
CALL RCTON, Executive, 5-159
CALL READEF, Executive, 5-156,
5-157, 5-158
CALL READSW, Executive, 5-155
CALL RECEIVE, Executive, 5-151
CALL RECOEX, Executive, 5-153
CALL REQUEST, Executive, 5-167
CALL RESUME, Executive, 5-176
CALL RMAF, Executive, 5-162
CALL RPOI, Executive, 5-163
CALL RREF, Executive, 5-170
CALL RRST, Executive, 5-173
CALL RUN, Executive, 5-177
CALLS
calling macro example (LADRV),
I/O Drivers, 22-28
special calling macro (LADRV), I/O
Drivers, 22-27
CALLS argument, MACRO-11, 8-11
CALL SDRC, Executive, 5-192
CALL SDRCN, Executive, 5-192
CALL SDRP, Executive, 5-195
CALL SEND, Executive, 5-187
CALL SETCLI, Executive, 5-185

C.TYP (XEDRV) (cont’d.)
set characteristic buffer, I/O Drivers,
13-8
set destination address, I/O Drivers,
13-12
$CSTA (Radix-50 to ASCII), System
Library, 5-11
Cache, RMS-11 User’s Guide, 4-15
indexed files, RMS-11 User’s Guide,
7-9
Cache data
See Data caching
/CACHE keyword
MOUNT command (MCR), MCR,
3-146
SET command (MCR), MCR, 3-207
Calculating file work space
(RMSIIFL), RMS-11 Utilities, 3-12
Call
operation routine, RMS-11 Macro,
2-13
arguments in memory, RMS-11
Macro, 2-14
macro argument, RMS-11 Macro,
2-13
CALL ABORT, Executive, 5-8
CALL ACHN, Executive, 5-10
CALL ALTPI, Executive, 5-13
CALL ASNLUN, Executive, 5-15
CALL ATRG, Executive, 5-19
CALL CANALL, Executive, 5-60
CALL CANMT, Executive, 5-36
CALL CLRIF, Executive, 5-31
CALL CNCT, Executive, 5-38
CALL CNCTN, Executive, 5-38
CALL CPCR, Executive, 5-41
CALL CRAW, Executive, 5-44
CALL CRELOG, Executive, 5-32
CALL CRELON, Executive, 5-32
CALL CRGF, Executive, 5-48
CALL CRGG, Executive, 5-50
CALL CRVT, Executive, 5-58
CALL DECLAR, Executive, 5-61
CALL DELLOG, Executive, 5-62
CALL DELTON, Executive, 5-62
CALL DISCKP, Executive, 5-66
CALL DSIAST, Executive, 5-64
CALL DTRG, Executive, 5-67
CALL ELAW, Executive, 5-69
CALL ELGF, Executive, 5-71
CALL ELVT, Executive, 5-73
CALL EMST, Executive, 5-75
CALL ENACKP, Executive, 5-77
CALL ENASAT, Executive, 5-76
CALL SETDDS, Executive, 5-189
CALL SETEF, Executive, 5-199
CALL SETTIM, Executive, 5-235
CALL SMSG, Executive, 5-202
CALL SNXC, Executive, 5-205
CALL SPAWN, Executive, 5-212
CALL SPAWNN, Executive, 5-212
CALL SREA, Executive, 5-224
CALL SREF, Executive, 5-228
CALL SREX, Executive, 5-224
CALL START, Executive, 5-177
CALL statement, Error Logging, 5-33
CALL STLOR, Executive, 5-238
CALL STLORS, Executive, 5-238
CALL STOP, Executive, 5-240
CALL STOPFR, Executive, 5-241
CALL SUSPND, Executive, 5-209
CALL TFEA, Executive, 5-248
CALL TRALOG, Executive, 5-250
CALL TRALON, Executive, 5-250
CALL SUSPND, Executive, 5-209
CALL TFEA, Executive, 5-248
CALL TRALOG, Executive, 5-250
CALL TRALON, Executive, 5-250
CALL ULGF, Executive, 5-253
CALL UNMAP, Executive, 5-254
CALL USTP, Executive, 5-256
CALL VRCD, Executive, 5-257
CALL VRCs, Executive, 5-259
CALL VRCx, Executive, 5-261
CALL VSDA, Executive, 5-263
CALL VSRC, Executive, 5-265
CALL VSRcN, Executive, 5-265
CALL WAIT, Executive, 5-125
CALL WAITFR, Executive, 5-272
CALL WFLOR, Executive, 5-270
CALL WFLORS, Executive, 5-270
CALL WFSNE, Executive, 5-268
CALL WTQIO, Executive, 5-147
CAN
See CANCEL command
CANCEL command, Command Language, 7-23, 9-7
CANCEL command (MCR), MCR, 1-7, 3-45, 3-180
eXample, MCR, 3-46
format, MCR, 3-45
parameters, MCR, 3-45
CANCEL command (VMR), System Management, 10-11
definition, System Management, 10-11
example, System Management, 10-11
format, System Management, 10-11
CANCEL command (VMR) (cont'd.) parameter, System Management, 10-11
Cancel CTRL/O (TTDRV), I/O Drivers, 2-12
Cancel I/O, I/O Drivers, 1-29
VTDRV, I/O Drivers, 4-4
Cancel I/O entry point, Writing I/O Driver, 2-4
DDT conditions, Writing I/O Driver, 4-10
Cancel Mark Time Requests directive, Executive, 5-36
Cancel Scheduled Initiation Requests directive, Executive, 5-60
Cancel Selective Marktime directive, System Management (11M), 4-31
CAPS LOCK key, Command Language, 3-13
CARD_FORMAT argument, MACRO-11, 8-9
Card reader
format
sequence number as comment, MACRO-11, 6-19
function code list, I/O Drivers, B-7
Card reader (CRDRV), I/O Drivers, 11-1
check
pick, I/O Drivers, 11-5
read, I/O Drivers, 11-5
recovery, I/O Drivers, 11-4
stack, I/O Drivers, 11-6
console message, I/O Drivers, 11-4
control character, I/O Drivers, 11-8, 11-9
format
alphabetic, I/O Drivers, 11-9
binary, I/O Drivers, 11-9
data, I/O Drivers, 11-9
function, I/O Drivers, 11-8
indicator, I/O Drivers, 11-5
input card limitation, I/O Drivers, 11-9
input error, I/O Drivers, 11-3
programming hint, I/O Drivers, 11-9
ready, I/O Drivers, 11-4
switch, I/O Drivers, 11-5
power, I/O Drivers, 11-5
reset, I/O Drivers, 11-6
stop, I/O Drivers, 11-6
Card Reader Spooling Transaction Block, System Management, 17-31
CARRIAGE_CONTROL attribute
RMSDES utility, RMS-11 Utilities, 2-37
RMSDEF utility, RMS-11 Utilities, A-9
Carriage-control, I/O Operations, 2-6, 2-7
See also RAT field in FAB record attribute, I/O Operations, 3-8
word, record attribute, I/O Operations, 3-9
Carriage-control device
See FB$CCL mask in DEV field
Carriage return
automatic
half-duplex, I/O Drivers, 3-29, 3-31
TDDRV, I/O Drivers, 2-76
CTRL/R (TDDRV), I/O Drivers, 2-70
TDDRV, I/O Drivers, 2-69
Carriage-return carriage control
See FB$CR mask in RAT field
CASE_MISMATCH argument, MACRO-11, 8-9
Case control, MACRO-11, 6-19
Case conversion (half-duplex), I/O Drivers, 3-15
CASE statement, Error Logging, 5-34
Cassette, RMS-11 Macro, 3-2, 3-20, 5-37, 5-43, 5-77, 5-88, 5-104, 5-111, 5-118
capacity (CTDRV), I/O Drivers, 9-1
function code list, I/O Drivers, B-7
/CA switch
RMSCNV utility, RMS-11 Utilities, 4-8
$CAT5 (ASCII to Radix-50), System Library, 4-6
$CAT5B (ASCII with blanks to Radix-50), System Library, 4-8
Catchall task, Indirect, 2-2
CBD
See also Common Block Directory entry
removing, Command Language, 7-37
$CBDAT (Binary date to decimal), System Library, 5-2
$CBDMG (Binary to unsigned decimal), System Library, 5-3
$CBDG (Binary to signed decimal), System Library, 5-4
CBM, System Management, 12-29
$CBOMG (Binary to unsigned octal), System Library, 5-7
$CBOSG (Binary to signed octal), System Library, 5-8
Cb parameter
device-specific function
tape driver, I/O Drivers, 8-8
VTDRV, I/O Drivers, 4-3
IO.STC function (VTDRV), I/O Drivers, 4-5
/CB switch
CMP utility, Utilities, 12-2
$CBTA (General purpose binary to ASCII), System Library, 5-10
$CBTMG (Binary byte to octal), System Library, 5-9
CC command
EDI utility, Utilities, 2-30
/CC keyword
MOUNT command (MCR), MCR, 3-147
CCML$ macro, I/O Operations, 6-12
/CC switch, Task Builder, 10-7
CDA, Error Logging, 1-1
See also Crash dump analysis listing, CDA, 1-1, 1-6, 1-8, 3-1 to 3-57
command line, CDA, 2-1 to 2-13
binary file, CDA, 2-2
crash input file, CDA, 2-3
default, CDA, 2-12
format, CDA, 2-1
in indirect command file, CDA, 1-8
list file, CDA, 2-1
symbol file, CDA, 2-2
debugging driver code, Writing I/O Driver, 3-20
function, CDA, 1-1
generating, CDA, 1-1
input to, CDA, 1-1, 1-3
messages, CDA, A-1
running, CDA, 1-7
as installed task, CDA, 1-7
as uninstalled task, CDA, 1-8
switches, CDA, 2-3 to 2-13
system requirements, CDA, 1-1
CD command
EDI utility, Utilities, 2-30

Master Index-30
$CDDMG (Double-precision binary to decimal), System Library, 5-5
CDR symbolic argument, MACRO-11, 6-19
/CD switch
PIP utility, Utilities, 3-16
RMSBCK utility, RMS-11 Utilities, 6-8, 6-9
$CDTB (Decimal to binary), System Library, 4-4
CDT field in DAT block
DISPLAY operation, RMS-11 Macro, 5-32
offset, RMS-11 Macro, 6-14
OPEN operation, RMS-11 Macro, 5-81
RSTS/E, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-16
CE.ACN address protocol/pair
(XEDRV), I/O Drivers, 13-9
CE.IUM address protocol/pair
(XEDRV), I/O Drivers, 13-9
CE.MCE multicast error (XEDRV), I/O Drivers, 13-10
CE.NMA multicast error (XEDRV), I/O Drivers, 13-10
CE.PCN protocol usage conflict
(XEDRV), I/O Drivers, 13-9
CE.RES error code (XEDRV), I/O Drivers, 13-8
CE.RTL error code (XEDRV), I/O Drivers, 13-8
CE.RTS error code (XEDRV), I/O Drivers, 13-8
Cell, RMS-11 Introduction, 3-5
relative files, RMS-11 User’s Guide, 4-1
sequential files, RMS-11 User’s Guide, 3-2
Central buffer pool, RMS-11 Macro, 3-5
Central Processing Unit
See CPU
CFL, Error Logging, 1-1, 1-3, 1-5, 5-1
declaration
conditional, Error Logging, 5-29, 5-30
data item, Error Logging, 5-26
definition, Error Logging, 5-3
scope, Error Logging, 5-26
variable, Error Logging, 5-26
definition, Error Logging, 4-2, 5-2
CFL
expression (cont’d.)
conditionals in, Error Logging, 5-2
list handling, Error Logging, 5-39
intermediate form modules, Error Logging, 5-1
lexical conditionals, Error Logging, 5-36
signalling, Error Logging, 5-40
spaces and tabs in text, Error Logging, 5-2
statement
ACTION, Error Logging, 5-30
BEGIN-END, Error Logging, 5-36
CALL, Error Logging, 5-33
CASE, Error Logging, 5-34
CONTROL, Error Logging, 5-32
CRASH, Error Logging, 5-41
DECLARE, Error Logging, 5-27
DECLARE, Error Logging, 5-32
DECREMENT, Error Logging, 5-31
DYNAMIC TABLE, Error Logging, 5-37
ENABLE, Error Logging, 5-40
FILE, Error Logging, 5-37, 5-38
FIND, Error Logging, 5-39
IF-THEN-ELSE, Error Logging, 5-34
INCREMENT, Error Logging, 5-31
LEAVE, Error Logging, 5-35
LIST, Error Logging, 5-39
LITERAL, Error Logging, 5-33
MESSAGE, Error Logging, 5-41
MODULE, Error Logging, 5-32
PACKET, Error Logging, 5-28
POINTER, Error Logging, 5-38, 5-39
PRINT FORMATTING, Error Logging, 5-41
PROCEDURE, Error Logging, 5-33, 5-34
PUT, Error Logging, 5-39
RETURN, Error Logging, 5-33
SEARCH, Error Logging, 5-40
SELECT, Error Logging, 5-34, 5-35
SET, Error Logging, 5-31
SIGNAL, Error Logging, 5-40, 5-41

Master Index-31
CFL statement (cont’d.)
  SIGNAL STOP, Error Logging, 5-41
  SUBPACKET, Error Logging, 5-29
  TABLE, Error Logging, 5-37
  WHILE/UNTIL/DO, Error Logging, 5-35
  WRITE, Error Logging, 5-31
  WRITE GROUP, Error Logging, 5-31
  table structure, Error Logging, 5-36
  user interface
    command mode, Error Logging, 5-43
    option mode, Error Logging, 5-43
CFL command line
  DEVSM1, Error Logging, 4-36
  CFL command mode, Error Logging, 5-43
  CFL comments, Error Logging, 5-3
  CFL data type
    ASCII, Error Logging, 5-5
    automatic conversion, Error Logging, 5-4
    binary byte, Error Logging, 5-4
    bit, Error Logging, 5-4, 5-7
    expression, Error Logging, 5-4
    logical, Error Logging, 5-4
    numeric, Error Logging, 5-5
      attribute option, Error Logging, 5-5
      byte, Error Logging, 5-5
      default, Error Logging, 5-5
      longword, Error Logging, 5-5
      quadword, Error Logging, 5-5
      radix option, Error Logging, 5-5
      value, Error Logging, 5-5
      word, Error Logging, 5-5
    numeric field, Error Logging, 5-7
    numeric literal, Error Logging, 5-6
    pointer, Error Logging, 5-7
    RSXTIME, Error Logging, 5-7
    string, Error Logging, 5-4
      numeric value, Error Logging, 5-4
      VMSTIME, Error Logging, 5-7
  CFL expression, Error Logging, 5-9
    definition, Error Logging, 5-5
    logical operators, Error Logging, 5-10
  numeric operators, Error Logging, 5-13, 5-14, 5-15
  relational operators, Error Logging, 5-11 to 5-13
  string operators, Error Logging, 5-9
CFL file
  command, Error Logging, 5-3
  error, Error Logging, 5-4
  input, Error Logging, 5-3
  report, Error Logging, 5-3
  user, Error Logging, 5-3
CFL function
  %CND, Error Logging, 5-17
  %CNV, Error Logging, 5-17, 5-18
  %CNV$RSXTIME, Error Logging, 5-19
  %CNV$STRING, Error Logging, 5-19
  %CNV$VMSTIME, Error Logging, 5-19
  %COD, Error Logging, 5-19
  %COM, Error Logging, 5-20
  %CTL, Error Logging, 5-21
  format, Error Logging, 5-16
  %LOK, Error Logging, 5-21
  %PKT, Error Logging, 5-22
  %RPT, Error Logging, 5-22
  %STR, Error Logging, 5-23, 5-24
  %TIM, Error Logging, 5-25
  %USR, Error Logging, 5-25
CFL literals, Error Logging, 5-9
CFL named variable, Error Logging, 5-8
  CONTEXT, Error Logging, 5-8
  COUNT, Error Logging, 5-9
  LENGTH, Error Logging, 5-8
  POINTER, Error Logging, 5-8
CFL operands
  literals, Error Logging, 5-9
  variables, Error Logging, 5-9
CFL operator precedence, Error Logging, 5-15
CFL option mode, Error Logging, 5-43
CFL primitives, Error Logging, 5-1
CFL statement
  definition, Error Logging, 5-3
  ,CHAIN directive, Indirect, 2-41
Chaining, System Generation (11M), 4-9
  See also Saved answer file
  See also Standard Function System
  definition, System Generation (11M), 3-9
Chaining (cont’d.)
restriction, System Generation (11M), 3-9
Changeable key, RMS-11 Introduction, 3-10 RMS-11 User’s Guide, 6-9
See also XB$CHG mask in FLG field
CHANGE command
EDI utility, Program Development, 2-16, 7-5 Utilities, 2-12, 2-29
EDT editor, Introduction, 2-5
Change mode (EDT)
See character mode
CHANGES attribute
RMSDES utility, RMS-11 Utilities, 2-40
Channel
assignment (ICDRV/ISDRV), I/O Drivers, 19-6
definition
multi-access (XEDRV), I/O Drivers, 13-23
ICDRV/ISDRV, I/O Drivers, 19-7
identical number (AFC11), I/O Drivers, 15-10
read A/D (ICDRV/ISDRV), I/O Drivers, 19-13
set information (K-series), I/O Drivers, 23-28
Character, Debugging, 2-4
control
CRDRV, I/O Drivers, 11-8, 11-9
half-duplex, I/O Drivers, 3-21, 3-26
TTDRV, I/O Drivers, 2-68
conversion to 16-bit value, MACRO-11, 6-25
delimiting, MACRO-11, 3-3
echo
half-duplex, I/O Drivers, 3-14
IO.RAL function (half-duplex), I/O Drivers, 3-14
generating printable, MACRO-11, 6-26, 6-27, 6-28
illegal, MACRO-11, 3-3
legal label, MACRO-11, 2-3
padding (tape driver), I/O Drivers, 8-18
pass-through, MCR, 3-241, 3-250
receive buffer (TTDRV), I/O Drivers, 2-78
separating, MACRO-11, 3-3
special, MACRO-11, 3-1, 3-2, 3-3
Character (cont’d.)
string packing, MACRO-11, 6-29, 6-30
translation, MCR, 3-8 to 3-10, 3-152
unprocessed (TTDRV), I/O Drivers, 2-58
unsolicited
input (half-duplex), I/O Drivers, 3-34
programming use (half-duplex), I/O Drivers, 3-11
stack operation (half-duplex), I/O Drivers, 3-11
wildcard, MCR, 2-7
Characteristic
buffer
XEDRV, I/O Drivers, 13-7
zero size, I/O Drivers, 13-21
clearing on remote (TTDRV), I/O Drivers, 2-83
multiple (VTDRV), I/O Drivers, 4-6
name
SF.GMC function (half-duplex), I/O Drivers, 3-11
SF.SMC function (half-duplex), I/O Drivers, 3-16
obtaining (tape driver), I/O Drivers, 8-8
physical (disk driver), I/O Drivers, 5-2
resetting, importance of (tape driver), I/O Drivers, 8-15
return (half-duplex), I/O Drivers, 3-11
set
Ethernet, I/O Drivers, 13-7
multiple (TTDRV), I/O Drivers, 2-59
protocol/address (XEDRV), I/O Drivers, 13-8
tape driver, I/O Drivers, 8-10
terminal (VTDRV), I/O Drivers, 4-7
XEDRV multicast address, I/O Drivers, 13-9
setting, side-effect
half-duplex, I/O Drivers, 3-33
TTDRV, I/O Drivers, 2-62
table
terminal (half-duplex), I/O Drivers, 3-12
VTDRV, I/O Drivers, 4-7
Characteristic terminal (cont’d.)
- get multiple (TTDRV), I/O Drivers, 2-18, 2-51
- set multiple (TTDRV), I/O Drivers, 2-18
- terminal-dependent (half-duplex), I/O Drivers, 3-5
- word (half-duplex), I/O Drivers, 3-4

Character mode (EDT), Introduction, 2-2 to 2-5

Character-oriented interface (communication driver), I/O Drivers, 12-1

Character set
- ASCII, MACRO-11, A-1, A-2, A-3
- legal, MACRO-11, 3-1, 3-2, 3-3

CHAR key (EDT), Introduction, 2-6

Checkpoint area
- task image, Task Builder, B-9
- dynamic common regions, System Management, 14-2
- file, MCR, 3-11
  primary, MCR, 3-12
- size, MCR, 3-12
- space
  allocating, MCR, 3-11, 3-117, 3-119, 3-182 Task Builder, 10-6, 10-10, 11-13 to 11-14
  static common regions, System Management, 14-2
- task, MCR, 2-20, 3-11, 3-31, 3-182 System Management, 14-2

Checkpointable task
- fixing, System Management, 10-18

Checkpoint Common Region directive, Executive, 5-41

Checkpoint file, Command Language, 5-88

Checkpoint file header, I/O Operations, E-2

Checkpointing, Introduction, 6-6
- System Generation (11M), 4-45
- System Management, 10-22, 10-28
- buffer override (half-duplex), I/O Drivers, 3-30
- common, System Management, 10-28
- during prompt (TTDRV), I/O Drivers, 2-14, 2-27, 2-40

Checkpointing (cont’d.)
- during read (TTDRV), I/O Drivers, 2-27
  task
    half-duplex, I/O Drivers, 3-14
    VTDRV, I/O Drivers, 4-5
  task buffer (TTDRV), I/O Drivers, 2-78
- terminal input
  half-duplex, I/O Drivers, 3-32, 3-35
  TTDRV, I/O Drivers, 2-82
  with system checkpoint file, System Generation (11M), 4-46

/CHECKPOINT qualifier, Task Builder, 11-13 to 11-14

Check recovery (CRDRV), I/O Drivers, 11-4

Checksum calculating
- SLP utility, Utilities, 13-3
- file content validating
  PAT utility, Utilities, 14-6
- Checksum value, I/O Operations, 5-4

Chna parameter
- synchronous QIO$ function (LSDRV), I/O Drivers, 17-6

Chnd parameter
- synchronous QIO$ function (LSDRV), I/O Drivers, 17-6

Chn parameter (ICDRV/ISDRV), I/O Drivers, 19-9
- IO.SAO function, I/O Drivers, 19-16

CINT$, Executive, 5-21

CINT$ directive, Writing I/O Driver, 3-1

Circumflex (‘), Command Language, 3-14, 3-17

cross-reference listing, Task Builder, 10-12, 10-13, 11-23, 11-24

global cross-reference of an overlaid task, Task Builder, 4-13

Circumflex command (‘), Debugging, 2-5, 4-2, 4-4, 9-9

CIS
See Commercial Instruction Set

Ckcsr parameter
- IO.CLK function (LADRV), I/O Drivers, 22-29

/CKP keyword

INSTALL command (MCR), MCR, 3-117
/CKP keyword (cont'd.)
INSTALL command (VMR), System Management, 10-22
RUN command (MCR), MCR, 3-182
CL; Command Language, 5-5 MCR, 2-10, 2-11
CL command
EDI utility, Utilities, 2-29
CLEAR command, System Management, 15-8
RMSDES utility, RMS-11 Utilities, 2-6, 2-18, 2-25, 2-26
and PROTECTION attribute, RMS-11 Utilities, 2-33
defining areas by default, RMS-11 Utilities, 2-44
in indirect command file, RMS-11 Utilities, 2-4
with CREATE, RMS-11 Utilities, 2-8, 2-28
with SAVE, RMS-11 Utilities, 2-27
Clear Event Flag directive, Executive, 5-31
Clearing attributes (RMSDES)
See Attribute, clearing
Clear OOB (TTDRV), I/O Drivers, 2-61
CLEFS$ directive, Executive, 5-31
/CLE keyword SWITCH REGISTER, MCR, 3-274
CLI, Command Language, 1-1
Introduction, 1-5 System Management, 1-3, 10-23, 11-1, 11-3
See also COMMAND LINE
INTERPRETER command
See also DCL
See also MCR
adding to account entry, System Management, 2-3
changing, Command Language, 3-3
System Management, 2-7
commands, MCR, 1-8
continuation lines, System Management, 11-8
data structures, MCR, 3-48
DCL, MCR, 3-56 Program Development, 1-1 to 1-3
default, MCR, 3-79
definition, Batch and Queue, 4-2
disabling, MCR, 3-49
CLI (cont'd.)
displaying, System Management, 2-5, 2-8
displaying information, Command Language, 8-6
eliminating, MCR, 3-48
elements, System Management, 11-10, 11-15
FORTRAN, System Management, 11-15 to 11-19
MACRO-11, System Management, 11-10 to 11-14
Executive directives, System Management, 11-3
getting information, Executive, 5-96
in account entry, System Management, 2-1
interaction with system, System Management, 11-3
login, MCR, 3-79
MCR, Program Development, 1-1 to 1-3 System Management, 2-3, 11-2
mode, Indirect, 2-48
multi-CLI support, System Management, 2-1, 2-3, 2-7
prompting, System Management, 11-7, 11-8
prompts
CTRL/C, System Management, 11-7
task-exit, System Management, 11-8
prompt string, MCR, 3-49
receiving system message, Executive, 5-92
retrieving command buffer, Executive, 5-92
serial command processing, System Management, 11-8
setting up, Executive, 5-185
spawning, Executive, 4-5
specifying ASTs, Executive, 5-182
symbol, Indirect, 2-18
system messages to, System Management, 11-5
task, MCR, 3-49 System Management, 10-23
task names, System Management, 11-4
user-written, System Generation (11M), 4-64
CLI (cont’d.)
VAX/VMS, System Generation (11S), 7-2, 7-4
writing, System Management, 11-2, 11-3
CLI dispatcher task, System Management, 12-5

/CLI keyword
HELP command, MCR, 3-87
INSTALL command (MCR), MCR, 3-117
INSTALL command (VMR), System Management, 10-23
SET command (MCR), MCR, 3-209

$CLINS routine, Writing I/O Driver, 5-5

CLI Parser Block
See CPB
CLI parser block dump, CDA, 3-31
/CLI switch, CDA, 2-4, 2-6
Indirect, Indirect, 2-4, 2-27
CLKDPS, CDA, B-4, C-12
Clock
clock rate and preset (K-series), I/O Drivers, 23-30
interrupt, MCR, 3-180
system, System Generation (11M), 4-16
watchdog timer, System Generation (11M), 4-16
CLOCKA: subroutine
set clock A rate
K-series, I/O Drivers, 23-11
LADRV, I/O Drivers, 22-7
Clock B, control (K-series), I/O Drivers, 23-12
CLOCKB: subroutine
control clock B
K-series, I/O Drivers, 23-12
LADRV, I/O Drivers, 22-7
Clock queue, Command Language, 7-11 MCR, 2-11
displaying, MCR, 3-55
dump, CDA, 3-50
entry
displaying information, Command Language, 7-65
eliminating, Command Language, 7-23
inserting, Command Language, 7-23
switch
See /CLQ switch

CLOCK QUEUE command, MCR, 1-7, 3-55
example, MCR, 3-55
format, MCR, 3-55
Clock start command (LADRV), I/O Drivers, 22-29
CLOSE$ directive, Executive, 5-32
CLON$ directive, Executive, 5-32
Close
line (XEDRV), I/O Drivers, 13-17
relay (LSDRV), I/O Drivers, 17-4
CLOSE$ example, I/O Operations, 5-9
CLOSE$ macro, I/O Operations, 3-1
block size reset, I/O Operations, 2-19
file processing, I/O Operations, 3-20
file processing completion, I/O Operations, 2-8
format, file processing, I/O Operations, 3-20
CLOSE & DELETE command
EDI utility, Utilities, 2-30
CLOSE command
EDI utility, Utilities, 2-27, 2-29
CLOSE directive, Indirect, 2-42
$CLOSE macro, RMS-11 Macro, 5-3
CLOSE operation, RMS-11
Introduction, 4-2 RMS-11 Macro, 3-8 RMS-11 User’s Guide, 1-18
BDB requirement, RMS-11 Macro, 2-8
$CLOSE macro, RMS-11 Macro, 5-3
I/O buffer requirement, RMS-11 Macro, 2-7
wildcard loop, RMS-11 Macro, 3-10
CLOSES command
See CLOSE SECONDARY command
CLOSE SECONDARY command
EDI utility, Utilities, 2-30
CLQ
See CLOQ QUEUE command
/CLQ switch, CDA, 2-4, 2-6
CLSTR option, Task Builder, 12-9, 12-10
CLUSTER_SIZE attribute
RMSDES utility, RMS-11 Utilities, 2-31
Cluster library, Task Builder, 5-44
See also Library
Cluster size
See RTV field in FAB
$C macro form, Executive, 1-6
$C macro form (cont'd.)
processing errors, Executive, 1-7
/ CMD keyword
RUN command (MCR), MCR, 3-182
CMKT$ directive, Executive, 5-36
$CMPAL
completion routine, Task Builder, 8-8
$CMPCS
completion routine, Task Builder, 8-8, 8-12, 8-13, 8-14
CMPC$ module, Task Builder, 8-8, 8-12, 8-13
CMRP$ option, Task Builder, 8-4, 8-8, 12-11
use in CSM library, Task Builder, 8-8
/CM switch
DSC utility, Utilities, 8-14
CMP utility, Command Language, 4-77
command line, Utilities, 12-1
error message, Utilities, 12-6
output file format, Utilities, 12-4
switch, Utilities, 12-2
default, Utilities, 12-4
/CM switch, Task Builder, 10-8
SLP utility, Utilities, 13-15
CNCT$ directive, Executive, 5-38
%CND function, Error Logging, 5-17
CND symbolic argument, MACRO-11, 6-12
CNF
DSC64K.SYS and
See DSC utility
stand-alone BRU and
See BRU utility
.CNF module, Error Logging, 4-1
Cn parameter (ICDRV/ISDRV), I/O Drivers, 19-9
IO.LTI function, I/O Drivers, 19-26
%CNV$RSXTIME, Error Logging, 5-19
%CNV$STRING, Error Logging, 5-19
%CNV$VMSTIME, Error Logging, 5-19
%CNV function, Error Logging, 5-17, 5-18
CO:, Command Language, 5-5 MCR, 2-11, 3-188 System Management, 3-1
as pseudo device, System Management, 3-1
attaching, System Management, 3-3
detaching, System Management, 3-3

CO: (cont'd.)
monitoring status, System Management, 3-6
reading from, System Management, 3-3
redirecting, System Management, 3-7
COBOL carriage control, I/O Operations, 2-6
COBOL command, Introduction, 5-10
%COD, Error Logging, 5-19
/ CODE[:DATA_SPACE] qualifier, Task Builder, 11-15
/ CODE[:EAE] qualifier, Task Builder, 11-16
/ CODE[:FP] qualifier, Task Builder, 11-17
/ CODE[:PIC] qualifier, Task Builder, 11-18
use in region, Task Builder, 5-3 to 5-6
/ CODE[:POSITION_INDEPENDENT] qualifier, Task Builder, 11-19
Code and mask symbol declaring
ALL block, RMS-11 Macro, C-3, C-4
DAT block, RMS-11 Macro, C-3, C-4
FAB, RMS-11 Macro, C-1
KEY block, RMS-11 Macro, C-3, C-4
NAM block, RMS-11 Macro, C-2
PRO block, RMS-11 Macro, C-3, C-4
RAB, RMS-11 Macro, C-2
SUM block, RMS-11 Macro, C-3, C-4
XAB, RMS-11 Macro, C-4
value
ALL block, RMS-11 Macro, 6-2
DAT block, RMS-11 Macro, 6-14
FAB, RMS-11 Macro, 6-22
KEY block, RMS-11 Macro, 6-67
NAM block, RMS-11 Macro, 6-94
PRO block, RMS-11 Macro, 6-108
RAB, RMS-11 Macro, 6-115
SUM block, RMS-11 Macro, 6-145
Code sharing, MACRO-11, 6-45

Master Index-37
Code symbol
See Code and mask symbol

COD field in ALL block
offset, RMS-11 Macro, 6-2
summary
XB$ALL code, RMS-11 Macro, 6-10

COD field in DAT block
offset, RMS-11 Macro, 6-14
summary
XB$DAT code, RMS-11 Macro, 6-17

COD field in KEY block
offset, RMS-11 Macro, 6-67
summary
XB$KEY code, RMS-11 Macro, 6-70

COD field in PRO block
offset, RMS-11 Macro, 6-108
summary
XB$PRO code, RMS-11 Macro, 6-110

COD field in SUM block
offset, RMS-11 Macro, 6-145
summary
XB$SUM code, RMS-11 Macro, 6-147

Coding standard, MACRO-11, E-1 to E-16

Coding TPARS, I/O Operations, 7-1
CODRV, System Management, 3-1
Colon (:) Command Language, 3-15
DCL, Command Language, 1-9
%COM, Error Logging, 5-20
Command, Introduction, 1-1
See also individual command entries
See also Commands
See also RMSDES
aborting, Command Language, 7-16
at sign (@), Debugging, 2-5, 4-4, 9-9
B, Debugging, 2-8, 9-11
circumflex (^), Debugging, 2-5, 4-2, 4-4, 9-9
D, Debugging, 2-8, 9-12
DCL
abbreviation, Command Language, 9-1
function, Command Language, 1-15 to 1-17
translating to MCR, Command Language, 1-13 to 1-14, 2-8, B-1

Command (cont'd.)
E, Debugging, 2-9, 6-2
equal sign (=), Debugging, 2-8, 7-2, 9-11
F, Debugging, 2-9, 6-4
G, Debugging, 2-9, 8-6, 9-12
I, Debugging, 2-9, 9-12
K, Debugging, 2-9, 9-12
L, Debugging, 2-10, 6-4, 9-13
left-angle bracket ( <), Debugging, 2-6, 9-9
Line feed, Debugging, 2-5, 4-3, 9-8
N, Debugging, 2-10, 6-2
O, Debugging, 2-10, 7-1, 9-13
P, Debugging, 2-10, 8-7, 9-13
R, Debugging, 2-11, 9-13
Return, Debugging, 2-5, 4-2, 9-8
right-angle bracket ( >), Debugging, 2-6, 9-9
RMSDES utility, RMS-11 Utilities, 2-1, 2-4
S, Debugging, 2-11, 9-1, 9-14
summary, Batch and Queue, 4-1
U, Debugging, 2-11
underscore (_), Debugging, 2-5, 4-4, 9-9
V, Debugging, 2-11
W, Debugging, 2-11, 6-2
X

ODT, Debugging, 1-4, 2-12
XDT, Debugging, 9-1, 9-14
Z, Debugging, 2-12

Command file
close, I/O Operations, 6-12
comment, Task Builder, 1-14
indirect, Task Builder, 1-11, 3-30
See also Indirect command file
interaction with indirect, Task Builder, 1-12, 1-13
level of indirection, Task Builder, 1-13
option, Task Builder, 1-14
reset scan macro, I/O Operations, 6-12
with ODL, Task Builder, 3-30

Command format
MAC task, MACRO-11, 8-4 to 8-7
COMMAND key (EDT), Introduction, 2-8, 2-16

Command Language Interpreter
See CLI

Command library, Indirect, 2-28
default file type, Indirect, 2-28
DIGITAL-supplied, Indirect, 2-29
Command line, **MCR**, 1-1 to 1-2
comments, **MCR**, 1-4
common blocks, **System Generation** (11S), 2-11
compressing, **MCR**, 1-2
continuing, **Command Language**, 3-11
**MCR**, 1-2, 2-4
DCL
comment, **Command Language**, 1-12
file specifications
VMR, **System Management**, 10-5
format, **MCR**, 3-2
Task Builder, 1-2
Utilities, 1-4
VMR, **System Management**, 10-4
ignoring blanks and tabs, I/O **Operations**, 7-8
length, **MCR**, 2-4
LINK command, **Task Builder**, 1-5
form, **Task Builder**, 1-3
input file, **Task Builder**, 1-4
map file, **Task Builder**, 1-5
symbol definition file, **Task Builder**, 1-6
multiline input, **Task Builder**, 1-7
LINK command, **Task Builder**, 1-8
TKB, **Task Builder**, 1-7
OTL, **System Generation** (11S), 2-8
output file interpretation, **Task Builder**, 1-8
parameters, **MCR**, 1-1, 1-2
parsing, I/O **Operations**, 7-1
Indirect, 2-75
**MCR**, 1-2
processing, I/O **Operations**, 6-1
**MCR**, 1-5
quotation marks, **MCR**, 1-2
quoting string, **Command Language**, 1-9
rejected, **System Management**, 10-94
special characters, **MCR**, 1-2
syntax
command names, **System Management**, 10-4
VMR, **System Management**, 10-4
abbreviating commands, **System Management**, 10-4
command parameters, **System Management**, 10-4
**MCR**, 1-2, 2-4
comments, **System Management**, 10-5
Command line
syntax (cont’d.)
keywords, **System Management**, 10-4
keyword values, **System Management**, 10-5
terminating, **Command Language**, 3-11
**MCR**, 1-2
terminating character, **Task Builder**, 1-7, 1-11, 1-12
UFD convention, **Task Builder**, 1-15, 1-16
VMR
components, **System Management**, 10-4
Command Line Interpreter
See CLI
**COMMAND LINE INTERPRETER**
command, **MCR**, 1-8, 3-48
error messages, **MCR**, 3-53 to 3-54
effects, **MCR**, 3-52
formats, **MCR**, 3-48
keywords
/DISABLE, **MCR**, 3-48
/ELIM, **MCR**, 3-48
/ENABLE, **MCR**, 3-49
/INIT, **MCR**, 3-49
/MESSAGE, **MCR**, 3-52
/UNOVR, **MCR**, 3-52
parameters, **MCR**, 3-48
subkeywords
/CPR, **MCR**, 3-50
/CTRLC, **MCR**, 3-49
/DISABLE, **MCR**, 3-50
/DPR, **MCR**, 3-50
/LGO, **MCR**, 3-50
/MESSAGE, **MCR**, 3-51
/NULL, **MCR**, 3-51
/PRIV, **MCR**, 3-51
/PROMPT, **MCR**, 3-51
/QUIET, **MCR**, 3-51
/RESTRICT, **MCR**, 3-51
/SNL, **MCR**, 3-51
/TASK, **MCR**, 3-52
Command Line Interpreter switch
See /CLI switch,
Command procedure
invoking, **Indirect**, 2-29
universal library, **Indirect**, 2-28
Commands
Basic **MCR**, **System Generation** (11S), 2-2
initialization, **System Generation** (11S), 2-2

*Master Index*–39
Commands

Basic MCR (cont'd.)
  system maintenance, System Generation (11S), 2-3
  task control, System Generation (11S), 2-2
command line interpreter, MCR, 1-8
description format, MCR, 3-1
  name, MCR, 3-2
  FIX, System Generation (11S), 2-7
informational, MCR, 1-7
initialization, MCR, 1-6
MCR INSTALL, System Generation (11S), 2-7
multiuser protection, MCR, 1-8
privileged, MCR, 2-19
privilege status, MCR, 3-2
SIP, System Generation (11S), 2-17
summary of MCR, MCR, 1-5 to 1-8
system maintenance, MCR, 1-8
task control, MCR, 1-7

Command sequence
simple, Task Builder, 1-2

Command string
RMSBCK utility, RMS-11 Utilities, 6-2, 6-3
RMSCNV utility, RMS-11 Utilities, 4-3, 4-4
RMSDEF utility, RMS-11 Utilities, A-5
RMSDSP utility, RMS-11 Utilities, 5-2, 5-3
RMSIFL utility, RMS-11 Utilities, 3-2, 3-3
checking, RMS-11 Utilities, 3-9
RMSRST utility, RMS-11 Utilities, 7-2, 7-3

Command String Interpreter
See CSI
COMMAN symbol, Indirect, 2-25
Comma operator (,), Task Builder, 3-49
See also ODL operator
Comma separator (,)
See Separator
Comment, Indirect, 1-7, 2-4
  block directive, MACRO-11, 6-18
  card reader format, MACRO-11, 6-19
command file, Task Builder, 1-14
command line

DCL, Command Language, 1-12

Comment (cont'd.)
  delimiter, MACRO-11, 3-2
  field, MACRO-11, 2-1, 2-4, 2-5
COMMENTS argument, MACRO-11, 8-11
Commercial Instruction Set, MACRO-11, C-3, C-4
Common, Task Builder, 5-1, 5-28 to 5-32
  See also Region
  allocation diagram, Task Builder, 5-21
  assigning reference, Task Builder, 5-24
building
  linking task, Task Builder, 5-22 to 5-24
building and linking, Task Builder, 5-16, 5-18, 5-19, 5-20
to device, Task Builder, 5-28 to 5-32
checkpointing, MCR, 3-122 System Management, 10-28
definition, Task Builder, 2-18
device, MCR, 3-125, 3-238 Task Builder, 5-28 to 5-32
  See also Device common
  example map, Task Builder, 5-30
directive
  fixing, System Management, 10-19
establishing offset, Task Builder, 5-29
installing, MCR, 3-122
RSX-11M, Task Builder, 5-2, 5-3, 5-22
linking to region, Task Builder, 5-16
MACRO-11
  building and linking, Task Builder, 5-18, 5-19, 5-20
  See also Region
  map, Task Builder, 5-20, 5-21
  of linking task, Task Builder, 5-25
memory image, MCR, 3-125
name, MCR, 3-170
partition, MCR, 3-169 System Management, 14-1
read/write, MCR, 3-169
read-only, MCR, 3-169
program section
  building a linking task, Task Builder, 5-24
Common (cont'd.)
protecting, System Management, 10-25
read/write
  checkpointing, MCR, 3-122
read-only
  installing, MCR, 3-122
region, MCR, 3-75
  accessing, MCR, 3-120
  displaying, MCR, 3-46
  installed, MCR, 3-119
  protecting, MCR, 3-119
  removing, MCR, 3-175
status, MCR, 3-46
  status bits, MCR, 3-46
synchronizing, MCR, 3-121
  tasks, MCR, 3-47
unfixing, MCR, 3-284
reinstalling, MCR, 3-125
resident, Task Builder, 5-1, 5-2
  declaring, Task Builder, 12-12, 12-24, 12-30
name block data, Task Builder, B-8
shareable
  building, Command Language, 6-20
  specifying, Task Builder, 10-9, 11-65
  synchronizing task use, System Management, 10-27
  task sharing, System Management, 10-27
unfixing, System Management, 10-92
Common (UDDRV)
  creating global, I/O Drivers, 16-12
  linking task, I/O Drivers, 16-14
  referencing global, I/O Drivers, 16-12
Common Block Directory, MCR, 3-116
  See also CBD
displaying, MCR, 3-46
removing regions, MCR, 3-175
COMMON BLOCK DIRECTORY
  command, MCR, 1-7, 3-46
  examples, MCR, 3-47
  format, MCR, 3-46
keyword
  /TASKS, MCR, 3-46
  parameters, MCR, 3-46
Common Block Directory dump, CDA, 3-36
Common event flag, Executive, 2-2
reading, Executive, 5-158
COMMON option, Task Builder, 12-12, 12-13, 12-24
  shared region use, Task Builder, 5-15
Common region
  checkpointing, Executive, 5-41
Communication
  driver, I/O Drivers, 12-1
    example, I/O Drivers, 12-13
    programming hint, I/O Drivers, 12-11
  function code list, I/O Drivers, B-8
    link
      function code list, I/O Drivers, B-12
mode
  setting full-duplex (communication driver), I/O Drivers, 12-7
set operation
  IO.SYN function (communication driver), I/O Drivers, 12-7
Communications products
  DECnet, System Generation (11M), 4-36
SYSGEN support, System Generation (11M), 4-36
COMPAREDATA YES/NO command
  IOX, System Management, 4-28
$COMPARE macro, RMS-11 Macro, 2-16
  example, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15
/COMPARE qualifier
  BRU utility, Utilities, 7-14
Compatibility mode
  See VAX-11 RSX
/COMPATIBLE qualifier, Task Builder, 11-20
Compiler, Command Language, 6-2
  Introduction, 5-3
  See also High-level language conditional literal declaration, Error Logging, 4-12
Complement
  See One's or Two's complement
Completion
  See handler, RMS-11 Macro, 2-17
  return macro
    declaring, RMS-11 Macro, C-2
routine
  $CMPAL, Task Builder, 8-2, 8-8

Master Index-41
Completion routine (cont'd.)

$CMPCS, Task Builder, 8-2, 8-8, 8-12, 8-13

definition, Task Builder, A-11

identification, Task Builder, A-11

name, Task Builder, A-11

user-written, Task Builder, 8-21

symbol declaring, RMS-11 Macro, C-3

Completion status

See STS field in FAB

See STS field in RAB

See STV field in FAB

See STV field in RAB

Complex relocation, MACRO-11, 4-1

Task Builder, A-22

entry, Task Builder, A-23

operation code, Task Builder, A-22

Compound test, Indirect, 2-64

Compression, RMS-11 User's Guide, 5-10, 5-16, 6-7, 6-9

RMSIFL utility, RMS-11 Utilities, 3-11

Computational function, Error Logging, 5-20

COM symbolic argument, MACRO-11, 6-11

/CONCATENATE qualifier, Task Builder, 11-21

CONCATENATION CHARACTER command

EDI utility, Utilities, 2-30

Concatenation indicator, MACRO-11, 3-3

Conditional assembly, MACRO-11, 6-50 to 6-54, 6-56

block, MACRO-11, 7-3

directive, MACRO-11, 6-50 to 6-54, 6-55, 6-56

case sensitivity control, MACRO-11, 6-19

nested, MACRO-11, 6-52

immediate, MACRO-11, 6-56

Conditional assembly symbol

LD$xx, Writing I/O Driver, 3-5

Conditional declaration, Error Logging, 5-30

Conditional function, Error Logging, 5-17

Conditional routine, Writing I/O Driver, 5-1

CONDITIONALS argument, MACRO-11, 8-11

CONFIG symbol, Indirect, 2-18

Configuration

See also Autoconfigure of devices in IOX, System Management, 4-29

peripheral saved, System Generation (11M), 4-8

saved host, System Generation (11M), 4-7

Configuration (UDDRV), I/O Drivers, 16-10

UDCOM.MAC, I/O Drivers, 16-10

UDCOM.MAC symbol, I/O Drivers, 16-10

CONFIGURE command

IOX, System Management, 4-29

Connect function (UNIBUS switch driver), I/O Drivers, 24-4

task (LDRDV), I/O Drivers, 14-10

UNIBUS to another CPU (UNIBUS switch driver), I/O Drivers, 24-5

Connect directive, Executive, 5-38

$CONNECT macro, RMS-11 Macro, 5-6

CONNECT operation, RMS-11


BDB requirement, RMS-11 Macro, 2-8

block stream, RMS-11 Macro, 4-13

$CONNECT macro, RMS-11 Macro, 5-6

I/O buffer requirement, RMS-11 Macro, 2-7

indexed files, RMS-11 User's Guide, 7-2

IRAB requirement, RMS-11 Macro, 2-5

key buffer requirement, RMS-11 Macro, 2-6

record stream, RMS-11 Macro, 4-8

relative files, RMS-11 User's Guide, 4-7

sequential files, RMS-11 User's Guide, 3-7

Connect to Interrupt Vector directive, Executive, 5-21

Master Index-42
Console Logger, System Management, 1-1, 3-1
communication with, System Management, 3-2
task communication, System Management, 3-2
user communication, System Management, 3-2
Console Logging, Command Language, 5-5
CO: writing to, System Management, 3-2
commands, System Management, 3-3
error messages, System Management, 3-11
installing COT..., System Management, 3-2
loading CODRV, System Management, 3-2
log file
  disabling, System Management, 3-5
  reassigning, System Management, 3-5
multiple commands, System Management, 3-6
reading log file, System Management, 3-8
sample session, System Management, 3-8
starting, System Management, 3-4
stopping, System Management, 3-4
Console Output Device
  See CO:
Console switch register
  obtaining contents, Executive, 5-115
Console terminal
  disabling, System Management, 3-5
  display, System Management, 3-4
  reassigning, System Management, 3-5
Constant register
  See C register
CON symbolic argument, MACRO-11, 6-42
Contact interrupt
digital input (UDDRV), I/O Drivers, 16-6
Container file
  RMSBCK utility, RMS-11 Utilities, 6-1, 6-3, 6-7
  Container file (cont'd.)
  RMSDSP utility, RMS-11 Utilities, 5-1, 5-3, 5-4
detailed display, RMS-11 Utilities, 5-4
  RMSRST utility, RMS-11 Utilities, 7-3, 7-9, 7-10
CONTENTS argument, MACRO-11, 8-11
Context, RMS-11 Introduction, 4-5
block, RMS-11 Introduction, 4-7
  readable block, RMS-11 Introduction, 4-7
  writable block, RMS-11 Introduction, 4-7
block stream, RMS-11 Macro, 4-12
CONNECT operation, RMS-11
  User's Guide, 3-7, 4-7, 7-2
current record, RMS-11 Introduction, 4-5
DELETE operation, RMS-11 User's Guide, 4-7, 7-3
DISCONNECT operation, RMS-11
  User's Guide, 3-7, 4-8
FIND operation, RMS-11 User's Guide, 3-8, 4-8, 7-3
FLUSH operation, RMS-11 User's Guide, 3-9, 4-10, 7-5
GET operation, RMS-11 User's Guide, 3-10, 4-11, 7-5
next record, RMS-11 Introduction, 4-5
PUT operation, RMS-11 User's Guide, 3-11, 4-11, 7-6
record stream, RMS-11 Macro, 4-3
REWIND operation, RMS-11 User's Guide, 3-11, 4-12, 7-6
TRUNCATE operation, RMS-11
  User's Guide, 3-12
UPDATE operation, RMS-11 User's Guide, 3-13, 4-12, 7-6
Context block, Executive, 5-101, 5-190
  See also FB$CTG mask in FOP field
  See also XB$CTG mask in AOP field
indexed files, RMS-11 User's Guide, 6-13
relative files, RMS-11 User's Guide, 4-4
RMSCNV utility, RMS-11 Utilities, 4-2

Master Index-43
Contiguity (cont'd.)
RMSDEF utility, RMS-11 Utilities, A-15
RMSFL utility, RMS-11 Utilities, 3-1, 3-6
sequential files, RMS-11 User's Guide, 3-4
virtual, RMS-11 Introduction, 2-3
CONTIGUOUS attribute
RMSDES utility
area section, RMS-11 Utilities, 2-46
file section, RMS-11 Utilities, 2-35
Continuation line, MCR, 1-2
See also Line continuation
CLI, System Management, 11-8
CONTINUE command, Command Language, 7-21 to 7-22, 9-7
Contradictory Bit Mask
See CBM
Control character, MCR, 2-15 to 2-18
IOX command
category, System Management, 4-3
key, MCR, 2-15
CONTROL C command
CONTROL C YES/NO command
IOX, System Management, 4-32
IOX
effect on CTRL/C, System Management, 4-32
CONTROL FIELD SIZE attribute
RMSDES utility, RMS-11 Utilities, 2-37
CONTROL P
See CTRL/P
Control and status register
See CSR
Control block, RMS-11 Introduction, 4-7 RMS-11 Macro, 1-2 RMS-11 User's Guide, 1-14
chaining, RMS-11 Macro, 2-12
declaring, RMS-11 Macro, 2-8
examining, RMS-11 Macro, 2-15
field
See Field
initializing, RMS-11 Macro, 2-8
setting up, RMS-11 Macro, 2-10
summary, RMS-11 Introduction, 4-8
Control character
half-duplex, I/O Drivers, 3-17, 3-21, 3-26
TITDRV
escape sequence, I/O Drivers, 2-74
Control file
universal library, Error Logging, 5-1
Control File Language compiler
See CFL
Control file module, Error Logging, 1-3
architecture, Error Logging, 4-1, 4-2
compilation path, Error Logging, 4-11
CPU level module, Error Logging, 4-7
data subpacket, Error Logging, 4-3
definition, Error Logging, 4-1
device ID subpacket, Error Logging, 4-3
device operation subpacket, Error Logging, 4-3
DEVSM1, Error Logging, 4-7
DEVUDA, Error Logging, 4-7
Dispatch, Error Logging, 4-3
dispatching, Error Logging, 4-1
DMPALL, Error Logging, 4-8
E1134, Error Logging, 4-8
E1144, Error Logging, 4-8
E117X, Error Logging, 4-8
E11XX, Error Logging, 4-8
ERRORM, Error Logging, 4-7
EUNKWN, Error Logging, 4-8
FM1NM1, Error Logging, 4-6
FM1WM1, Error Logging, 4-6
FM2CM1, Error Logging, 4-6
FM3CM1, Error Logging, 4-6
FM4NM1, Error Logging, 4-6
FM4WM1, Error Logging, 4-6
FMTNP1, Error Logging, 4-7
format, Error Logging, 5-1
header subpacket, Error Logging, 4-3
INITM1, Error Logging, 4-7
interaction of interface, Error Logging, 4-13
litera declaration, Error Logging, 4-12
naming conventions, Error Logging, 4-1
non-DIGITAL device module, Error Logging, 4-1
options, Error Logging, 4-12
PARS1M, Error Logging, 4-4
Control file module (cont'd.)
PARS2M, Error Logging, 4-4
PARS3M, Error Logging, 4-4
PARSEM, Error Logging, 4-4
program control flow, Error Logging, 4-10
PRS2AM, Error Logging, 4-4
PRS2BM, Error Logging, 4-4
recompilation, Error Logging, 4-13
SELTM1, Error Logging, 4-4
task subpacket, Error Logging, 4-3
Control I/O function mask, Writing I/O Driver, 4-12
Control key
See CTRL key.
See also individual control (CTRL) keys
Controller, Command Language, 5-1
access restriction (ICDRV/ISDRV), I/O Drivers, 19-32
definition (XEDRV), I/O Drivers, 13-23
universal digital, I/O Drivers, 16-1
Controller failures, System Management, 15-32
Controller number, Writing I/O Driver, 2-14
Controller Table Block, MCR, 3-132
Control section
name, Task Builder, A-5
CONTROL statement, Error Logging, 5-32
Control task
tape, I/O Operations, G-11
Control-Z mode, Indirect, 2-47
Conversion
A/D control word
AFC11/AD01 converter, I/O Drivers, 15-3
UDDRV, I/O Drivers, 16-5
A/D input to floating point (K-series), I/O Drivers, 23-13
case (half-duplex), I/O Drivers, 3-15
software (ICDRV/ISDRV), I/O Drivers, 19-80
affected feature, I/O Drivers, 19-80
module support, I/O Drivers, 19-80
switch gain A/D to floating-point (LSDRV), I/O Drivers, 17-15
Conversion (cont'd.)
UIC, ASCII/binary, I/O Operations, 4-7, 4-8
unsigned integer (K-series), I/O Drivers, 23-21
CONVERT command, Command Language, 4-50 to 4-56, 9-8
Converter
A/D (UDDRV), I/O Drivers, 16-8
A/D terminal output (ICDRV/ISDRV), I/O Drivers, 19-32
ICS11 A/D (UDDRV), I/O Drivers, 16-8
Convert UIC
binary to ASCII, I/O Operations, 4-8
COP, System Management, 12-30
°C operator, MACRO-11, 3-5, 6-35, 6-36
/COPIES file qualifier
PRINT command, Batch and Queue, 2-6
SET QUEUE command, Batch and Queue, 2-21
Copy
RA60/80/81 tape kit
on-line, System Generation (11M), 2-19
RK06/07 disk kit
on-line, System Generation (11M), 2-22
stand-alone, System Generation (11M), 2-12
RL01/02 disk kit
on-line, System Generation (11M), 2-24
stand-alone, System Generation (11M), 2-15
RM02/03/05/80 tape kit
on-line, System Generation (11M), 2-19
RP04/05/06 tape kit
on-line, System Generation (11M), 2-19
tape kit
on-line, System Generation (11M), 2-19
stand-alone, System Generation (11M), 2-6
target system disk
mapped, System Generation (11M), 6-9

Master Index-45
Copy
  target system disk (cont'd.)
  unmapped, System Generation (11M), 6-19
COPY command, Command Language, 4-42 to 4-46, 9-8
Introduction, 3-4
System Management, 9-7
DCL, Program Development, 4-3
EDT editor, Introduction, 2-15
Copying
  file, Command Language, 4-42
Copying procedures
  RSX-11M host, System Generation (11S), 5-2
  RSX-11M-PLUS host, System Generation (11S), 6-3
  VAX/VMS host, System Generation (11S), 7-4
COPY key, Command Language, 3-13
CORIMG.SYS file, Command Language, 5-11
/C0 switch, Task Builder, 10-9
CMP utility, Utilities, 12-2
file
  PRI command, Batch and Queue, 2-6
  QUE/MOD command, Batch and Queue, 2-21
FLX utility, Utilities, 4-6
job
  PRI command, Batch and Queue, 2-4
  QUE/MOD command, Batch and Queue, 2-20
LBR utility, Utilities, 10-10
PIP utility, Utilities, 3-11
COT... System Management, 3-1
$COTB (Octal to binary), System Library, 4-5
Cotree, Task Builder, 3-31, 3-33
  and main tree
  virtual address space, Task Builder, 3-40
  global symbol resolution, Task Builder, 3-17
  null root, Task Builder, 3-31
  ODL statement
    from allocation diagram, Task Builder, 3-40
  overlay, Task Builder, 3-34, 3-35
  segment
  affecting symbol search, Task Builder, 10-19, 11-33
  loading, Task Builder, 4-3
Cotree (cont'd.)
  summary, Task Builder, 3-51
  virtual address space, Task Builder, 3-32
Counter
  disconnect interrupt (ICDRV/ISDRV), I/O Drivers, 19-22
  location
    definition, Task Builder, A-17
    modification, Task Builder, A-18
  routine (ICDRV/ISDRV), I/O Drivers, 19-58
COUNTER argument, MACRO-11, 8-11
Counter module, W734 (UDDRV), I/O Drivers, 16-7
CPB
  address in UCB, Writing I/O Driver, 4-25
/CBP switch, CDA, 2-4, 2-6
CPCR$ directive, Executive, 4-11
/C switch, Task Builder, 10-10
CPU (Central Processing Unit),
  Introduction, 6-5, 6-6
CPU affinity
  removing, Executive, 5-162
  setting, Executive, 5-233
/CPU keyword
  OPENREGISTER command, MCR, 3-165
CPU-level
  dispatching module, Error Logging, 4-11
Cpu parameter (UNIBUS switch driver)
  device-specific, I/O Drivers, 24-4
  IO.CON function, I/O Drivers, 24-5
CR11, I/O Drivers, 11-1
Crash, Introduction, 1-19
  cause
    determining, CDA, 4-1
    HALT instruction, CDA, 1-2
    infinite loop, CDA, 1-2
    processor trap, CDA, 1-2
    restart procedure, CDA, 1-3
  dump
    obtaining, CDA, 1-2
/CRAHDEV keyword
  SET command (MCR), MCR, 3-209
Crash dump
  analysis, System Generation (11M), 4-46
  CDA support, System Generation (11M), 4-46

Master Index-46
Crash dump (cont'd.)
device, System Generation (11M), 4-47
PANIC, System Generation (11M), 4-46
device, System Generation (11M), 4-48
Crash Dump Analyzer
See CDA
See Crash dump
Crash dump binary file, CDA, 1-3, 1-6, 2-2
Crash dump device, CDA, 1-1, 1-3
and drivers, CDA, 1-4
changing, CDA, 1-4
displaying, CDA, 1-5
restrictions, CDA, 1-2
specifying, CDA, 1-4, 1-5, 2-2
valid for RSX-11M/M-PLUS system, CDA, 1-2
Crash dump driver
and devices, CDA, 1-4
loadable, CDA, 1-1, 1-3 to 1-7
loading, CDA, 1-4
unloading, CDA, 1-5
Crash dump listing
See also Analysis listings
interpreting, CDA, 4-1 to 4-3
mapping data, CDA, 4-1
stack depth, CDA, 4-2
Crash dump routine
See Executive crash dump routine
Crash notification device, CDA, 1-1, 1-2, 1-3
Crash Recovery Transaction Block, System Management, 17-25
CRASH statement, Error Logging, 5-41
$CREATE, CDA, 3-15, 3-45
$CREATE symbol
use of
in fault tracing, Writing I/O Driver, 3-28
CRAW$ directive, Executive, 5-44
CRE argument to ORG$ macro, RMS-11 Macro, 2-3
CREATE/DIRECTORY command, Command Language, 4-13 to 4-15, 9-9
examples, Command Language, 4-14
qualifiers, Command Language, 4-13 to 4-14
Create access, Command Language, 4-10
volume, MCR, 3-96, 3-106, 3-151
Create Address Window directive, Executive, 5-43
CREATE command, Command Language, 4-10, 4-11 to 4-12, 9-9 Introduction, 2-1, 3-4
RMSDE$ utility, RMS-11 Utilities, 2-7, 2-18, 2-28, 2-31
and INDEX_AREA attribute, RMS-11 Utilities, 2-41
and LEVEL1_INDEX_AREA attribute, RMS-11 Utilities, 2-41
defining areas by default, RMS-11 Utilities, 2-44
defining areas explicitly, RMS-11 Utilities, 2-43
key numbering, RMS-11 Utilities, 2-38
setting attributes, RMS-11 Utilities, 2-21
with GET, RMS-11 Utilities, 2-10, 2-25
/CREATED qualifier
BRU utility, Utilities, 7-14
Create Group Global Event Flags directive, Executive, 5-48
Create Logical Name directive, Executive, 5-32
$CREATE macro, RMS-11 Macro, 5-9
CREATE operation, RMS-11 Introduction, 4-2 RMS-11 Macro, 3-7 RMS-11 User's Guide, 1-18
and shared access, RMS-11 User's Guide, 2-6
BDB requirement, RMS-11 Macro, 2-8
$CREATE macro, RMS-11 Macro, 5-9
declaring with ORG$ macro, RMS-11 Macro, 2-3
I/O buffer requirement, RMS-11 Macro, 2-7
IFAB requirement, RMS-11 Macro, 2-5
remote access, RMS-11 User's Guide, B-2, B-3
wildcard loop, RMS-11 Macro, 3-10
Create option
ACNT, System Management, 2-3
Create Region directive, Executive, 5-50
Create Virtual Terminal directive, Executive, 5-54

Master Index-47
Creating macro library,  Program Development, 6-1, 6-2, 6-3
object library,  Program Development, 6-4 to 6-6
object module
  FORTRAN IV,  Program Development, 7-5
  MACRO-11,  Program Development, 3-4 to 3-6
source file
  FORTRAN IV,  Program Development, 7-2, 7-3
  MACRO-11,  Program Development, 2-12
  skeleton,  Program Development, 1-6, 4-1, 4-2, 7-5, 7-6
Creating files
  See also Data file (RMSDES)
  RMSDEP utility,  RSM-11 Utilities, A-19
Creation date
  See also CDT field in DAT block
  RMSBCK utility,  RSM-11 Utilities, 6-8
CREF processor,  MACRO-11, 8-16
C register,  Debugging, 2-6, 5-3, 9-10
  indicator,  Debugging, 2-8, 7-3, 9-12
/CREF keyword
  FLA command,  MCR, 3-77
CRF symbolic argument,  MACRO-11, 6-19
CRF utility,  Program Development, 1-8
  assembly cross-reference,  Program Development, 3-7, 3-8
  data processing,  Utilities, B-1
  error message,  Utilities, B-5
  global cross-reference,  Program Development, 4-5, 4-6
  MACRO-11/Task Builder,  Utilities, B-1
SEND packet,  Utilities, B-4
  switch,  Utilities, B-1
symbol table file,  Utilities, B-3
task,  MACRO-11, 8-16
CRGF$ directive,  Executive, 5-48
Cross-reference
  global
  of overlaid task,  Task Builder, 4-12, 4-13
Cross-reference
  listing (cont'd.)
  specifying,  Task Builder, 10-11
/CROSSREFERENCE qualifier,
  MACRO-11, 8-8 Task Builder, 11-22
.CROSS directive,  MACRO-11, 6-21
Cross-reference
  directive,  MACRO-11, 6-21, 6-22
  listing,  MACRO-11, 3-12
    assembly,  Program Development, 3-7, 3-8
    asterisk in,  MACRO-11, 8-17
    controlling output in,  MACRO-11, 6-19
    equal sign in,  MACRO-11, 8-17
    generating,  MACRO-11, 8-16, 8-17
    global,  Program Development, 4-5, 4-6
    number sign in,  MACRO-11, 8-17
    specifying,  Task Builder, 11-22
Cross-Reference Processor
  See CRF utility
$CRPKT,  Error Logging, 4-23
CRRG$ directive,  Executive, 5-50
/CR switch,  MACRO-11, 8-7 Task Builder, 10-11, 10-12, 10-13
CRF utility,  Utilities, B-1
LBR utility,  Utilities, 10-12
/CR$ keyword
  SET command (MCR),  MCR, 3-210
  SET command (VMR),  System Management, 10-57
CRT rubout (TTDRV),  I/O Drivers, 2-18
CRVT$ directive,  Executive, 5-58
.CSECT directive,  MACRO-11, 3-11, 6-46
CSI,  I/O Operations, 6-1
  control block bit values
    definition,  I/O Operations, 6-14
  control block offsets
    definition,  I/O Operations, 6-14
  expand file specification,  I/O Operations, 6-19
  initialize control block,  I/O Operations, 6-19
  parse file specification,  I/O Operations, 6-19
  routine,  I/O Operations, 6-14

Master Index-48
CSI (cont'd.)
run-time macros, I/O Operations, 6-19
CSI$1 macro, command syntax analyzer, I/O Operations, 6-19
CSI$2 macro
command semantic parser, I/O Operations, 6-20
initialize control block, I/O Operations, 6-19
parse file specification, I/O Operations, 6-19
CSI$4 macro
command semantic parser, I/O Operations, 6-22
expand file specification, I/O Operations, 6-19
CSI$ macro, switch definition, I/O Operations, 6-14, 6-15
CSI$ND macro, I/O Operations, 6-24
define end of descriptor table, I/O Operations, 6-31
CSI$SV macro, I/O Operations, 6-23
create switch value descriptor table entry, I/O Operations, 6-28
CSI$SW macro, I/O Operations, 6-23
create switch descriptor table entry, I/O Operations, 6-24
CSI macro, switch definition, I/O Operations, 6-23
CSM library
dispatching, Task Builder, 8-19
linking task example, Task Builder, 8-14, 8-15, 8-16
Csm parameter (ICDRV/ISDRV), I/O Drivers, 19-10
IOLDI function, I/O Drivers, 19-25
CSM routine, Task Builder, 8-12
CSR
address
boot device, MCR, 3-190
saving, MCR, 3-190
address in SCB, Writing I/O Driver, 4-22
altering
using CNF, System Generation (11M), 2-5
definition, System Generation (11M), 1-4
floating, System Generation (11M), E-4
CSR definition (XEDRV), I/O Drivers, 13-23

/CSR keyword
SAVE command (MCR), MCR, 3-190
CSRQ$ directive, Executive, 5-60
/CSR switch
BAD utility, Utilities, 6-8
DSC utility, Utilities, 8-21
/CS switch
PAT utility, Utilities, 14-6
SLP utility, Utilities, 13-15
CTB
See Controller Table Block
CTBDF$, CDA, C-14
/CTB keyword
LOAD command (MCR), MCR, 3-132
LOAD command (VMR), System Management, 10-33
CTDI: routine
connect buffer to receive interrupt data (ICDRV/ISDRV), I/O Drivers, 19-51
CTDI: subroutine
connect contact interrupt (UDDRV), I/O Drivers, 16-20
CTDRV, I/O Drivers, 9-1
error recovery, I/O Drivers, 9-6
programming hint, I/O Drivers, 9-7
tape structure, I/O Drivers, 9-6
%CTL, Error Logging, 5-21
/CTL switch, CDA, 2-5, 2-6
CTRL/C, Command Language, 3-11, 3-18 Introduction, 1-4 MCR, 1-3, 2-17 Program Development, 1-2
half-duplex, I/O Drivers, 3-21
ignored, I/O Drivers, 3-15
MCR, I/O Drivers, 3-9
read all, I/O Drivers, 3-14
invoking CLI prompt, MCR, 3-49
ODT, Debugging, 1-5
CTRL/C character
TTDRV, I/O Drivers, 2-68
abort, I/O Drivers, 2-68
abort task, I/O Drivers, 2-16
directed to task, I/O Drivers, 2-68
excluding, I/O Drivers, 2-16
hold screen mode, I/O Drivers, 2-68
pass to task, I/O Drivers, 2-13
terminate read, I/O Drivers, 2-68
TF.RPT, I/O Drivers, 2-14
CTRL/C character
TTDRV (cont’d.)
TF.RST, I/O Drivers, 2-14
unsolicited input, I/O Drivers, 2-13
CTRL/C command
See CONTROL_C command
CTRL/G, Command Language, 3-21
CTRL/L, Command Language, 3-21
MCR, 2-17
half-duplex, I/O Drivers, 3-21
CTRL/I character
TTDRV, I/O Drivers, 2-69
CTRL/J, Debugging, 4-3
half-duplex, I/O Drivers, 3-21
CTRL/K character
TTDRV, I/O Drivers, 2-69
CTRL/L, Command Language, 3-21
MCR, 2-17
half-duplex, I/O Drivers, 3-21
CTRL/M character
TTDRV, I/O Drivers, 2-69
CTRL/O character
TTDRV, I/O Drivers, 2-70
CTRL/P, System Management, 9-3, 9-5
CTRL/Q, Command Language, 3-18
MCR, 2-18 Program Development
3-7
half-duplex, I/O Drivers, 3-22
AST, I/O Drivers, 3-9
read all, I/O Drivers, 3-14
CTRL/O character
TTDRV
pass to task, I/O Drivers, 2-13
resume output, I/O Drivers, 2-70
state, I/O Drivers, 2-57
TF.RPT, I/O Drivers, 2-14
TF.RST, I/O Drivers, 2-14
CTRL/R, Command Language, 3-20
Introduction, 1-9 MCR, 2-18
half-duplex, I/O Drivers, 3-22
IO.RNE function, I/O Drivers, 3-14
CTRL/R character
TTDRV
automatic redisplay, I/O Drivers, 2-16
carriage return, I/O Drivers, 2-70
input redisplay, I/O Drivers, 2-17
line feed, I/O Drivers, 2-70
prompt, I/O Drivers, 2-14
read no echo, I/O Drivers, 2-13
read no filter, I/O Drivers, 2-14
redisplay
write breakthrough, I/O Drivers, 2-24
retype, I/O Drivers, 2-17
TF.RPR, I/O Drivers, 2-14, 2-28
TF.RST, I/O Drivers, 2-14
CTRL/S, Command Language, 3-18
MCR, 2-18 Program Development, 3-7
half-duplex, I/O Drivers, 3-22
AST, I/O Drivers, 3-9
cancel, I/O Drivers, 3-16
CTRL/C restart output, I/O Drivers, 3-21
read all, I/O Drivers, 3-14
CTRL/S character
TTDRV, I/O Drivers, 2-70
CTRL/S character

TTDRV (cont’d.)
break-through write, I/O Drivers, 2-17
pass to task, I/O Drivers, 2-13
state, I/O Drivers, 2-57
suspend output, I/O Drivers, 2-70
TF.RPT (TTDRV), I/O Drivers, 2-14
TF.RST, I/O Drivers, 2-14
CTRL/U, Command Language, 3-20
Introduction, 1-10 MCR, 2-18
Program Development, 3-17
half-duplex, I/O Drivers, 2-22
ODT, Debugging, 2-8

CTRL/U character

TTDRV, I/O Drivers, 2-70
delete start of line, I/O Drivers, 2-70
prompt, I/O Drivers, 2-14
read no filter, I/O Drivers, 2-14
TF.RPR, I/O Drivers, 2-14,
TF.RST, I/O Drivers, 2-14
CTRL/X, Command Language, 3-21
MCR, 2-18
CTRL/X character

TTDRV, I/O Drivers, 2-70, 2-73
clear typeahead, I/O Drivers, 2-70
CTRL/Z character

TTDRV, I/O Drivers, 2-70, 2-73
exit task, I/O Drivers, 2-70
pass to task, I/O Drivers, 2-13
TF.RPT, I/O Drivers, 2-14
CTRL character
allowed
escape sequence (half-duplex), I/O Drivers, 3-26
half-duplex, I/O Drivers, 3-17
CTRL key, Command Language, 3-17
See also individual CTRL keys
CTRL routine, control device, I/O Operations, 4-31
CTRL routine, tape, I/O Operations, 5-7

CTTI: connect buffer
receive counter data (ICDRV/ISDRV), I/O Drivers, 19-56
CTTI: subroutine
connect timer interrupt (UDDRV), I/O Drivers, 16-21
CTTY:, connect buffer
terminal interrupt (ICDRV/ISDRV), I/O Drivers, 19-60
CTX field in FAB, RMS-ll Macro, 2-18
offset, RMS-ll Macro, 6-22
summary, RMS-ll Macro, 6-32
CTX field in RAB, RMS-ll Macro, 2-18
offset, RMS-ll Macro, 6-115
summary, RMS-ll Macro, 6-119
Current location counter, MACRO-ll, 2-2, 3-12, 3-13, 3-15, 3-17, 6-11,
6-37, 6-43
example usage, MACRO-ll, 3-14
indicator for, MACRO-ll, 3-2
Current location indicator (#), Debugging, 7-3, 9-8
Current-record context, RMS-ll Macro, 4-3
See also Context
Current task priority
pointer to, CDA, 3-20
Cursor, Introduction, 1-4
controlling, Command Language,
3-16
Cursor control
direct (half-duplex), I/O Drivers, 3-34
terminal-independent (TTDRV), I/O Drivers, 2-18, 2-80
Cursor-control key, Command Language, 3-16
Cursor position (TDDRV) restore, I/O Drivers, 2-13, 2-27, 2-46, 2-48 save, I/O Drivers, 2-13, 2-27, 2-46, 2-48
CUT key (EDT), Introduction, 2-8
CVADF: subroutine convert A/D input to floating point K-series, I/O Drivers, 23-13 LADRV, I/O Drivers, 22-9
$CVLOK (Page lock), System Library, 8-22
$CVRL (Virtual to real address), System Library, 8-24
CVSWG: subroutine convert switch gain A/D (LSDRV), I/O Drivers, 17-15
$CVTUC (Uppercase text), System Library, 6-1
Cylinder, RMS-11 Introduction, 2-1 See also Placement control

D
D$$$BUG label, Writing I/O Driver, 3-19
D$CUIC, Indirect, 2-5 DA11-B parallel interface (communication driver), I/O Drivers, 12-2
DAN field in KEY block CREATE operation, RMS-11 Macro, 5-19 DISPLAY operation, RMS-11 Macro, 5-31 offset, RMS-11 Macro, 6-67 OPEN operation, RMS-11 Macro, 5-80 summary, RMS-11 Macro, 6-71
DAP (data access protocol) See DECalnet
DAPRES remote access code, RMS-11 User's Guide, B-1
/DA switch, Error Logging, 3-5, 3-8 Task Builder, 10-14
DASWP: subroutine initiate synchronous D/A sweep K-series, I/O Drivers, 23-14 LADRV, I/O Drivers, 22-9
$DAT (Date conversion), System Library, 6-2
Data adjacency in memory, Task Builder, 2-27 segment autoloadable, Task Builder, 4-7 sending to task, Executive, 5-192, 5-265 structure building, Task Builder, 2-1 overlay, Task Builder, 3-18 transfer checking, MCR, 3-265 DATA_AREA attribute RMSDES utility, RMS-11 Utilities, 2-40 DATA_FILL attribute RMSDES utility, RMS-11 Utilities, 2-40 Data access protocol (DAP) See DECalnet
Data area number See DAN field in KEY block
Data base driver accessing shared, Writing I/O Driver, 2-9 changing, Writing I/O Driver, 3-3 controlling access to shared, Writing I/O Driver, 2-10 example, Writing I/O Driver, 6-2 to 6-4 loadable See Loadable data base overview, Writing I/O Driver, 3-5 resident See Resident data base overlay, Task Builder, B-15
Data block dequeuing, Executive, 5-149, 5-151, 5-153, 5-257, 5-259, 5-261 local, Program Development, 2-8 queuing, Executive, 5-187, 5-263 Data caching, MCR, 3-146 to 3-147, 3-207 to 3-209 options, MCR, 3-146, 3-207 region, MCR, 3-146, 3-207 specifying partition, MCR, 3-146, 3-207 .DATA directive, Indirect, 2-43
Data file
RMSDES utility, RMS-ll Utilities, 2-3, 2-17, 2-24
creating, RMS-ll Utilities, 2-3, 2-7, 2-28
GET command, RMS-ll Utilities, 2-10
Data format
ANSI tape, I/O Operations, 1-7
file device, I/O Operations, 1-6
input
Task Builder, Task Builder, A-1
to A-32
Data integrity checking
RMSBCK utility, RMS-ll Utilities, 6-6, 6-7, 6-9
RMSRST utility, RMS-ll Utilities, 7-6, 7-8, 7-11
Data mode, indirect, 2-47
Data packet
sending, Executive, 5-202
Data parameter
immediate device-specific function (LSDRV), I/O Drivers, 17-3
Data record, RMS-ll Introduction, 3-7
Dataset descriptor, I/O Operations, 2-28
address, initialization, I/O Operations, 2-14
as data structure, I/O Operations, 1-4
definition, I/O Operations, 1-3
general description, I/O Operations, 1-5
OFNB$x macro, I/O Operations, 3-17
pointer
definition, I/O Operations, 1-3
file-open, I/O Operations, 2-14
initialization, I/O Operations, 2-14
specifying, I/O Operations, 2-28
Data sharing, MACRO-ll, 6-45
Data space, Debugging, 7-2, 9-3
Executive, 3-1
command, Debugging, 2-8, 9-12
enabling, Debugging, 1-3
mapping, Executive, 3-3
moving data, Executive, 5-133
Data storage, RMS-ll Introduction, 2-1
Data storage (cont'd.)
control in assembly language,
Program Development, 1-4, 1-5
directive, Program Development, 1-4, 1-5
MACRO-ll definition, Program Development, 2-8
program section, Program Development, 2-8
Data storage directive, MACRO-ll, 6-23 to 6-39
Data structure, Writing I/O Driver, 2-7
macro definition
See also System data structure macro definition
ACP interface, Writing I/O Driver, D-7
DH11 terminal multiplexer, Writing I/O Driver, 2-7
figure, Writing I/O Driver, 2-19
interaction with driver, Writing I/O Driver, 2-5
interrelationship, Writing I/O Driver, 2-18
memory management directive,
Executive, 3-11
overview, Writing I/O Driver, 4-1
RL11 disk, Writing I/O Driver, 2-8
summary, Writing I/O Driver, 2-20
Data terminal emulation
See DTE
Data Terminal Emulator
See DTE
Data transfer
BRU utility, Utilities, 7-26
DSC utility, Utilities, 8-24
FLX utility, Utilities, 4-1
Data type
keys, RMS-ll User's Guide, 6-3
and segmenting, RMS-ll User's Guide, 6-7
2-byte-signed integer, RMS-ll User's Guide, 6-3
4-byte signed integer, RMS-ll User's Guide, 6-4
4-byte unsigned binary, RMS-ll User's Guide, 6-5
packed decimal, RMS-ll User's Guide, 6-6
string, RMS-ll User's Guide, 6-3

Master Index-53
Data type (cont’d.)
key values, RMS-11 Introduction, 3-7
DAT block, RMS-11 Introduction, 4-8
chaining to FAB, RMS-11 Macro, 2-12, 2-13
declaring, RMS-11 Macro, 2-8
initializing, RMS-11 Macro, 2-9
summary, RMS-11 Macro, 6-14
Date
See also DAT block
displaying, System Management, 10-90
related qualifiers, Command Language, 4-8
setting, System Management, 10-90
system
  displaying, Command Language, 2-1, 8-3
  setting, Command Language, 2-1, 8-1
XAB
  See DAT block
Date conversion
date ($DAT), System Library, 6-2
Date format
DCL, Command Language, 1-8
Date switch, Error Logging, 3-5, 3-8
DATE symbol, Indirect, 2-18
DBMS-11, System Generation (11M), 4-25
DBS field in KEY block
  DISPLAY operation, RMS-11 Macro, 5-31
  offset, RMS-11 Macro, 6-68
  OPEN operation, RMS-11 Macro, 5-80
  summary, RMS-11 Macro, 6-72
/DCB switch
  SLP utility, Utilities, 13-15
$DBTS program section
  reserved name, Task Builder, E-2
DCB, Command Language, 5-5
description, Writing I/O Driver, 4-7
relationship of
  with I/O control blocks, Writing I/O Driver, 2-6
required field, Writing I/O Driver, 3-6
role of
  in I/O data structure, Writing I/O Driver, 2-20
with ACP, Writing I/O Driver, D-9
DCBDFS, CDA, B-6, C-15
DCB field
  D.DSP, Writing I/O Driver, 3-6, 4-10, 4-14
  D.LNK, Writing I/O Driver, 3-6, 3-8, 4-8
  D.MSK, Writing I/O Driver, 3-6, 4-11
  D.NAM, Writing I/O Driver, 3-6, 4-9
  D.PCB, Writing I/O Driver, 3-6, 4-14
  D.UCB, Writing I/O Driver, 3-6, 3-8, 4-8
  D.UCBL, Writing I/O Driver, 3-6, 4-9
  D.UNIT, Writing I/O Driver, 3-6, 4-9
/DB switch, CDA, 2-5, 2-6
DCL, Command Language, 1-1
  Introduction, 1-1, 1-11, 3-1, 5-1
  MCR, 3-56 Program Development,
     1-1 to 1-3 RMS-11 User’s Guide,
     B-2 System Generation (11M), 4-63
     System Management, 11-2, 11-5, 11-8
See also DIGITAL COMMAND
  LANGUAGE command
  abbreviations, Command Language, 1-7
building, System Management, 12-1
colon (:) Command Language, 1-9
column command
  abbreviation, Command Language, 9-1
  function, Command Language, 1-15 to 1-17
interpretation, System Management, 12-5
mapping to MCR, System Management, 12-21
translating to MCR, Command Language, 2-8, B-1
column line, Command Language, 1-2
quoting string, Command Language, 1-9
column, Command Language, 1-8
conventional installation, System Management, 12-2
dates, Command Language, 1-8
DECnet, Command Language, 1-10
definition, Batch and Queue, 4-2
deleting files, System Management, 9-7
DCL (cont’d.)
equal sign (=), Command Language, 1-9
errors, Command Language, 1-14
IFORM, System Management, 12-24
installation, System Management, 12-1
alternatives, System Management, 12-2
catchall task, System Management, 12-3
MCR task, System Management, 12-3
intermediate form
See IFORM
line continuation, Command Language, 1-12, 3-11
MCR fallthrough, System Management, 12-4
number
decimal, Command Language, 1-8
octal, Command Language, 1-8
parameter, Command Language, 1-8
parser process, System Management, 12-5
parser table example, System Management, 12-21
qualifier, Command Language, 1-3 to 1-4
quotation mark ("), Command Language, 1-9
using, Command Language, 1-9
RSX-11M, Command Language, 1-19
SET commands, Command Language, 2-1 System Management, 12-3
SHOW commands, Command Language, 2-1
task, System Management, 1-4, 12-1, 12-3, 12-5
task building, System Management, 12-4
first task build, System Management, 12-4
second task build, System Management, 12-5
television number
specifying, System Management, 9-4
terminal emulation
specifying, System Management, 9-3 to 9-5
transferring files, System Management, 9-7

DCL (cont’d.)
translator process, System Management, 12-5
underscore (_), Command Language, 1-8
VAX/VMS, Command Language, 1-19
DCL command, Command Language, 1-6
linking
ODT, Debugging, 1-3
ODTID, Debugging, 1-3
supervisor libraries, Debugging, 1-4
DCL command table, System Management, 12-7
constructing, System Management, 12-6
example, System Management, 12-46 to 12-48
interpreting, System Management, 12-18
modifying, System Management, 12-8
/DCL keyword
HELP command, MCR, 3-87
SET command (MCR), MCR, 3-211
DCL Master Command Table
See DCL MCT
DCL MCT, System Management, 12-9
DCL QMG commands
DCL task, System Management, 1-4, 12-5
adding commands, System Management, 12-8
definition, System Management, 12-1
deleting commands, System Management, 12-13
modifying commands, System Management, 12-13
overlay, System Management, 12-10
PT/TT, System Management, 12-12
file, System Management, 12-9
D command, Debugging, 2-8, 9-12
/DC switch
DMP utility, Utilities, 11-5
/DD2CT (Decimal to binary double-word), System Library, 4-1
/DDDRV, I/O Drivers, 7-1
/DDL (Double-precision divide), System Library, 3-3
DDS
See Default directory string

Master Index-55
/DD switch
PIP utility, Utilities, 3-16
DDT
See also Driver Dispatch Table
address, Writing I/O Driver, 3-5
role of
in I/O data structure, Writing I/O Driver, 2-20
DEA
See DEALLOCATE command
$DEACB routine, Writing I/O Driver, 5-6
Deaccess lock (F11ACP), I/O Drivers, C-6
DEALLOCATE command, Command Language, 5-34 to 5-35, 9-9
DEALLOCATE command (MCR), MCR, 1-8, 3-57
example, MCR, 3-57
format, MCR, 3-57
parameters, MCR, 3-57
Dealocate Device Transaction Block, System Management, 17-28
DEASSIGN/QUEUE command, Command Language, 9-10
DEASSIGN command, Command Language, 5-29 to 5-30, 9-10
$DEBUG, I/O Operations, 7-2
Debugging
aid, MCR, 3-58
including, Task Builder, 10-14, 11-25 to 11-26
CDA, Writing I/O Driver, 3-20
Executive stack and register dump routine, Writing I/O Driver, 3-16
fault code, Writing I/O Driver, 3-26
fault isolation, Writing I/O Driver, 3-20 to 3-23
fault tracing, Writing I/O Driver, 3-23 to 3-28
introduction, Program Development, 1-6, 1-7
MACRO-11 source file, Program Development, 3-3, 3-4
Panic Dump routine, Writing I/O Driver, 3-19 to 3-20
task, MCR, 3-58 Program Development, 4-9, 5-1, 5-2, 7-7, 7-8, 7-9
tool
See ODT
Debugging (cont'd.)
using map, Program Development, 5-2, 5-8
XDT, Writing I/O Driver, 3-15 to 3-18
Debugging aid, Writing I/O Driver, 3-16
$DEBUG qualifier, Task Builder, 11-25 to 11-26
Debug routine, I/O Operations, 7-6
.DEC directive, Indirect, 2-44
Decimal conversion
decimal to binary ($CDTB), System Library, 4-4
decimal to binary double-word (.DD2CT), System Library, 4-1
Decimal mode, Indirect, 2-48
Decimal number
packing, MACRO-11, 6-31
/DEC keyword
SET command (MCR), MCR, 3-211
SET command (VMR), System Management, 10-57
DECLS$ directive, Executive, 5-61
Declaration flag byte
symbol, Task Builder, A-7
Declare Significant Event directive, Executive, 5-61
DECLARE statement, Error Logging, 5-26, 5-27
DECnet, RMS-11 User's Guide, B-1
See also Communications products
and CREATE operations, RMS-11 User's Guide, B-2, B-3
and file organization, RMS-11 User's Guide, B-3
and OPEN operations, RMS-11 User's Guide, B-2, B-3
block access, RMS-11 User's Guide, B-3
DAPRES resident library, RMS-11 User's Guide, B-1
DCL, Command Language, 1-10
directory
displaying, Command Language, 8-6
setting, Command Language, 8-4
disk-resident overlaid code, RMS-11 User's Guide, B-1
FALs
on different systems, RMS-11 User's Guide, B-3
DECnet (cont'd.)

I/O buffers, RMS-11 User's Guide, B-3
indexed files, RMS-11 User's Guide, B-3
relative files, RMS-11 User's Guide, B-3
sequential files, RMS-11 User's Guide, B-3
limitations on functions, RMS-11 User's Guide, B-1

DECnet Remote Terminal Facility
See RMT

DECODE statement, Error Logging, 5-32

DECREMENT statement, Error Logging, 5-31

DEC Standard Editor
See also EDT editor

DECTape, Command Language, 5-3
RMS-11 Macro, 3-1, 5-20, 5-37, 5-42, 5-77, 5-88, 5-104, 5-111, 5-117

ACP, Command Language, 5-39
exercising

IOX, System Management, 4-2
function code list, I/O Drivers, B-8
GLUN$ macro, I/O Drivers, 6-1
I/O function, I/O Drivers, 6-2, 6-3
I/O status return, I/O Drivers, 6-4
programming hint, I/O Drivers, 6-7
recovery, I/O Drivers, 6-6
reverse read, I/O Drivers, 6-7
reverse speed, I/O Drivers, 6-7
reverse write, I/O Drivers, 6-7
select recovery, I/O Drivers, 6-7
task aborting, I/O Drivers, 6-8
transfer length, I/O Drivers, 6-7

DECTape file structure, I/O Operations, 5-1

DECTape II, RMS-11 Macro, 3-1, 5-20, 5-37, 5-42, 5-77, 5-88, 5-104, 5-111, 5-117

DECWTR II, Command Language, 3-1
Dedicated mode (LADRV), I/O Drivers, 22-1

DEF$SZ argument, RMS-11 Macro, C-1
DEFAUL symbol, Indirect, 2-10

DEQ, RMS-11 User's Guide, 4-4
device
VMR, System Management, 10-5
directory
VMR, System Management, 10-6

file type
MACRO-11, Program Development, 3-5

TKB, Program Development, 4-1
VMR, System Management, 10-6
operating system, RMS-11 User's Guide, 2-2

RMSDES utility, RMS-11 Utilities, 2-21

switch
modifying, Task Builder, F-7, F-8 to F-11

system library search
MACRO-11, Program Development, 1-5, 1-10, 2-7

TKB, Program Development, 1-11, 4-2
task building, Task Builder, 1-1
transfer (starting) address, Program Development, 4-8
version number
VMR, System Management, 10-6

VMR
file name, System Management, 10-6

/DEFAULT_LIBRARY qualifier, Task Builder, 11-27

Default directory string, Executive, 5-101, 5-190 Indirect, 2-18, 2-21
retrieving, Executive, 5-100
setting, Executive, 5-189

Default extension quantity
See DEQ
Default extension size
See DEQ field in ALL block
See DEQ field in FAB
Default Filename Block
See DFNB
Default fill character, Error Logging, 5-6
Default LUN (ICDRV/ISDRV), I/O Drivers, 19-38
Default print field width, Error Logging, 5-6
Default radix, Error Logging, 5-6
MACRO-11, 3-14
Default register definition, MACRO-11, 3-10
Default response examples, System Generation (11M), 5-6
Default string
See DNA field in FAB
Deferred addressing indicator, MACRO-11, 3-2
Deferred address mode
autodecrement, MACRO-11, 5-5
autoincrement, MACRO-11, 5-4
index, MACRO-11, 5-6
register, MACRO-11, 5-3
relative, MACRO-11, 5-9
Deferred write, RMS-11 User's Guide, 2-17
See also FB$DFW mask in FOP field and mass insertion, RMS-11 User's Guide, 6-29
indexed files, RMS-11 User's Guide, 7-8
relative files, RMS-11 User's Guide, 4-14
sequential files, RMS-11 User's Guide, 3-14
/DELETE file switch
PRI command, Batch and Queue, 2-6
Defined report string
user, Error Logging, 3-21
DEFINITIONS argument, MACRO-11, 8-11
/DEF keyword
SET command (MCR), MCR, 3-212
DEL argument to OREG$ macro, RMS-11 Macro, 2-3
.DELEY directive, Indirect, 2-45
DEL C key (EDT), Indirect, 2-7
DELET$ macro, I/O Operations, 3-1, 3-42
format
file operations, I/O Operations, 3-42
Delete
character (half-duplex), I/O Drivers, 3-15
escape sequence, I/O Drivers, 3-25
key (TTDRV), I/O Drivers, 2-71
read no filter (TTDRV), I/O Drivers, 2-14
TF.RST (TTDRV), I/O Drivers, 2-14
DELETE/ENTRY command, Command Language, 9-11
DELETE/JOB command, Command Language, 9-11
DELETE/processortype command, Command Language, 9-11
DELETE/QUEUE command, Command Language, 9-12
DELETE/REMOTE command, System Management, 9-7
DELETE & PRINT command
EDI utility, Utilities, 2-14, 2-31
DELETE/ENTRY command,
Introduction, 3-12
Delete access, Command Language, 4-10, 4-84 MCR, 2-3
common region, MCR, 3-120
file, MCR, 3-149, 3-213
UFD, MCR, 3-281
volume, MCR, 3-94, 3-96, 3-106, 3-151
DELETE command, Command Language, 4-35 to 4-38, 9-10
Introduction, 3-4 to 3-5, 3-6
System Management, 9-7
EDI utility, Utilities, 2-13, 2-31
EDT editor, Introduction, 2-13
example, Batch and Queue, 2-11
format, Batch and Queue, 2-10
/DELETE file qualifier
PRINT command, Batch and Queue, 2-6
SET QUEUE command, Batch and Queue, 2-21
DELETE key, Command Language, 3-12 Introduction, 1-8, 1-9 MCR, 2-16
Delete Logical Name directive,
Executive, 5-62
$DELETE macro, RMS-11 Macro, 5-25
Delete mode, Indirect, 2-48
DELETE operation, RMS-11
Introduction, 4-4 RMS-11 Macro, 4-11 RMS-11 User's Guide, 1-15
DELETE operation (cont'd.)
and key position, RMS-11 User's Guide, 6-7
and shared access, RMS-11 User's Guide, 2-6
compressing records, RMS-11 User's Guide, 5-10, 5-16, 6-7, 6-9
declaring with ORG$ macro, RMS-11 Macro, 2-3
deferred write, RMS-11 User's Guide, 7-9
$DELETE macro, RMS-11 Macro, 5-25
duplicate keys, RMS-11 User's Guide, 6-9
indexed files, RMS-11 User's Guide, 5-15, 7-3, 7-9
optimizing, RMS-11 User's Guide, 6-7
relative files, RMS-11 User's Guide, 4-7
Delete option
ACNT, System Management, 2-9
Deleting text (EDT), Introduction, 2-7, 2-13
Deletion, file marked for
See FB$MKD mask in FOP field
/DEL file switch
QUE /MOD command, Batch and Queue, 2-21
Delimiter, Program Development, 2-16
Delimiting character, MACRO-11, 3-3
DEL L key (EDT), Introduction, 2-7
DEL W key (EDT), Introduction, 2-7
Density
See also Bit density
bit 11 characteristic (tape driver), I/O Drivers, 8-9
parameter, device-specific (disk driver), I/O Drivers, 5-9
selection (tape driver), I/O Drivers, 8-16
tape
in IOX, System Management, 4-33
volume
changing, Command Language, 5-70
setting, Command Language, 5-59
/DENSITY command
IOX, System Management, 4-33
/BRU utility, Utilities, 7-14
/DENSITY switch
FMT utility, Utilities, 5-8
/DENS keyword
HOME command, MCR, 3-93
INITVOLUME command, MCR, 3-102
MOUNT command (MCR), MCR, 3-147
SAVE command (VMR), System Management, 10-48
/DENS switch, CDA, 2-10
DMP utility, Utilities, 11-5
DSC utility, Utilities, 8-14
Depth
DEQ
indexed files, RMS-11 User's Guide, 6-26
relative files, RMS-11 User's Guide, 4-4
default, RMS-11 User's Guide, 4-4
RMSDEF utility, RMS-11 Utilities, A-15
DEQ field in ALL block
CREATE operation, RMS-11 Macro, 5-17
DISPLAY operation, RMS-11 Macro, 5-30
offset, RMS-11 Macro, 6-2
OPEN operation, RMS-11 Macro, 5-79
RSTS/E, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-11
DEQ field in FAB
CREATE operation, RMS-11 Macro, 5-17
offset, RMS-11 Macro, 6-22
OPEN operation, RMS-11 Macro, 5-74, 5-78
summary, RMS-11 Macro, 6-33
D error, MACRO-11, 2-3
summary, MACRO-11, D-3
Description file
RMSDES utility, RMS-11 Utilities, 2-3, 2-13, 2-17, 2-24
EXIT command, RMS-11 Utilities, 2-10
GET command, RMS-11 Utilities, 2-10
SAVE command, RMS-11 Utilities, 2-27

Master Index-59
Descriptor
region, Task Builder, B-15, B-17, B-21, B-22
segment, Task Builder, B-15 to B-20
window, Task Builder, B-15, B-17, B-20, B-21
DESELECT command
IOX, System Management, 4-35
Design buffer
RMSDES utility, RMS-11 Utilities, 2-1
using, RMS-11 Utilities, 2-16
Design buffer sections (RMSDES)
See Section
Designing applications, RMS-11 User's Guide, 2-1
ease of design, RMS-11 User's Guide, 2-10
space, RMS-11 User's Guide, 2-4, 3-1
speed, RMS-11 User's Guide, 2-3, 8-1
when to design, RMS-11 User's Guide, 2-2
Designing files, RMS-11 Introduction, 3-15
See also Indexed file organization
See also Relative file organization
See also Sequential file organization
indexed, RMS-11 User's Guide, 6-1
relative, RMS-11 User's Guide, 4-2
sequential, RMS-11 User's Guide, 3-3
Design session
RMSDES utility, RMS-11 Utilities, 2-1
resuming, RMS-11 Utilities, 2-2
Despooler
definition, Batch and Queue, 4-3
Despool prototype task
See LPP
/DE switch, Error Logging, 3-5, 3-8
FLX utility, Utilities, 4-7
Indirect, Indirect, 2-29
LBR utility, Utilities, 10-13
PIP utility, Utilities, 3-17
RMSIFL utility, RMS-11 Utilities, 3-7, 3-10, 3-14
/DE switch (cont'd.)
VFY utility, Utilities, 9-4
Detach mode, Indirect, 2-17
Detach Region directive, Executive, 5-67
$DEUMR routine, Writing I/O Driver, 5-7, B-3
DEUNA driver
See XEDRV
DEV
See also DEVICES command
disk data caching, System Management, 19-15
DEV-ctl parameter
IO.XOP function (XEDRV), I/O Drivers, 13-6
DEV field in FAB, RMS-11 Macro, 3-1, 3-2
CREATE operation, RMS-11 Macro, 5-20
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-42, 5-43
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-77
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-104
RENAME operation, RMS-11 Macro, 5-111
SEARCH operation, RMS-11 Macro, 5-117, 5-118
summary, RMS-11 Macro, 6-34
$DEVHD word, Writing I/O Driver, 2-19
role of
in I/O data structure, Writing I/O Driver, 2-20
Device, Command Language, 5-1, 5-4, 5-5
Introduction, 1-6, 1-13, 3-10, 6-7
MCR, 2-10 to 2-14 RMS-11
Introduction, 2-1
See also Medium
accessing, MCR, 3-141
allocating, Command Language, 5-31
MCR, 2-13, 3-16
and record formats, RMS-11 User's Guide, 2-15
assignment, Task Builder, 12-8
attached, MCR, 3-173
Device
attribute
displaying, Command Language, 5-91
setting, Command Language, 5-88
attaching, I/O Drivers, 1-27
bootable, MCR, 3-35
buffer
setting, Command Language, 5-89
characteristic (tape driver), I/O Drivers, 8-3
characteristics
See also DEV field in FAB
setting, MCR, 3-197
common, MCR, 3-238 Task Builder, 5-30, 5-32
building and linking, Task Builder, 5-28 to 5-32
control
LUN register, Debugging, 2-7, 5-4, 6-2
controller
overlapped-seek support, MCR, 3-236
crash dump, CDA, 1-1
crash notification, CDA, 1-1
See also Crash notification device
deallocating, Command Language, 5-34 MCR, 2-13, 3-16, 3-57
default, Command Language, 4-2, 4-4 MCR, 3-212
displaying, Command Language, 4-82
setting, Command Language, 4-80
detaching, I/O Drivers, 1-28
disconnecting (communication driver), I/O Drivers, 12-7
disk, RMS-11 Introduction, 2-1
displaying, MCR, 3-60
displaying information, Command Language, 2-3, 5-91
driver, RMS-11 Introduction, 2-1
building, MCR, 3-134
loadable, MCR, 3-166
loading, MCR, 3-132
mapping, MCR, 3-132
nonresident, MCR, 3-132
vectoring, MCR, 3-132, 3-134
error logging, Error Logging, 2-4
control file module, Error Logging, 2-4, 2-5
Device (cont’d.)
errors
error logging, Error Logging, 1-6
hardware register contents, Error Logging, 1-6
example, System Generation (11M), 4-67
exercising
examples
RL02, System Management, 4-10
fairness-count, MCR, 3-235
file
default number, Command Language, 5-62
Files-11, MCR, 2-1
file-structured, MCR, 3-141
fixed media, CDA, 1-3, 1-5
getting information, Executive, 5-103
global assignment, Command Language, 5-8
I/O requests
redirecting, MCR, 3-173
identifier, MCR, 2-10
See also DVI field in NAM block
industrial, Command Language, 5-4
information, Indirect, 2-87
initializing (communication driver), I/O Drivers, 12-7
invalid crash dump, CDA, 1-3, 1-5
IOX
adding, System Management, 4-29
displaying, System Management, 4-29
exercising
steps, System Management, 4-2
status during exercise, System Management, 4-60
testing
removing, System Management, 4-35
time of, System Management, 4-57
laboratory, Command Language, 5-4
list, Command Language, 5-2 MCR, 3-144
list of supported, I/O Drivers, 1-43
local assignment, Command Language, 5-8
logical, System Generation (11M), 4-33

Master Index–61
Device (cont'd.)

logical assignment
  displaying, Command Language, 2-5, 5-86
logical name, Command Language, 5-5, 5-6, 5-8 Indirect, 2-89
assigning, Command Language, 5-8, 5-21
deleting, Command Language, 5-29
table, Command Language, 5-8
login assignment, Command Language, 5-8
magnetic tape, RMS-11 Introduction, 2-4
mass-storage, Command Language, 5-3
mounted, MCR, 3-62
name, Command Language, 5-1
  MCR, 2-4
  assigning logical, MCR, 2-12
displaying, MCR, 3-60
logical, CDA, 3-17
nonphysical, I/O Drivers, 1-20
physical, CDA, 3-17 I/O Drivers, 1-18, 1-20
pseudo, I/O Drivers, 1-20
non-file-structured, MCR, 3-141
nonshared, MCR, 3-142
null, MCR, 2-11 System Management, 10-39
off-line, MCR, 3-62 System Management, 10-17
on-line, MCR, 3-62
owner, Command Language, 5-9
peripheral, Command Language, 5-1
  Introduction, 6-1, 6-7 MCR, 2-10
physical, Command Language, 5-4
placing off line, System Management, 15-3
placing on line, System Management, 15-3
private, Command Language, 5-9, 5-12 MCR, 2-13, 3-246
allocating, Command Language, 5-31
deallocating, Command Language, 5-34 MCR, 3-16, 3-57
displaying, MCR, 3-246
privileged status, MCR, 2-13
protection, Command Language, 5-12

Device (cont'd.)
pseudo, Command Language, 5-1, 5-4, 5-5, 5-9 to 5-6 Introduction, 3-10 MCR, 2-10 to 2-11, 3-173
System Generation (11M), C-3
System Management, 10-3
list, Command Language, 5-6
name, Command Language, 5-5
public, Command Language, 5-9, 5-13 MCR, 2-13, 3-62, 3-142
dismounting, MCR, 2-13
displaying, MCR, 3-245, 3-246
setting, Command Language, 5-89 MCR, 3-245
queuing I/O request, Executive, 5-143, 5-147
random-access, Command Language, 5-3
REASSIGN command, I/O Drivers, 1-20
REDIRECT command, I/O Drivers, 1-20
redirecting, Command Language, 5-5
System Management, 10-39
output, Command Language, 5-24
redirecting restrictions, System Management, 10-39
removing, System Management, 10-93
attached device, System Management, 10-93
saving system image, MCR, 3-187
sequential, MCR, 3-141
sequential-access, Command Language, 5-9
setting default, Command Language, 2-5
shadow, MCR, 3-70
shareable, Command Language, 5-9, 5-12
shared, MCR, 3-142
specifying, System Generation (11M), 4-18
parameters, System Generation (11M), 4-67
spooled, MCR, 3-173
support
BAD utility, Utilities, 6-9
BRU utility, Utilities, 7-5
DSC utility, Utilities, 8-4
FLX utility, Utilities, 4-2
FMT utility, Utilities, 5-5

Master Index-62
Device

Device support (cont’d.)
on RSX-11M, System Generation (11M), 4-18, C-1
switch, CDA, 2-6 Error Logging, 3-5, 3-8
system, CDA, 1-5
system default
adding to account entry, System Management, 2-3
changing, System Management, 2-7
displaying, System Management, 2-5, 2-8
in account entry, System Management, 2-1

TI:
pseudo, I/O Drivers, 1-21
virtual, I/O Drivers, 1-21
time out (half-duplex), I/O Drivers, 3-19
unit number, CDA, 1-4
unit-record, Command Language, 5-3 RMS-11 Introduction, 3-5
unowned, Command Language, 5-9, 5-13 MCR, 2-13
user's default, MCK, 2-11
valid crash dump, CDA, 1-2, 1-5
verifying
BAD utility, Utilities, 6-3

Device context, System Management, 15-3

Device Control Block
See DCB

Device controller

Device controller (cont’d.)
GR, System Generation (11M), 4-79
LA, System Generation (11M), 4-79
LP, System Generation (11M), 4-80
LS, System Generation (11M), 4-82
MM, System Generation (11M), 4-83
MS, System Generation (11M), 4-84
MT, System Generation (11M), 4-84
MU, System Generation (11M), 4-84
PP, System Generation (11M), 4-85
PR, System Generation (11M), 4-85
UD, System Generation (11M), 4-85
XB, System Generation (11M), 4-86
XE, System Generation (11M), 4-86
XL, System Generation (11M), 4-87
XM, System Generation (11M), 4-87
XP, System Generation (11M), 4-88
XQ, System Generation (11M), 4-88
XU, System Generation (11M), 4-89
XW, System Generation (11M), 4-89
YH, System Generation (11M), 4-90
YJ, System Generation (11M), 4-90
YL, System Generation (11M), 4-91
YV, System Generation (11M), 4-91
YZ, System Generation (11M), 4-92
Device controller dump, CDA, 3-51
common interrupt address, CDA, 3-51
Controller Request Block, CDA, 3-52
controller status, CDA, 3-52
Controller Table, CDA, 3-51
Device controller switch
See /CTL switch
Device control routine, I/O Operations, 4-31
Device driver, Command Language, 5-1
name, Command Language, 5-4
testing, Indirect, 2-63
without error logging, Error Logging, 1-3
Device I/O activity, Error Logging, 1-1
Device information
.PRSDV routine, I/O Operations, 4-16
Device information dump, CDA, 3-38
control processing flags, CDA, 3-39
device characteristics word, CDA, 3-39
Device Control Block, CDA, 3-42
I/O request packet, CDA, 3-42
Status Control Block, CDA, 3-42
terminal status word, CDA, 3-38
UCB extension, CDA, 3-42

Master Index-63
Device information table, Error Logging, 4-34
ALTPRINTNAME field, Error Logging, 4-35
DISPNAME field, Error Logging, 4-35
DRIVETYPE field, Error Logging, 4-36
MASSBUSFLAG field, Error Logging, 4-36
MNEMONIC field, Error Logging, 4-35
PRINTNAME field, Error Logging, 4-35
SIZE field, Error Logging, 4-36
Device interrupt entry point, Writing I/O Driver, 2-4
Device interrupt vector, Writing I/O Driver, 4-33
definition, Writing I/O Driver, 2-10
Device-level module, Error Logging, 4-11
adding to system, Error Logging, 4-25
addition to device information table, Error Logging, 4-34
bit-to-text translation, Error Logging, 4-30
coroutine, Error Logging, 4-30
device data declaration, Error Logging, 4-26
device name, Error Logging, 4-26
type, Error Logging, 4-30
EUNKNWN, Error Logging, 4-37
exit, Error Logging, 4-31
* flag, Error Logging, 4-28
intermodule variable, Error Logging, 4-29
local work variable, Error Logging, 4-29
MASSBUS, Error Logging, 4-33, 4-34
module statement, Error Logging, 4-26
Non-MASSBUS, Error Logging, 4-33, 4-34
notes, Error Logging, 4-31
procedure statement, Error Logging, 4-26
register definitions, Error Logging, 4-27
subpacket statement, Error Logging, 4-26

Device module
EML11, Error Logging, 4-8
ERK05, Error Logging, 4-8
ERK67, Error Logging, 4-8
ERL12, Error Logging, 4-8
ERM05, Error Logging, 4-8
ERM23, Error Logging, 4-8
ERM80, Error Logging, 4-8
ERP07, Error Logging, 4-8
ERP23, Error Logging, 4-8
ERP456, Error Logging, 4-8
ERS11, Error Logging, 4-9
ERS34, Error Logging, 4-9
ERX01, Error Logging, 4-9
ERX02, Error Logging, 4-9
ET0310, Error Logging, 4-9
ET1645, Error Logging, 4-9
ETA11, Error Logging, 4-9
ETC11, Error Logging, 4-9
ETS11, Error Logging, 4-9
ETSV05, Error Logging, 4-9
ETUX8, Error Logging, 4-9
ETU77, Error Logging, 4-9
MSCP60, Error Logging, 4-9
MSCP80, Error Logging, 4-9
MSCPAT, Error Logging, 4-9
MSCPE, Error Logging, 4-9
MSCPEN, Error Logging, 4-9
MSCPSD, Error Logging, 4-9
MSCPTO, Error Logging, 4-9
Device name field, I/O Operations, 2-34
Device name string descriptor, I/O Operations, 2-29
/DEVICE qualifier
PRINT command, Batch and Queue, 2-6
SHOW QUEUE command, Batch and Queue, 2-15
DEVICES command (MCR), MCR, 1-7, 3-60
definition, System Management, 10-16
elements, MCR, 3-60
example, System Management, 10-16
example, System Management, 10-16
format, System Management, 10-16
DEVICES command (VMR) (cont’d.)
fnotes, System Management, 10-17
parameter, System Management, 10-16
Device-specific QIO$ (LADRV), I/O
Drivers, 22-28
Device Statistics Block, System
Management, 17-31
Device statistics example
Resource Accounting, System
Management, 17-7
Device time-out entry point, Writing
I/O Driver, 2-4
DDT conditions, Writing I/O Driver, 4-11
Device unit failures, System
Management, 15-32
/DEV keyword
DISMOUNT command (MCR), MCR, 3-71
Dev parameter
ALUN$ macro, I/O Drivers, 1-17
DEVSM1, Error Logging, 4-7, 4-18,
4-24, 4-36
SLP, Error Logging, 4-36
/DEV switch, CDA, 2-5, 2-6
$$DEVT program section
reserved name, Task Builder, E-2
DEVUDA, Error Logging, 4-7
DF condition test argument, MACRO-11, 6-52
DFDI: routine
disconnect buffer from counter
interrupt (ICDRV/ISDRV), I/O Drivers, 19-56
DFDI: subroutine
disconnect contact interrupt
(UDDRV), I/O Drivers, 16-22
DFNB (cont’d.)
definition, I/O Operations, 1-2
FNBLK$ macro, I/O Operations,
2-31
OFNB$x macro, I/O Operations,
3-17
specifying, I/O Operations, 2-28
/DF switch
LBR utility, Utilities, 10-14
PIP utility, Utilities, 3-18
DFTI: routine
disconnect buffer from counter
interrupt, I/O Drivers, 19-59
DFTI: subroutine
disconnect timer interrupt (UDDRV),
I/O Drivers, 16-23
DFTY: circular buffer
terminal input (ICDRV/ISDRV),
I/O Drivers, 19-62
/DG switch
LBR utility, Utilities, 10-15
DH11, I/O Drivers, 3-31
remote (half-duplex), I/O Drivers,
3-33
remote line (TTDRV), I/O Drivers,
2-83
TTDRV, I/O Drivers, 2-81
DHV11 (TTDRV), I/O Drivers, 2-81
DI/DIW: subroutine
read contact sense fields (UDDRV),
I/O Drivers, 16-23
DI/DIW input routine
digital sense multiple field
(ICDRV/ISDRV), I/O Drivers,
19-47, 19-48
Diagnostic
buffer
p5 address, I/O Drivers, 13-19
p6 size, I/O Drivers, 13-19
XEDRV, I/O Drivers, 13-19
function
IO.DGN (DDDRV), I/O Drivers,
7-4
IO.XRC, I/O Drivers, 13-19,
13-20
IO.XTM, I/O Drivers, 13-19,
13-20
no data transfer (XEDRV), I/O
Drivers, 13-21
request block (XEDRV), I/O Drivers,
13-19
user-mode function, I/O Drivers,
1-34, 1-35

Master Index-65
Diagnostic error message, System Management, 10-94
Diagnostic exit, Task Builder, 10-54, 11-28
Diagnostic run
FORTRAN IV source file, Program Development, 7-3, 7-4
MACRO-11 source file, Program Development, 3-1, 3-2
Diagnostics Loader task
See DLD
DIC, Executive, 1-2
list, Executive, C-1
DID field in NAM block
CREATE operation, RMS-11 Macro, 5-10, 5-21
ENTER operation, RMS-11 Macro, 5-36, 5-37
ERASE operation, RMS-11 Macro, 5-41, 5-42
offset, RMS-11 Macro, 6-94
OPEN operation, RMS-11 Macro, 5-73, 5-77
PARSE operation, RMS-11 Macro, 5-87
REMOVE operation, RMS-11 Macro, 5-103, 5-105
RENAME operation, RMS-11 Macro, 5-109, 5-110, 5-111
RSTS/E, RMS-11 Macro, D-4
SEARCH operation, RMS-11 Macro, 5-116, 5-118
summary, RMS-11 Macro, 6-95
DIF condition test argument, MACRO-11, 6-52
DIFFERENCES command, Command Language, 4-72 to 4-77, 9-12
DIGITAL Command Language
See DCL
DIGITAL COMMAND LANGUAGE command, MCR, 1-8, 3-56
examples, MCR, 3-56
format, MCR, 3-56
Digital controller, universal, I/O Drivers, 16-1
Digital input (K-series), I/O Drivers, 23-16
DIGITAL Multinational Character Set, MCR, 3-8
Digital output (K-series), I/O Drivers, 23-20
DIGITAL Standard Editor
See EDT editor
Digital start event (K-series), I/O Drivers, 23-16
DIGO: subroutine
digital start event (K-series), I/O Drivers, 23-16
DINP: subroutine
digital input (K-series), I/O Drivers, 23-16
DIR$ macro, Executive, 1-6 I/O Drivers, 1-14, 1-15
example, I/O Drivers, 1-16
format, I/O Drivers, 1-15
DIR attribute, System Management, 12-31
Direct access
See also Random access error (UDDRV), I/O Drivers, 16-16
I/O page (UDDRV), I/O Drivers, 16-3
physical address (ICDRV/ISDRV), I/O Drivers, 19-74
Direct-access label, Indirect, 2-31
Direct assignment operator, MACRO-11, 3-1, 3-2, 3-9
statement, MACRO-11, 3-6 to 3-9, 3-13
Directive assembler, Program Development, 1-5
function, MACRO-11, 6-18 to 6-22
summary, MACRO-11, B-3 to B-8
Cancel Selective Marktime, System Generation (11M), 4-31
comment block, MACRO-11, 6-18
conditional assembly, MACRO-11, 6-50 to 6-54, 6-55, 6-56
conventions, Executive, 5-6
cross-reference, MACRO-11, 6-21, 6-22
data storage, MACRO-11, 6-23 to 6-39
DIC list, Executive, C-1
file control, MACRO-11, 6-57, 6-58
general assembler, MACRO-11, 6-1, 6-2, 6-3
summary table, MACRO-11, 6-1, 6-2, 6-3
Get Mapping Context, System Generation (11M), 4-28
immediate conditional assembly, MACRO-11, 6-56
Directive (cont’d.)
Indirect, Indirect, 1-4, 2-3, 2-30
Introduction, 4-2
function, Indirect, 2-3
summary, Indirect, 2-5
listing control, MACRO-11, 6-3 to 6-18
arguments for, MACRO-11, 6-10, 6-11, 6-12
macro, MACRO-11, 7-1
macros, Executive, 1-4
memory management, Executive, 3-1
data structures, Executive, 3-11
PLAS, System Generation (11M), 4-27
summary, Executive, 3-9
.NAME, Task Builder, 3-28
attributes, Task Builder, 3-28
example use, Task Builder, 3-29
ODL, Task Builder, 3-23, 3-24
.END, Task Builder, 3-23, 3-24
.FCTR, Task Builder, 3-23, 3-25
.NAME, Task Builder, 3-23
.PSECT, Task Builder, 3-23
.ROOT, Task Builder, 3-23, 3-24
processing, Executive, 1-2
program identification, MACRO-11, 6-16, 6-17
program sectioning, MACRO-11, 6-40 to 6-48
.PSECT, Task Builder, 3-29
rejecting, Executive, 1-2
Send/Receive By Reference, System Generation (11M), 4-28
summary, Executive, A-1
symbol control, MACRO-11, 6-48, 6-49
system, Program Development, 1-9, 1-10 System Generation (11M), 4-38
terminating, MACRO-11, 6-39
unconditional assembly, MACRO-11, 6-53
use, Program Development, 2-3, 2-5, 2-6
use of parentheses, Task Builder, 3-24
version number, MACRO-11, 6-16, 6-17
directive
macro
$C form, Executive, 1-6
directive
macro (cont’d.)
$ form, Executive, 1-5
naming conventions, Executive, 1-5
$S form, Executive, 1-6
Directive condition, I/O Drivers, 1-37
Directive Identification Code
See DIC
Directive Parameter Block
See DPB
Directive status, I/O Drivers, 1-37
Directive status code, Indirect, 2-15
list, Executive, B-1
Directive Status Word
See DSW
Directive summary
I/O related, I/O Operations, C-1
Directory, Command Language, 4-1
Introduction, 1-13
See also UFD
count
legal values, MCR, 3-95
maximum, MCR, 3-104
specifying, MCR, 3-104, 3-150
creating, Command Language, 4-10, 4-13
creating files, MCR, 2-2
data caching, MCR, 3-146, 3-207
DECnet
displaying, Command Language, 8-6
setting, Command Language, 8-4
default, Command Language, 4-2,
4-4 MCR, 3-212
displaying, Command Language, 4-82
setting, Command Language, 4-80
deleting, MCR, 2-2
displaying information, Command
Language, 4-26
file, I/O Operations, 5-2
format, MCR, 2-4
identification information
.PARSE routine, I/O Operations, 4-13
.PRSDI routine, I/O Operations, 4-16
library, MCR, 3-182
listing, Program Development, 3-9
login, MCR, 3-79
named, MCR, 2-4
nonamed, MCR, 2-4

Master Index-67
Directory (cont'd.)

numbered, MCR, 2-4

group number, MCR, 2-4

member number, MCR, 2-4

purging, Program Development, 3-9, 3-10

setting default, Command Language, 2-5

specification, MCR, 2-4

structure, I/O Operations, 5-3

syntax, MCR, 2-4

system, Command Language, 7-6, 8-7 MCR, 3-182
displaying, Command Language, 2-8, 8-6

setting, Command Language, 2-8, 8-3, 8-7

terminal

default, MCR, 2-7

wildcard context

See WDI field in NAM block

wildcard operation

See NB$WCH mask in FNB field

DIRECTORY command, Command Language, 4-26 to 4-34, 9-13

Introduction, 1-13, 3-5 to 3-6

DCL, Program Development, 3-9

examples, Command Language, 4-29 to 4-33

qualifiers, Command Language, 4-27 to 4-29

Directory entry

creating

See ENTER operation

deleting

See REMOVE operation

.REMOV routine, I/O Operations, 4-20

inserting

.ENTER routine, I/O Operations, 4-19

locating

.FIND routine, I/O Operations, 4-17

replacing

See RENAME operation

toggle, I/O Operations, 4-17

Directory identification

FNB (F1ACP), I/O Drivers, C-7

Directory operation, RMS-11

Introduction, 4-1 RMS-11 Macro, 3-5 RMS-11 User's Guide, 1-17

See also Operation

Directory operation macro, RMS-11

Macro, 1-2

declaring, RMS-11 Macro, C-2

Directory processing, RMS-11 Macro, 3-1

/DIRECTORY qualifier

BRU utility, Utilities, 7-15

Directory record

declare global symbol, Task Builder, A-2

end of global symbol, Task Builder, A-11

global symbol

end, Task Builder, A-11

internal symbol, Task Builder, A-24

relocation, Task Builder, A-12

Directory string

default

read, I/O Operations, 4-2

write, I/O Operations, 4-3

descriptor, I/O Operations, 2-29

routine

default, I/O Operations, 4-29

DIRECT symbol, Indirect, 2-18

/DIR keyword

FIX-IN-MEMORY command (VMR), System Management, 10-19

DIRSYM.MAC, Executive, 4-3

Disable AST Recognition directive, Executive, 5-64

Disable Checkpointing directive, Executive, 5-66

.DISABLE directive, Indirect, 2-46

/DISABLE subkeyword, MCR, 2-48

Disconnect
digital interrupt (ICDRV/ISDRV), I/O Drivers, 19-20

UNIBUS switch driver, I/O Drivers, 24-5

$DISCONNECT macro, RMS-11

Macro, 5-27

DISCONNECT operation, RMS-11

Introduction, 4-4 RMS-11 User's Guide, 1-15


DISCONNECT macro, RMS-11

Macro, 5-27

indexed files, RMS-11 User's Guide, 7-3

record stream, RMS-11 Macro, 4-9

Master Index—68
DISCONNECT operation (cont’d.)
relative files, RMS-11 User’s Guide, 4-8
sequential files, RMS-11 User’s Guide, 3-7
Disk, Command Language, 5-3 RMS-11 Macro, 3-1, 5-20, 5-37, 5-42, 5-77, 5-88, 5-104, 5-111, 5-117
See also Medium
ACP, Command Language, 5-39
backing up
BRU utility, Utilities, 7-1
disc utility, Utilities, 8-1
bad blocks
locating, Command Language, 5-14
block
random or sequential
IOX, System Management, 4-51
testing range display
IOX, System Management, 4-52
testing range for NFS volumes
IOX, System Management, 4-52
characteristics
displaying, MCR, 3-60
comparing
DSC utility, Utilities, 8-14
compressing
DSC utility, Utilities, 8-3
conventional backup
BRU utility, Utilities, 7-4
copying
BRU utility, Utilities, 7-1
disc utility, Utilities, 8-1
dismounting, MCR, 3-70
displaying free space
PIP utility, Utilities, 3-23
VFY utility, Utilities, 9-5
drive, RMS-11 Introduction, 2-1
examining data
DMP utility, Utilities, 11-1
exercising (IOX), System Management, 4-2
examples
NFS volume, System Management, 4-15
RL02, System Management, 4-10
Files-11
parameter commands
Disk
Files-11 (cont’d.)
IOX, System Management, 4-8
testing
IOX, System Management, 4-65
formatting
FLX utility, Utilities, 4-4
FMT utility, Utilities, 5-1
full backup
BRU utility, Utilities, 7-3
function code list, I/O Drivers, B-9
home block, MCR, 3-93
image backup
BRU utility, Utilities, 7-4
initializing, MCR, 3-99
BRU utility, Utilities, 7-2, 7-17
locating bad block
BAD utility, Utilities, 6-1
mounting
BRU utility, Utilities, 7-2
power failure, I/O Drivers, 1-43
preparing, Command Language, 5-9
private, Program Development, 1-12
public, Program Development, 1-12
recovering
lost block
VFY utility, Utilities, 9-7
space
DSC utility, Utilities, 8-3
restoring
BRU utility, Utilities, 7-1
selective backup
BRU utility, Utilities, 7-3
space recovery, System Generation (11M), 6-3, 6-14
spinning down, MCR, 3-71
structure, RMS-11 Introduction, 2-1
cylinder, RMS-11 Introduction, 2-1
platter, RMS-11 Introduction, 2-1
sector, RMS-11 Introduction, 2-1
track, RMS-11 Introduction, 2-1
swapping interval, System Generation (11M), 4-42
priority, System Generation (11M), 4-43
testing
selecting random testing
IOX, System Management, 4-51
skipping blocks

Master Index-69
Disk testing (cont’d.)
  IOX, System Management, 4-41
transferring data
  DSC utility, Utilities, 8-25
verifying, Utilities, 9-1
  block
  VFY utility, Utilities, 9-7
write-checking support, System Generation (TIM), 4-34
Disk-resident overlay, Task Builder, 3-1, 3-2
  loading, Task Builder, 4-1
remote access code, RMS-11 User’s Guide, B-1
  structure, Task Builder, 3-2
Disk Data Caching, System Management, 19-1
Data Cache Manager, System Management, 19-3
DCL commands, System Management, 19-6 to 19-10
  features, System Management, 19-1
I/O operations, System Management, 19-1
  including in system, System Management, 19-3
MCR commands, System Management, 19-10 to 19-16
  options, System Management, 19-7, 19-10
  region, System Management, 19-3
Disk data caching, System Management, 1-5
  including in system, System Management, 19-1
Disk driver, I/O Drivers, 5-1
  physical characteristic, I/O Drivers, 5-2
  programming hint, I/O Drivers, 5-12
  QIO$ macro, I/O Drivers, 5-12
  /DIS keyword
  SWITCH REGISTER command, MCR, 3-274
Disk file structure, I/O Operations, 5-1
Disk image, Task Builder, 2-8
  conventional task, Task Builder, 7-5
Disk Save and Compress Utility Program
  See DSC utility
Disk Volume Formatter Utility
  See FMT utility

Dismount (RC25), I/O Drivers, 5-14
DISMOUNT command, Command Language, 5-53 to 5-56, 9-13
DISMOUNT command (MCR), MCR, 1-6, 3-70
  error messages, MCR, 3-72
  examples, MCR, 3-72
  formats, MCR, 3-70
  keywords
    /DEV, MCR, 2-13, 3-71
    /LOCK, MCR, 3-71
    /TERM, MCR, 3-71
    /USER, MCR, 3-71
  parameters, MCR, 3-70
  shadow device, MCR, 3-70
Dismount Device Transaction Block, System Management, 17-29
Dispatching
  event-level, Error Logging, 4-16
Dispatch module, Error Logging, 4-3, 4-11
  subpacket definition, Error Logging, 4-69 to 4-71
Dispatch module path
  brief report, Error Logging, 4-15
  full report, Error Logging, 4-15
  no report, Error Logging, 4-15
  register report, Error Logging, 4-15
Dispatch procedure, Error Logging, 4-10
Displaced relocation
  internal, Task Builder, A-15
Display
  graphic driver, I/O Drivers, 21-1
  in LED lights (LSDRV), I/O Drivers, 17-21
IOX
  bad blocks list, System Management, 4-26
  commands as a category, System Management, 4-3
  continuing
    with PROCEED, System Management, 4-50
  status during exercise, System Management, 4-60
  signed integer (LSDRV), I/O Drivers, 17-4
DISPLAY command, System Management, 15-9
Display information (RMSDSP), RMS-11 Utilities, 5-1

Master Index—70
Display information (RMSDSP) (cont’d.)
allocation information, RMS-11
Utilities, 5-4
area information, RMS-11 Utilities, 5-4
attributes, RMS-11 Utilities, 5-4
eamples, RMS-11 Utilities, 5-5
key information, RMS-11 Utilities, 5-4
Displaying attributes (RMSDES)
See Attribute
$DISPLAY macro, RMS-11 Macro, 5-29
RSTS/E, RMS-11 Macro, D-4
Display mode, Indirect, 2-48
DISPLAY operation, RMS-11
Introduction, 4-2 RMS-11 Macro, 3-7 RMS-11 User’s Guide, 1-18
BDB requirement, RMS-11 Macro, 2-8
$DISPLAY macro, RMS-11 Macro, 5-29
I/O buffer requirement, RMS-11 Macro, 2-7
wildcard loop, RMS-11 Macro, 3-10
/DISPLAY qualifier
BRU utility, Utilities, 7-16
Distribution kit, System Generation (11S), 3-1
definition, System Generation (11M), 2-1
external volume label, System Generation (11M), 2-2
guidelines for copying, System Generation (11M), 2-4
inventory, System Generation (11M), 2-2
restriction, System Generation (11M), 2-2
types, System Generation (11M), 2-1
/DI switch
CMP utility, Utilities, 12-3
FLX utility, Utilities, 4-7
DISWP: subroutine
initiating synchronous digital input sweep
K-series, I/O Drivers, 23-17
LADRV, I/O Drivers, 22-12
$DIV (Integer divide), System Library, 3-2
Divide routine
divide ($DIV), System Library, 3-2
double-precision divide ($DDIV), System Library, 3-3
Division operator, MACRO-11, 3-2, 3-5
DJ11, I/O Drivers, 3-31
TDDRV, I/O Drivers, 2-81
DL11, I/O Drivers, 3-31
interrupt enable (half-duplex), I/O Drivers, 3-34
TDDRV, I/O Drivers, 2-81
DL11-E
asynchronous interface (communication driver), I/O Drivers, 12-2
remote line (TDDRV), I/O Drivers, 2-83
serial asynchronous interface (communication driver), I/O Drivers, 12-2
DLD, System Management, 15-34
how to use, System Management, 15-34 to 15-37
.DLFNB routine, delete file by filename block, I/O Operations, 4-30
DLOG$ directive, Executive, 5-62
DLON$ directive, Executive, 5-62
/DL switch, Task Builder, 10-15
DLX (XEDRV)
definition, I/O Drivers, 13-23
incompatibility, I/O Drivers, 13-21
DLXDF$ macro (XEDRV), I/O Drivers, 13-4
DM11-BB, I/O Drivers, 3-31
DMAP attribute, System Management, 12-32
DMC11 (communication driver)
message send, I/O Drivers, 12-13
powerfail, I/O Drivers, 12-12
serial synchronous interface, I/O Drivers, 12-2
synchronous line interface, I/O Drivers, 12-3
DMO
See DISMOUNT command
DMPALL, Error Logging, 4-8
/DMP switch, CDA, 2-5, 2-6
DMP utility
command line, Utilities, 11-2
erro message, Utilities, 11-12
eample, Utilities, 11-8
mode
device, Utilities, 11-2
file, Utilities, 11-1
switch, Utilities, 11-3

Master Index-71
$DMUL (Double-precision multiply),
  System Library, 3-3
DNA (XEDRV), I/O Drivers, 13-23
DNA field in FAB, RMS-11 Macro, 3-3
CREATE operation, RMS-11 Macro, 5-10
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-41
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-73
PARSE operation, RMS-11 Macro, 5-87
REMOVE operation, RMS-11 Macro, 5-103
RENAME operation, RMS-11 Macro, 5-109, 5-110
summary, RMS-11 Macro, 6-35
DNS field in FAB, RMS-11 Macro, 3-3
CREATE operation, RMS-11 Macro, 5-10
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-41
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-73
PARSE operation, RMS-11 Macro, 5-87
REMOVE operation, RMS-11 Macro, 5-103
RENAME operation, RMS-11 Macro, 5-109, 5-110
summary, RMS-11 Macro, 6-35
/DNS switch
FLX utility, Utilities, 4-7
DOL/DOLW: subroutine latch or unlatch fields (UDDRV), I/O Drivers, 16-24
DOL/DOLW routine multiple bistable digital output field (ICDRV/ISDRV), I/O Drivers, 19-45, 19-46
Dollar sign ($), Debugging, 2-6, 5-1, 9-10
DCL prompt, Command Language, 3-14
in file specification, MCR, 2-7
ODT, Program Development, 5-6, 5-7, 5-8

Dollar sign ($) (cont’d.)
specifying directory, MCR, 3-182
DOM/DOMW
  momentary digital output multiple field (ICDRV/ISDRV), I/O Drivers, 19-49
DOM/DOMW: subroutine
  pulse fields (UDDRV), I/O Drivers, 16-25
'D operator, MACRO-11, 3-5, 6-32
DOS-11
device support
  FLX utility, Utilities, 4-1
file copying
  FLX utility, Utilities, 4-3
volume
deleting
  FLX utility, Utilities, 4-10
directory listing
  FLX utility, Utilities, 4-8
initializing
  FLX utility, Utilities, 4-10
/DO switch
FLX utility, Utilities, 4-4
DOSWP: subroutine
  initiating synchronous digital output sweep
    K-series, I/O Drivers, 23-19
    LADRV, I/O Drivers, 22-14
Dot (.) indicator
See Register indicator
Double ASCII character indicator,
  MACRO-11, 3-2
Double-precision divide ($DDIV),
  System Library, 3-3
Double-precision multiply ($DMUL),
  System Library, 3-3
Double-precision routine, System Library, 3-2
Double quote character,
  MACRO-11, 6-25
Double space
  TTDRV, I/O Drivers, 2-75
  VFC (half-duplex), I/O Drivers, 3-27
  VFC (LPDRV), I/O Drivers, 10-6
DOUT: subroutine
digital output (K-series), I/O Drivers, 23-20
Down-line loading, System Generation (11S), 1-4
DP11 (communication driver)
  baud rate, I/O Drivers, 12-3

Master Index-72
DP11 (communication driver) (cont'd.)
serial synchronous interface, I/O Drivers, 12-2
synchronous line interface, I/O Drivers, 12-3

DPB, Executive, 1-2 I/O Drivers, 1-12, 1-14, 1-15 Writing I/O Driver, 2-5
description, Writing I/O Driver, 4-6
diagnostic, I/O Drivers, 1-35
diagnostic word data, I/O Drivers, 1-34
dynamic creation, I/O Drivers, 1-14
example, I/O Drivers, 1-12
source of I/O packet information, Writing I/O Driver, 2-9

$DPB$$, Executive, 1-6

DP command
EDI utility, Program Development, 2-17 Utilities, 2-14, 2-31

Dp parameter
device-specific function (UDDRV), I/O Drivers, 16-5
ICDRV/ISDRV, I/O Drivers, 19-10
IO.MLO function, I/O Drivers, 19-17
IO.MSO function, I/O Drivers, 19-16

/DPRO keyword

SET command (MCR), MCR, 3-213

DQ11 (communication driver)
baud rate, I/O Drivers, 12-3
serial synchronous interface, I/O Drivers, 12-2
sync character, I/O Drivers, 12-3
synchronous line interface, I/O Drivers, 12-3

DR11-K digital I/O interface, I/O Drivers, 23-2
D register, Debugging, 2-7, 5-4, 6-2
DRERR$ macro
I/O completion code, I/O Drivers, 1-37

DRGIN.MAC, Executive, 1-24
Drive, RMS-11 Introduction, 2-1

Driver
changing code, Writing I/O Driver, 3-3
debugging, Debugging, 9-2
See also Debugging
definition, System Generation (11M), 1-4
device, Command Language, 5-1
function, Writing I/O Driver, 1-2

Driver (cont'd.)
loadable, System Generation (11M), 4-30
See also Loadable driver
default to, System Generation (11M), 4-30
partition for, System Generation (11M), 5-10, 5-11
task-build, System Generation (11M), 5-9
multicontroller, Writing I/O Driver, 2-10
Non-MASSBUS NPR, Writing I/O Driver, B-1
postinitiation service, Writing I/O Driver, 2-11
preinitiation processing of, Writing I/O Driver, 2-11
process-like characteristic, Writing I/O Driver, 2-13
property, Writing I/O Driver, 1-2
rebuilding and reincorporating after debugging, Writing I/O Driver, 3-29 to 3-30
resident
See also Resident driver
role of
in RSX-11M, Writing I/O Driver, 2-5
Software Performance Report (SPR) support, Writing I/O Driver, 3-4
SYSGEN support, Writing I/O Driver, 3-1
terminal, System Generation (11M), 4-49
type, Writing I/O Driver, 1-1
user-written, System Generation (11M), 4-33

Driver code
changing, Writing I/O Driver, 3-3
eample, Writing I/O Driver, 6-4 to 6-9
overview, Writing I/O Driver, 3-4

Driver data base
See Data base

Driver Dispatch Table
See DDT

Driver entry point
cancel I/O, Writing I/O Driver, 2-4, 4-10
device interrupt, Writing I/O Driver, 2-4
Driver entry point (cont'd.)
device time-out, Writing I/O Driver, 2-4, 4-11
I/O initiator, Writing I/O Driver, 2-4, 2-12, 4-10
power failure, Writing I/O Driver, 2-4, 4-11
Driver global symbol
$xxINP, Writing I/O Driver, 3-5
$xxINT, Writing I/O Driver, 3-5
$xxOUT, Writing I/O Driver, 3-5
$xxTBL, Writing I/O Driver, 3-5
Drive serial numbers
significant numbers, Error Logging, 8-1
DRQIO module
service performed in processing QIO, Writing I/O Driver, 2-11
DRS11, I/O Drivers, 19-1
addressing, I/O Drivers, 19-8
sample configuration, I/O Drivers, 19-7
DRS: subroutine
synchronous digital input sweep
(LSDRV), I/O Drivers, 17-15
DRV11 digital I/O interface, I/O Drivers, 23-2
/DRV keyword
OPENREGISTER command, MCR, 3-166
.DSABL directive, MACRO-11, 6-19, 6-20, 6-21
arguments for, MACRO-11, 6-19, 6-20, 6-21
/DSABLE qualifier, MACRO-11, 6-19, 6-20, 6-21
DSAR$S directive, Executive, 5-64
I/O Drivers, 1-11
DSCP$S directive, Executive, 5-66
DSC utility
bad block information, Utilities, 8-9
command line, Utilities, 8-5
parameter, Utilities, 8-5
stand-alone, Utilities, 8-21
data transfer, Utilities, 8-24
device support, Utilities, 8-4
error message, Utilities, 8-28
file label, Utilities, 8-8
initiating, Utilities, 8-5
operation overview, Utilities, 8-19
stand-alone
command line, Utilities, 8-21
DSC64K.SYS, Utilities, 8-23
CNF and, Utilities, 8-24
DSCSYS.SYS, Utilities, 8-19
DSC utility (cont'd.)
switch, Utilities, 8-6
on-line, Utilities, 8-9
stand-alone
DSC64K.SYS, Utilities, 8-24
DSCSYS.SYS, Utilities, 8-20
summary, Utilities, 8-7, 8-20
task build, System Generation (11M), 6-13
terminating, Utilities, 8-5
using to backup target system disk,
System Generation (11M), 6-19
DSP1M1
subpacket definition, Error Logging, 4-72
DSP1P1
subpacket definition, Error Logging, 4-72
DSP2M1
subpacket definition, Error Logging, 4-73
DSP2P1
subpacket definition, Error Logging, 4-73
DSP3M1
subpacket definition, Error Logging, 4-73
DSP3P1
subpacket definition, Error Logging, 4-73
DSP4M1
subpacket definition, Error Logging, 4-74
DSP4P1
subpacket definition, Error Logging, 4-74
DSP5M1
subpacket definition, Error Logging, 4-74
DSP5P1
subpacket definition, Error Logging, 4-74
DSP6M1
subpacket definition, Error Logging, 4-74
DSP6P1
subpacket definition, Error Logging, 4-74
DSP7M1
subpacket definition, Error Logging, 4-75

Master Index-74
DSP7P1
subpacket definition, Error Logging, 4-75
D-space
See Data space
DSPPAT option, Task Builder, 12-14
DSS11, I/O Drivers, 19-1
addressing, I/O Drivers, 19-8
configuration
hardware, I/O Drivers, 19-1
sample, I/O Drivers, 19-7
/DS switch, MACRO-11, 8-6
$DSW, Executive, 1-2
DSW, Executive, 1-2
DSW$ status code return, I/O Drivers, 1-37
DSW register, Debugging, 5-3
See also W register
D symbolic argument, MACRO-11, 6-41
DT07 UNIBUS switch, I/O Drivers, 24-1
DTE, System Management, 1-3, 9-1
DTP field in KEY block
CREATE operation, RMS-11 Macro, 5-18
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-67
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-75
DU11 (communication driver)
serial synchronous interface, I/O Drivers, 12-2
sync character, I/O Drivers, 12-3
synchronous line interface, I/O Drivers, 12-3
Dummy argument, MACRO-11, 7-2
Dump
See also PMD
See also Snapshot dump
Dumping file
DMP utility, Utilities, 11-1
/DUMP switch, CDA, 2-5, 2-6
DUP11 (communication driver)
serial synchronous interface, I/O Drivers, 12-2
synchronous line interface, I/O Drivers, 12-4
Duplicate key, RMS-11 Introduction, 3-10 RMS-11 User’s Guide, 6-8
Duplicate key (cont’d.)
See also XB$DUP mask in FLG field
DUPLICATES attribute
RMSDES utility, RMS-11 Utilities, 2-40, 2-42
area section, RMS-11 Utilities, 2-44
DV.UMD bit
UCB, set for diagnostic, I/O Drivers, 1-34
DV field in KEY block
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-68
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-75
DVI field in NAM block, RMS-11 Macro, 3-3
CREATE operation, RMS-11 Macro, 5-10, 5-21
ENTER operation, RMS-11 Macro, 5-36, 5-37
ERASE operation, RMS-11 Macro, 5-41, 5-42
offset, RMS-11 Macro, 6-94
OPEN operation, RMS-11 Macro, 5-73, 5-77
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-103, 5-105
RENAME operation, RMS-11 Macro, 5-109, 5-110, 5-111
SEARCH operation, RMS-11 Macro, 5-116
summary, RMS-11 Macro, 6-74
$DVMSG routine, Writing I/O Driver, 5-8
/DV switch
VFY utility, Utilities, 9-5
Dwell parameter
XRATE: subroutine
K-series, I/O Drivers, 23-30
LADRV, I/O Drivers, 22-26
Dynamic common region
checkpointing, System Management, 14-2
shuffling, System Management, 14-4
Dynamic region, Executive, 3-5 Task Builder, 5-40 to 5-44
creating, Executive, 5-50
Dynamic storage region
See Pool
DYNAMIC TABLE statement, Error Logging, 5-37

DZ11

half-duplex remote line, I/O Drivers, 3-33
serial line multiplexer, I/O Drivers, 3-31
with modem, I/O Drivers, 3-33

TTDRV
remote serial line, I/O Drivers, 2-83
serial line multiplexer, I/O Drivers, 2-82
serial line with modem, I/O Drivers, 2-83

E

E1134, Error Logging, 4-8
E1144, Error Logging, 4-8
E117X, Error Logging, 4-8
E11XX, Error Logging, 4-8
EAE, System Generation (11M), 4-13
/E/A switch, Task Builder, 10-16

EBDIC
character set, MCR, 3-153
/EBC keyboard
SET command (MCR), MCR, 3-215
SET command (VMR), System Management, 10-57
Echo, Command Language, 3-10
Introduction, 1-6
Echo, multiple (half-duplex), I/O Drivers, 3-16
/ECHO keyword
SET command (MCR), MCR, 3-216
SET command (VMR), System Management, 10-58
Echo loops, System Management, 9-4
E command, Debugging, 2-9, 6-2, 6-3
ED command
EDI utility, Utilities, 2-32
EDIT/ED command, Command Language, 4-23, 9-14
EDIT/editor command, Command Language, 4-23, 9-14
K52, Command Language, 4-24
KED, Command Language, 4-24
SOS, Command Language, 4-23
TECO, Command Language, 4-23
EDIT/EDT command, Command Language, 4-16, 9-14
EDIT/SLP command, Command Language, 4-20, 9-14

EDIT command, Command Language, 4-15, 4-16, 9-14
Introduction, 3-6
/OUTPUT qualifier, Introduction, 5-8

Editing
file, Command Language, 4-16, 4-23
/EDIT keyword
SET command (MCR), MCR, 3-217
SET command (VMR), System Management, 10-58

Editor
EDI, Command Language, 4-23
EDI utility, Utilities, 2-1
EDT, Command Language, 4-16
K52, Command Language, 4-24
KED, Command Language, 4-24
SOS, Command Language, 4-23
TECO, Command Language, 4-23
text, Program Development, 1-3, 1-4
See also EDI utility
See also EDT editor

EDI utility, Command Language, 4-23
Program Development, 1-3, 1-4
abbreviating
strings, Program Development, 2-16
altering
text, Program Development, 7-5
asterisk (*), Program Development, 2-10
block mode, Program Development, 1-3

CHANGE command, Program Development, 7-5
character erase, Utilities, 2-6
command
basic, Utilities, 2-9
detailed reference summary, Utilities, 2-27
device output, Utilities, 2-26
file I/O, Utilities, 2-25
function summary, Utilities, 2-20
locator, Utilities, 2-22
macro, Utilities, 2-25
set up, Utilities, 2-21
summary, Utilities, 2-10
text manipulation, Utilities, 2-23 to 2-24
text modification, Utilities, 2-23 to 2-24
commands, Program Development, 2-12 to 2-18
EDI utility
commands (cont’d.)
   AP command, Program
      Development, 2-17
   BEGIN, Program Development,
      2-14
   CHANGE, Program
      Development, 2-16
   DP command, Program
      Development, 2-17
   END, Program Development,
      2-14
EXIT
   closing file, Program
      Development, 2-10
   creating new file, Program
      Development, 2-12,
      2-18
INSERT, Program Development,
      2-18
LIST, Program Development,
      2-13
LOCATE, Program Development,
      2-14, 2-18
PLOCATE, Program
      Development, 2-15
RENEW, Program Development,
      2-15
TYPE, Program Development,
      2-13, 2-14
   control mode, Utilities, 2-3
convention
   command, Utilities, 2-8
   terminal, Utilities, 2-6
correcting
   source file error, Program
      Development, 7-4, 7-5
   task error, Program Development,
      4-9, 7-9
creating
   file, Program Development, 2-9,
      2-10, 2-12, 7-2, 7-3
deleting
   characters, Program
      Development, 2-17
   lines, Program Development,
      2-17
displaying text, Program
      Development, 2-13
efficiency, Program Development, 2-16
error message, Utilities, 2-56

EDI utility
error message (cont’d.)
   command level information,
      Utilities, 2-57
   fatal, Utilities, 2-64
   file access, Utilities, 2-60
   requiring EDI restart, Utilities,
      2-61
ESCAPE key, Program Development,
      2-13
example, Utilities, 2-51
EXIT command
   closing file, Program
      Development, 7-7
   creating new file, Program
      Development, 7-5
file specification
   default, Utilities, 2-2
   format, Utilities, 2-2
   initiating (invoking), Utilities, 2-1
input
   initial, Program Development,
      2-9, 7-3
   terminating, Program
      Development, 2-10
INSERT command, Program
      Development, 7-7
inserting
   characters, Program
      Development, 2-17
   lines, Program Development,
      2-9, 2-18
insert mode, Program Development,
      2-18
line erase, Utilities, 2-7
LOCATE command, Program
      Development, 7-4, 7-5, 7-7
locating text, Program Development,
      2-14, 2-15, 7-4, 7-5
paging, Utilities, 2-5
positioning line pointer, Program
      Development, 2-14, 2-15
RETURN key, Program Development,
      2-9, 2-10, 2-13, 2-18, 7-7
   Utilities, 2-7
slash (/), Program Development,
      2-16
text access mode, Utilities, 2-3
   block mode, Utilities, 2-4
   line-by-line mode, Utilities, 2-4
text file
   creating, Utilities, 2-2
   input, Utilities, 2-6
   output, Utilities, 2-6

Master Index-77
EDI utility
text file (cont’d.)
  secondary, Utilities, 2-6
text modification, Program
  Development, 2-16
usage notes, Utilities, 2-50
$EDMSG (Edit message), System
  Library, 6-5
EDT editor, Command Language, 4-16
  Introduction, 2-2
  Program
  Development, 1-3
Best reference, EDT Editor Manual
EDT field in DAT block
DISPLAY operation, RMS-11 Macro, 5-32
offset, RMS-11 Macro, 6-14
OPEN operation, RMS-11 Macro, 5-81
summary, RMS-11 Macro, 6-18
EDT field in NAM block
RSX-11, RMS-11 Macro, D-4
EDTINLEDT file, Introduction, 2-2
E error, MACRO-11, 6-39
summary, MACRO-11, D-3
Efn parameter (cont’d.)
general (TTDRV), I/O Drivers, 2-10
  IO.WAL function (TTDRV), I/O
    Drivers, 2-47
  IO.WBT function (TTDRV), I/O
    Drivers, 2-49
  IO.WLB function, I/O Drivers, 1-32
  IO.WVB function, I/O Drivers, 1-33
  IO.XCL function (XEDRV), I/O
    Drivers, 13-17
  IO.XIN function (XEDRV), I/O
    Drivers, 13-10
  IO.XOP function (XEDRV), I/O
    Drivers, 13-6
  IO.XRC function (XEDRV), I/O
    Drivers, 13-14
  IO.XSC function (XEDRV), I/O
    Drivers, 13-7
  IO.XTL function (XEDRV), I/O
    Drivers, 13-18
  IO.XTM function (XEDRV), I/O
    Drivers, 13-11
QIO$ basic syntax, I/O Drivers, 1-7
SF.GMC function (TTDRV), I/O
  Drivers, 2-51
WTSE$ macro, I/O Drivers, 1-25
EIS, System Generation (11M), 4-14
Elapsed time between events (LSDRV), I/O
  Drivers, 17-7
ELAWS$ directive, Executive, 5-69
Element
  extended arithmetic
    specifying, Task Builder, 11-16
ELGF$ directive, Executive, 5-71
ELI, Error Logging, 1-1
Append switch, Error Logging, 2-3, 2-8
  Delete subswitch, Error Logging, 2-3, 2-8
  /AP switch, Error Logging, 2-3, 2-8
Backup switch, Error Logging, 2-3, 2-9
  /BA switch, Error Logging, 2-3, 2-9
error messages
  console terminal, Error Logging, 2-11
  user terminal, Error Logging, 2-11
file naming switch, Error Logging, 2-8
Hard error limit switch, Error Logging, 2-3, 2-7
/HL switch, Error Logging, 2-3, 2-7

Master Index—78
ELI
installing
privileged, Error Logging, 2-1
startup command file, Error Logging, 2-1
invoking, Error Logging, 2-2
privileged, Error Logging, 2-1
Limit switch, Error Logging, 2-3, 2-6
/LIM switch, Error Logging, 2-3, 2-6
/LOG switch, Error Logging, 2-2, 2-3, 2-4, 2-5, 2-8
Log switch, Error Logging, 2-3, 2-4, 2-5, 2-8
error limiting and, Error Logging, 2-2
New version subswitch, Error Logging, 2-3, 2-6
No limit subswitch, Error Logging, 2-3, 2-5, 2-6
No limit switch, Error Logging, 2-3, 2-6
/NOLIM switch, Error Logging, 2-3, 2-6
/NOLOG switch, Error Logging, 2-4
No log switch, Error Logging, 2-4
nonprivileged command, Error Logging, 2-2
privileged commands, Error Logging, 2-2
Reset switch, Error Logging, 2-4, 2-7
/RE switch, Error Logging, 2-7
/R switch, Error Logging, 2-4
Show switch, Error Logging, 2-2, 2-4, 2-10, 2-11
/SH switch, Error Logging, 2-4, 2-10, 2-11
/SL switch, Error Logging, 2-4, 2-7
Soft error limit switch, Error Logging, 2-4, 2-7
subswitch summary, Error Logging, 2-3
switch functions, Error Logging, 2-1
switch summary, Error Logging, 2-3
Switch switch, Error Logging, 2-4, 2-8
Delete subswitch, Error Logging, 2-4, 2-9
New version subswitch, Error Logging, 2-4, 2-9
/SW switch, Error Logging, 2-4, 2-8
using ERRLOG defaults, Error Logging, 2-2

ELI command
reset limit, Error Logging, 1-4
Eliminate Address Window directive, Executive, 5-69
Eliminate Group Global Event Flags directive, Executive, 5-71
Eliminate Virtual Terminal directive, Executive, 5-73
/ELIM keyword
CLI command, MCR, 3-48
FLA command, MCR, 3-77
ELI show switch
QIO count, Error Logging, 2-11
ELI switches
type
display, Error Logging, 2-2
file naming, Error Logging, 2-2
limiting, Error Logging, 2-2
logging, Error Logging, 2-2
Ellipsis
EDI utility, Program Development, 2-16
/EL switch, Task Builder, 10-17
ELVT$ directive, Executive, 5-73
Emit Status directive, Executive, 5-75
EML11, Error Logging, 4-8
EMST$ directive, Executive, 5-75
EMT 377 instruction, Executive, 1-1
EMT trap instruction, Debugging, 8-5, 9-5
.ENABLE directive, MACRO-11, 6-19, 6-20, 6-21
arguments for, MACRO-11, 6-19, 6-20, 6-21
Enable AST Recognition directive, Executive, 5-76
Enable Checkpointing directive, Executive, 5-77
FENABLE directive, Indirect, 2-47
FENABLE GLOBAL directive, Indirect, 2-4
/ENABLE keyword, MCR, 3-49
/ENABLE qualifier, MACRO-11, 8-8
ENABLE statement, Error Logging, 5-40
ENAR$S directive, Executive, 5-76
I/O Drivers, 1-11
Encoding function, Error Logging, 5-19
ENCP$S directive, Executive, 5-77
/ENDC directive, MACRO-11, 6-51
END command
EDI utility, Program Development, 2-14 Utilities, 2-31

Master Index-79
.END directive, Indirect, 2-4, 2-51 MACRO-11, 6-39 Program Development, 2-7, 3-4, 4-3, 4-8 Task Builder, 3-23, 3-24 summary, Task Builder, 3-50 .ENDM directive, MACRO-11, 7-2 End-of-block indicator sequential files, RMS-11 User's Guide, 3-2 End-of-file See also EOF label (tape), I/O Operations, G-9 READ$ macro, I/O Operations, 3-36 sequential files, RMS-11 User's Guide, 3-2 End of global symbol directory, Task Builder, A-11 End-of-module record, Task Builder, A-24, A-30 record format, Task Builder, A-32 End-of-tape See EOT End-of-volume label (tape), I/O Operations, G-10 End-of-volume label (tape), I/O Operations, G-8 .ENDR directive, MACRO-11, 7-19 /EN switch, MACRO-11, 8-6 PIP utility, Utilities, 3-19 QUE /DEL command, Batch and Queue, 2-10 QUE /LI command, Batch and Queue, 2-16 ENTER key, Command Language, 3-16 $ENTER macro, RMS-11 Macro, 5-35 RSTS/E, RMS-11 Macro, D-4 ENTER operation, RMS-11 Introduction, 4-1 RMS-11 Macro, 3-5 BDB requirement, RMS-11 Macro, 2-8 $ENTER macro, RMS-11 Macro, 5-35 I/O buffer requirement, RMS-11 Macro, 2-7 IFAB requirement, RMS-11 Macro, 2-5 wildcard loop, RMS-11 Macro, 3-10 .ENTER routine, insert directory entry, I/O Operations, 4-19 Entry point, Program Development, 6-5, 6-6 Entry point (cont'd.) definition, program, MACRO-11, 6-39 symbol, MACRO-11, 6-49 table, Program Development, 6-5, 6-9, 6-10 zero entry points, Program Development, 6-7 Entry point name, Command Language, 6-28 removing, Command Language, 6-43 Entry point table See EPT Entry procedure, Error Logging, 4-10 /ENTRY qualifier DELETE command, Batch and Queue, 2-10 SHOW QUEUE command, Batch and Queue, 2-16 EOF IO.SPF function (CTDRV), I/O Drivers, 9-7 /EOF switch PIP utility, Utilities, 3-21 EOF symbol, Indirect, 2-10 EOS /EO switch RMSCNV utility, RMS-11 Utilities, 4-8 /EOS switch logical (CTDRV), I/O Drivers, 9-6, 9-8 read (PRDRV), I/O Drivers, 18-5 EOX /EO switch LBR utility, Utilities, 10-16 EOY breakpoints, System Generation (11M), 3-8, 4-8 /EO switch EPKDF.MAC, Error Logging, 4-16 EPKDF$, CDA, B-13, C-17 EPMDF$ macro (XEDRV), I/O Drivers, 13-4 /EP switch LBR utility, Utilities, 10-16 EPT, Command Language, 6-28 EQ condition test argument, MACRO-11, 6-51 Equal sign (=), Command Language, 3-15 DCL, Command Language, 1-9 Equal sign command (=), Debugging, 2-8, 9-11 ZAP utility, Utilities, 15-17

Master Index-80
Equal sign operator (=)
See Operator

ER$CUR
DELETE operation, RMS-11 User’s Guide, 4-7
TRUNCATE operation, RMS-11 User’s Guide, 3-12
UPDATE operation, RMS-11 User’s Guide, 3-12, 4-12, 7-6

ER$DEL
FIND operation, RMS-11 User’s Guide, 4-8, 7-3
GET operation, RMS-11 User’s Guide, 4-11, 7-5

ER$EOF
FIND operation, RMS-11 User’s Guide, 3-8, 4-8, 7-3
GET operation, RMS-11 User’s Guide, 3-10
PUT operation, RMS-11 User’s Guide, 3-11

ER$-family symbol
declaring, RMS-11 Macro, C-3

ER$IOP
UPDATE operation, RMS-11 User’s Guide, 3-12

ER$KEY
FIND operation, RMS-11 User’s Guide, 3-8
GET operation, RMS-11 User’s Guide, 3-10

ER$MRN
FIND operation, RMS-11 User’s Guide, 4-8
GET operation, RMS-11 User’s Guide, 4-10

ER$NEF
PUT operation, RMS-11 User’s Guide, 3-10

ER$RAC
PUT operation, RMS-11 User’s Guide, 3-10

ER$REX
PUT operation, RMS-11 User’s Guide, 4-11

ER$RFA
FIND operation, RMS-11 User’s Guide, 3-8, 7-3

ER$RFA (cont’d.)
GET operation, RMS-11 User’s Guide, 3-10, 7-5

ER$RFM
UPDATE operation, RMS-11 User’s Guide, 3-12

ER$RLK
and shared access, RMS-11 User’s Guide, 2-10

ER$RNF
FIND operation, RMS-11 User’s Guide, 4-8, 7-3
GET operation, RMS-11 User’s Guide, 4-10, 4-11, 7-5

ER$RSZ
UPDATE operation, RMS-11 User’s Guide, 3-12

Erase (tape driver), I/O Drivers, 8-8
data security, I/O Drivers, 8-8

ERASE command
EDI utility, Utilities, 2-32
$EREASE directive, Indirect, 2-52
$EREASE macro, RMS-11 Macro, 5-40
example, RMS-11 Macro, 7-11

ERASE operation, RMS-11 Introduction, 4-2
RMS-11 Macro, 3-7 RMS-11 User’s Guide, 1-18
BDB requirement, RMS-11 Macro, 2-8
$EREASE macro, RMS-11 Macro, 5-40
I/O buffer requirement, RMS-11 Macro, 2-7
IFAB requirement, RMS-11 Macro, 2-5
remote access, RMS-11 User’s Guide, 8-2
wildcard loop, RMS-11 Macro, 3-9, 3-10
nonselective, RMS-11 Macro, 3-10
selective, RMS-11 Macro, 3-11
E register, Debugging, 2-7, 5-4
ERK05, Error Logging, 4-8
ERK67, Error Logging, 4-8
ERL12, Error Logging, 4-8
ERLCFL Report Messages, Error Logging, 5-44
ERLCNF Report Messages, Error Logging, 3-22
fatal, Error Logging, 3-22
information, Error Logging, 3-27
ERLRPT Report Messages, Error Logging, 3-28

Master Index—81
ERLRPT Report Messages (cont'd.)
- control file, Error Logging, 3-28
- /ERL switch
- FMT utility, Utilities, 5-8
- ERM05, Error Logging, 4-8
- ERM23, Error Logging, 4-8
- ERM23 device-level module, Error Logging, 4-37 to 4-49
- ERM80, Error Logging, 4-8
- ERP07, Error Logging, 4-8
- ERP23, Error Logging, 4-8
- ERP456, Error Logging, 4-8
- ERR attribute, System Management, 12-31
- ERRCTL symbol, Indirect, 2-11
- ERRDEFINE.CFS, Error Logging, 3-20
- ERRLOG, Error Logging, 1-1
  - backup file, Error Logging, 1-4, 2-9
  - defaults, Error Logging, 2-2
  - ELI commands, Error Logging, 1-3, 1-4
  - installing privileged, Error Logging, 2-1
  - log file, Error Logging, 1-4
  - mandatory installation, Error Logging, 2-1
- ERRLOG.ULB, Error Logging, 3-2
- ERRLOGGETC.ULG, Error Logging, 4-36
- ERRLOG Messages, Error Logging, 2-12
- ERRNUM symbol, Indirect, 2-12
- Error
  - See also Message ADS: subroutine, I/O Drivers, 17-32
  - assembly-time, RMS-11 Macro, 2-20
  - condition (PDRV/PDRV), I/O Drivers, 18-4
  - data
    - ICAR register, I/O Drivers, 19-73
    - ICSR register, I/O Drivers, 19-73
  - DCL, Command Language, 1-14
  - detection, Debugging, A-1
  - hard receive (TDRV), I/O Drivers, 2-18, 2-77
  - ICDRV/ISDRV, I/O Drivers, 19-70
  - error codes, Debugging, 9-6, A-2
- Error (cont'd.)
  - exit TKB command, Task Builder, 4-11
  - facility codes, Debugging, 9-6
  - fatal, RMS-11 Macro, 2-15
  - handler, RMS-11 Macro, 2-17
  - handling
    - $ALERR entry, Task Builder, 4-11
    - for autoload, Task Builder, 4-11
    - for manual load, Task Builder, 4-11
  - overlay, Task Builder, 4-11
  - hardware, Ethernet, I/O Drivers, 13-3
  - interrupt disable (ICDRV/ISDRV), I/O Drivers, 19-32
  - log file, MCR, 3-273
  - message, MCR, A-1 to A-35
  - messages, Task Builder, H-1 to H-11
  - recovery
    - CTDRV, I/O Drivers, 9-6
    - ICDRV/ISDRV, I/O Drivers, 19-70
  - reporting
    - disable (ICDRV/ISDRV), I/O Drivers, 19-32
    - hardware enable (ICDRV/ISDRV), I/O Drivers, 19-33
    - retry (tape driver), I/O Drivers, 8-14
    - select (tape driver), I/O Drivers, 8-14
    - serial line (ICDRV/ISDRV), I/O Drivers, 19-71
  - task image, Debugging, A-2
  - T-bit, Debugging, 9-4
  - /ERROR.LIMIT qualifier, Task Builder, 11-28
- Error code, RMS-11 User's Guide, 3-7, 4-7, 7-2
- assembler
  - summary, MACRO-11, D-1 to D-5
  - block locking, I/O Operations, 2-48
  - definitions, CDA, D-1
  - file operations, I/O Operations, I-1
  - RMSIFL utility
    - sort routine, RMS-11 Utilities, D-1
  - shared file, I/O Operations, 2-48
  - .ERROR directive, MACRO-11, 7-15
Error limit, Error Logging, 1-4
altering
IOX, System Management, 4-36
device mount, Error Logging, 2-6
logging and, Error Logging, 2-6
notification, Error Logging, 1-4
reset, Error Logging, 1-4, 2-7
reset counts, Error Logging, 2-6
system reboot, Error Logging, 2-6
ERRORLIMIT command
IOX, System Management, 4-36
Error log
command packet, Error Logging, 1-4
control file, Error Logging, 1-3
architecture, Error Logging, 4-1
definition, Error Logging, 4-1
devices, Error Logging, 2-4
file, Error Logging, 1-1
definition, Error Logging, 4-2
format, Error Logging, 5-1
naming, Error Logging, 2-8
RPT, Error Logging, 1-3
packet, Error Logging, 1-1
command, Error Logging, 1-3
creation, Error Logging, 4-23
definition, Error Logging, 4-2
ERRSEQ, Error Logging, 1-3
format, Error Logging, 1-4, 5-1, C-1
packet number
definition, Error Logging, 1-3
processing, Error Logging, 5-1
queue, Error Logging, 4-24
removed from queue, Error Logging, 4-25
SMMSG$, Error Logging, 1-4
structure, Error Logging, 4-3
unsolicited interrupt, Error Logging, 4-23
packet number, Error Logging, 3-1
report
context information, Error Logging, 1-5
subpacket
definition, Error Logging, 4-2
system
task interaction, Error Logging, 1-2
Error log buffer
address of, CDA, 3-19
Error Logger, Executive, 5-202 System Management, 15-30
See also ERRLOG

Error logging
device errors, Error Logging, 1-6
System Generation (11M), 4-33
executive support, Error Logging, 1-6
device errors, Error Logging, 1-6
device timeouts, Error Logging, 1-6
memory errors, Error Logging, 1-6
unexpected traps or interrupts, Error Logging, 1-6
interrupt timeouts, Error Logging, 1-6
memory errors, Error Logging, 1-6
modifying driver to incorporate, Writing I/O Driver, 3-5
SCB field, Writing I/O Driver, 4-20
support on Non-DIGITAL device, Error Logging, 4-19
device level module, Error Logging, 4-19
driver, Error Logging, 4-19
universal library entry, Error Logging, 4-19
UCB field, Writing I/O Driver, 4-24
to 4-25
unexpected traps or interrupts, Error Logging, 1-6
unknown device
See EUNKWN
unused vectors, Error Logging, 1-6
Error logging devices
control file module, Error Logging, 2-4, 2-5
Error Logging System
CDA, Error Logging, 1-1
Control File Language compiler,
Error Logging, 1-1
device I/O activity, Error Logging, 1-1
Error logger, Error Logging, 1-1
Error log interface, Error Logging, 1-1
executive routines, Error Logging, 1-1
hard error, Error Logging, 1-3
mass storage device errors, Error Logging, 1-1
memory errors, Error Logging, 1-1
operating system failure, Error Logging, 1-1
Report generator, Error Logging, 1-1

Master Index–83
Error Logging System (cont'd.)
soft error, Error Logging, 1-3
Error Log Interface
See ELI
Error log packet dump, CDA, 1-9, 3-1, 3-19
Error log report generator, MCR, 3-273
ERRORM, Error Logging, 4-7
Error message, Introduction, 1-1
Error messages, CDA, A-I
Indirect,
BAD utility, Utilities, 6-10
Basic MCR, System Generation (11S), 2-4
BRU utility, Utilities, 7-34
CMP utility, Utilities, 12-6
CRF utility, Utilities, B-5
dmp utility, Utilities, 11-12
DSC utility, Utilities, 8-28
EDI utility, Utilities, 2-56
FLX utility, Utilities, 4-17
FMT utility, Utilities, 5-10
format, System Management, 10-94
FORTRAN IV, Program Development, 7-4
IOX, System Management, 4-68
LBR utility, Utilities, 10-33
MACRO-11, MACRO-11, 8-19 to 8-21 Program Development, 3-5
ODT, Program Development, 5-3
OTL, System Generation (11S), 2-11
PAT utility, Utilities, 14-7
PPI utility, Utilities, 3-43
RSX-11S, System Generation (11S), A-1
SIP, System Generation (11S), 2-19
SLP utility, Utilities, 13-20
SYSGEN, System Generation (11M), 8-1
TKB, Program Development, 4-2
TKTN, Program Development, 4-8
System Generation (11S), 2-21
VFY utility, Utilities, 9-11
VMR, System Management, 10-94 to 10-112
diagnostic, System Management, 10-94
fatal, System Management, 10-94
format, System Management, 10-94
unmarked, System Management, 10-94
Error messages (cont'd.)
ZAP utility, Utilities, 15-23
ERROR module, Error Logging, 4-19
Error notice macro definition, MACRO-11, 7-15, 7-16
Error processing, Indirect, 2-11, 2-67
Error report data compare
IOX, System Management, 4-21
directing to device
IOX, System Management, 4-42
disabling
IOX, System Management, 4-54
enabling
IOX, System Management, 4-54
I/O error
IOX, System Management, 4-22
types
IOX, System Management, 4-54
Error return, Executive, 1-3
ACP, I/O Drivers, C-14
communication driver, I/O Drivers, 12-8
CRDRV, I/O Drivers, 11-3, 11-7
CTDRV, I/O Drivers, 9-4
GCMLD$ macro, I/O Operations, 6-5
GRDRV, I/O Drivers, 21-3
ICDRV/ISDRV, I/O Drivers, 19-12
IE.IFC, I/O Operations, 2-49
IE.LCK, I/O Operations, 2-49
IE.ULK, I/O Operations, 2-49
IE.WAC, I/O Operations, 2-48
LPDRV, I/O Drivers, 10-4
LSDRV, I/O Drivers, 17-29
PPDRV/PRDRV, I/O Drivers, 18-3
receiver (LRDRV), I/O Drivers, 14-11
tape driver, I/O Drivers, 8-10
transmitter (LRDRV), I/O Drivers, 14-6
UDDRV, I/O Drivers, 16-31
UNIBUS switch driver, I/O Drivers, 24-7
XEDRV, I/O Drivers, 13-5
IO.XCL function, I/O Drivers, 13-18
IO.XIN function, I/O Drivers, 13-11
IO.XRC function, I/O Drivers, 13-16
IO.XTL function, I/O Drivers, 13-18

Master Index-84
Error return
XEDRV (cont'd.)
   IO.XTM function, I/O Drivers, 13-13
Error routine
   file macro, I/O Operations, 3-2
Error sequence number
   See ERRSEQ
   /ERRORS qualifier
   BRU utility, Utilities, 7-16
Error type definition, Error Logging, 1-5
Err parameter
   ASTX$ macro, I/O Drivers, 1-24
   DIR$ macro, I/O Drivers, 1-15
ERRSEQ
   Append switch, Error Logging, 1-3
   change, Error Logging, 1-3
   RMD use, Error Logging, 1-3
ERRSEV symbol, Indirect, 2-12
ERS11, Error Logging, 4-9
ERS34, Error Logging, 4-9
ERSEEN symbol, Indirect, 2-10
/ER switch
   RMSIFL utility, RMS-ll Utilities, 3-5, 3-6
ERX01, Error Logging, 4-9
ERX02, Error Logging, 4-9
ESA field in NAM block, RMS-ll
   Macro, 3-3, 3-9
   CREATE operation, RMS-ll Macro, 5-10
   ENTER operation, RMS-ll Macro, 5-36
   ERASE operation, RMS-ll Macro, 5-42
   offset, RMS-ll Macro, 6-94
   OPEN operation, RMS-ll Macro, 5-74
   PARSF operation, RMS-ll Macro, 5-87
   REMOVE operation, RMS-ll Macro, 5-104
   RENAME operation, RMS-ll Macro, 5-110
   SEARCH operation, RMS-ll Macro, 5-116
   summary, RMS-ll Macro, 6-97
Escape character
   line terminator (half-duplex), I/O Drivers, 3-25
   ESCAPE command
   EDI utility, Utilities, 2-14, 2-32
ESCAPE key, Command Language, 3-11 MCR, 2-15
EDI utility, Program Development, 2-13
   requesting list of options
   ACNT, System Management, 2-3
Escape mode, Indirect, 2-48
Escape sequence
   half-duplex, I/O Drivers, 3-23
      allowed control character, I/O Drivers, 3-26
      characteristic, I/O Drivers, 3-25
      definition, I/O Drivers, 3-23
      echo, I/O Drivers, 3-25
      exception, I/O Drivers, 3-27
      full buffer, I/O Drivers, 3-26
      prerequisite, I/O Drivers, 3-25
      recognition, I/O Drivers, 3-11, 3-32
      syntax violation, I/O Drivers, 3-25
      unsolicited input, I/O Drivers, 3-25
   syntax exception (TTDRV), I/O Drivers, 2-75
TTDRV, I/O Drivers, 2-72
   characteristic, I/O Drivers, 2-74
   control character, I/O Drivers, 2-74
   control character error, I/O Drivers, 2-74
   DELETE character, I/O Drivers, 2-74
   format, I/O Drivers, 2-72
   full buffer, I/O Drivers, 2-74
   handling, I/O Drivers, 2-17
   interrupt, I/O Drivers, 2-17
   prerequisite, I/O Drivers, 2-73
   recognition, I/O Drivers, 2-12
   RUBOUT character, I/O Drivers, 2-74
   syntax violation, I/O Drivers, 2-74
Escape-sequence mode, Indirect, 2-48
ESCAPE symbol, Indirect, 2-10
ESC command
   RMSDES utility, RMS-ll Utilities, 2-9, 2-21
ESC key
   half-duplex, I/O Drivers, 3-23, 3-24
   TTDRV, I/O Drivers, 2-71

Master Index-85
/ESCSEQ keyword
SET command (MCR), MCR, 3-217
SET command (VMR), System Management, 10-58
ESL field in NAM block
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-42
offset, RMS-11 Macro, 6-94
OPEN operation, RMS-11 Macro, 5-77
PARSE operation, RMS-11 Macro, 5-88
RENAME operation, RMS-11 Macro, 5-105
SEARCH operation, RMS-11 Macro, 5-116
summary, RMS-11 Macro, 6-98
ESS field in NAM block
CREATE operation, RMS-11 Macro, 5-10
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-42
offset, RMS-11 Macro, 6-94
OPEN operation, RMS-11 Macro, 5-74
PARSE operation, RMS-11 Macro, 5-87
RENAME operation, RMS-11 Macro, 5-104
summary, RMS-11 Macro, 6-99
ESTATUS command, System Management, 15-12
/EST keyword
RUN command (MCR), MCR, 3-178, 3-182
ET0310, Error Logging, 4-9
ET1645, Error Logging, 4-9
ETA11, Error Logging, 4-9
ETC11, Error Logging, 4-9
Ethernet (XEDRV) (cont’d.)
device consideration, I/O Drivers, 13-2
hardware error, I/O Drivers, 13-3
LF$DEF protocol, I/O Drivers, 13-3
LF$EXC protocol, I/O Drivers, 13-3
message, I/O Drivers, 13-2
message padding, I/O Drivers, 13-3
protocol
LF$DEF, I/O Drivers, 13-3
LF$EXC, I/O Drivers, 13-3
receive, I/O Drivers, 13-3
transmit, I/O Drivers, 13-3
ETS11, Error Logging, 4-9
ETSV05, Error Logging, 4-9
ETU58, Error Logging, 4-9
ETU77, Error Logging, 4-9
EUNKWN, Error Logging, 4-8, 4-19, 4-37
.EVEN assembler directive
count block alignment, RMS-11 Macro, 2-8
pool alignment, RMS-11 Macro, 2-4
.EVEN directive, MACRO-11, 6-37
Event
definition, Error Logging, 1-3, 4-2
significant, I/O Drivers, 1-9, 1-36
Event declaration, significant, I/O Drivers, 1-13
Event flag, Executive, 2-2 I/O Drivers, 1-9 MCR, 3-58
ast, I/O Drivers, 1-11
clearing polarity, Executive, 5-31
common, Executive, 2-2 I/O Drivers, 1-9, 1-10
creating, MCR, 3-77
eliminating, MCR, 3-77
group global, Command Language, 6-51 Executive, 2-2 I/O Drivers, 1-9 MCR, 3-77
System Generation (11M), 4-38
creating, Command Language, 6-52 Executive, 5-48
decrementing use count, Executive, 5-253
deleting, Command Language, 6-52 Executive, 5-71
displaying, Command Language, 6-53
eliminating, Executive, 5-253
I/O coordination, I/O Operations, 2-43
I/O synchronization, I/O Operations, 3-10

Master Index-86
Event flag (cont’d.)

- IOX, System Management, 4-66
- local, MCR, 3-77
- none, I/O Drivers, 1-8
- number, I/O Drivers, 1-9
- reading, Executive, 5-156, 5-158
- setting, Executive, 5-199
- task, I/O Drivers, 1-9
- testing, Executive, 2-3, 5-157
- wait after I/O, I/O Drivers, 1-15
- wait for single, I/O Drivers, 1-24

Event-level dispatching, Error Logging, 4-16

- control information, Error Logging, 4-17
- CPU-detected errors, Error Logging, 4-17
- device control information, Error Logging, 4-17
- device errors, Error Logging, 4-17
- dispatcher module, Error Logging, 4-18
- error log control code, Error Logging, 4-17
- event code, Error Logging, 4-18
- event type, Error Logging, 4-18
- format, Error Logging, 4-18
- system control information, Error Logging, 4-17

EVNDIF$, CDA, B-14, C-25

EXACT POSITIONING attribute

RMSDES utility, RMS-11 Utilities, 2-47

Examine option

ACNT, System Management, 2-5

Example

- Brief format report, Error Logging, 3-13, 3-14
- device information table, Error Logging, 4-34
- ERM23, Error Logging, 4-26
- ERM23 device-level module, Error Logging, 4-37 to 4-49
- ERM23 notes file, Error Logging, 4-31
- error log packet format, Error Logging, 5-2
- error log subpacket format, Error Logging, 5-2
- Full format report, Error Logging, 3-16, 3-17

Example (cont’d.)

- notes module, Error Logging, 4-67, 4-68
- NRM23 notes module, Error Logging, 4-67, 4-68
- register report, Error Logging, 3-19
- RM02/03
  - register printing, Error Logging, 4-27
- RM02/03 module, Error Logging, 4-38 to 4-49
- RM03 module, Error Logging, 4-13
- RMS-11 MACRO-11 programs, RMS-11 Macro, 7-1
- RMSBCK utility, RMS-11 Utilities, 6-10
- RMSCNV utility, RMS-11 Utilities, 4-16
- RMSDES utility, RMS-11 Utilities, 2-47
- RMSDSP utility, RMS-11 Utilities, 5-5
- RMSIFL utility, RMS-11 Utilities, 3-14
- RMRST utility, RMS-11 Utilities, 7-12

Exception code

RMSIFL utility, RMS-11 Utilities, 3-6

Exception record

RMSIFL utility, RMS-11 Utilities, 3-5, 3-6, 3-10

Exclamation point operator (!), Task Builder, 3-49

See also ODL operator

/EXCLUDE qualifier

BRU utility, Utilities, 7-16

/EXECUTABLE qualifier, Task Builder, 11-29 to 11-30

EXECUTE command

IOX, System Management, 4-37

Execution

termination of task

IOX, System Management, 4-24

Execution mode

entering

IOX, System Management, 4-61

IOX, System Management, 4-18

Executive, Introduction, 5-1, 6-3, 6-5, 6-6

Best reference, Executive building, System Generation (11S), 4-1

Master Index-87
Executive (cont’d.)
commons, System Generation (11M), 4-27
configuration, System Generation (11M), 4-7
definition, System Generation (11M), 1-3
DIC list, Executive, C-1
directive, MCR, 3-140
   aborting tasks, MCR, 3-5
directive status code list, Executive, B-1
directive summary, Executive, A-1
fast-mapping, MCR, 3-118
large (20K), System Generation (11M), 4-32
library, Program Development, 1-11
   macro, Program Development, 1-9, 1-10
loadable device driver, MCR, 3-132
   partition
   extended, MCR, 3-133
   priority range, MCR, 3-257
   round-robin scheduling, MCR, 3-248
routines
   _$GTWRD, System Generation (11M), 4-34
   $SPTWRD, System Generation (11M), 4-34
source files disk, System Generation (11M), 4-9
swapping interval, MCR, 3-256
tables
   logical device, MCR, 2-13
   physical device, MCR, 2-13
task
   aborting, MCR, 3-3
   active, MCR, 2-23
   allocating space, MCR, 2-20
   checkpointing, MCR, 2-20
   dormant, MCR, 2-23
   header, MCR, 3-122
   loading, MCR, 3-116
   priority, MCR, 2-21
   running, MCR, 1-5, 2-23, 3-116

Executive Crash Dump routine, Writing I/O Driver, 3-20
Executive crash dump routine, CDA, 1-1, 1-2, 1-3
   building, CDA, 1-1
Executive data space support, System Management, 10-3

Executive Debugging Tool, MCR, 3-36

Executive Debugging Tool (cont’d.)
See also XDT
   invoking, MCR, 3-38
Executive error logging support, Error Logging, 1-6
Executive-level dispatching, Executive, 5-5
Executive pool monitor code, System Management, 13-1
Executive routines
   error collection
      device registers, Error Logging, 1-3
Executive Send Message directive
   See SMSG$
Executive service
   driver processing, Writing I/O Driver, 2-10
   postinitiation, Writing I/O Driver, 2-11
   preinitiation, Writing I/O Driver, 2-11
Executive service calls, Writing I/O Driver, 5-1 to 5-28
Executive stack and register dump routine, Writing I/O Driver, 3-17
deiung driver code, Writing I/O Driver, 3-16
   use of
      in fault tracing, Writing I/O Driver, 3-25
Executive symbol table, CDA, 1-1, 2-2, 2-17
   switch
   See /STB
EXELIB.OLB (Executive library), Program Development, 1-11
EXEMC.MLB (Executive macro library), Program Development, 1-9 to 1-10
EXIT$ directive, Executive, 5-78
Existence indicator (ICDRV/ISDRV), I/O Drivers, 19-18
EXIT$S directive, Executive, 5-80
   Program Development, 2-7
EXIT & DELETE command
   EDI utility, Utilities, 2-32
EXIT command
   EDI utility, Program Development, 2-10, 2-12, 2-18, 7-5, 7-7
   Utilities, 2-14, 2-27, 2-32
   EDT editor, Introduction, 2-8
   IOX, System Management, 4-38
   RMSDES utility, RMS-11 Utilities, 2-3, 2-9, 2-18, 2-27
Exit command
  ODT, Debugging, 2-12
  XDT, Debugging, 9-14
.EXIT directive, Indirect, 2-54
Exit If directive, Executive, 5-78
Exit on diagnostic, Task Builder, 10-54, 11-28
Exit option
  ACNT, System Management, 2-11
Exit status, Indirect, 2-12
value, Indirect, 2-12
Exit Status Code
  definition, Batch and Queue, 4-4
/EXIT switch, CDA, 2-10, 2-11
Exit with Status directive, Executive, 5-82
Expanded string
  See ESA field in NAM block
EXPANSIONS argument, MACRO-11, 8-11
/EXP keyword
  LOAD command (MCR), MCR, 3-133
.EXPLG module
  logical name expansion, I/O Operations, 4-15
Expression, Debugging, 2-3
  absolute, MACRO-11, 3-17
  address, Debugging, 2-2
  complex relocatable, MACRO-11, 3-18
  evaluating, Debugging, 2-3, 7-2
  MACRO-11, 3-16 to 3-18
  external, MACRO-11, 3-17
format, Debugging, 2-3
  illegal, Debugging, 2-8, 9-11
indicator
  immediate, MACRO-11, 3-2
  Radix-50
  evaluating, Debugging, 7-4
  register address, Debugging, 2-6, 9-10
  relocatable, MACRO-11, 3-17
$EXRQP routine, Writing I/O Driver, 5-9
EXST directive, Executive, 5-82
EXSTAT symbol, Indirect, 2-12
EXSTRI symbol, Indirect, 2-18
/EX switch
  LBR utility, Utilities, 10-18
  PIP utility, Utilities, 3-21
Extend access, Command Language, 4-10, 4-84 MCR, 2-3
Extend access (cont’d.)
  common region, MCR, 3-120
  file, MCR, 3-149, 3-213
  UFD, MCR, 3-281
  volume, MCR, 3-94
Extend control parameter (F11ACP), I/O Drivers, C-5
Extended arithmetic
  specifying, Task Builder, 10-16
Extended arithmetic element
Extended attribute block
  See XAB
Extended I/O (TTDRV), I/O Drivers, 2-18, 2-25
Extended instruction set
  See EIS
$EXTEND macro, RMS-11 Macro, 5-46
RSTS/E, RMS-11 Macro, D-4
EXTEND operation, RMS-11 Introduction, 4-2 RMS-11 Macro, 3-8 RMS-11 User’s Guide, 1-18
  and shared access, RMS-11 User’s Guide, 2-6
BDB requirement, RMS-11 Macro, 2-8
$EXTEND macro, RMS-11 Macro, 5-46
  I/O buffer requirement, RMS-11 Macro, 2-7
  wildcard loop, RMS-11 Macro, 3-10
/EXTEND qualifier
  BRU utility, Utilities, 7-16
  .EXTEND routine (disk driver), I/O Drivers, 5-8
Extend Task directive, Executive, 5-84
  improving performance, Task Builder, F-2
Extension
  default, I/O Operations, 2-20
  file
  See File type
EXTENSION attribute
RMSDES utility
  area section, RMS-11 Utilities, 2-45
  file section, RMS-11 Utilities, 2-32
EXTENSIONS argument, MACRO-11, 8-11
Extent
  data caching, MCR, 3-146, 3-208
External expression, MACRO-11, 3-17
External file (RMSDES)
  See Data file, Description file

Master Index-89
/EXTERNAL qualifier, Task Builder, 11-31
External symbol
See Global symbol
EXTKS directive, Executive, 5-84
/EXT keyword
HOME command, MCR, 3-94
INITVOLUME command, MCR, 3-102
.EXTND routine, extend file, I/O Operations, 4-28
EXTSCT option, Task Builder, 12-15
$EXTSK (Extend task), System Library, 8-13
EXTTSK option, Task Builder, 12-16
F
F$-family macro, RMS-11 Macro, 2-9
declaring, RMS-11 Macro, C-1
example, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15
F.ACTL field, number of retrieval pointers, I/O Operations, A-9
F.ALOC field, number of blocks allocated for extend, I/O Operations, A-7
F.BBFS field, block buffer size, I/O Operations, A-8
F.BDB field, block buffer descriptor block address, I/O Operations, A-9
F.BGBC field, big-buffer block count, I/O Operations, A-8
F.BKDN field, AST service routine address, I/O Operations, A-6
F.BKDS field, block I/O buffer descriptor, I/O Operations, A-6
F.BKEF field, block I/O event flag, I/O Operations, A-7
F.BKP1 field, FCS internal control bits, I/O Operations, A-8
F.BKST field, I/O status block address, I/O Operations, A-6
F.BKVD field, user virtual block number, I/O Operations, A-8
F.CHRI field, volume characteristics byte, I/O Operations, A-9
F.CNTG field, number of blocks to be allocated, I/O Operations, A-6
F.DFB field, default filename block pointer, I/O Operations, A-7
F.DSPT field, dataset descriptor pointer, I/O Operations, A-7
F.EFBK field, end-of-file block number, I/O Operations, A-4
F.EFN field, record I/O event flag, I/O Operations, A-7
F.EOBB field, end-of-block buffer, I/O Operations, A-6
F.ERR1 field, F.ERR extension, I/O Operations, A-8
F.ERR field, error return code byte, I/O Operations, A-8
F.EXT field, FDB extension address, I/O Operations, A-9
F.FACC field, file access byte, I/O Operations, A-7
F.FFBK field, first free byte in last block, I/O Operations, A-4
F.FLG field, flag byte, I/O Operations, A-9
F.FNB field, filename block offset, I/O Operations, A-9
F.HIBK field, highest allocated virtual block number, I/O Operations, A-4
F.LUN field
FDB, I/O Operations, 4-17
F.LUN field, LUN for FDB, I/O Operations, A-7
F.MBC1 field, number of buffers in use, I/O Operations, A-8
F.MBCT field, number of multiple buffers, I/O Operations, A-8
F.MBFG field, multibuffer flag word, I/O Operations, A-8
F.NRBD field, next record buffer descriptor, I/O Operations, A-6
F.NREC field, address of next record in block, I/O Operations, A-6
F.OVBS field, override block buffer size, I/O Operations, A-6
F.RACC field, record access byte, I/O Operations, A-4
F.RATT field, record attribute byte, I/O Operations, A-4
F.RCNM field, random access record number, I/O Operations, A-6
F.RCTL, device characteristic byte
.PARSE routine, I/O Operations, 4-13
F.RCTL field, device characteristics byte, I/O Operations, A-5
F.RSIZ field, record-size word, I/O Operations, A-4

Master Index-90
F.RTYP field, record-type byte, I/O Operations, A-3
F.SEQN field, sequence number, I/O Operations, A-9
F.STBK field, statistics block address, I/O Operations, A-6
F.URBD field, user record buffer descriptor, I/O Operations, A-6
F.VBN field, virtual block number, I/O Operations, A-8
F.VBSZ, device buffer size word. PARSE routine, I/O Operations, 4-13
F.VBSZ field, device buffer size word, I/O Operations, A-8
F1.xxx bit, I/O Drivers, 2-34, 3-13
F11ACP, Command Language, 5-3, 5-8
RMS-11 Introduction, 2-1
role of
in I/O data structure, Writing I/O Driver, 2-19
F11ACP stall I/O performance (disk driver), I/O Drivers, 5-13
F11DF$, CDA, C-28
F11TBL$, CDA, B-17
F2.xxx bit, I/O Drivers, 2-34, 3-13
F4POTS.OLB (FORTRAN IV and FORTRAN IV-PLUS library), Program Development, 1-11
F4PRES building, Task Builder, 5-56
FA.DLK value, not lock file, I/O Operations, 2-16
FA.EXL value, block locking, I/O Operations, 2-17
FA.LKL value, block locking, I/O Operations, 2-17
FA.NSP value, open file no supersede, I/O Operations, 3-19
FA.POS value, file position on close, I/O Operations, 2-16
FA.RWD value, rewind on close or open, I/O Operations, 2-16
FA.SHR value, open file shared access, I/O Operations, 3-19
FA.TMP value, open temporary file, I/O Operations, 3-19
FAB, RMS-11 Introduction, 4-8
chaining to RAB, RMS-11 Macro, 2-13
declaring, RMS-11 Macro, 2-8
initializing, RMS-11 Macro, 2-9
summary, RMS-11 Macro, 6-22
FAB$B macro, RMS-11 Macro, 2-8, C-1
example, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15
FAB$BT macro, RMS-11 Macro, C-1
FAB$E macro, RMS-11 Macro, 2-9
declaring, RMS-11 Macro, C-1
example, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15
FAB field in RAB, RMS-11 Macro, 4-2
chaining FAB to RAB, RMS-11 Macro, 2-13
CONNECT operation, RMS-11 Macro, 5-6
offset, RMS-11 Macro, 6-115
summary, RMS-11 Macro, 6-120
FABOF$ macro, RMS-11 Macro, C-1
FAC field in FAB
CREATE operation, RMS-11 Macro, 5-14
offset, RMS-11 Macro, 6-22
OPEN operation, RMS-11 Macro, 5-75
summary, RMS-11 Macro, 6-37
Facilities-declaration macro, RMS-11 Macro, 2-2
declaring, RMS-11 Macro, C-2
FAL, RMS-11 User's Guide, B-1
RSTS/E, RMS-11 User's Guide, B-1, B-3
VAX/VMS, RMS-11 User's Guide, B-3
FALSE symbol, Indirect, 2-11
Fast deletion
See RB$FDL mask in ROP field
Fast Task Builder
See FTB
/FA switch
FLX utility, Utilities, 4-5
Fatal error, RMS-11 Macro, 2-15
Fatal error message, System Management, 10-94
Fault code, Writing I/O Driver, 3-26
Fault isolation, System Management, 15-31 Writing I/O Driver, 3-20 to 3-23
Fault tracing, Writing I/O Driver, 3-23 to 3-28
after unintended loop, Writing I/O Driver, 3-28
Fault tracing (cont'd.)

Executive stack and register dump,
Writing I/O Driver, 3-25 to 3-27
hints, Writing I/O Driver, 3-28 to 3-29
in new driver, Writing I/O Driver, 3-28
when processor halts without display, Writing I/O Driver, 3-27

FB$BID code in BID field
summary, RMS-11 Macro, 6-26
value, RMS-11 Macro, 6-22

FB$BLK mask in RAT field
CREATE operation, RMS-11 Macro, 5-11
OPEN operation, RMS-11 Macro, 5-78
summary, RMS-11 Macro, 6-60
value, RMS-11 Macro, 6-23

FB$BLN code in BLN field
summary, RMS-11 Macro, 6-28
value, RMS-11 Macro, 6-22

FB$CCL mask in DEV field, RMS-11 Macro, 3-1
CREATE operation, RMS-11 Macro, 5-20
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-42
OPEN operation, RMS-11 Macro, 5-77
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-104
RENAME operation, RMS-11 Macro, 5-111
SEARCH operation, RMS-11 Macro, 5-117
value, RMS-11 Macro, 6-24

FB$CR mask in RAT field
CREATE operation, RMS-11 Macro, 5-12
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23

FB$CTG mask in FOP field
CREATE operation, RMS-11 Macro, 5-18
OPEN operation, RMS-11 Macro, 5-77
summary, RMS-11 Macro, 6-41
value, RMS-11 Macro, 6-23

FB$DFW mask in FOP field
CREATE operation, RMS-11 Macro, 5-15
OPEN operation, RMS-11 Macro, 5-76
summary, RMS-11 Macro, 6-42
value, RMS-11 Macro, 6-23

FB$DLK mask in FOP field
CREATE operation, RMS-11 Macro, 5-15
OPEN operation, RMS-11 Macro, 5-76
summary, RMS-11 Macro, 6-42
value, RMS-11 Macro, 6-23

FB$-family symbol
declaring, RMS-11 Macro, C-1

FB$FID mask in FOP field, RMS-11 Macro, 3-7, 3-9, 3-10, 3-11
CREATE operation, RMS-11 Macro, 5-10
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-41
OPEN operation, RMS-11 Macro, 5-73, 5-74
REMOVE operation, RMS-11 Macro, 5-103
RENAME operation, RMS-11 Macro, 5-109, 5-110
summary, RMS-11 Macro, 6-43
value, RMS-11 Macro, 6-23

FB$FIX code in RFM field
CREATE operation, RMS-11 Macro, 5-11
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23

FB$FTN mask in RAT field
CREATE operation, RMS-11 Macro, 5-12
FB$FTN mask in RAT field (cont’d.)
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23
FB$GET mask in FAC field
CREATE operation, RMS-11 Macro, 5-14
OPEN operation, RMS-11 Macro, 5-75
value, RMS-11 Macro, 6-22
FB$GET mask in SHR field
CREATE operation, RMS-11 Macro, 5-14
OPEN operation, RMS-11 Macro, 5-75
value, RMS-11 Macro, 6-22
FB$MDI mask in DEV field, RMS-11 Macro, 3-1
CREATE operation, RMS-11 Macro, 5-20
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-42
OPEN operation, RMS-11 Macro, 5-77
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-104
RENAME operation, RMS-11 Macro, 5-111
SEARCH operation, RMS-11 Macro, 5-117
value, RMS-11 Macro, 6-24
FB$MKD mask in FOP field
CREATE operation, RMS-11 Macro, 5-11
summary, RMS-11 Macro, 6-44
value, RMS-11 Macro, 6-23
FB$NEF mask in FOP field
OPEN operation, RMS-11 Macro, 5-76
RSTS/E, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-45
value, RMS-11 Macro, 6-23
FB$NIL mask in SHR field
CREATE operation, RMS-11 Macro, 5-14
OPEN operation, RMS-11 Macro, 5-75
value, RMS-11 Macro, 6-22
FB$POS mask in FOP field
CREATE operation, RMS-11 Macro, 5-15
summary, RMS-11 Macro, 6-46
value, RMS-11 Macro, 6-23
FB$PRN mask in RAT field
CREATE operation, RMS-11 Macro, 5-12
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23
FB$PUT mask in FAC field
CREATE operation, RMS-11 Macro, 5-14
OPEN operation, RMS-11 Macro, 5-75
value, RMS-11 Macro, 6-22
FB$REA mask in FAC field
CREATE operation, RMS-11 Macro, 5-14
OPEN operation, RMS-11 Macro, 5-75
value, RMS-11 Macro, 6-22
FB$REC mask in DEV field, RMS-11 Macro, 3-1, 3-2
CREATE operation, RMS-11 Macro, 5-20
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-42
OPEN operation, RMS-11 Macro, 5-77
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-104
RENAME operation, RMS-11 Macro, 5-111
SEARCH operation, RMS-11 Macro, 5-117
value, RMS-11 Macro, 6-24
FB$REL code in ORG field
CREATE operation, RMS-11 Macro, 5-11
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23

Master Index-93
FB$RWC mask in FOP field
CLOSE operation, RMS-11 Macro, 5-4
CREATE operation, RMS-11 Macro, 5-15
OPEN operation, RMS-11 Macro, 5-77
SEARCH operation, RMS-11 Macro, 5-117
summary, RMS-11 Macro, 6-47
value, RMS-11 Macro, 6-23
FB$RWO mask in FOP field
CREATE operation, RMS-11 Macro, 5-15
OPEN operation, RMS-11 Macro, 5-76
SEARCH operation, RMS-11 Macro, 5-117
summary, RMS-11 Macro, 6-48
value, RMS-11 Macro, 6-23
FB$SDI mask in DEV field, RMS-11 Macro, 3-2
CREATE operation, RMS-11 Macro, 5-20
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
OPEN operation, RMS-11 Macro, 5-77
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-104
RENAME operation, RMS-11 Macro, 5-111
SEARCH operation, RMS-11 Macro, 5-118
value, RMS-11 Macro, 6-24
FB$SEQ code in ORG field
CREATE operation, RMS-11 Macro, 5-11
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23
FB$SQD mask in DEV field, RMS-11 Macro, 3-2
CREATE operation, RMS-11 Macro, 5-20
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
FB$TMP mask in FOP field
CREATE operation, RMS-11 Macro, 5-10
summary, RMS-11 Macro, 6-49
value, RMS-11 Macro, 6-23
FB$TRM mask in DEY field
CREATE operation, RMS-11 Macro, 5-11
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23
FB$STM code in RFM field
CREATE operation, RMS-11 Macro, 5-11
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23
FB$SUP mask in FOP field
CREATE operation, RMS-11 Macro, 5-10
summary, RMS-11 Macro, 6-49
value, RMS-11 Macro, 6-23
FB$TMD mask in FOP field
CREATE operation, RMS-11 Macro, 5-11
value, RMS-11 Macro, 6-23
FB$TRN mask in FAC field
CREATE operation, RMS-11 Macro, 5-14
Master Index—94
FB$TRN mask in FAC field (cont'd.)
OPEN operation, RMS-11 Macro, 5-75
value, RMS-11 Macro, 6-22

FB$UDF code in RFM field
CREATE operation, RMS-11 Macro, 5-11
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-22

FB$UPD mask in FAC field
CREATE operation, RMS-11 Macro, 5-14
OPEN operation, RMS-11 Macro, 5-75
value, RMS-11 Macro, 6-22

FB$UPI mask in SHR field
CREATE operation, RMS-11 Macro, 5-14
OPEN operation, RMS-11 Macro, 5-75
RSX-11, RMS-11 Macro, D-4
value, RMS-11 Macro, 6-22

FB$VAR code in RFM field
CREATE operation, RMS-11 Macro, 5-11
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23

FB$VFC code in RFM field
CREATE operation, RMS-11 Macro, 5-11
OPEN operation, RMS-11 Macro, 5-78
value, RMS-11 Macro, 6-23

FB$WRI mask in SHR field
CREATE operation, RMS-11 Macro, 5-14
OPEN operation, RMS-11 Macro, 5-75
value, RMS-11 Macro, 6-22

FB$WRT mask in FAC field
CREATE operation, RMS-11 Macro, 5-14
OPEN operation, RMS-11 Macro, 5-75
value, RMS-11 Macro, 6-22

$FBCAL macro, RMS-11 Macro, C-2
/FB switch
FLX utility, Utilities, 4-5

FCB
See File Control Block

FCP
definition, System Generation (11M), 1-4
file sharing, System Generation (11M), 4-26
option, System Generation (11M), 4-61
placement control, System Generation (11M), 4-26
role of
in I/O data structure, Writing I/O Driver, 2-19
support, System Generation (11M), 4-25
user-written, System Generation (11M), 4-62

FCPLRG, System Generation (11M), 4-62
FCPMDL, System Generation (11M), 4-61
FCPMIN, System Generation (11M), 4-61
FCPSML, System Generation (11M), 4-61

FCS, I/O Operations, 1-1
data structure
general, I/O Operations, 1-4
definition, System Generation (11M), 1-3
file access method, I/O Operations, 1-6
I/O macro, I/O Operations, 2-1
important characteristic, I/O Operations, 1-3
impure area, I/O Operations, 2-38
library options, I/O Operations, K-1
macro
FDB information, I/O Operations, 2-2
.MCALL directive, I/O Operations, 2-2
PLAS resident library, System Generation (11M), 4-60
position of
in I/O hierarchy, Writing I/O Driver, 2-2
RSX-11S support, System Generation (11S), 2-25
sequential file compatibility, RMS-11 User’s Guide, 3-2
string processing, Executive, 5-135
tasks that use, System Generation (11M), 7-1

Master Index–95
FCS (cont'd.)
term definition, I/O Operations, 1-2
with Task Builder, I/O Operations, 1-1
FCS.OBJ FCS library, I/O Operations, K-1
FCSMBF.OBJ FCS library, I/O Operations, K-1
FCSMTA.OBJ FCS library, I/O Operations, K-1
FCSRES linking tasks to, System Generation (11M), 7-4
non-memory-resident, Task Builder, 5-56
overlaid, Task Builder, 5-55
types, Task Builder, 5-55
FCSRES routines, I/O Operations, 1-20
FCS subset, System Generation (11S), 2-25
macro calls, System Generation (11S), 2-25
/FC switch
FLX utility, Utilities, 4-7
.FCTR directive, Task Builder, 3-23, 3-25
allocation diagram
creating, Task Builder, 3-38, 3-39
argument, Task Builder, 3-26
library modules, Task Builder, 3-26
library to resolve references, Task Builder, 3-26
named input file, Task Builder, 3-26
program section name, Task Builder, 3-26
segment name, Task Builder, 3-27
autoloadable
making first component, Task Builder, 4-3
summary, Task Builder, 3-50
use of label, Task Builder, 3-25
.FCTYP routine, assembly parameters, I/O Operations, K-1
FD.BLK parameter
record attribute, I/O Operations, 2-6
block boundary crossing, I/O Operations, 3-9
FD.CR parameter
record attribute, I/O Operations, 2-6
line-feed character, I/O Operations, 3-8
FD.FTN parameter, I/O Operations, 3-8
FD.INS parameter
sequential file, I/O Operations, 2-10
sequential mode, I/O Operations, 3-6, 3-9
FD.PLC parameter
locate mode, I/O Operations, 2-10, 3-6, 3-9
move mode, I/O Operations, 2-10
FD.PRN parameter
record attribute, I/O Operations, 2-6
carriage-control word, I/O Operations, 3-9
FD.RAH parameter, read-ahead operation, I/O Operations, 3-12
FD.RAH value, read-ahead, I/O Operations, 2-19
FD.RAN parameter
random access, I/O Operations, 2-10, 3-9
random record I/O, I/O Operations, 3-6
FD.RTN, record attribute, I/O Operations, 2-6
FD.RWM parameter
block I/O operation, I/O Operations, 3-6
record access, I/O Operations, 2-10
record attribute
process with block I/O, I/O Operations, 3-9
FD.WBH parameter, write-behind operation, I/O Operations, 3-12
FD.WBH value, write behind, I/O Operations, 2-19
FDATSA macro, I/O Operations, 2-5
FDATSR macro, I/O Operations, 2-21
FD.B, I/O Operations, 2-3
address, run-time macro, I/O Operations, 2-24
allocate file block, I/O Operations, 2-8
as data structure, I/O Operations, 1-4
block I/O, I/O Operations, 2-10
block locking, I/O Operations, 2-17
FDB (cont’d.)
block size reset, I/O Operations, 2-19
carriage control, I/O Operations, 2-7
definition, I/O Operations, 1-2
description, I/O Operations, 1-5
extension, logical name translation, I/O Operations, 4-15
F.LUN field, I/O Operations, 4-17
F.xxx field, I/O Operations, A-3
file identification, I/O Operations, 1-5
GET$ macro, I/O Operations, 3-23
initialize block access, I/O Operations, 2-3
initialize block buffer, I/O Operations, 2-18, 2-22
initialize block buffer size, I/O Operations, 2-18
initialize file attribute, I/O Operations, 2-5, 2-21
initialize file-open section, I/O Operations, 2-14, 2-22
initialize record access, I/O Operations, 2-10, 2-21
initial values, I/O Operations, 2-1
largest record size, I/O Operations, 2-8
lun specification, I/O Operations, 3-10
macro
global symbol, I/O Operations, 2-26
local symbol, I/O Operations, 2-27
run-time exceptions, I/O Operations, 2-22
run-time initialization, I/O Operations, 2-21
multiple buffering, I/O Operations, 2-19
type, I/O Operations, 2-19
offset, global/local, I/O Operations, 2-25
OPEN$x macro requirement, I/O Operations, 3-7
PUT$ macro operation, I/O Operations, 3-27
record 1/O, I/O Operations, 2-10
record size, I/O Operations, 3-9
sequence number field, I/O Operations, 2-7

FDB (cont’d.)
space allocation, I/O Operations, 2-5
WRITE$ macro, I/O Operations, 3-39
FDBDF$ macro, FDB space allocation, I/O Operations, 2-5
FDBF$A macro, I/O Operations, 2-18
example, I/O Operations, 2-21
FDBF$R macro, I/O Operations, 2-22
FDBK$A macro
block access initialization, I/O Operations, 2-12
example, I/O Operations, 2-13
record access, block 1/O, I/O Operations, 2-12
FDBK$R macro, initialize block access, I/O Operations, 2-21
FDOPS$A macro, I/O Operations, 2-14
example, I/O Operations, 2-17
FDOPS$R macro, initialize file-open section, I/O Operations, 2-22
FDRC$A macro, I/O Operations, 2-10
example, I/O Operations, 2-10
FDRC$R macro, initialize record access, I/O Operations, 2-21
/FDX keyword
SET command (MCR), MCR, 3-218
SET command (VMR), System Management, 10-59
FEAT$ directive, Executive, 5-86
$FETCH macro, RMS-11 Macro, 2-15
example, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15
FF command
EDI utility, Utilities, 2-34
/FF switch
CMP utility, Utilities, 12-3
FID field in NAM block
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-41, 5-42
offset, RMS-11 Macro, 6-94
OPEN operation, RMS-11 Macro, 5-73, 5-77
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-111
SEARCH operation, RMS-11 Macro, 5-118

Master Index-97
FID field in NAM block (cont'd.)

summary, RMS-11 Macro, 6-100

Field, RMS-11 Macro, 1-2
clearing bits in, RMS-11 Macro, 2-11
comparing value, RMS-11 Macro, 2-16
copying value from, RMS-11 Macro, 2-15
copying value into, RMS-11 Macro, 2-10
examining, RMS-11 Macro, 2-15
initializing, RMS-11 Macro, 2-8
mnemonic, RMS-11 Macro, 1-2
setting bits in, RMS-11 Macro, 2-11
setting up, RMS-11 Macro, 2-10
testing bits in, RMS-11 Macro, 2-17

Field-access macro

$COMPARE, RMS-11 Macro, 2-16
declaring, RMS-11 Macro, C-2
$FETCH, RMS-11 Macro, 2-15
$OFF, RMS-11 Macro, 2-11
$SET, RMS-11 Macro, 2-11
$STORE, RMS-11 Macro, 2-10
$TESTBITS, RMS-11 Macro, 2-17

Field-initialization macro, RMS-11 Macro, 2-9
declaring
ALL block, RMS-11 Macro, C-3
DAT block, RMS-11 Macro, C-3
FAB, RMS-11 Macro, C-1
KEY block, RMS-11 Macro, C-3
NAM block, RMS-11 Macro, C-2
PRO block, RMS-11 Macro, C-3
RAB, RMS-11 Macro, C-2
SUM block, RMS-11 Macro, C-3

Field-offset symbol (cont'd.)
value
ALL block, RMS-11 Macro, 6-2
DAT block, RMS-11 Macro, 6-14
FAB, RMS-11 Macro, 6-22
KEY block, RMS-11 Macro, 6-67
NAM block, RMS-11 Macro, 6-94
PRO block, RMS-11 Macro, 6-108
RAB, RMS-11 Macro, 6-115
SUM block, RMS-11 Macro, 6-145

Field size symbols, file operation, I/O Operations, J-1

Field terminator, MACRO-11, 3-2

/Fl file switch
QUE /MOD command, Batch and Queue, 2-21
FILATR symbol, Indirect, 2-19
File, Command Language, 4-1, 5-1

See also Account file
See also Indexed file organization
See also Relative file organization
See also Sequential file organization
access, Command Language, 2-7
MCR, 2-3, 2-6, 3-122
method, FCS, I/O Operations, 1-6
optimizing, I/O Operations, 2-34

access requested
See FAC field in FAB
access shared
See SHR field in FAB
access types, Command Language, 4-9, 4-84

alignment
See also ALN field in ALL block
allocation
See also ALQ field in ALL block
See also ALQ field in FAB
and directory, MCR, 2-2
appending
PIP utility, Utilities, 3-14
area
See ALL block
assembler work, MACRO-11, F-1

Master Index-98
File
attribute
setting, Command Language, 4-87
attributes, RMS-11 Introduction, 5-1
attribute size (F11ACP), I/O Drivers, C-4
backing up, RMS-11 Introduction, 5-3
bucket size
See BKS field in FAB
See BKZ field in ALL block
checkpoint, Command Language, 5-88
close current command, I/O Operations, 6-12
close indirect command, I/O Operations, 6-12
closing, I/O Operations, 3-20
See also CLOSE operation
closing temporary, I/O Operations, 3-13
cluster size
See RTV field in FAB
command
comment, Task Builder, 1-14
level of indirection, Task Builder, 1-13
option, Task Builder, 1-14
comparing, Command Language, 4-72
CMP utility, Utilities, 12-1
content, MCR, 2-5
contiguity
See FB$CTG mask in FOP field
See XB$CTG mask in AOP field
contiguous, Introduction, 5-6
control directive, MACRO-11, 6-57, 6-58
copying, Command Language, 4-42
See also File transferring
BRU utility, Utilities, 7-1
DOS-11, Utilities, 4-3
DSC utility, Utilities, 8-1
Files-11, Utilities, 3-8
FLX utility, Utilities, 4-3
PIP utility, Utilities, 3-8
RT-11, Utilities, 4-3
count
calculating maximum, MCR, 3-105
creating, RMS-11 Introduction, 5-1, 5-2
File
creating (cont'd.)
See also CREATE operation
EDI utility, Utilities, 2-2
FO.WRT value, I/O Operations, 3-19
source, Program Development, 2-9, 2-10
temporary, I/O Operations, 3-13
mark for deletion, I/O Operations, 3-14
creation date
See CDT field in DAT block
date
See DAT block
declaring number of active, Task Builder, 12-7
default extension size
See DEQ field in ALL block
See DEQ field in FAB
default number, Command Language, 5-62
delete routine, I/O Operations, 4-29, 4-30
deleting, Command Language, 4-35
I/O Operations, 3-42
See also ERASE operation
PIP utility, Utilities, 3-17
deleting routine, I/O Operations, 4-29
deleting with wildcard, MCR, 2-7
design, RMS-11 Introduction, 3-15, 5-1
device
data format, I/O Operations, 1-6
directory, I/O Operations, 5-2
directory listing, Program Development, 3-9
displaying, Command Language, 4-57
RMS-11 Introduction, 5-3
block number
PIP utility, Utilities, 3-25
displaying information, Command Language, 4-26
dumping
DMP utility, Utilities, 11-1
editing, Command Language, 4-16, 4-23
EDI utility, Utilities, 2-1
source, Program Development, 2-9 to 2-18
EDTINLED, Introduction, 2-2
Master Index--99
File (cont’d.)
excluding, Command Language, 4-9
extend
eroutine, I/O Operations, 4-28
WRITES$ macro, I/O Operations, 3-39
extending, MCR, 3-102
extending allocation
See EXTEND operation
FORTRAN direct access
See FLX utility
header
allocating, MCR, 3-103
calculating preallocated, MCR, 3-104
contents, MCR, 2-2
initializing, MCR, 3-103
maximum per volume, MCR, 3-103
identification in FNB (F11ACP), I/O Drivers, C-7
identifier
See FID field in NAM block
index, I/O Operations, 5-2, E-1
listing contents
VFY utility, Utilities, 9-6
indirect command, Task Builder, 1-11
See also Indirect command file input
designating as debugging aid, Task Builder, 10-14, 11-25, 11-26
designating as library file, Task Builder, 10-23, 11-39
directing selective symbol search, Task Builder, 10-48, 10-49, 10-50, 11-61, 11-62, 11-63
including content of in map, Task Builder, 10-26
processing to reduce overhead, Task Builder, 1-6
specifying as default library, Task Builder, 10-15, 11-27
internal file identifier
See IFI field in FAB
library, Command Language, 6-28
declaring, Task Builder, 10-23, 11-39
LBR utility, Utilities, 10-2
LINK command input, Task Builder, 1-4
listing, Program Development, 3-6
FLX utility, Utilities, 4-7
File
listing (cont’d.)
LBR utility, Utilities, 10-21
PII utility, Utilities, 3-24
loading, RMS-11 Introduction, 5-2
location, MCR, 2-3
See also LOC field in ALL block
locked, Command Language, 4-78
I/O Operations, 2-16
locking
See FB$DLK mask in FOP field
lost
recovering
VFY utility, Utilities, 9-6
MACRO-l1 default specification,
MACRO-11, 8-3 to 8-6
making autoloadable
using name, Task Builder, 4-2
map
LINK command, Task Builder, 1-5, 1-6
printing, Task Builder, 1-3
in LINK command, Task Builder, 1-6, 1-7
mark for delete, I/O Operations, 3-14
maximum number
changing, Command Language, 5-71
setting, Command Language, 5-62
maximum per volume
calculating, MCR, 3-104
merging
PII utility, Utilities, 3-9
multiple, operation, I/O Operations, 5-6
name
specifying, MCR, 2-4
name block
See FNB
See NAM block
name block pointer, I/O Drivers, C-6
name in FNB (F11ACP), I/O Drivers, C-7
no lock on close, I/O Operations, 2-16
non-RMS-11, RMS-11 Introduction, 3-4
object, Introduction, 5-5
binary, Command Language, 6-2

Master Index-100
File

**ODL**
- creating using diagram, Task Builder, 3-35 to 3-40
- omitting specific output, Task Builder, 1-3

**open**
- at one time, Task Builder, 12-7
  - by filename block, I/O Operations, 3-16
  - by ID, I/O Operations, 3-14
  - for append
    - FO.APD value, I/O Operations, 3-19
  - for modify, I/O Operations, 3-19
  - for read, I/O Operations, 3-19
  - for shared access
    - FA.SHR value, I/O Operations, 3-19
  - for update and extend, I/O Operations, 3-19
  - for write
    - FO.WRT value, I/O Operations, 3-19
    - on LP: for printing, I/O Operations, 8-3
  - processing, I/O Operations, 3-3

**opening**
- See also OPEN operation for reading, Indirect, 2-73
- temporary, I/O Operations, 3-13
- mark for deletion, I/O Operations, 3-14

open temporary
- FA.TMP value, I/O Operations, 3-19

**organization**
- See ORG field in FAB

**output**
- omitting specific, Task Builder, 1-3

**owner**
- See PRG field in PRO block

**ownership, MCR, 2-2, 2-3**
- PIP utility, Utilities, 3-11
- position on close, I/O Operations, 2-16
- printing, Command Language, 4-60
  - Program Development, 3-8 to 3-9
- processing, RMS-11 Introduction, 4-1

**protection, Command Language, 4-9**
- Introduction, 6-4 MCR, 2-3
  - 2-6, 3-122, 3-148, 3-152, 3-214, 3-241
- See also PRO field in PRO block code, Command Language, 4-9, 4-83
default, Command Language, 4-84 MCR, 3-103
- specifying, MCR, 3-102

Files-11
- PIP utility, Utilities, 3-29
- setting, Command Language, 4-83, 5-38, 5-63, 5-64, 5-71

**purging, Command Language, 4-39**
- Program Development, 3-9, 3-10
- PIP utility, Utilities, 3-31
- record access initialization, I/O Operations, 2-21
- record-output characteristic
  - See RAT field in FAB
- recovering lost file
  - VFY utility, Utilities, 9-6
- rename, I/O Operations, 4-26
- renaming, Command Language, 4-47
  - See also RENAME operation
  - PIP utility, Utilities, 3-33
  - restoring, RMS-11 Introduction, 5-3
  - revision date
    - See RDT field in DAT block
  - revision number
    - See RVN field in DAT block
- saving
  - BRU utility, Utilities, 7-1
  - DSC utility, Utilities, 8-1
- sequenced, I/O Operations, 2-6
  - reading, I/O Operations, 2-7
  - writing, I/O Operations, 2-7
- sequential
  - appending, Command Language, 4-70
  - creating, Command Language, 4-10, 4-11
  - shared access, I/O Operations, 1-12
  - single, operation, I/O Operations, 5-6
  - source, Introduction, 5-5
  - maintaining, Command Language, 4-20
- specification, Introduction, 1-14 to 1-16
  - RMS-11 Introduction, 4-1
  - Utilities, 1-4
File attribute (cont’d.)
See also Attribute initialize, I/O Operations, 2-5
run-time, I/O Operations, 2-21
RMSDSP utility
indexed file
detailed display, RMS-11 Utilities, 5-4
specifying tape, I/O Operations, G-17
FILEB.MAC source code, Program Development, 2-23, 2-24
File back-up date
See Back-up date
File block
access initialization, I/O Operations, 2-12
run time, I/O Operations, 2-21
allocation, I/O Operations, 2-8
buffer initialization, I/O Operations, 2-18
run time, I/O Operations, 2-22
locking, I/O Operations, 2-17
File characteristic
system-controlled
SC.BAD, bad data block, I/O Operations, F-4
SC.MDL, file marked for delete, I/O Operations, F-4
user-controlled
UC.CON, contiguous file, I/O Operations, F-4
UC.DLK, file improperly closed, I/O Operations, F-4
FILE command
EDI utility, Utilities, 2-33
File Compare Utility
See CMP utility
File contiguity
See Contiguity
File Control Block, MCR, 3-104, 3-156
See also FCB
role of
in I/O data structure, Writing I/O Driver, 2-20
File Control Processor, RMS-11
Introduction, 2-1, 4-3 RMS-11 User’s Guide, 1-16
See also FCP
retrieval pointers, RMS-11 User’s Guide, 8-2
File control routine, I/O Operations, 4-1
File Control Services
See FCS
File creation date
See Creation date
File Descriptor Block
See FDB
File Dump Utility
See DMP utility
File extension
default, I/O Operations, 2-20
default size, I/O Operations, 2-9
size, I/O Operations, 2-8
virtual block, I/O Operations, 2-9
File header, Command Language, 4-2
allocating, Command Language, 5-60
maximum number, Command Language, 5-60
File header block, I/O Operations, 5-3, E-2
format, I/O Operations, F-1
H.XXXX field, I/O Operations, F-1
header area
file characteristics, I/O Operations, F-4
file owner information, I/O Operations, F-3
file protection code, I/O Operations, F-4
identification area, I/O Operations, F-4
creation date, I/O Operations, F-5
creation time, I/O Operations, F-5
expiration date, I/O Operations, F-5
filename, I/O Operations, F-4
filetype, I/O Operations, F-4
cfile version number, I/O Operations, F-4
revision date, I/O Operations, F-4
revision number, I/O Operations, F-4
map area, I/O Operations, F-4
tape, I/O Operations, G-10
user file, I/O Operations, E-2
File header block, H.XXXX field, I/O Operations, F-2
File header block, L.XXXX field, I/O Operations, F-2

Master Index-103
File header block, M.XXXX field, I/O Operations, F-2, F-3
File header label
   ANSI, I/O Operations, 5-4
tape, I/O Operations, G-3
   HDR1, I/O Operations, G-4
HDR2, I/O Operations, G-5
HDR3, I/O Operations, G-6
File I/O
   coordination, I/O Operations, 2-42
status block, I/O Operations, 2-44
File identification, I/O Operations, 5-3
   FDB, I/O Operations, 3-10
field, I/O Operations, 2-34
File Identification Block (F11ACP), I/O Drivers, C-2
File identifier
   processing by Files-11 (tape), I/O Operations, G-7
File label
tape, I/O Operations, G-1
File macro, I/O Operations, 3-1
   access privileges, I/O Operations, 3-3
error routine, I/O Operations, 3-2
File name, Command Language, 4-3
   Introduction, 3-1
ANSI, Command Language, 1-9
changing, Command Language, 4-47
default, Indirect, 2-5
   .PARSE routine, I/O Operations, 4-14
   .PRSFN routine, I/O Operations, 4-16
tape
   Radix-50 conversion, I/O Operations, 4-19
Filename block
See also FNB
default, I/O Operations, 2-31, 3-17
   file-open, I/O Operations, 2-14
initialization, I/O Operations, 2-15
OFNB$X macro, I/O Operations, 3-17
   specifying, I/O Operations, 2-28
default directory information
   .GTDID routine, I/O Operations, 4-21
delete file, I/O Operations, 4-30
Filename block
directory information (cont'd.)
   .GTDIR routine, I/O Operations, 4-20
initializing, I/O Operations, 2-35
local offset definition, I/O
   Operations, 2-33
manually initializing, I/O
   Operations, 2-36
   N.DID field
   .PARSE routine, I/O Operations, 4-13
   N.DVNM field, I/O Operations, 4-17
   N.NEXT
   .PARSE routine, I/O Operations, 4-15
   N.STAT word
   .PARSE routine, I/O Operations, 4-15
   NBOFL macro, I/O Operations, 2-33
   NMBSL$ macro, I/O Operations, 2-31
OPEN$X macro, I/O Operations, 2-35
   open file by, I/O Operations, 3-16
   .PARSE routine
disk, I/O Operations, 4-11
   N.DID field, I/O Operations, 4-13
   N.FID field, I/O Operations, 4-13
tape, I/O Operations, 4-11
Filename block routine, I/O Operations, 4-8, 4-20
Filename string descriptor, I/O Operations, 2-29
File number, I/O Operations, 5-3
File open
append, I/O Operations, 2-15
by ID, I/O Operations, 2-34
for file access, I/O Operations, 3-18
lock on close, I/O Operations, 2-16
modify, I/O Operations, 2-15
no supersede, I/O Operations, 2-15,
   3-18, 3-19
read access, I/O Operations, 2-15
shared access, I/O Operations, 2-15
tape position, I/O Operations, 2-16
temporary, I/O Operations, 2-15
update, I/O Operations, 2-15
write access, I/O Operations, 2-15
File operation, RMS-11 Introduction, 4-2 RMS-11 Macro, 3-6 RMS-11 User's Guide, 1-18
See also Operation
File operation, error codes, I/O Operations, 1-1
File operation macro, RMS-11 Macro, 1-2
declaring, RMS-11 Macro, C-2
See also Indexed file organization
See also Relative file organization
See also Sequential file organization
and file design, RMS-11 User's Guide, 2-11
and record formats, RMS-11 User's Guide, 1-20, 2-15
random access
to indexed files, RMS-11 Introduction, 3-15
to relative files, RMS-11 Introduction, 3-15
to sequential files, RMS-11 Introduction, 3-14
RMSDEF utility, RMS-11 Utilities, A-8
sequential access
to indexed files, RMS-11 Introduction, 3-14
to relative files, RMS-11 Introduction, 3-14
to sequential files, RMS-11 Introduction, 3-14
File owner word, I/O Operations, 4-5
read, I/O Operations, 4-7
write, I/O Operations, 4-7
FILE PLACEMENT attribute
RMSDES utility, RMS-11 Utilities, 2-30
File pointer routine, I/O Operations, 4-21
File position
to byte (cont'd.), .POINT routine, I/O Operations, 4-22
to record .POSRC routine, I/O Operations, 4-22
File processing, RMS-11 Macro, 3-1
File processing completion
CLOSE$ macro, I/O Operations, 2-8
File protection
setting, Command Language, 2-6
File protection word, I/O Operations, 4-4, 4-5
File random I/O, I/O Operations, 2-20
File read-ahead
FD.RAH parameter, I/O Operations, 3-12
File record attribute, I/O Operations, 2-6
moving, Command Language, 4-50
File rename routine, I/O Operations, 4-26
File revision date
See Revision date
FILERR symbol, Indirect, 2-13
Files-11, MCR, 2-1
ACP
See FCP
disk selecting for testing
IOX, System Management, 4-39, 4-65
file copying
FLX utility, Utilities, 4-2
PIP utility, Utilities, 3-8
protection
PIP utility, Utilities, 3-29
verifying structure, Utilities, 9-1
file name, MCR, 2-5
volume, Command Language, 5-3
backing up, Command Language, 5-73
dismounting, MCR, 3-70
formatting, Command Language, 5-57
home block, MCR, 3-93
initializing, MCR, 3-99
label, MCR, 3-70
level 401, Command Language, 5-62
Files-11

volume (cont'd.)
  level 402, Command Language, 5-62
  mounting, MCR, 3-142
  protecting, MCR, 3-148, 3-151
  protecting with TEMPORARYFILE
  IOX, System Management, 4-63
restoring, Command Language, 5-73
selecting, System Management, 4-7
  types, MCR, 2-1
volume exercise
example
  IOX, System Management, 4-10

Files-11 ACP
See FCP
FILES11 command
  IOX
default parameters, System Management, 4-39
Files-11 structure, I/O Operations, 5-1
File sequence number, I/O Operations, 2-7, 5-3
File Set ID, Command Language, 5-38, 5-48
File Set Identifier, MCR, 3-143, 3-144, 3-150, 3-151, 3-154
See also File Set ID, Command Language, 5-38

File sharing
See Shared access

File size
  specifying in blocks, System Management, 4-63

File space (RMSIFL)
calculating, RMS-11 Utilities, 3-12
File space preallocation, I/O Operations, 2-20

Filespec
See file specification
File specification, Command Language, 4-2 Introduction, 1-14 to 1-16
See also File
See also Infile
See also Outfile
convention, Task Builder, 1-15, 1-16, 1-19

File specification (cont'd.)
default, MCR, 2-7, 3-35 Task Builder, 1-15, 1-16
defaults, Command Language, 4-4
definition, I/O Operations, 1-3
device, I/O Operations, 1-14
  .PRSDV routine, I/O Operations, 4-16
directory, I/O Operations, 1-14
  .PRSDI routine, I/O Operations, 4-16
dynamic processing
  SYSLIB, I/O Operations, 2-34
elements, MCR, 2-9
Files-11
  assigning logical name, MCR, 3-21
  format, MCR, 2-4
  fully qualified, RMS-11 Macro, 3-4
generation, I/O Operations, 1-17
  input, MCR, 2-4
  logical name expanding, I/O Operations, 4-10
  logical name merging, I/O Operations, 4-10
  logical name parsing, I/O Operations, 4-10
  parsing
  See PARSE operation
  processing, Executive, 5-10
RMSBCK utility, RMS-11 Utilities, 6-9
RMSDEF utility, RMS-11 Utilities, A-7
RMSRST utility, RMS-11 Utilities, 7-10
scanning, Executive, 5-89
syntax description, I/O Operations, 1-13
type, I/O Operations, 1-15
UIC, MCR, 2-6
unit
  .PRSDV routine, I/O Operations, 4-16
  version, I/O Operations, 1-16

Master Index-106
File specification (cont'd.)

VMR
components, System Management, 10-5
defaults, System Management, 10-5
device name, System Management, 10-5
directory, System Management, 10-6
    named, System Management, 10-6
file name, System Management, 10-6
file type, System Management, 10-6
format, System Management, 10-5
/IM switch, System Management, 10-7
    specifying, System Management, 10-5
version number, System Management, 10-6
wildcard, RMS-ll Introduction, 4-1
    RMS-ll Macro, 3-8
wildcards, Command Language, 4-6
within program, I/O Operations, 2-27

File Specification Scanner directive,
Executive, 5-89
/FILES qualifier
    SHOW QUEUE command, Batch and Queue, 2-15
FILE statement, Error Logging, 5-37, 5-38

File Storage Region
See FSR

File structure, I/O Operations, 5-1
    See also Structure
tape, I/O Operations, G-9
user, I/O Operations, 5-2
virtual blocks, I/O Operations, 5-2

File-structured device exercising
    IOX, System Management, 4-3

File Structure Verification Utility
See VFY utility

File trailer label (tape), I/O Operations, G-9

File Transfer Utility
See FLX utility

File type, Command Language, 4-3
    Introduction, 2-1

File type (cont’d.)
changing, Command Language, 4-47
default, Command Language, 4-4
.FTN, Program Development, 7-3, 7-4
.LST, Program Development, 3-4, 6-11, 7-3, 7-4
.MAC, Program Development, 3-1
.MAP, Program Development, 4-6
.MLB, Program Development, 6-1
.OBJ, Program Development, 3-4, 7-5
.OLB, Program Development, 6-4
.PARSE routine, I/O Operations, 4-14
.PMD, Program Development, 5-10
.PRSFN routine, I/O Operations, 4-16
standard, Command Language, 4-5
.TSK, Program Development, 4-1

File version
    .PARSE routine, I/O Operations, 4-14
    .PRSFN routine, I/O Operations, 4-16

File window pointer number, I/O Operations, 2-16
/FIL keyword
    HELP command, MCR, 3-87

Fill command
See F command

Fill number
data bucket
    See DFL field in KEY block
index bucket
    See IFL field in KEY block
RMSCNV utility, RMS-ll Utilities, 4-10
RMSDEF utility, RMS-ll Utilities, A-16
RMSIFL utility, RMS-ll Utilities, 3-6

Fill size
    See Bucket fill number
FILSPC symbol, Indirect, 2-20
/FINAL keyword
    ASSIGN command (MCR), MCR, 3-26
FIN argument to ORG$ macro, RMS-ll Macro, 2-3
FIND command
    EDT utility, Utilities, 2-33
    EDT editor, Introduction, 2-13
    FIND key (EDT), Introduction, 2-7

Master Index—107
$FIND macro
key access, RMS-11 Macro, 5-51
RFA access, RMS-11 Macro, 5-54
sequential access, RMS-11 Macro, 5-49
FIND NEXT key (EDT), Introduction, 2-7
FIND operation, RMS-11 Introduction, 4-4 RMS-11 Macro, 4-10 RMS-11 User's Guide, 1-15
access modes, RMS-11 Introduction, 4-6
and bucket locking, RMS-11 User's Guide, 2-8
and shared access, RMS-11 User's Guide, 2-6, 2-10
and stream records, RMS-11 User's Guide, 2-16
declaring with ORG$ macro, RMS-11 Macro, 2-3
deferred write, RMS-11 User's Guide, 7-9
$FIND macro
key access, RMS-11 Macro, 5-51
RFA access, RMS-11 Macro, 5-54
sequential access, RMS-11 Macro, 5-49
indexed files, RMS-11 User's Guide, 7-3
key access, RMS-11 User's Guide, 7-3
random by key, RMS-11 User's Guide, 5-13
RFA access, RMS-11 User's Guide, 7-3
sequential access, RMS-11 User's Guide, 5-17, 7-3
key access, RMS-11 User's Guide, 1-15
relative files, RMS-11 User's Guide, 4-8
key access, RMS-11 User's Guide, 4-8
RFA access, RMS-11 User's Guide, 4-8
sequential access, RMS-11 User's Guide, 4-8
RFA access, RMS-11 User's Guide, 1-15
sequential access, RMS-11 User's Guide, 1-15
FIND operation (cont'd.)
sequential files, RMS-11 User's Guide, 3-7
key access, RMS-11 User's Guide, 3-7
RFA access, RMS-11 User's Guide, 3-7
sequential access, RMS-11 User's Guide, 3-7
.FIND routine, find directory entry,
I/O Operations, 4-17
FIND statement, Error Logging, 5-39
FINIT$ macro
FSR initialization
run-time, I/O Operations, 2-40
.FINIT routine, initialize before .PARSE routine, I/O Operations, 4-11
FIS, System Generation (11M), 4-14
/FL switch
DMP utility, Utilities, 11-5
PIP utility, Utilities, 3-22
QUE /DEL command, Batch and Queue, 2-11
FIX, Command Language, 7-38 to 7-39, 9-15
See also FIX-IN MEMORY command
Fixed control area
RMSDEF utility, RMS-11 Utilities, A-8
Fixed-control-size
See FSZ field in FAB
Fixed-length record
PUT$ macro
block boundary, I/O Operations, 3-29
block buffer, I/O Operations, 3-29
See also FB$FIX code in RFM field
Fixing
directive common, System Management, 10-19
FIX-IN-MEMORY command (MCR), MCR, 1-7, 3-75
error messages, MCR, 3-76
examples, MCR, 3-76
format, MCR, 3-75
FIX-IN-MEMORY command (VMR), System Management, 10-18
definition, System Management, 10-18

Master Index-108
FIX-IN-MEMORY command (VMR) (cont’d.)
examples, System Management, 10-19
format, System Management, 10-18
keywords
/DIR, System Management, 10-19
/NSF, System Management, 10-19
parameter, System Management, 10-18
/FIX keyword
INSTALL command (VMR), System Management, 10-23
FLA
See GROUP GLOBAL EVENT
FLAGS command
Flag
See also Event flag
group global event, MCR, 3-77
/FLAG_PAGE qualifier
PRINT command, Batch and Queue, 2-5
Flagwd parameter
device-specific function
transmit (LDRV), I/O Drivers, 14-4
FLG field in KEY block
CREATE operation, RMS-11 Macro, 5-19
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-67
OPEN operation, RMS-11 Macro, 5-80
summary
XB$CHG mask, RMS-11 Macro, 6-76
XB$DUP mask, RMS-11 Macro, 6-77
XB$NUL mask, RMS-11 Macro, 6-78
Floating instruction set
See FIS
Floating-point
directive, MACRO-11, 6-35
.DFT2, MACRO-11, 6-35
.DFT4, MACRO-11, 6-35
number, MACRO-11, 6-33, 6-34
operation code, MACRO-11, C-4, C-5
processor, MACRO-11, 3-14
rounding, MACRO-11, 6-34
Floating-point
rounding (cont’d.)
controlling, MACRO-11, 6-19
truncation, MACRO-11, 6-34
controlling, MACRO-11, 6-19
unary operator, MACRO-11, 6-35, 6-36
Floating Point Processor
See also FP11
specifying, Task Builder, 10-18, 11-17
Floating qualifier, Command Language, 1-3 to 1-4
/FL switch
PRI command, Batch and Queue, 2-5
FLT16: subroutine
convert unsigned integer to real
constant
K-series, I/O Drivers, 23-21
LADRV, I/O Drivers, 22-17
.FLT2 directive, MACRO-11, 6-35
.FLT4 directive, MACRO-11, 6-35
Flush buffer routine, I/O Operations, 4-32
$FLUSH macro, RMS-11 Macro, 5-56
FLUSH operation, RMS-11
Introduction, 4-4 RMS-11 User’s Guide, 1-15
$FLUSH macro, RMS-11 Macro, 5-56
indexed files, RMS-11 User’s Guide, 7-5
record stream, RMS-11 Macro, 4-8
relative files, RMS-11 User’s Guide, 4-10
sequential files, RMS-11 User’s Guide, 3-9
.FLUSH routine, flush buffer, I/O Operations, 4-32
FLX, System Generation (11S), 2-7
FLX utility, MCR, 2-2 System Generation (11S), 1-4
cassette, Utilities, 4-13
input file, Utilities, 4-15
multivolume support, Utilities, 4-14
output file, Utilities, 4-14
TA11/TU60 support, Utilities, 4-13
command line, Utilities, 4-2
device support, Utilities, 4-2
DOS-11 volume, Utilities, 4-8
deleting, Utilities, 4-10

Master Index-109
FLX utility
DOS-11 volume (cont’d.)
directory listing, Utilities, 4-8
initializing, Utilities, 4-10
valid, Utilities, 4-1
error message, Utilities, 4-17
file
deleting, Utilities, 4-7
Files-11, Utilities, 4-2
specifying, Utilities, 4-2
FORTRAN direct access file,
Utilities, 4-16
paper tape support,
Utilities, 4-15
RT-11 volume,
Utilities, 4-10
deleting, Utilities, 4-12
initializing, Utilities, 4-10
valid, Utilities, 4-2
switch,
Utilities, 4-3
control, Utilities, 4-6
transfer mode, Utilities, 4-4
volume
directory listing, Utilities, 4-7
file deletion, Utilities, 4-7
file transfer, Utilities, 4-4
formatting, Utilities, 4-4
initializing, Utilities, 4-2
wildcard, Utilities, 4-3
Flying installs, System Management, 12-4
FM1WM1, Error Logging, 4-6
FM2CM1, Error Logging, 4-6
FM3CM1, Error Logging, 4-6
FM4NM1, Error Logging, 4-6
FMASK symbol, Indirect, 2-20
FMS-11 interface, Indirect, 2-55
FMTBUF option, Task Builder, 12-17
FMTNP1, Error Logging, 4-7
FMT utility
command line, Utilities, 5-1
device support, Utilities, 5-5
error message, Utilities, 5-10
indirect command file, Utilities, 5-9
initiating, Utilities, 5-1
operation mode, Utilities, 5-2
switch, Utilities, 5-7
summary, Utilities, 5-1
terminating, Utilities, 5-2
FN1NM1, Error Logging, 4-6
FNA field in FAB, RMS-11 Macro, 3-3
CREATE operation, RMS-11 Macro, 5-10
FNA field in FAB (cont’d.)
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-41
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-73
PARSE operation, RMS-11 Macro, 5-87
REMOVE operation, RMS-11 Macro, 5-103
RENAME operation, RMS-11 Macro, 5-109, 5-110
summary, RMS-11 Macro, 6-38
FNB
definition, I/O Operations, 1-2
N.XXXX field, I/O Operations, B-1
FNB (F11ACP), I/O Drivers, C-6
directory identification, I/O Drivers, C-7
file identification, I/O Drivers, C-7
file name, I/O Drivers, C-7
file type, I/O Drivers, C-7
file version number, I/O Drivers, C-7
pointer, I/O Drivers, C-6
status word, I/O Drivers, C-7
wildcard context, I/O Drivers, C-7
FNB field in NAM block, RMS-11
Macro, 3-3, 3-9, 3-10
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-37, 5-38
ERASE operation, RMS-11 Macro, 5-41, 5-43
offset, RMS-11 Macro, 6-94
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-103, 5-105
RENAME operation, RMS-11 Macro, 5-109, 5-111, 5-112
SEARCH operation, RMS-11 Macro, 5-116, 5-118
summary, RMS-11 Macro, 6-101
NB$WCH mask, RMS-11 Macro, 6-102
wildcard loop, RMS-11 Macro, 3-10
Fnc parameter
QI0$ basic syntax, I/O Drivers, 1-6
FOP field in FAB (cont'd.)

FOP field in FAB, RMS-11 Macro, 3-7, 3-9, 3-10, 3-11
CLOSE operation, RMS-11 Macro, 5-4
CREATE operation, RMS-11 Macro, 5-10, 5-11, 5-15, 5-18
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-41
EXTEND operation, RMS-11 Macro, 5-46
offset, RMS-11 Macro, 6-23
OPEN operation, RMS-11 Macro, 5-73, 5-74, 5-76, 5-77, 5-78
REMOVE operation, RMS-11 Macro, 5-103

FOP field in FAB, RMS-11 Macro, 3-3
CREATE operation, RMS-11 Macro, 5-10
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-41
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-73
PARSE operation, RMS-11 Macro, 5-87
REMOVE operation, RMS-11 Macro, 5-103
RENAME operation, RMS-11 Macro, 5-109, 5-110
summary, RMS-11 Macro, 6-39

IBM operator, MACRO-11, 3-5, 6-36
FORATT symbol, Indirect, 2-16
FOR command
MCR, Program Development, 7-1, 7-4
FOR compiler task, Program Development, 7-1
creating object module, Program Development, 7-5
/D_LINES, Program Development, 7-7
/DE, Program Development, 7-7
debugging statements, Program Development, 7-7
diagnostic run, Program Development, 7-3, 7-4
FOR command
MCR, Program Development, 7-1, 7-4
FORTRAN command
DCL, Program Development, 7-1, 7-3
.FTN file type, Program Development, 7-3, 7-7
/LIST, Program Development, 7-3, 7-7

Master Index-111
FOR compiler task (cont’d.)

/NOOBJECT, Program Development, 7-3

/OBJECT, Program Development, 7-3, 7-7

Foreign volume
See Volume

$FORK1 routine, Writing I/O Driver, 5-11

Fork block
storage words in SCB, Writing I/O Driver, 4-23

/FOR keyword

MOUNT command (MCR), MCR, 3-148

Fork level processing, Writing I/O Driver, 2-15

Fork list, Writing I/O Driver, 2-9

Fork process, Writing I/O Driver, 2-9
creating with $FORK, Writing I/O Driver, 2-12

$FORK routine, Writing I/O Driver, 5-10
accessing shared driver data base, Writing I/O Driver, 2-10
initiating fork process, Writing I/O Driver, 2-9

Form
special hardcopy, Batch and Queue, 1-2

Format
See also Record format
assembler listing, MACRO-11, 6-4
control directive, MACRO-11, 6-13, 6-14
line printer, MACRO-11, 6-5, 6-6
teleprinter, MACRO-11, 6-7, 6-8
assembler statement, MACRO-11, 2-1
control, MACRO-11, 2-5

FORTRAN IV statement, Program Development, 7-3

MACRO-11
source file, Program Development, 2-1 to 2-3
skeleton, Program Development, 2-4
statement, Program Development, 2-3
macro definition, MACRO-11, 7-4
memory listing, Debugging, 6-5

Format (cont’d.)
overall
internal symbol, Task Builder, A-25
PSW, Debugging, B-1
source line, MACRO-11, 2-5
Trace program listing, Debugging, 10-2

FORMAT attribute
RMSDES utility, RMS-11 Utilities, 2-36

Format module, Error Logging, 4-11
Format register
See F register

Format switch, Error Logging, 3-5
full report, Error Logging, 3-15
no report, Error Logging, 3-19
register report, Error Logging, 3-18

Formatting volume
FLX utility, Utilities, 4-4
FMT utility, Utilities, 5-1

Form feed, Command Language, 3-21
Form feed (TIDRV), I/O Drivers, 2-69

FORM FEED command
EDI utility, Utilities, 2-34

/FORMFEED keyword

SET command (MCR), MCR, 3-219

SET command (VMR), System Management, 10-59

Forms
definition, Batch and Queue, 4-4

/FORMS qualifier
PRINT command, Batch and Queue, 2-5

QUE /LI command, Batch and Queue, 2-16

SET QUEUE command, Batch and Queue, 2-20

FOROTS.OLB (FORTRAN IV and FORTRAN IV-PLUS library), Program Development, 1-11

FORTRAN
See also ISA
AST service routine, Executive, 1-20
common block
overlays, Task Builder, 3-18
ICDRV/ISDRV
I/O status return, I/O Drivers, 19-35
optional argument, I/O Drivers, 19-37

interface
AFC11/AD01 converter, I/O Drivers, 15-3
FORTRAN interface (cont'd.)
K-series, I/O Drivers, 23-7
LADRV, I/O Drivers, 22-2
LSDRV, I/O Drivers, 17-9
routine (ICDRV/ISDRV), I/O Drivers, 19-34
routine list (K-series), I/O Drivers, 23-7
status return value list (UDDRV), I/O Drivers, 16-33
status value (LSDRV), I/O Drivers, 17-33
UDDRV, I/O Drivers, 16-14
values
AFC11/AD01 converter, I/O Drivers, 15-9
UDDRV, I/O Drivers, 16-33
manual load calling sequence, Task Builder, 4-9, 4-10
run-time support
virtual program section, Task Builder, 5-61, 5-64
sample program (K-series), I/O Drivers, 23-33
completion routine, I/O Drivers, 23-35
with event flag, I/O Drivers, 23-34
subroutine
LADRV, I/O Drivers, 22-3
LSDRV, I/O Drivers, 17-11
UDDRV, I/O Drivers, 16-16
FORTRAN carriage-control
record attribute, I/O Operations, 3-8
FORTRAN command, Introduction, 5-10
DCL, Program Development, 7-1, 7-3
FORTRAN IV
See also FOR compiler task
compiler task, Program Development, 7-1
formatting source statements, Program Development, 7-3
library, Program Development, 1-11
source file
blank line, Program Development, 7-3
comment line, Program Development, 7-3
FORTRAN IV (cont'd.)
specifying OTS to TKB, Program Development, 7-5
FORTRAN IV-PLUS
library, Program Development, 1-11
FORTRAN-style carriage control
See FB$FTN mask in RAT field
FORTRAN subroutine
integer arguments, Executive, 1-11
list, Executive, 1-13
unavailable, Executive, 1-19
Forward reference, MACRO-11, 3-8 to 3-10, 3-13
/F0 switch
PIP utility, Utilities, 3-11
PRI command, Batch and Queue, 2-5
QUE /LI command, Batch and Queue, 2-16
RMS CNV utility, RMS-11 Utilities, 4-9, 4-15
Four-byte signed integer key, RMS-11 User's Guide, 6-4
Four-byte unsigned binary key, RMS-11 User's Guide, 6-5
FP11, System Generation (1M), 4-14
/FPRO keyword
HOME command, MCR, 3-94
INITVOLUME command, MCR, 3-102
MOUNT command (MCR), MCR, 3-148
/FP switch, Task Builder, 10-18
FPT symbolic argument, MACRO-11, 6-19
$FREE macro, RMS-11 Macro, 5-58
FREE operation, RMS-11 Introduction, 4-4 RMS-11 User's Guide, 1-15
and shared access, RMS-11 User's Guide, 2-10
block stream, RMS-11 Macro, 4-13
$FREE macro, RMS-11 Macro, 5-58
record stream, RMS-11 Macro, 4-9
Free-space list for pool, RMS-11 Macro, 2-19
F register, Debugging, 2-6, 5-3, 9-10
/FR switch
PIP utility, Utilities, 3-23
RM SRST utility, RMS-11 Utilities, 7-7
VFY utility, Utilities, 9-5
FSR
as data structure, I/O Operations, 1-4

Master Index—113
FSR (cont'd.)
definition, I/O Operations, 1-3
general description, I/O Operations, 1-5
increasing size
FORTRAN, I/O Operations, 2-42
MACRO-11, I/O Operations, 2-41
initialization
FINIT$ macro, I/O Operations, 2-40
FSRSZ$ macro, I/O Operations, 2-37
record I/O, I/O Operations, 2-38
multiple buffering, I/O Operations, 2-38

fsr
INITIALIZATION, I/O Operations, 2-37
$$FSR1, I/O Operations, 1-5
$$FSR1 program section
reserved name, Task Builder, E-3
$$FSR2
default UIC, I/O Operations, 4-4
file owner word, I/O Operations, 4-5
file protection word, I/O Operations, 4-4
general description, I/O Operations, 1-6
FSR block buffer
block boundary, I/O Operations, 3-28
locate mode, I/O Operations, 3-23, 3-29
pool space, I/O Operations, 2-39
space allocation, I/O Operations, 2-20
.FSRPT
low-memory context, Task Builder, B-10
reserved global symbol, Task Builder, E-1
FSRSZ$ macro, FSR initialization, I/O Operations, 2-37
FSS$ directive, Executive, 5-89
/F switch, Error Logging, 3-5
FSZ field in FAB
CREATE operation, RMS-11 Macro, 5-11
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-78

FSZ field in FAB (cont'd.)
summary, RMS-11 Macro, 6-51
FTB, Command Language, 6-11
Program Development, 4-4
description, Task Builder, G-1, G-2
speed of, Task Builder, G-2
supported feature, Task Builder, G-1, G-2
supported option, Task Builder, G-2
switch, Task Builder, G-1
unsupported feature, Task Builder, G-1, G-2

.FTN file type, Program Development, 7-3, 7-4
See also FOR compiler task
/FULL_SEARCH qualifier, Task Builder, 11-33

Full-duplex
considerations (communication driver), I/O Drivers, 12-11
mode
setting (communication driver), I/O Drivers, 12-7
operation (TTDRV), I/O Drivers, 2-79

Full-duplex terminal driver, System Management, 10-50
GET/SET option, System Management, 10-50

Full context report, Error Logging, 3-15
context information, Error Logging, 1-5
device error, Error Logging, 1-5
device supplied information, Error Logging, 1-5
flag, Error Logging, 1-5
I/O operation, Error Logging, 1-5
/FULL qualifier
SHOW QUEUE command, Batch and Queue, 2-15

Function
Task Builder, Task Builder, 2-1 to 2-28
Function commands
IOX category, System Management, 4-3
Function directive, assembler, MACRO-11, 6-18 to 6-22
Function mask word
See I/O function mask
Function switches, CDA, 2-9 to 2-12
/FU switch, Task Builder, 10-19
LBR utility, Utilities, 10-21
PIP utility, Utilities, 3-25

Master Index-114
/FU switch (cont'd.)
QUE /LI command, Batch and Queue, 2-15
RMSDSP utility, RMS-11 Utilities, 5-2, 5-4

G
Gain range (AFC11/AD01 converter), I/O Drivers, 15-10
Gather interevent time data (K-series), I/O Drivers, 23-21
GBLDEF option, Task Builder, 12-18
GBLINC option, Task Builder, 12-19
/GBL keyword
ASSIGN command (MCR), MCR, 3-26, 3-28, 3-29
ASSIGN command (VMR), System Management, 10-10
GBLPAT option, Task Builder, 12-20
See also TKB
GBLREF option, Task Builder, 12-21
GBL symbolic argument, MACRO-11, 6-21, 6-41
GBLXCL option, Task Builder, 8-4, 12-22
use in CSM library, Task Builder, 8-8, 8-9, 8-17
GCC$ directive, Executive, 5-93
GCII$ directive, Executive, 5-96
GCML, I/O Operations, 6-1, 6-2
control block
allocate, I/O Operations, 6-3
define bit values, I/O Operations, 6-5
define offsets, I/O Operations, 6-5
initialize, I/O Operations, 6-3
routine, run-time error, I/O Operations, 6-9
usage, I/O Operations, 6-13
GCM$ macro, I/O Operations, 6-9
GCMBS macro, I/O Operations, 6-3
GCMBD$ macro, I/O Operations, 6-5
G command, Debugging, 2-9, 3-2, 3-4, 8-6, 9-12
ODT, Program Development, 5-6, 5-8
GDIR$ directive, Executive, 5-100
General Information Directive, Executive, 1-24
General register, Debugging, 5-1
contents, Debugging, 5-2
examining, Debugging, 5-1

General register (cont’d.)
setting, Debugging, 5-1
Generic match, RMS-11 Introduction, 3-12
GEN partition, Command Language, 7-2
GET$ macro, I/O Operations, 1-8, 3-1
example, I/O Operations, 3-22
FD.RWM parameter, record I/O, I/O Operations, 2-10
FDB, file processing, I/O Operations, 3-23
file processing, I/O Operations, 3-21
locate mode, I/O Operations, 3-23
move mode, I/O Operations, 3-23
format, file processing, I/O Operations, 3-21
GET$R macro, I/O Operations, 3-1
file processing
read logical record, random mode, I/O Operations, 3-24
GET$S macro, I/O Operations, 3-1
file processing
read logical record, sequential mode, I/O Operations, 3-26
GETADR subroutine, Executive, 1-12
GET argument to ORG$ macro, RMS-11 Macro, 2-3
Get buffer status (K-series), I/O Drivers, 23-23
GET command
RMSDES utility, RMS-11 Utilities, 2-10, 2-17, 2-24
and PROTECTION attribute, RMS-11 Utilities, 2-33
with SAVE, RMS-11 Utilities, 2-28
Get Command for Command Interpreter directive, Executive, 5-92
Get Command Interpreter Information directive, Executive, 5-96
Get command line
See GCML
Get command line macro, I/O Operations, 6-9
Get Default Directory directive, Executive, 5-100

Master Index-115
$GETGSA macro, RMS-11 Macro, 2-19
Get LUN Information directive, Executive, 5-103
$GET macro
key access, RMS-11 Macro, 5-63
RFA access, RMS-11 Macro, 5-67
sequential access, RMS-11 Macro, 5-60
Get Mapping Context directive, Executive, 5-108
System Generation (1IM), 4-28
Get MCR Command Line directive, Executive, 5-106
GET operation, RMS-11 Introduction, 4-4 RMS-11 Macro, 4-10 RMS-11 User's Guide, 1-15
access modes, RMS-11 Introduction, 4-6
and bucket locking, RMS-11 User's Guide, 2-8
and shared access, RMS-11 User's Guide, 2-6, 2-10
and stream records, RMS-11 User's Guide, 2-16, 2-17
declaring with ORG$ macro, RMS-11 Macro, 2-3
deferred write, RMS-11 User's Guide, 7-9
$GET macro
key access, RMS-11 Macro, 5-63
RFA access, RMS-11 Macro, 5-67
sequential access, RMS-11 Macro, 5-60
indexed files, RMS-11 User's Guide, 7-5, 7-9
key access, RMS-11 User's Guide, 7-5
random by key, RMS-11 User's Guide, 5-13
RFA access, RMS-11 User's Guide, 7-5
sequential access, RMS-11 User's Guide, 5-17, 7-5
key access, RMS-11 User's Guide, 1-15
locate mode, RMS-11 User's Guide, 3-14
indexed files, RMS-11 User's Guide, 7-8
relative files, RMS-11 User's Guide, 4-13
GET operation (cont'd.)
moved mode
indexed files, RMS-11 User's Guide, 7-7
relative files, RMS-11 User's Guide, 4-12
sequential files, RMS-11 User's Guide, 3-13
relative files, RMS-11 User's Guide, 4-10
key access, RMS-11 User's Guide, 4-10
RFA access, RMS-11 User's Guide, 4-10
sequential access, RMS-11 User's Guide, 4-10
RFA access, RMS-11 User's Guide, 1-15
sequential access, RMS-11 User's Guide, 1-15
sequential files, RMS-11 User's Guide, 3-9
key access, RMS-11 User's Guide, 3-9
RFA access, RMS-11 User's Guide, 3-9
sequential access, RMS-11 User's Guide, 3-9
Get Partition Parameters directive, Executive, 5-111
Get Region Parameters directive, Executive, 5-113
Get Sense Switches directive, Executive, 5-115
Get-space routine, RMS-11 Macro, 2-18
example, RMS-11 Macro, 7-18
macro
declaring, RMS-11 Macro, C-2
RMS-11-supplied, RMS-11 Macro, 2-4
Get Task Parameters directive, Executive, 5-119
Get terminal support, I/O Drivers, 3-13
Get Time Parameters directive, Executive, 5-117
GFB, Executive, 5-48, 5-71, 5-253
$$GLB, Executive, 1-8
Global
additive
relocation, Task Builder, A-16
cross-reference listing, Program Development, 4-5, 4-6

Master Index-116
Global (cont’d.)
default
disabling in MACRO-11,
Program Development, 3-1,
3-2
expression evaluation, MACRO-11,
3-17
label, MACRO-11, 6-49
reference, MACRO-11, 6-49
relocation, Task Builder, A-15
additive displaced, Task Builder,
A-17
symbol, MACRO-11, 3-7
address of ODT SST routine,
Task Builder, 12-26
autoloaddable segment, Task
Builder, 4-7
cross-reference listing, Task
Builder, 10-12, 10-13,
11-23, 11-24
declaration directory record,
Task Builder, A-2
definition, MACRO-11, 3-1,
3-2, 3-8, 6-49
deleting definition, Indirect,
2-52
directory, MACRO-11, 1-2
directory record format, Task
Builder, A-4
delete end of directory record, Task
Builder, A-11
to point, Program
Development, 6-5, 6-6,
6-10
from the default library, Task
Builder, 3-18
internal, Task Builder, A-28
label, MACRO-11, 2-2
name, Task Builder, A-6
name entry, Task Builder, A-6
resolution, Program
Development, 4-2, 6-8,
6-9 Task Builder, 2-7, 2-8
default library, Task Builder,
3-18
undefined, Program
Development, 6-8, 6-9
Task Builder, 2-7
undefined reference, MACRO-
11, 6-21
GLOBAL argument, MACRO-11, 8-9
Global assignment
device, Command Language, 5-8
Global common (UDDRV)
creating, I/O Drivers, 16-12
referencing, I/O Drivers, 16-12
Global label
$USRDB, Writing I/O Driver, 3-13
$xxDAT, Writing I/O Driver, 3-9
$xxEND, Writing I/O Driver, 3-9
$xxTBL, Writing I/O Driver, 4-10
Global logical assignment, MCR, 3-20
Global mode, Indirect, 2-48
/GLOBALS qualifier, Task Builder,
11-34
Global switch
RMSBCK utility, RMS-11 Utilities,
6-5
RMSVFL utility, RMS-11 Utilities,
3-5
RMSRST utility, RMS-11 Utilities,
7-5
Global symbol, Command Language,
6-28 Program Development, 1-4,
1-5
definition
See .GLOBL directive
entry point, Program Development,
1-4
removing, Command Language, 6-43
Global symbol, FDB macro, I/O
Operations, 2-26
.GLOBL directive, MACRO-11, 3-7,
6-49
GLUN$ directive, Executive, 5-103
GLUN$ directive summary, I/O
Operations, C-1
GLUN$ macro, I/O Drivers, 1-14,
1-21
buffer (TTDRV), I/O Drivers, 2-7
example, I/O Drivers, 1-21, 1-24
get information
AFC11/AD01 converter, I/O
Drivers, 15-2
communication driver, I/O
Drivers, 12-4
CRDRV, I/O Drivers, 11-1
CTDRV, I/O Drivers, 9-1
DDDRV, I/O Drivers, 7-1
disk driver, I/O Drivers, 5-5
DTDRV, I/O Drivers, 6-1
GRDRV, I/O Drivers, 21-1
half-duplex, I/O Drivers, 3-4
ICDRV/ISDDRV, I/O Drivers,
19-8
LADRV, I/O Drivers, 22-2
GLUN$ macro
  get information (cont’d.)
  LPDRV, I/O Drivers, 10-3
  LRDRV, I/O Drivers, 14-2
  LSDRV, I/O Drivers, 17-2
  PPDVR/PDRDrv, I/O Drivers, 18-1
  tape driver, I/O Drivers, 8-5
  TTDVR, I/O Drivers, 2-7
  UDDRV, I/O Drivers, 16-3
  UNIBUS switch driver, I/O
  Drivers, 24-2
  VTDRV, I/O Drivers, 4-1
  information returned, I/O Drivers, 1-21
  information table (TTDRV), I/O Drivers, 2-7
  GMCR$ directive, Executive, 5-106
  GMCR$ directive summary, I/O Operations, C-1
  GMCX$ directive, Executive, 5-109
  .$GNCAL macro, RMS-11 Macro, C-2
  Go command
  See G command
  GOLD key (EDT), Introduction, 2-3
  .GOSUB directive, Indirect, 2-58
  .GOTO directive, Indirect, 2-59
  .GPRT$ directive, Executive, 5-111
  GRDRV, I/O Drivers, 21-1
  function code list, I/O Drivers, B-9
  programming hint, I/O Drivers, 21-3
  GREG$ directive, Executive, 5-113
  G register, Debugging, 2-7, 5-4, 9-10
  /GR keyword
  ASSIGN command (MCR), MCR, 3-26, 3-28, 3-29
  /GRO keyword
  HELP command, MCR, 3-87
  Group event flag dump, CDA, 1-9
  Group global event flag, Command Language, 6-51 Executive, 2-2
  creating, Command Language, 6-52
  Executive, 5-48
  decrementing use count, Executive, 5-253
  deleting, Command Language, 6-52
  Executive, 5-71
  displaying, Command Language, 6-53
  eliminating, Executive, 5-253
  reading, Executive, 5-158
  Group Global Event Flag Control Block
  See GFB

Group global event flag dump, CDA, 3-1, 3-18
GROUP GLOBAL EVENT FLAGS
  command, MCR, 1-6, 3-77
  error messages, MCR, 3-78
  examples, MCR, 3-77
  format, MCR, 3-77
  keywords
  /CRE, MCR, 3-77
  /ELIM, MCR, 3-77
  Group logical assignment, MCR, 3-20
  GSA$ macro, RMS-11 Macro, 2-18
  example, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15
  GSSW$ directive, Executive, 5-115
  $GTBYT routine, Writing I/O Driver, 5-12
  GT condition test argument, MACRO-11, 6-51
  $GTCOR (Get core), System Library, 8-11
  .GTDID routine, I/O Operations, 4-20
  default directory information, I/O Operations, 4-21
  .GTDIR routine, I/O Operations, 4-20
  insert directory information, I/O Operations, 4-20
  GTHIST: subroutine
    gather interevent time data (K-series), I/O Drivers, 23-21
  GTIM$ directive, Executive, 5-117
  $GTPKT routine, Writing I/O Driver, 2-12, 5-13
  in driver processing, Writing I/O Driver, 2-17
  use of
    with ACP, Writing I/O Driver, D-6
  GTSK$ directive, Executive, 5-119
  $GTWRD routine, Writing I/O Driver, 5-14
  conditional assembly, Writing I/O Driver, 5-1
  inclusion of
    by SYSGEN, Writing I/O Driver, 3-2

H
  H.CKSM, checksum word, I/O Operations, F-3
  H.FLEV, structure level, I/O Operations, F-1
H.FNUM, file number, I/O Operations, F-1
H.FOWN, offset to file owner, I/O Operations, F-1
H.FPRO, file protection code, I/O Operations, F-1
H.FSEQ, file sequence number, I/O Operations, F-1
H.IDOF, header area, I/O Operations, F-1
H.MPOF, map area offset, I/O Operations, F-1
H.PROG, member number, I/O Operations, F-1
H.PROJ, group number, I/O Operations, F-1
H.SCHA, system-controlled file characteristics, I/O Operations, F-2
H.UCHA, user-controlled file characteristics, I/O Operations, F-1
H.UFAT, user file attributes, I/O Operations, F-2
Half-duplex
considerations (communication driver), I/O Drivers, 12-11
hold-screen mode, I/O Drivers, 3-21
programming hint, I/O Drivers, 3-31
set mode (communication driver), I/O Drivers, 12-7
Hard error, System Management, 15-30
definition, Error Logging, 1-3
limit switch, Error Logging, 2-3, 2-7
Hard location
See XBS$HRD mask in AOP field
Hardware
program development, Program Development, 1-12
Hardware/software configurations, System Generation (11S), 1-4
Hardware configuration
ICR11, I/O Drivers, 19-1
ICS11, I/O Drivers, 19-1
K-series, I/O Drivers, 23-2
Hardware faults, System Management, 15-29
intermittent failures, System Management, 15-30
media failures, System Management, 15-29
Hardware faults (cont’d.)
transient failures, System Management, 15-29
Hardware interrupt
processing, Executive, 5-21
/HDR3 keyword
MOUNT command (MCR), MCR, 3-149
HDRDFS$, CDA, B-21, C-33
/HDR switch, CDA, 2-5, 2-6
/HD switch, Task Builder, 10-20
DMP utility, Utilities, 11-5
VFY utility, Utilities, 9-5
Header, Task Builder, 2-8, 2-9
excluding task, Task Builder, 10-20, 11-35
task
fixed part, Task Builder, B-11
variable part, Task Builder, B-12
vector extension area, Task Builder, B-13
task image, Task Builder, B-10
Header, page, MACRO-11, 6-4
Header area, I/O Operations, 5-3
file header block, I/O Operations, F-3
file characteristics, I/O Operations, F-4
file number, I/O Operations, F-3
file owner information, I/O Operations, F-3
file protection code, I/O Operations, F-4
file sequence number, I/O Operations, F-3
identification area, I/O Operations, F-3
map area offset, I/O Operations, F-3
structure level, I/O Operations, F-3
user file attributes
file characteristics, I/O Operations, F-4
Hardware block
file, I/O Operations, 5-3
/HEADER qualifier, Task Builder, 11-35
/HEADERS qualifier
BRU utility, Utilities, 7-16

Master Index-119
$HEADR pointer
use of in fault tracing, Writing I/O Driver, 3-24
HEL
See HELLO command
HELLO command, Introduction, 1-5
MCR, 1-8, 3-79
error messages, MCR, 3-84
elements, MCR, 3-83
formats, MCR, 3-81
Hello OOB (TTDRV), I/O Drivers, 2-61
HELP
RMSBCK utility, RMS-11 Utilities, 6-4
RMSCNV utility, RMS-11 Utilities, 4-5
RMSCDEF utility, RMS-11 Utilities, A-5
RMSCES utility, RMS-11 Utilities, 2-2, 2-11
RMSCESP utility, RMS-11 Utilities, 5-3
RMSIFL utility, RMS-11 Utilities, 3-3
RMSRST utility, RMS-11 Utilities, 7-3
Help extracting a help file, System Generation (11M), 6-6, 6-16
library, System Generation (11M), 6-6, 6-16
HELP.ULB, System Generation (11M), 6-6, 6-16
HELPBUILD.CMD, System Generation (11M), 6-7, 6-17
HELP command
keywords (cont’d.)
/MCR, MCR, 3-88
/OUT, MCR, 3-88
qualifiers, Command Language, 3-23 to 3-24 MCR, 3-87, 3-88
Help file, MCR, 3-87 to 3-93
element, Command Language, 3-27 to 3-29
format, Command Language, 3-26 to 3-29 MCR, 3-88
qualifiers, MCR, 3-88
writing, Command Language, 3-26 to 3-29
/HFILL keyword
SET command (MCR), MCR, 3-220
SET command (VMR), System Management, 10-59
/HF switch
DMP utility, Utilities, 11-6
/HHT keyword
SET command (MCR), MCR, 3-221
SET command (VMR), System Management, 10-59
High-key value buckets, RMS-11 User’s Guide, 5-5, 5-6
/HIGH keyword
LOAD command (MCR), MCR, 3-133
High-level language, Introduction, 5-10 to 5-11 RMS-11 Introduction, 4-7, 5-1
access streams, RMS-11 User’s Guide, 1-15
and file design, RMS-11 User’s Guide, 1-19
and remote access, RMS-11 User’s Guide, B-1
and shared access, RMS-11 User’s Guide, 2-7
bucket size, RMS-11 User’s Guide, 6-21
file and directory operations, RMS-11 User’s Guide, 3-15, 4-15, 7-10
file operations, RMS-11 User’s Guide, 8-2
key characteristics, RMS-11 User’s Guide, 6-8
keys, RMS-11 User’s Guide, 6-7
locate mode, RMS-11 User’s Guide, 3-14, 4-13
High-level language (cont'd.)
overlay program, *Task Builder*, 3-40, 3-41
restrictions, *Executive*, 1-10 RMS-11
subroutine, *Executive*, 1-9
error conditions, *Executive*, 1-19
optional arguments, *Executive*, 1-10
specifying task names, *Executive*, 1-11
support, *Executive*, 1-10
High limit register
See H register
High pool, *System Management*, 13-3, 13-4
HIST: subroutine
histogram sampling (LSDRV), I/O *Drivers*, 17-17
Histogram sampling (LSDRV), I/O *Drivers*, 17-17
HLP attribute, *System Management*, 12-32
/HL switch, *Error Logging*, 2-3, 2-7
HOLD/ENTRY command, *Command Language*, 9-16
HOLD/JOB command, *Command Language*, 9-16
HOLD/ENTRY command, *Introduction*, 3-13
HOLD command
format
entry number, *Batch and Queue*, 2-22
job name, *Batch and Queue*, 2-22
/HOLD keyword
BYE command, MCR, 3-43
SET command (MCR), MCR, 3-222
/HOLD qualifier
LOGOUT command, *Command Language*, 3-9
PRINT command, *Batch and Queue*, 2-4
HOLD SCREEN key, *Introduction*, 1-16
Hold-screen mode (half-duplex), I/O *Drivers*, 3-21
HOM
See HOME command
Home block, *I/O Operations*, E-1
access types, MCR, 3-94
Home block (cont'd.)
changing, MCR, 3-93
initializing, MCR, 3-93
task
installing, MCR, 3-93
volume, *Command Language*, 5-57
changing, *Command Language*, 5-70
displaying information, *Command Language*, 5-71
HOME command, *Command Language*, 5-70 MCR, 1-6, 3-93
e error messages, MCR, 3-97
example, MCR, 3-97
format, MCR, 3-93
keywords
/DENS, MCR, 3-93
/EXT, MCR, 3-94
/FPRO, MCR, 3-94
/LRU, MCR, 3-94
/MXT, MCR, 3-95
/NAME, MCR, 3-95
/OVR, MCR, 3-95
/OWNER, MCR, 3-95
/POS, MCR, 3-95
/PRO, MCR, 3-96
/UIC, MCR, 3-96
/VI, MCR, 3-96
/WIN, MCR, 3-97
HOME utility
See HOME command
Host/Target systems, *System Generation (11S)*, 1-3
/HOST keyword
SET command (MCR), MCR, 3-223
Host system, *Task Builder*, C-1 to C-5
building a task for another system, *Task Builder*, C-1
definition, *System Generation (11M)*, 1-6
description, *Task Builder*, C-1, C-2
displaying, *Command Language*, 1-11 to 1-12
setting, *Command Language*, 1-11 to 1-12
transferring
e xample, *Task Builder*, C-3 to C-5
to target, *Task Builder*, C-2
/HO switch
PRI command, *Batch and Queue*, 2-4
HRC (cont'd.)
error messages, System Management, 15-39 to 15-42
format, System Management, 15-37
H register, Debugging, 2-6, 5-3, 6-1, 9-10
/HSYNC keyword
SET command (MCR), MCR, 3-223
SET command (VMR), System Management, 10-60
HWDDF$, CDA, B-23, C-35
HX switch
DMP utility, Utilities, 11-6
Hyphen (-), Command Language, 3-15
Hyphen operator (-), Task Builder, 3-49
See also ODL operator

I.CRTD, creation date, I/O Operations, F-2
I.CRTI, creation time, I/O Operations, F-2
I.EXDT, expiration date, I/O Operations, F-2
I.FNAM, identification area, I/O Operations, F-2
I.FTYP, file type, I/O Operations, F-2
I.FVER, file version number, I/O Operations, F-2
I.RVDT, revision date, I/O Operations, F-2
I.RVNO, revision number, I/O Operations, F-2
I.RVTI, revision time, I/O Operations, F-2
I/O, RMS-11 Introduction, 2-1
and record operations, RMS-11 User's Guide, 5-17
asynchronous (XEDRV), I/O Drivers, 13-21
asynchronous process control
(AFC11/AD01 converter), I/O Drivers, 15-3
attach device, I/O Drivers, 1-27
block operation, I/O Operations, 1-7
buffer
disable (VTDRV), I/O Drivers, 4-5
enable (VTDRV), I/O Drivers, 4-5
cancel, I/O Drivers, 1-29
VTDRV, I/O Drivers, 4-4
completion, I/O Drivers, 1-8, 1-9, 1-11, 1-36
completion status (VTDRV), I/O Drivers, 4-5, 4-6
coordination
event flag, I/O Operations, 2-43
file operation, I/O Operations, 2-42
data-transfer mode, I/O Operations, 1-9
detach device, I/O Drivers, 1-28
device-dependent, I/O Drivers, 1-1
directive
condition, I/O Drivers, 1-37
status, I/O Drivers, 1-37
directive summary, I/O Operations, C-1
error
DTDRV, I/O Drivers, 6-6
status list, I/O Drivers, B-1
extended
subfunction modifier (TTDRV), I/O Drivers, 2-25
TTDRV, I/O Drivers, 2-18, 2-25
failure, I/O Drivers, 1-37
function support
F11ACP, I/O Drivers, C-1
MTAACP, I/O Drivers, C-1
in progress
disk driver, I/O Drivers, 5-7
DTDRV, I/O Drivers, 6-2
issuing, I/O Drivers, 1-4
kill I/O, I/O Drivers, 1-29
locate mode, I/O Operations, 1-9, 1-10
macro
QI0C form, I/O Drivers, 1-14
QIO form, I/O Drivers, 1-13
QIO$ form, I/O Drivers, 1-13
move mode, I/O Operations, 1-9
outstanding, before LUN reassignment, I/O Drivers, 1-3
overlapped (disk driver), I/O Drivers, 5-8
overview, I/O Drivers, 1-1
packet, I/O Drivers, 1-13

Master Index-122
I/O (cont'd.)
paging operations, RMS-11 User's Guide, 8-2
preparation, FCS macro, I/O Operations, 2-1
read logical block, I/O Drivers, 1-30
read virtual block, I/O Drivers, 1-30
record
  big buffering, I/O Operations, 1-11
  multiple buffering, I/O Operations, 1-10
read logical block, I/O Drivers, 1-31, 1-32
read virtual block, I/O Drivers, 1-30
record
  big buffering, I/O Operations, 1-11
  multiple buffering, I/O Operations, 1-10
record operation, I/O Operations, 1-8
related macro, I/O Drivers, 1-13
form, I/O Drivers, 1-13
request, issuing, I/O Drivers, 1-14
return code, I/O Drivers, 1-36
rundown, System Generation (11M), 4-28
rundown (ICDRV/ISDRV), I/O Drivers, 19-33
second status word (tape driver), I/O Drivers, 8-13
stall (RC25), I/O Drivers, 5-12
standard function, I/O Drivers, 1-25
  as a NOP, I/O Drivers, 1-26
  code list, I/O Drivers, B-7
subsystem, industrial control
  See ICDRV
  See ISDRV
success, I/O Drivers, 1-37
status list, I/O Drivers, B-5
synchronization, I/O Operations, 1-7
event flag, I/O Operations, 2-18, 3-10
synchronous process control
  (AFC11/AD01 converter), I/O Drivers, 15-3
terminating (tape driver), I/O Drivers, 8-6
transfer length, write block (DTDRV), I/O Drivers, 6-7
unrecoverable error (DTDRV), I/O Drivers, 6-6
wait for completion
  block I/O, I/O Operations, 3-40
window turning, RMS-11 User's Guide, 8-2
I/O (cont'd.)
write logical block, I/O Drivers, 1-31, 1-32
I/O buffer, RMS-11 Introduction, 4-2
application design, RMS-11 User's Guide, 2-5
remote access, RMS-11 User's Guide, B-3
indexed files, RMS-11 User's Guide, B-3
relative files, RMS-11 User's Guide, B-3
sequential files, RMS-11 User's Guide, B-3
I/O buffer pool, RMS-11 Macro, 2-6
I/O control blocks
  interrelationship, Writing I/O Driver, 2-6
I/O data structure
  See System data structure macro definition
  See Data structure
I/O driver
  See Driver
I/O error code, Indirect, 2-13
I/O error report
  IOX, System Management, 4-22
I/O exercise
  steps, System Management, 4-2
termination, System Management, 4-24
I/O Exerciser
  See IOX
I/O function
  code, basic syntax, I/O Drivers, 1-6
code, identical, I/O Drivers, 1-7
code, list, I/O Drivers, B-7
introduction, I/O Drivers, 1-1
summary, I/O Drivers, A-1
analog-to-digital, I/O Drivers, A-1
card reader, I/O Drivers, A-1
cassette, I/O Drivers, A-1
communication driver, I/O Drivers, A-2
DECtape, I/O Drivers, A-2
DECTape II, I/O Drivers, A-2
DEUNA, I/O Drivers, A-3
disk, I/O Drivers, A-3
F11ACP, I/O Drivers, C-8
graphics, I/O Drivers, A-3
industrial control, I/O Drivers, A-4

Master Index-123
I/O function summary (cont'd.)
lab peripheral accelerator, I/O Drivers, A-5
lab peripheral system, I/O Drivers, A-5
line printer, I/O Drivers, A-6
magnetic tape, I/O Drivers, A-6
MTAACP, I/O Drivers, C-10
paper tape, I/O Drivers, A-6
parallel communication, I/O Drivers, A-7
terminal, I/O Drivers, A-7
UNIBUS switch, I/O Drivers, A-9
universal digital controller, I/O Drivers, A-9
virtual terminal, I/O Drivers, A-10
I/O function mask
ACP, Writing I/O Driver, 4-12
control, Writing I/O Driver, 4-12
creating, Writing I/O Driver, 4-13
legal, Writing I/O Driver, 4-12
no-op, Writing I/O Driver, 4-12
values for disk drive, Writing I/O Driver, 4-16
values for magtape drive, Writing I/O Driver, 4-17
values for standard functions, Writing I/O Driver, 4-15
values for unit record device, Writing I/O Driver, 4-18
I/O hierarchy, Writing I/O Driver, 2-1
I/O initiator entry point, Writing I/O Driver, 2-4, 2-12
DDT conditions, Writing I/O Driver, 4-10
I/O macro
AST service routine, I/O Operations, 2-45, 2-46
FCS, I/O Operations, 2-1
FDB, I/O Operations, 2-2
I/O packet, Writing I/O Driver, 2-8
description, Writing I/O Driver, 4-2
format, Writing I/O Driver, 4-3
pointer in SCB, Writing I/O Driver, 4-21
pre-allocated, System Generation (11M), 4-40
with ACP, Writing I/O Driver, D-7
I/O packet field
LAST, Writing I/O Driver, 4-5
I/O packet field (cont'd.)
I.EFN, Writing I/O Driver, 4-3
I.FCN, Writing I/O Driver, 4-4
I.IOSS, Writing I/O Driver, 4-4
I.LNK, Writing I/O Driver, 4-2
I.PRI, Writing I/O Driver, 4-3
I.PRM, Writing I/O Driver, 4-5
I.TCB, Writing I/O Driver, 4-4
I.UCB, Writing I/O Driver, 4-4
I/O page
access ([CDRV/ISDRV), I/O Drivers, 19-76
accessing, MCR, 3-238
direct access (UDDRV), I/O Drivers, 16-3
direct access procedure (UDDRV), I/O Drivers, 16-9
global definition ([CDRV/ISDRV), I/O Drivers, 19-77
overmapping, MCR, 3-183
specifying, MCR, 3-238 Task Builder, 10-22, 11-38
subpartition, MCR, 3-267
I/O parameter
basic, I/O Drivers, 1-5
I/O philosophy, Writing I/O Driver, 2-1
I/O processing
ACP, Writing I/O Driver, 2-3
QIO directive, Writing I/O Driver, 2-3
I/O program example, I/O Operations, D-1
I/O queue, Writing I/O Driver, 2-9
I/O Queue Optimization, System Management, 1-5, 16-1
Cylinder Scan, System Management, 16-1, 16-4
default, System Management, 16-3
Elevator, System Management, 16-1
Elevator Method, System Management, 16-4
error messages, System Management, 16-4
fairness count, System Management, 16-1
adjustment, System Management, 16-3
initiating, System Management, 16-1
Nearest Cylinder, System Management, 16-1, 16-4
optimization status, System Management, 16-2

Master Index-124
I/O Queue Optimization (cont'd.)
optimization types, System Management, 16-1
selecting method, System Management, 16-3

I/O request
flow, Writing I/O Driver, 2-16 to 2-17
queuing, Executive, 5-143, 5-147

I/O status, I/O Drivers, 1-36
block, I/O Drivers, 1-8, 1-11, 1-36, 1-38

AFC11/AD01 converter, I/O Drivers, 15-4, 15-8
communication driver, I/O Drivers, 12-8

CRDRV, I/O Drivers, 11-3
different content (TTDRV), I/O Drivers, 2-51, 2-59
error test, I/O Drivers, 1-39
element, I/O Drivers, 1-39
first word (LSDRV), I/O Drivers, 17-10
first word content
K-series, I/O Drivers, 23-32
LADRV, I/O Drivers, 22-31
UDDRV, I/O Drivers, 16-15

FORTRAN (ICDRV/ISDRV), I/O Drivers, 19-35, 19-36
GRDRV, I/O Drivers, 21-3
half-duplex, I/O Drivers, 3-13, 3-15, 3-16, 3-17, 3-18, 3-26
importance (LSDRV), I/O Drivers, 17-34
K-series, I/O Drivers, 23-6, 23-32
LADRV, I/O Drivers, 22-2, 22-30
LPDRV, I/O Drivers, 10-5
LRDRV, I/O Drivers, 14-4, 14-5, 14-11
LSDRV, I/O Drivers, 17-9, 17-31, 17-34
PPDRV/PRDRV, I/O Drivers, 18-3
return
status (TTDRV), I/O Drivers, 2-63
second word (LSDRV), I/O Drivers, 17-31
SF.GMC different (TTDRV), I/O Drivers, 2-51, 2-59

I/O status block
cont'd.
UDDRV, I/O Drivers, 16-7, 16-15, 16-16, 16-31
UNIBUS switch driver, I/O Drivers, 24-6, 24-7
VTDRV, I/O Drivers, 4-7
4-word (LADRV), I/O Drivers, 22-31
XEDRV, I/O Drivers, 13-18
code, I/O Drivers, 1-37
binary value, I/O Drivers, 1-37
code list, I/O Drivers, B-1
condition, I/O Drivers, 1-38
table, I/O Drivers, 1-40
CRDRV, I/O Drivers, 11-7
return
completion, I/O Drivers, 1-36
DDDRV, I/O Drivers, 7-4
disk driver, I/O Drivers, 5-9
DTDRV, I/O Drivers, 6-4
summary (ICDRV/ISDRV), I/O Drivers, 19-36
TTDRV, I/O Drivers, 2-63
VTDRV, I/O Drivers, 4-5
word
CTDRV, I/O Drivers, 9-6
tape driver, I/O Drivers, 8-13
word 1 (ICDRV/ISDRV), I/O Drivers, 19-36
I/O status block
block I/O, I/O Operations, 2-13
defined in task, I/O Operations, 2-45
file I/O, I/O Operations, 2-44
I/O subfunction
bit, I/O Drivers, 1-26
example, I/O Drivers, 1-26
unsupported, I/O Drivers, 1-26
summary, terminal, I/O Drivers, A-8
I/O technique, RMS-11 User's Guide, 2-17
defered write, RMS-11 User's Guide, 2-17
indexed files, RMS-11 User's Guide, 7-8
defered write, RMS-11 User's Guide, 7-8
multiple access streams, RMS-11 User's Guide, 7-10
multiple buffers, RMS-11 User's Guide, 7-9

Master Index-125
I/O technique
indexed files (cont'd.)
  sequential reads, RMS-11 User's Guide, 7-10
mass insertion, RMS-11 User's Guide, 2-18
MBC, RMS-11 User's Guide, 2-17
relative files, RMS-11 User's Guide, 4-14
deferred write, RMS-11 User's Guide, 4-14
multiple access streams, RMS-11 User's Guide, 4-15
multiple buffers, RMS-11 User's Guide, 4-15
sequential files, RMS-11 User's Guide, 3-14
deferred write, RMS-11 User's Guide, 3-14
MBC, RMS-11 User's Guide, 3-15
multiple access streams, RMS-11 User's Guide, 3-15
multiple buffers, RMS-11 User's Guide, 3-15
I/O unit, RMS-11 User's Guide, 1-14
blocks, RMS-11 User's Guide, 1-16
buckets, RMS-11 User's Guide, 1-16
IAD-1A A/D converter
address convention, I/O Drivers, 19-4
ladj parameter
ADJLPS: subroutine (LSDRV), I/O Drivers, 17-13
IAN field in KEY block
CREATE operation, RMS-11 Macro, 5-19
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-67
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-80
IAS symbol, Indirect, 2-11
IBFSST: subroutine
get buffer status
K-series, I/O Drivers, 23-23
LADRV, I/O Drivers, 22-17
IBS field in KEY block
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-68
IBS field in KEY block (cont'd.)
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-80
Ibuf parameter
IGTBUF: subroutine
K-series, I/O Drivers, 23-24
LADRV, I/O Drivers, 22-18
INXTBF: subroutine
K-series, I/O Drivers, 23-24
LADRV, I/O Drivers, 22-19
IWBUF: subroutine
K-series, I/O Drivers, 23-25
LADRV, I/O Drivers, 22-19
IWBUF: subroutine (K-series), I/O Drivers, 23-25
Ibuf parameter
ADJLPS: subroutine (LSDRV), I/O Drivers, 17-13
ADSWP: subroutine
K-series, I/O Drivers, 23-9
LADRV, I/O Drivers, 22-4
CTDI: subroutine (UDDRV), I/O Drivers, 16-21
CTTI: subroutine (UDDRV), I/O Drivers, 16-22
DASWP: subroutine
K-series, I/O Drivers, 23-14
LADRV, I/O Drivers, 22-9
DISWP: subroutine
K-series, I/O Drivers, 23-17
LADRV, I/O Drivers, 22-12
DOSWP: subroutine
K-series, I/O Drivers, 23-19
LADRV, I/O Drivers, 22-14
DRS: subroutine (LSDRV), I/O Drivers, 17-16
GTHIST: subroutine (K-series), I/O Drivers, 23-21
HIST: subroutine (LSDRV), I/O Drivers, 17-17
IBFSST: subroutine
K-series, I/O Drivers, 23-23
LADRV, I/O Drivers, 22-17
IGTBUF: subroutine
K-series, I/O Drivers, 23-24
LADRV, I/O Drivers, 22-18
INXTBF: subroutine
K-series, I/O Drivers, 23-24
LADRV, I/O Drivers, 22-19
IRDB: subroutine (LSDRV), I/O Drivers, 17-21
ISTADC: subroutine (LSDRV), I/O Drivers, 17-28

Master Index-126
Ibuf parameter (cont'd.)
IWITBUF: subroutine
   K-series, I/O Drivers, 23-25
   LADRV, I/O Drivers, 22-19
LRSBUF: subroutine (LSDRV), I/O Drivers, 23-26
LADRV, I/O Drivers, 22-22
RMVBUF: subroutine
   K-series, I/O Drivers, 23-26
   LADRV, I/O Drivers, 22-22
RTS: subroutine (LSDRV), I/O Drivers, 17-23
SDAC: subroutine (LSDRV), I/O Drivers, 17-25
SDO: subroutine (LSDRV), I/O Drivers, 17-27
SETADC: subroutine (LADRV), I/O Drivers, 22-23
SETIBF: subroutine
   K-series, I/O Drivers, 23-28
   LADRV, I/O Drivers, 22-24
STPSWP: subroutine
   K-series, I/O Drivers, 23-29
   LADRV, I/O Drivers, 22-25
ICAR register
   content, I/O Drivers, 19-74
   error data, I/O Drivers, 19-73
ICB, Writing I/O Driver, 3-2, 4-35
ICDRV/ISDRV
   driver functions, I/O Drivers, 19-4
   task functions, I/O Drivers, 19-4
ICF module, Error Logging, 4-1
Ich parameter
   ADC: subroutine (LSDRV), I/O Drivers, 17-12
   ADINP: subroutine (K-series), I/O Drivers, 23-8
   RTS: subroutine (LSDRV), I/O Drivers, 17-24
   SDAC: subroutine (LSDRV), I/O Drivers, 17-26
Ich parameter (cont'd.)
   SETADC: subroutine (LADRV), I/O Drivers, 22-23
   ICLOKB: subroutine
      read 16-bit clock (K-series), I/O Drivers, 23-23
Icont parameter
   SCOPE: subroutine (K-series), I/O Drivers, 23-27
I command, Debugging, 2-9, 9-12
Ich parameter
   AIRD/AIRDW subroutine (UDDRV), I/O Drivers, 16-18
   AISQ/AISQW subroutine (UDDRV), I/O Drivers, 16-18
   AO/AOW subroutine (UDDRV), I/O Drivers, 16-19
   DI/DIW: subroutine (UDDRV), I/O Drivers, 16-23
   DOL/DOLW subroutine (UDDRV), I/O Drivers, 16-24
   DM/DOMW subroutine (UDDRV), I/O Drivers, 16-25
Icos parameter
   RDWD: subroutine (UDDRV), I/O Drivers, 16-30
ICP
   See Indirect
Ich parameter
   device-specific function (UDDRV), I/O Drivers, 16-4
   ICDRV/ISDRV, I/O Drivers, 19-10
   IO.LTI function, I/O Drivers, 19-22
   IO.LTI function, I/O Drivers, 19-26
   ICR11, I/O Drivers, 19-1
ICR common block
   linking task, I/O Drivers, 19-76
ICR register
   read direct access sample subroutine, I/O Drivers, 19-78
ICS/ICR-DSS/DR
   function code list, I/O Drivers, B-10
ICS11, I/O Drivers, 16-1, 19-1
ICS1 A/D converter (UDDRV), I/O Drivers, 16-8
ICS common block
   linking task, I/O Drivers, 19-76
ICS register
   read direct access sample subroutine, I/O Drivers, 19-78

Master Index-127
ICSR register
content, I/O Drivers, 19-73
error data, I/O Drivers, 19-73
Ict parameter (UDDRV)
RDCS: subroutine, I/O Drivers, 16-27
RDDI: subroutine, I/O Drivers, 16-28
Idata parameter
AIRD/AIRDW subroutine (UDDRV), I/O Drivers, 16-18
AISQ/AISQW subroutine (UDDRV), I/O Drivers, 16-18
AO/AOW subroutine (UDDRV), I/O Drivers, 16-19
DI/DIW: subroutine (UDDRV), I/O Drivers, 16-23
DOL/DOLW: subroutine (UDDRV), I/O Drivers, 16-24
DOM/DOMW: subroutine (UDDRV), I/O Drivers, 16-25
DOUT: subroutine (K-series), I/O Drivers, 23-21
IDIR: subroutine (LSDRV), I/O Drivers, 17-19
IDN condition test argument, MACRO-11, 6-52
IDOR: subroutine
write digital output (LSDRV), I/O Drivers, 17-20
Id parameter
device-specific function
transmit (LRDRV), I/O Drivers, 14-4
Idsc parameter
LAMSKS: subroutine (LADRV), I/O Drivers, 22-21
/ID switch, Task Builder, 10-21
DMP utility, Utilities, 11-6
FLX utility, Utilities, 4-7
PIP utility, Utilities, 3-23
RMSBCK utility, RMS-11 Utilities, 6-4, 6-5
RMSCNV utility, RMS-11 Utilities, 4-5, 4-9
RMSDEF utility, RMS-11 Utilities, A-5
RMSDSP utility, RMS-11 Utilities, 5-3, 5-5
RMSIFL utility, RMS-11 Utilities, 3-3, 3-5
RMSRST utility, RMS-11 Utilities, 7-3, 7-5
Idsw parameter
LAMSKS: subroutine (LADRV), I/O Drivers, 22-21
Idwell parameter
ADSWP: subroutine (LADRV), I/O Drivers, 22-5
DASWP: subroutine (LADRV), I/O Drivers, 22-10
DISWP: subroutine (LADRV), I/O Drivers, 22-13
DOSWP: subroutine (LADRV), I/O Drivers, 22-15
IDX argument to ORG$ macro, RMS-11 Macro, 2-3
Idx parameter
DOM/DOMW: subroutine (UDDRV), I/O Drivers, 16-25
IE.ABO error return, I/O Drivers, 1-40
ACP, I/O Drivers, C-14

Master Index-128
IE.ABO error return (cont’d.)

AFC11/AD01 converter, I/O Drivers, 15-8
communication driver, I/O Drivers, 12-10
CRDRV, I/O Drivers, 11-7
CTDRV, I/O Drivers, 9-4
disk driver, I/O Drivers, 5-10
DTDRV, I/O Drivers, 6-4
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 15-9
GRDRV, I/O Drivers, 21-3
half-duplex, I/O Drivers, 3-18
ICDRV/ISDRV, I/O Drivers, 19-12
LPDRV, I/O Drivers, 10-5
LSDRV, I/O Drivers, 17-29
PPDRV/PRDRV, I/O Drivers, 18-3
receiver (LRDRV), I/O Drivers, 14-12
tape driver, I/O Drivers, 8-10
transmitter (LRDRV), I/O Drivers, 14-8
TTDRV, I/O Drivers, 2-63
UDDRV, I/O Drivers, 16-31
UNIBUS switch driver, I/O Drivers, 24-7
VTDRV, I/O Drivers, 4-9
IE.BAD error return, ACP, I/O Drivers, C-14
IE.BBE error return, I/O Drivers, 1-40
disk driver, I/O Drivers, 5-10
receiver (LRDRV), I/O Drivers, 14-12
tape driver, I/O Drivers, 8-10
transmitter (LRDRV), I/O Drivers, 14-8
IE.BCC error return communication driver, I/O Drivers, 12-9
TTDRV, I/O Drivers, 2-64
IE.BDR error return, ACP, I/O Drivers, C-14
IE.BLK error return, I/O Drivers, 1-40
disk driver, I/O Drivers, 5-10
DTDRV, I/O Drivers, 6-4
IE.BTP error return, ACP, I/O Drivers, C-15
IE.BVR error return, ACP, I/O Drivers, C-15
IE.BYT error return, I/O Drivers, 1-41
AFC11/AD01 converter, I/O Drivers, 15-8
disk driver, I/O Drivers, 5-10
DTDRV, I/O Drivers, 6-4
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 15-9
half-duplex, I/O Drivers, 3-18
IE.BYT error return
ICDRV/ISDRV (cont'd.)
  IO.RAD function, I/O Drivers, 19-29
  IO.RBC function, I/O Drivers, 19-14
  LSDRV, I/O Drivers, 17-29
  tape driver, I/O Drivers, 8-10
  UDDRV, I/O Drivers, 16-32
IE.BYT error return, ACP, I/O Drivers, C-15
IE.CKS error return, ACP, I/O Drivers, C-15
IE.CLO error return, ACP, I/O Drivers, C-15
IE.CNR error return
  communication driver, I/O Drivers, 12-9
  GRDRV, I/O Drivers, 21-3
  UNIBUS switch driver, I/O Drivers, 24-7
IE.CON error return
ICDRV/ISDRV
  IO.CCI function, I/O Drivers, 19-20
  IO.CTI function, I/O Drivers, 19-21
  IO.CTY function, I/O Drivers, 19-23
  IO.DCI function, I/O Drivers, 19-21
  IO.DTI function, I/O Drivers, 19-23
  IO.DTY function, I/O Drivers, 19-24
  UDDRV, I/O Drivers, 16-32
IE.DAA error return, I/O Drivers, 1-41
CRDRV, I/O Drivers, 11-7
CTDRV, I/O Drivers, 9-4
half-duplex, I/O Drivers, 3-19
LPDRV, I/O Drivers, 10-5
PPDRV/PRDRV, I/O Drivers, 18-3
receiver (LRDRV), I/O Drivers, 14-12
tape driver, I/O Drivers, 8-11
TDDRV, I/O Drivers, 2-64
UNIBUS switch driver, I/O Drivers, 24-7
IE.DAO error return (cont'd.)
  FORTRAN interface value
    (AFC11/AD01 converter), I/O Drivers, 15-9
  LSDRV, I/O Drivers, 17-29
tape driver, I/O Drivers, 8-11
TDDRV, I/O Drivers, 2-64
XEDRV, I/O Drivers, 13-17
IE.DFU error return, ACP, I/O Drivers, C-15
IE.DNA error return, I/O Drivers, 1-41
CRDRV, I/O Drivers, 11-7
CTDRV, I/O Drivers, 9-4
GRDRV, I/O Drivers, 21-3
half-duplex, I/O Drivers, 3-19
LPDRV, I/O Drivers, 10-5
PPDRV/PRDRV, I/O Drivers, 18-3
receiver (LRDRV), I/O Drivers, 14-12
tape driver, I/O Drivers, 8-11
TDDRV, I/O Drivers, 2-64
UNIBUS switch driver, I/O Drivers, 24-7
IE.DNR error return, I/O Drivers, 1-41
AFC11/AD01 converter, I/O Drivers, 15-8
communication driver, I/O Drivers, 12-9
CTDRV, I/O Drivers, 9-4
DDDRV, I/O Drivers, 7-5
diagnostic, device not ready, I/O Drivers, 1-35
disk driver, I/O Drivers, 5-10
DTPRV, I/O Drivers, 6-4
FORTRAN interface value
  (AFC11/AD01 converter), I/O Drivers, 15-9
half-duplex, I/O Drivers, 3-19
ICDRV/ISDRV, I/O Drivers, 19-13
IO.RBC function, I/O Drivers, 19-14
LSDRV, I/O Drivers, 17-29
power fail, I/O Drivers, 1-43
PPDRV/PRDRV, I/O Drivers, 18-3
receiver (LRDRV), I/O Drivers, 14-11
tape driver, I/O Drivers, 8-11
transmitter (LRDRV), I/O Drivers, 14-7
TDDRV, I/O Drivers, 2-64
UDDRV, I/O Drivers, 16-32

Master Index-130
IE.DOA error return
receiver (LRDRV), I/O Drivers, 14-12

IE.DUN error return (VTDRV), I/O Drivers, 4-9

IE.DUP error return, ACP, I/O Drivers, C-15

IE.EOF error return, ACP, I/O Drivers, 1-41
CRDRV, I/O Drivers, 11-7
CTDRV, I/O Drivers, 9-5
half-duplex, I/O Drivers, 3-18
PPDRV/PRDRV, I/O Drivers, 18-3
tape driver, I/O Drivers, 8-11
TTDRV, I/O Drivers, 2-65
VTDRV, I/O Drivers, 4-9

IE.EOF error return, ACP, I/O Drivers, C-15

IE.EOT error return
CTDRV, I/O Drivers, 9-5
tape driver, I/O Drivers, 8-11

IE.EOV error return
tape driver, I/O Drivers, 8-12

IE.FHE error return, I/O Drivers, 1-41
DDDRV, I/O Drivers, 7-5
disk driver, I/O Drivers, 5-10
receiver (LRDRV), I/O Drivers, 14-12
tape driver, I/O Drivers, 8-12

IE.FLG error return
transmitter (LRDRV), I/O Drivers, 14-8

IE.FLN error return
IO.FLN function (ICDRV/ISDRV), I/O Drivers, 19-33

IE.HFU error return
IO.FLU function, I/O Drivers, C-16

IE.IEF error return, ACP, I/O Drivers, 1-38
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 15-9

IE.IFC error return, ACP, I/O Drivers, 1-38
IO.LTY function, I/O Drivers, 19-27
LSDRV, I/O Drivers, 17-30
UDDRV, I/O Drivers, 16-32

IE.IES error return
half-duplex, I/O Drivers, 3-19
TTDRV, I/O Drivers, 2-65

IE.IFC error return, I/O Drivers, 1-41
AFC11/AD01 converter, I/O Drivers, 15-9
communication driver, I/O Drivers, 12-10
CRDRV, I/O Drivers, 11-7
CTDRV, I/O Drivers, 9-5
DDDRV, I/O Drivers, 7-5
disk driver, I/O Drivers, 5-11
DTDRV, I/O Drivers, 6-4
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 15-9

IE.IFU error return, ACP, I/O Drivers, C-16

IE.IES error return
half-duplex, I/O Drivers, 3-19

IE.IFU error return
IO.LKE function, I/O Drivers, 19-28
IO.LKE function, I/O Drivers, 19-28
IO.UER function, I/O Drivers, 19-31
LPDRV, I/O Drivers, 10-5
LSDRV, I/O Drivers, 17-30
PPDRV/PRDRV, I/O Drivers, 18-4
receiver (LRDRV), I/O Drivers, 14-12
tape driver, I/O Drivers, 8-12
transmitter (LRDRV), I/O Drivers, 14-8

IE.IFU error return, ACP, I/O Drivers, C-16

IE.IFC error return, ACP, I/O Drivers, C-16

IE.IFU error return, ACP, I/O Drivers, C-16

IE.ILU error return, I/O Drivers, 1-38
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 15-9

---

Master Index-131
IE.ILU error return (cont'd.)
ICDRV/ISDRV, I/O Drivers, 19-12
IE.LCK error return, ACP, I/O Drivers, C-16
IE.LUN error return, ACP, I/O Drivers, C-16
IE.MOD error return
ICDRV/ISDRV
IO.CTY function, I/O Drivers, 19-23
IO.ITI function, I/O Drivers, 19-22
IO.LDI function, I/O Drivers, 19-26
IO.LTI function, I/O Drivers, 19-27
IO.LTY function, I/O Drivers, 19-27
IO.MLO function, I/O Drivers, 19-17
IO.MSO function, I/O Drivers, 19-16
IO.SAO function, I/O Drivers, 19-16
IO.UDI function, I/O Drivers, 19-30
IO.UTI function, I/O Drivers, 19-31
IO.UTY function, I/O Drivers, 19-31
IO.WLB function, I/O Drivers, 19-32
UDDRV, I/O Drivers, 16-32
IE.NLK error return
ICDRV/ISDRV
IE.NLN error return
ICDRV/ISDRV
IE.NLN error return
ICDRV/ISDRV
IE.NLD error return, I/O Drivers, 1-42
CRDRV, I/O Drivers, 11-7
disk driver, I/O Drivers, 5-11
DTDRV, I/O Drivers, 6-5
FORTRAN interface value
(AFC11/AD01 converter),
I/O Drivers, 15-9
half-duplex, I/O Drivers, 3-19
ICDRV/ISDRV, I/O Drivers, 19-13
IO.LDI function, I/O Drivers, 19-26
IO.LKE function, I/O Drivers, 19-28
IO.LTI function, I/O Drivers, 19-27
IO.LTY function, I/O Drivers, 19-27
LSDRV, I/O Drivers, 17-30
TTDRV, I/O Drivers, 2-65
UNIBUS switch driver, I/O Drivers, 24-8
IE.NOD error return, ACP, I/O Drivers, C-16
IE.NSF error return
XEDRV, I/O Drivers, 13-5
IE.NSF error return, ACP, I/O Drivers, C-16
IE.NST error return
ICDRV/ISDRV
IO.LDI function, I/O Drivers, 19-26
IO.LKE function, I/O Drivers, 19-28
IO.LTY function, I/O Drivers, 19-27
IO.UDI function, I/O Drivers, 19-30
IO.UTI function, I/O Drivers, 19-31
IO.UTY function, I/O Drivers, 19-31
IO.WLB function, I/O Drivers, 19-32
IE.NTR error return
receiver (LRDRV), I/O Drivers, 14-12
IE.OFL error return, I/O Drivers, 1-42
AFC11/AD01 converter, I/O Drivers, 15-9
IE.OFL error return (cont'd.)
communication driver, I/O Drivers, 12-10
CRDRV, I/O Drivers, 11-8
CTDRV, I/O Drivers, 9-5
disk driver, I/O Drivers, 5-11
DTDRV, I/O Drivers, 6-5
half-duplex, I/O Drivers, 3-20
ICDRV/ISDRV, I/O Drivers, 19-13
LPDRV, I/O Drivers, 10-5
LSDRV, I/O Drivers, 17-30
PPDRV/PRDRV, I/O Drivers, 18-4
tape driver, I/O Drivers, 8-12
TTDRV, I/O Drivers, 2-65
UDDRV, I/O Drivers, 16-32
UNIBUS switch driver, I/O Drivers, 24-8
IE.OFL error return, ACP, I/O Drivers, C-16
IE.ONP error return
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 19-26
LSDRV, I/O Drivers, 17-30
IE.OVR error return, I/O Drivers, 1-42
disk driver, I/O Drivers, 5-11
DTDRV, I/O Drivers, 6-5
IE.PES error return
half-duplex, I/O Drivers, 3-20
TTDRV, I/O Drivers, 2-65
IE.FRI error return, I/O Drivers, 1-42
disk driver, I/O Drivers, 5-11
DTDRV, I/O Drivers, 6-5
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 19-26
half-duplex, I/O Drivers, 3-20
ICDRV/ISDRV
IO.CCI function, I/O Drivers, 19-20
IO.CTI function, I/O Drivers, 19-22
IO.FLN function, I/O Drivers, 19-33
IO.ONL function, I/O Drivers, 19-33
LSDRV, I/O Drivers, 17-30
TTDRV, I/O Drivers, 2-65
UDDRV, I/O Drivers, 16-32
XE DRV, I/O Drivers, 13-19
IE.PRI error return, ACP, I/O Drivers, C-17
IE.REJ error return
transmitter (LRDRV), I/O Drivers, 14-8
IE.RER error return, ACP, I/O Drivers, C-17
IE.RSU error return
communication driver, I/O Drivers, 12-10
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 19-26
half-duplex, I/O Drivers, 3-20
ICDRV/ISDRV
IO.LDI function, I/O Drivers, 19-26
IO.LKE function, I/O Drivers, 19-28
IO.LTI function, I/O Drivers, 19-27
IO.LTY function, I/O Drivers, 19-27
LSDRV, I/O Drivers, 17-30, 17-31
IO.ADS function, I/O Drivers, 17-31
IO.HIS function, I/O Drivers, 17-31
IO.MDA function, I/O Drivers, 17-31
IO.MDI function, I/O Drivers, 17-31
IO.MDO function, I/O Drivers, 17-31
IO.SDO function, I/O Drivers, 17-31
IE.SDP error return, I/O Drivers, 1-38
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 19-26
ICDRV/ISDRV, I/O Drivers, 19-13
IE.SNC error return, ACP, I/O Drivers, C-17
IE.SPC error return, I/O Drivers, 1-42
AFC11/AD01 converter, I/O Drivers, 15-9
communication driver, I/O Drivers, 12-10
CRDRV, I/O Drivers, 11-8
CTDRV, I/O Drivers, 9-5
disk driver, I/O Drivers, 5-11
DTDRV, I/O Drivers, 6-5
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 15-9
GRDRV, I/O Drivers, 21-3

Master Index-133
IE.SPC error return (cont'd.)
half-duplex, I/O Drivers, 3-20
ICDRV/ISDRV
IO.CCI function, I/O Drivers, 19-20
IO.CTI function, I/O Drivers, 19-22
IO.CTY function, I/O Drivers, 19-23
IO.RAD function, I/O Drivers, 19-29
LPDRV, I/O Drivers, 10-5
LSDRV, I/O Drivers, 17-30
PPDRV/PRDRV, I/O Drivers, 18-4
receiver (LRDRV), I/O Drivers, 14-12
tape driver, I/O Drivers, 8-12
transmitter (LRDRV), I/O Drivers, 14-8
TTDRV, I/O Drivers, 2-66
IO.ATA function, I/O Drivers, 2-21
UDDRV, I/O Drivers, 16-33
UNIBUS switch driver, I/O Drivers, 24-8
VTDRV, I/O Drivers, 4-8
XEDRV, I/O Drivers, 13-13, 13-17, 13-19
IE.SPC error return, ACP, I/O Drivers, C-17
IE.SQC error return, ACP, I/O Drivers, C-17
IE.TMO error return, communication driver, I/O Drivers, 12-10
DDDRV, I/O Drivers, 7-5
UNIBUS switch driver, I/O Drivers, 24-8
XEDRV, I/O Drivers, 13-17
IE.ULN error return, I/O Drivers, 1-38
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 15-9
ICDRV/ISDRV, I/O Drivers, 19-13
IE.UPN error return, I/O Drivers, 1-38
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 15-9
VTDRV, I/O Drivers, 4-8
IE.VER error return, I/O Drivers, 1-43
communication driver, I/O Drivers, 12-10
CTDRV, I/O Drivers, 9-5
IE.VER error return (cont'd.)
DDDRV, I/O Drivers, 7-5
disk driver, I/O Drivers, 5-11
TDIV, I/O Drivers, 6-6
PPDRV/PRDRV, I/O Drivers, 18-4
tape driver, I/O Drivers, 8-13
transmitter (LRDRV), I/O Drivers, 14-8
TTDRV, I/O Drivers, 2-66
IE.WAC error return, ACP, I/O Drivers, C-17
IE.WAT error return, ACP, I/O Drivers, C-17
IE.WCK error return, I/O Drivers, 1-43
disk driver, I/O Drivers, 5-12
IE.WER error return, ACP, I/O Drivers, C-18
IE.WLK error return, I/O Drivers, 1-43
CTDRV, I/O Drivers, 9-5
DDDRV, I/O Drivers, 7-5
disk driver, I/O Drivers, 5-12
tape driver, I/O Drivers, 8-13
IE.WLK error return, ACP, I/O Drivers, C-18
IE.VER error return, ACP, I/O Drivers, C-18
Iefn parameter
ADSWP: subroutine
K-series, I/O Drivers, 23-10
LADRV, I/O Drivers, 22-5
DASWP: subroutine
K-series, I/O Drivers, 23-15
LADRV, I/O Drivers, 22-10
DISWP: subroutine
K-series, I/O Drivers, 23-18
LADRV, I/O Drivers, 22-13
DOSWP: subroutine
K-series, I/O Drivers, 23-20
LADRV, I/O Drivers, 22-15
DRS: subroutine (LSDRV), I/O Drivers, 17-16
GTHIST: subroutine (K-series), I/O Drivers, 23-22
HIST: subroutine (LSDRV), I/O Drivers, 17-18
IWTBUF: subroutine
K-series, I/O Drivers, 23-25
LADRV, I/O Drivers, 22-19
RTS: subroutine (LSDRV), I/O Drivers, 17-24
SDAC: subroutine (LSDRV), I/O Drivers, 17-26
SDO: subroutine (LSDRV), I/O Drivers, 17-28

Master Index—134
lmc parameter

LAMSKS: subroutine (LADRV), I/O
Drivers, 22-21

iemw parameter

LAMSKS: subroutine (LADRV), I/O
Drivers, 22-21

I error, MACRO-11, 6-26, 6-28, 6-29
summary, MACRO-11, D-3

ilev parameter (UDDRV)

CTDI: subroutine, I/O
Drivers, 16-21
CTTI: subroutine, I/O
Drivers, 16-22

IFAB pool, RMS-11 Macro, 2-5

.IFACT directive, Indirect, 2-61
.IFDF directive, Indirect, 2-61
.IF directive, Indirect, 2-60 MACRO-
11, 6-51 to 6-55
condition test argument, MACRO-
11, 6-51, 6-52
.IFDISABLED directive, Indirect, 2-62
.IFENABLED directive, Indirect, 2-62
.IFF directive, Indirect, 2-63 MACRO-
11, 6-53, 6-54, 6-55

IFI field in FAB

CLOSE operation, RMS-11 Macro,
5-3, 5-4
CONNECT operation, RMS-11
Macro, 5-6
CREATE operation, RMS-11 Macro,
5-20
DISPLAY operation, RMS-11 Macro,
5-30
EXTEND operation, RMS-11 Macro,
5-46
offset, RMS-11 Macro, 6-22
OPEN operation, RMS-11 Macro,
5-77
summary, RMS-11 Macro, 6-52
.IFINS directive, Indirect, 2-62
.IFLA.TMP (RMSIFL), RMS-11 Utilities,
3-11
allocating space, RMS-11 Utilities,
3-13
.IFLA1.TMP (RMSIFL), RMS-11
Utilities, 3-12
allocating space, RMS-11 Utilities,
3-14

Iflag parameter

ADINP: subroutine (K-series), I/O
Drivers, 23-8
ISTADC: subroutine (K-series), I/O
Drivers, 23-28

Iflag parameter (cont’d.)

SETADC: subroutine (LADRV), I/O
Drivers, 22-23
XRATE: subroutine
K-series, I/O Drivers, 23-30
LADRV, I/O Drivers, 22-26

IFL field in KEY block

CREATE operation, RMS-11 Macro,
5-20
DISPLAY operation, RMS-11 Macro,
5-31
offset, RMS-11 Macro, 6-67
OPEN operation, RMS-11 Macro,
5-80
summary, RMS-11 Macro, 6-81
.IFLOA directive, Indirect, 2-63
.IFLP.TMP (RMSIFL), RMS-11 Utilities,
3-10
allocating space, RMS-11 Utilities,
3-13
.IFNACT directive, Indirect, 2-61
.IFNDF directive, Indirect, 2-61
.IFNINS directive, Indirect, 2-62
.IFNLOA directive, Indirect, 2-63
IFORM, System Management, 12-24
.IFT directive, Indirect, 2-63 MACRO-
11, 6-53, 6-54, 6-55
.IFTF directive, MACRO-11, 6-53, 6-54
IF-THEN-ELSE statement, Error
Logging, 5-34

Igain parameter

ADC: subroutine (LSDRV), I/O
Drivers, 17-12

IGTBUF: subroutine
return buffer number
K-series, I/O Drivers, 23-24
LADRV, I/O Drivers, 22-17

.IFAR$S directive, Executive, 5-64
.IFF directive, MACRO-11, 6-56

llen parameter (LSDRV)

DRS: subroutine, I/O Drivers,
17-16

HIST: subroutine, I/O Drivers,
17-18

RTS: subroutine, I/O Drivers,
17-23

SDAC: subroutine, I/O Drivers,
17-25

SDO: subroutine, I/O Drivers,
17-27

Illegal character, MACRO-11, 3-3

Image
disk, Task Builder, 2-8
memory, Task Builder, 2-9

Master Index–135
IM switch
VMR (cont'd.)
relationship to symbol definition file, System Management, 10-7
uses, System Management, 10-7
.INC directive, Indirect, 2-65
.INC keyword
INSTALL command (MCR), MCR, 3-118
INSTALL command (VMR), System Management, 10-24
RUN command (MCR), MCR, 3-183
INCLUDE command
EDT editor, Introduction, 2-16
.INCLUDE directive, MACRO-11, 6-58
Include OOB (TTDRV), I/O Drivers, 2-61
/INCLUDE qualifier, Task Builder, 11-36 to 11-37
Inc parameter
ISTADC: subroutine (K-series), I/O Drivers, 23-28
SETADC: subroutine (LADRV), I/O Drivers, 22-23
Incremental reorganization, RMS-ll User's Guide, 5-12
INCREMENT statement, Error Logging, 5-31
Indefinite repeat block, MACRO-11, 7-3, 7-16 to 7-19
Index, RMS-ll Introduction, 3-7
See also KEY block alternate
bucket size calculation, RMS-ll User's Guide, 6-19
level 0, RMS-ll User's Guide, 5-5
SIDRs, RMS-ll User's Guide, 5-5
area bucket size
See IBS field in KEY block
area number (higher levels)
See IAN field in KEY block
area number (lowest level)
See LAN field in KEY block
count
See NOK field in SUM block
data bucket size
See DBS field in KEY block
data bucket VBN
See DVB field in KEY block
depth, RMS-ll User's Guide, 5-5
Indexed file organization (cont’d.)
  bucket fill size, RMS-11 User’s Guide, 6-27
  bucket format, RMS-11 User’s Guide, 5-2
  bucket size, RMS-11 User’s Guide, 6-15
    calculation, alternate indexes, RMS-11 User’s Guide, 6-19
    calculation, primary index, RMS-11 User’s Guide, 6-15
  bucket splitting, RMS-11 User’s Guide, 5-11
  changeable keys, RMS-11
    Introduction, 3-10
  compressing deleted records, RMS-11 User’s Guide, 5-10, 5-16,
    6-7, 6-9
  CONNECT operation, RMS-11
    User’s Guide, 7-2
  contiguity, RMS-11 User’s Guide, 6-13
  data level, RMS-11 User’s Guide, 5-5
  data records, RMS-11 Introduction, 3-7 RMS-11 User’s Guide, 5-2
  declaring with ORG$ macro, RMS-11 Macro, 2-3
  deferred write, RMS-11 User’s Guide, 7-3
  DELETE operation, RMS-11 User’s Guide, 5-15, 6-7, 7-3, 7-9
    duplicate keys, RMS-11 User’s Guide, 6-9
  design, RMS-11 User’s Guide, 5-1, 6-1
    allocation, RMS-11 User’s Guide, 6-22
    areas, RMS-11 User’s Guide, 6-22
  initial calculation, RMS-11
    User’s Guide, 6-22
  alternate key, RMS-11 Introduction, 3-7
  and remote access, RMS-11 User’s
    Guide, B-3
  areas, RMS-11 User’s Guide, 5-2, 6-10
  multiarea files, RMS-11 User’s
    Guide, 6-12
  single-area files, RMS-11 User’s
    Guide, 6-11

Master Index-137
Indexed file organization (cont’d.)
DISCONNECT operation, RMS-11 User's Guide, 7-3
duplicate keys, RMS-11 Introduction, 3-10
file operations, RMS-11 User's Guide, 7-10
FIND operation, RMS-11 User's Guide, 7-3, 7-9
random by key, RMS-11 User's Guide, 5-13
sequential access, RMS-11 User's Guide, 5-17
GET operation, RMS-11 User's Guide, 7-5, 7-7, 7-8, 7-9
random by key, RMS-11 User's Guide, 5-13
sequential access, RMS-11 User's Guide, 5-17
I/O techniques, RMS-11 User's Guide, 7-8
incremental reorganization, RMS-11 User's Guide, 5-12
index, RMS-11 Introduction, 3-7
index buckets, RMS-11 User's Guide, 5-6
index levels, RMS-11 User's Guide, 5-4, 5-6
index records, RMS-11 Introduction, 3-7 RMS-11 User's Guide, 5-2, 5-6
keys, RMS-11 Introduction, 3-6
RMS-11 User's Guide, 1-5, 6-2
changeable, RMS-11 User's Guide, 6-9
characteristics, RMS-11 User's Guide, 6-8
data type, RMS-11 Introduction, 3-7 RMS-11 User's Guide, 6-3
duplicates, RMS-11 User's Guide, 6-8
null, RMS-11 User's Guide, 6-10
number of, RMS-11 User's Guide, 6-2
position, RMS-11 User's Guide, 6-7
size, RMS-11 User's Guide, 6-6
level 0
Indexed file organization
level 0 (cont’d.)
locate mode, RMS-11 User's Guide, 7-7
mass insertion, RMS-11 User's Guide, 6-9
move mode, RMS-11 User's Guide, 7-7
multiple access streams, RMS-11 User's Guide, 7-10
multiple buffers, RMS-11 User's Guide, 7-9
null keys, RMS-11 Introduction, 3-10
placement control, RMS-11 User's Guide, 6-13
populating files, RMS-11 User's Guide, 6-26
primary key order, RMS-11 User's Guide, 6-27
random insertions, RMS-11 User's Guide, 6-27
primary key, RMS-11 Introduction, 3-7 RMS-11 User's Guide, 1-11
PUT operation, RMS-11 User's Guide, 6-7, 7-5, 7-7, 7-9
duplicate keys, RMS-11 User's Guide, 6-9
mass insertion, RMS-11 User's Guide, 7-9
random by key, RMS-11 User's Guide, 5-10
random access, RMS-11 User's Guide, 5-7, 6-12
record operations, RMS-11 User's Guide, 7-1
random access, RMS-11 User's Guide, 5-9
sequential access, RMS-11 User's Guide, 5-16
record transfer modes, RMS-11 User's Guide, 7-6
locate mode, RMS-11 User's Guide, 7-7
move mode, RMS-11 User's Guide, 7-7
REWIND operation, RMS-11 User's Guide, 7-6
search times, RMS-11 User's Guide, 5-8
Indexed file organization (cont’d.)
segmented keys, RMS-11
Introduction, 3-10
sequential reads, RMS-11 User’s
Guide, 7-10
shared access, RMS-11 User’s
Guide, 7-1
block access, RMS-11 User’s
Guide, 7-1
record access, RMS-11 User’s
Guide, 7-1
sharing declarations, RMS-11 User’s
Guide, 7-1
stream operations, RMS-11 User’s
Guide, 7-1
structure
conceptual, RMS-11 User’s
Guide, 5-4
physical, RMS-11 User’s Guide, 5-2
tree structure, RMS-11 Introduction, 3-7
UPDATE operation, RMS-11 User’s
Guide, 5-14, 7-6, 7-7, 7-8, 7-9
changeable keys, RMS-11 User’s
Guide, 6-10
duplicate keys, RMS-11 User’s
Guide, 6-9
INDEXF.SYS file, Command Language, 5-10
Index file, I/O Operations, 5-2 MCR, 3-103
bit map, I/O Operations, E-2
format, I/O Operations, E-1
header, I/O Operations, E-2
allocating, MCR, 3-103
listing contents
VFY utility, Utilities, 9-6
locating, Command Language, 5-61
Index record, RMS-11 Introduction, 3-7
RMS-11 User’s Guide, 5-2, 5-6
Indicator
See also Register indicator
Indirect, Command Language, 1-17
Indirect, 1-1, 2-1 Introduction, 4-1 to 4-2
comments, Introduction, 4-3
directives, Introduction, 4-2
labels, Introduction, 4-3
substitution of symbols, Introduction, 4-2
Indirect command file, Indirect, 1-2, 2-1 Utilities, 1-9
BAD utility, Utilities, 6-2
Indirect command file (cont’d.)
block-structuring, Indirect, 2-4
chaining, Indirect, 2-41
CLI, Indirect, 2-2
default file type, Indirect, 2-2
nesting, Indirect, 2-2
DCL, Command Language, 1-17
definition, Batch and Queue, 4-5
deleting, Indirect, 2-29, 2-48
duplicates, Indirect, 1-7, 2-96
FMT utility, Utilities, 5-9
formatting, Indirect, 2-30
independent, System Generation (11M), 3-5
BLDLAINIT.CMD, System Generation (11M), 3-5
SGNBLDDRV.CMD, System Generation (11M), 3-5
SGNKLADB.CMD, System Generation (11M), 3-5
invoking, System Generation (11M), 3-5
IOX, System Management, 4-6
major, System Generation (11M), 3-5
overview, System Generation (11M), 3-4
RMSBCK utility, RMS-11 Utilities, 6-2
RMSCNV utility, RMS-11 Utilities, 4-4
RMSDES utility, RMS-11 Utilities, 2-3
comments, RMS-11 Utilities, 2-4
RMSDSP utility, RMS-11 Utilities, 5-2
RMSIFL utility, RMS-11 Utilities, 3-2
RMSRST utility, RMS-11 Utilities, 7-2
searching for, Indirect, 2-5
SLP utility, Utilities, 13-8
task, Indirect, 2-1
default file type, Indirect, 2-2
nesting, Indirect, 2-2
tracing, Indirect, 2-27, 2-49
using task name, Indirect, 2-5
VMR, System Management, 10-3
levels allowed, System Management, 10-4
requirements, System Management, 10-3

Master Index–139
Indirect command file
VMR (cont'd.)
specifying, *System Management*, 10-4
ZAP utility, *Utilities*, 15-6
Indirect command file processing
delaying, *Indirect*, 2-45
interrupting, *Indirect*, 2-77
suspending, *Indirect*, 2-94
terminating, *Indirect*, 2-54, 2-66, 2-84
Indirect Command Processor
See *Indirect*
Ind parameter
ADSWP: subroutine (LADRV), I/O Drivers, 22-6
CLOCKA: subroutine
K-series, I/O Drivers, 23-11
LADRV, I/O Drivers, 22-7
CLOCBK: subroutine
K-series, I/O Drivers, 23-13
LADRV, I/O Drivers, 22-8
DASWP: subroutine (LADRV), I/O Drivers, 22-11
DINP: subroutine (K-series), I/O Drivers, 23-17
DISWP: subroutine (LADRV), I/O Drivers, 22-14
DOSWP: subroutine (LADRV), I/O Drivers, 22-16
INXTBF: subroutine
K-series, I/O Drivers, 23-24
LADRV, I/O Drivers, 22-19
ISTADC: subroutine (K-series), I/O Drivers, 23-28
LAMSKS: subroutine (LADRV), I/O Drivers, 22-21
RLSBUF: subroutine
K-series, I/O Drivers, 23-26
LADRV, I/O Drivers, 22-22
RMVBUF: subroutine
K-series, I/O Drivers, 23-26
LADRV, I/O Drivers, 22-22
SETADC: subroutine (LADRV), I/O Drivers, 22-23
SETIBF: subroutine
K-series, I/O Drivers, 23-29
LADRV, I/O Drivers, 22-24
STPSWP: subroutine
K-series, I/O Drivers, 23-30
LADRV, I/O Drivers, 22-25
Industrial control subsystem
See ICDRV
See ISDRV

/INDEX keyword
INITVOLUME command, MCR, 3-103
Infile
RMSBCK utility, *RMS-11 Utilities*, 6-3
RMSCNV utility, *RMS-11 Utilities*, 4-5
RMSDSP utility, *RMS-11 Utilities*, 5-3
RMSIFL utility, *RMS-11 Utilities*, 3-3
RMSRST utility, *RMS-11 Utilities*, 7-3

/INF keyword
INITVOLUME command, MCR, 3-103
Informational commands, MCR, 1-7
Information record
text, *Task Builder*, A-11
Inhibit AST Recognition directive, *Executive*, 5-64
Inhibit MCR
See MCR
INI
See INITVOLUME command
$INIDM (Initialize memory), *System Library*, 7-2
Initial allocation
relative files, *RMS-11 User's Guide*, 4-3
sequential files, *RMS-11 User's Guide*, 3-4
Initial argument indicator, *MACRO-11*, 3-2
Initial expression indicator, *MACRO-11*, 3-2
Initialization
field, *RMS-11 Macro*, 2-9
Initialization commands, MCR, 1-6
Initialize
MACRO-11 source module (K-series), I/O Drivers, 23-31
timer module
SCTI: subroutine (UDDRV), I/O Drivers, 16-30
INITIALIZE/PROCESSOR command
input, *Command Language*, 9-17
output, *Command Language*, 9-17
INITIALIZE/QUEUE command, *Command Language*, 9-18
INITIALIZE/UPDATE command,
Command Language, 5-70 to 5-72, 9-18
qualifiers, Command Language, 5-70 to 5-71
INITIALIZE command, Command Language, 5-57 to 5-69, 9-16
error messages, Command Language, 5-66 to 5-69
qualifiers, Command Language, 5-58 to 5-65
Initialize LPA1
IO.INI function (LADRV), I/O Drivers, 22-29
/INITIALIZE qualifier
BRU utility, Utilities, 7-17
Initial register indicator, MACRO-11, 3-2
/INIT keyword, MCR, 3-49
subkeywords, MCR, 3-49 to 3-52
INITM1, Error Logging, 4-7
INITS macro
calling example (LADRV), I/O Drivers, 22-28
special calling (LADRV), I/O Drivers, 22-27
special purpose (K-series), I/O Drivers, 23-31
INITVOLUME command, MCR, 1-6, 3-99
default file protection, MCR, 2-3
error messages, MCR, 3-108 to 3-116
examples, MCR, 3-107
format, MCR, 3-99
keywords
/ACCESS, MCR, 3-100
/BAD, MCR, 3-100
/DENS, MCR, 3-102
/EXT, MCR, 3-102
/FPRO, MCR, 3-102
/INDX, MCR, 3-103
/INF, MCR, 3-103
/LRU, MCR, 3-104
/MXF, MCR, 3-105
/OWNER, MCR, 3-105
/POS, MCR, 3-106
/PRO, MCR, 3-106
/UIC, MCR, 3-107
/WIN, MCR, 3-107
parameters, MCR, 3-99
$INIVM (Initialize virtual memory),
System Library, 8-5

Inm parameter (UDDRV)
AIRD/AIRDW subroutine, I/O Drivers, 16-17
AISQ/AISqw subroutine, I/O Drivers, 16-18
AO/AOW subroutine, I/O Drivers, 16-19
DI/DIW: subroutine, I/O Drivers, 16-23
DOL/DOLW: subroutine, I/O Drivers, 16-24
DOM/DMOW: subroutine, I/O Drivers, 16-25
Input, Introduction, 1-4
ADJLPS: subroutine, use of, I/O Drivers, 17-36
analog (ICDRV/ISDRV), I/O Drivers, 19-39, 19-40
sequential channel, I/O Drivers, 19-42
specified channel, I/O Drivers, 19-39
buffer, intermediate (TTDRV), I/O Drivers, 2-80
checkpoint, terminal (TTDRV), I/O Drivers, 2-82
data format
Task Builder, Task Builder, A-1 to A-32
default read (TTDRV), I/O Drivers, 2-13
digital (ICDRV/ISDRV), I/O Drivers, 19-47
interrupt single-point, I/O Drivers, 19-48
sense multiple field, I/O Drivers, 19-47, 19-48
line, delete start (TTDRV), I/O Drivers, 2-70
parameter
DINP: subroutine (K-series), I/O Drivers, 23-17
random analog data (UDDRV), I/O Drivers, 16-17
unsolicited (TTDRV), I/O Drivers, 2-55, 2-68
notification, I/O Drivers, 2-13
Input/output
See I/O
Input file switch
RMSBCK utility, RMS-11 Utilities, 6-8
Input file switch (cont’d.)

RMSIFL utility, RMS-11 Utilities, 3-7
RMSRST utility, RMS-11 Utilities, 7-8

/INQUIRE keyword

SET command (MCR), MCR, 3-225
INS, I/O Drivers, 13-5
See also INSTALL command

INSERT command

EDI utility, Program Development, 2-18, 7-7 Utilities, 2-15
EDT editor, Introduction, 2-12

Inserting

characters in a line, Program Development, 2-17
code in the source file, Program Development, 2-18
lines in a file, Program Development, 2-9, 2-18
modules in a library, Program Development, 6-9, 6-10

Inserting text (EDT), Introduction, 2-6

INSTALL command, Command Language, 7-28 to 7-36, 9-19
Introduction, 5-8
error messages, Command Language, 7-31 to 7-36
qualifiers, Command Language, 7-28 to 7-30

INSTALL command (MCR), MCR, 1-6, 3-116
format, MCR, 3-116
installing task, MCR, 2-21, 2-23

keywords

/AFJ, MCR, 3-117
/CKP, MCR, 3-117
/CLI, MCR, 3-117
/FMAP, MCR, 3-118
/INC, MCR, 3-118
/IOP, MCR, 3-118
/PAR, MCR, 3-119
/PMD, MCR, 3-119
/PRI, MCR, 3-119
/ROPAR, MCR, 3-120
/SEC, MCR, 3-120
/SLV, MCR, 3-120
/SYNC, MCR, 3-121
/TASK, MCR, 3-121
/TIME, MCR, 3-121
/UIC, MCR, 3-121
/WB, MCR, 3-122
/XHR, MCR, 3-122
parameters, MCR, 3-116

INSTALL command (VMR), System Management, 10-21
definition, System Management, 10-21
events, System Management, 10-30 to 10-31
format, System Management, 10-21

keywords

/CKP, System Management, 10-22
/CLI, System Management, 10-23
/FIX, System Management, 10-23
/INC, System Management, 10-24
/IOP, System Management, 10-24
/PMD, System Management, 10-25
/PRI, System Management, 10-25
/PRO, System Management, 10-25
/SLV, System Management, 10-27
/SYNC, System Management, 10-27
/TASK, System Management, 10-27
/UIC, System Management, 10-28
/WB, System Management, 10-28

notes, System Management, 10-31 to 10-32
parameters, System Management, 10-21

Install-run-remove form

RUN command, Command Language, 7-3, 7-7

Instruction data space, MCR, 3-167
Instruction set

commercial, MACRO-11, C-3, C-4
floating-point, MACRO-11, C-4, C-5
PDP-11, MACRO-11, C-1, C-2

Instruction space, Debugging, 3-2, 7-2, 9-3 Executive, 3-1
command, Debugging, 2-9, 9-12
enabling, Debugging, 1-3
mapping, Executive, 3-3
moving data, Executive, 5-133
Interrupt (cont’d.)
unlink counter (ICDRV/ISDRV),
I/O Drivers, 19-30
unlink task (ICDRV/ISDRV), I/O
Drivers, 19-29
unsolicited
processing (ICDRV/ISDRV),
I/O Drivers, 19-64
task activate (ICDRV/ISDRV),
I/O Drivers, 19-24
unsolicited data
continual monitoring
(ICDRV/ISDRV), I/O
Drivers, 19-51
unsolicited processing
(ICDRV/ISDRV), I/O
Drivers, 19-17
vector, MCR, 3-132
Interrupt Control Block
See ICB
Interrupting function (ICDRV/ISDRV),
I/O Drivers, 19-5
Interrupt processing, Debugging, 8-3
fork level, Writing I/O Driver, 2-9,
2-15
priority 7, Writing I/O Driver, 2-14
priority of interrupting source,
Writing I/O Driver, 2-14
Interrupt Service Routine
See ISR
Interrupt timeouts
error logging, Error Logging, 1-6
Intersystem file transfer, RMS-11
Utilities, 1-2, 6-1
RMSCNV utility, RMS-11 Utilities,
4-1
RMSRST utility, RMS-11 Utilities,
7-1, 7-10
/FR switch, RMS-11 Utilities,
7-7
version number conversion,
RMS-11 Utilities, 7-5
Interval
reschedule, MCR, 3-180
Interval report
IOX, System Management, 4-20
Int parameter
immediate device-specific function
(LSDRV), I/O Drivers, 17-3
Introduction
Task Builder, Task Builder, 1-1 to
1-19
INTSV$ macro
  description, Writing I/O Driver, 4-35
  format, Writing I/O Driver, 4-35
$INTSV routine, Writing I/O Driver, 2-12, 5-15
calling with INTSV$ macro, Writing I/O Driver, 4-35
processing at priority of interrupting source, Writing I/O Driver, 2-15
$INTXT routine, Writing I/O Driver, 5-16
Invalid Login Transaction Block, System Management, 17-27
Invoking
  interactively, Indirect, 1-10, 2-96
RMSBCK utility, RMS-11 Utilities, 6-2
RMSCNV utility, RMS-11 Utilities, 4-3
RMSDEF utility, RMS-11 Utilities, A-5
RMSDES utility, RMS-11 Utilities, 2-2
RMSDSP utility, RMS-11 Utilities, 5-2
RMSIFL utility, RMS-11 Utilities, 3-2
RMSRST utility, RMS-11 Utilities, 7-2
/INVOLUME qualifier
BRU utility, Utilities, 7-17
INXTBF: subroutine
  set next buffer
    K-series, I/O Drivers, 23-24
    LADRV, I/O Drivers, 22-18
IO.ACE function
  F11ACP, I/O Drivers, C-9
  MTAACP, I/O Drivers, C-10
IO.ACP function (MTAACP, I/O Drivers, C-12
IO.ACR function
  F11ACP, I/O Drivers, C-8
  MTAACP, I/O Drivers, C-10
IO.ACW function
  F11ACP, I/O Drivers, C-8
  MTAACP, I/O Drivers, C-10
IO.ADS function
  ADC: subroutine error (LSDRV), I/O Drivers, 17-32
  IO.RSU return (LSDRV), I/O Drivers, 17-31
IO.ADS function (cont’d.)
  synchronous (LSDRV), I/O Drivers, 17-6
IO.APV function (MTAACP, I/O Drivers, C-12
IO.ATA function
  half-duplex, I/O Drivers, 3-9
  TTDRV, I/O Drivers, 2-20
IO.ATF function, receive (LRDRV), I/O Drivers, 14-10
IO.ATT function
  GLUNS, before (RX02), I/O Drivers, 5-12
  (GRDRV), I/O Drivers, 21-2
  standard function, I/O Drivers, 1-27
  TF,ESQ, with (half-duplex), I/O Drivers, 3-11
  UNIBUS switch driver, I/O Drivers, 24-2, 24-3
  VTDRV, I/O Drivers, 4-4
IO.ATX function, transmitter (LRDRV), I/O Drivers, 14-5
IO.BLS function (DDDRV), I/O Drivers, 7-4
IO.CCI function (ICDRV/ISDRV), I/O Drivers, 19-19
IO.CCO function
  half-duplex, I/O Drivers, 3-11
  TTDRV, I/O Drivers, 2-23
  VFC (TTDRV), I/O Drivers, 2-75
IO.CLK function (LADRV), I/O Drivers, 22-29
IO.CNT function (GRDRV), I/O Drivers, 21-2
IO.CON function
  device-specific (UNIBUS switch driver), I/O Drivers, 24-4
  GRDRV, I/O Drivers, 21-2
IO.CRE function
  F11ACP, I/O Drivers, C-8
  MTAACP, I/O Drivers, C-11
IO.CRX function, receive (LRDRV), I/O Drivers, 14-10
IO.CSR function
  device-specific (UNIBUS switch driver), I/O Drivers, 24-6
IO.CTI function
  ICDRV/ISDRV, I/O Drivers, 19-21
  UDDRV, I/O Drivers, 16-8
IO.CTY function (ICDRV/ISDRV), I/O Drivers, 19-23
IO.DAC function
  F11ACP, I/O Drivers, C-9

Master Index-145
IO.DAC function (cont’d.)
  MTAACP, I/O Drivers, C-10
IO.DCI function (ICDRV/ISDRV), I/O Drivers, 19-20
IO.DEL function (F11ACP), I/O Drivers, C-8
IO.DET function
  GRDRV, I/O Drivers, 21-2
  standard function, I/O Drivers, 1-28
  UNIBUS switch driver, I/O Drivers, 24-2, 24-3
  VTDRV, I/O Drivers, 4-4
IO.DIN function diagnostic (DDDRV), I/O Drivers, 7-4
IO.DIS function
  device-specific (UNIBUS switch driver), I/O Drivers, 24-5
  GRDRV, I/O Drivers, 21-2
IO.DPT function
  device-specific (UNIBUS switch driver), I/O Drivers, 24-5
IO.DRX function, receive (LRDRV), I/O Drivers, 14-11
IO.DSE function (tape driver), I/O Drivers, 8-8
IO.DTI function
  ICDRV/ISDRV, I/O Drivers, 19-22
  UDDRV, I/O Drivers, 16-8
IO.DTY function (ICDRV/ISDRV), I/O Drivers, 19-24
IO.EIO function (TTDRV), I/O Drivers, 2-25
  item list 1 buffer, I/O Drivers, 2-30
  item list 2 buffer, I/O Drivers, 2-32
  remote terminal, I/O Drivers, 2-25
IO.ENA function
  F11ACP, I/O Drivers, C-9
  MTAACP, I/O Drivers, C-10
IO.ERS function (tape driver), I/O Drivers, 8-8
IO.EXT function (F11ACP), I/O Drivers, C-9
IO.FDX function (communication driver), I/O Drivers, 12-7
IO.FBN function (ICDRV/ISDRV), I/O Drivers, 19-32
IO.FNX function
  F11ACP, I/O Drivers, C-9
  MTAACP, I/O Drivers, C-10
IO.GTS function
  half-duplex, I/O Drivers, 3-13
IO.GTS function (cont’d.)
  support returned (TTDRV), I/O Drivers, 2-34
  TTDRV, I/O Drivers, 2-18, 2-33
  VTDRV, I/O Drivers, 4-4
IO.HDX function, set mode
  (communication driver), I/O Drivers, 12-7
IO.HIS function (LSDRV)
  IO.RSU return, I/O Drivers, 17-31
  synchronous, I/O Drivers, 17-7
IO.HNG function (TTDRV), I/O Drivers, 2-35
IO.INI function (LADRV), I/O Drivers, 22-29
IO.INL function
  communication driver, I/O Drivers, 12-7
  after sync, I/O Drivers, 12-12
IO.ITU function (ICDRV/ISDRV), I/O Drivers, 19-22
IO.KIL function
  CRDRV, I/O Drivers, 11-2
  DTDRV, I/O Drivers, 6-2
  GRDRV, I/O Drivers, 21-2
  I/O in progress (CTDRV), I/O Drivers, 9-3
  ICDRV/ISDRV, I/O Drivers, 19-33
  LPDRV, I/O Drivers, 10-4
  standard function, I/O Drivers, 1-29
  tape driver, I/O Drivers, 8-6
  time required (half-duplex), I/O Drivers, 3-32
  UDDRV, I/O Drivers, 16-3
  UNIBUS switch driver, I/O Drivers, 24-3
  VTDRV, I/O Drivers, 4-4
IO.KIL function
  (PPDRV/PRDRV), I/O Drivers, 18-2
IO.LDI function (ICDRV/ISDRV), I/O Drivers, 19-25
IO.LED function, immediate (LSDRV), I/O Drivers, 17-4
IO.LKE function (ICDRV/ISDRV), I/O Drivers, 19-27
IO.LOD function (LADRV), I/O Drivers, 22-29
IO.LTI function (ICDRV/ISDRV), I/O Drivers, 19-26
IO.LTY function (ICDRV/ISDRV), I/O Drivers, 19-27
IO.MDA function (LSDRV)
  IO.RSU return, I/O Drivers, 17-31
IO.MDA function (LSDRV) (cont’d.)
synchronous, I/O Drivers, 17-8
IO.MDI function (LSDRV)
IE.RSU return, I/O Drivers, 17-31
synchronous, I/O Drivers, 17-8
IO.MDO function (LSDRV)
IE.RSU return, I/O Drivers, 17-31
synchronous, I/O Drivers, 17-8
IO.MLO function (ICDRV/ISDRV), I/O Drivers, 19-17
IO.MSO function (ICDRV/ISDRV), I/O Drivers, 19-16
IO.NLK function (ICDRV/ISDRV), I/O Drivers, 19-30
IO.ONL function (ICDRV/ISDRV), I/O Drivers, 19-33
IO.RAD function (ICDRV/ISDRV), I/O Drivers, 19-28
IO.RAL function
Badge Reader (TTDRV), I/O Drivers, 2-82
character echo (half-duplex), I/O Drivers, 3-14
half-duplex, I/O Drivers, 3-14
TTDRV, I/O Drivers, 2-36
IO.RAT function
F11ACP, I/O Drivers, C-9
MTAACP, I/O Drivers, C-11
IO.RBC function (ICDRV/ISDRV), I/O Drivers, 19-13
IO.REL function, immediate (LSDRV), I/O Drivers, 17-4
IO.RLB function
communication driver, I/O Drivers, 12-7
ignore prompt (TTDRV), I/O Drivers, 2-27
standard function, I/O Drivers, 1-30
tape driver, I/O Drivers, 8-7
VTDRV, I/O Drivers, 4-4
IO.RLC function (DDDRV), I/O Drivers, 7-4
IO.RNA function (F11ACP), I/O Drivers, C-9
IO.RNE function
Badge Reader (TTDRV), I/O Drivers, 2-82
half-duplex, I/O Drivers, 3-14
TTDRV, I/O Drivers, 2-38
IO.RNS function (communication driver), I/O Drivers, 12-7
IO.RPRITF.XOF function (half-duplex), I/O Drivers, 3-15
IO.RPR function
allowed subfunction bit (half-duplex), I/O Drivers, 3-14
half-duplex, I/O Drivers, 3-14, 3-15
TTDRV, I/O Drivers, 2-40
VFC (TTDRV), I/O Drivers, 2-75
VTDRV, I/O Drivers, 4-7
IO.RST function
half-duplex, I/O Drivers, 3-15
TTDRV, I/O Drivers, 2-43
successful completion, I/O Drivers, 2-43
IO.RTF function, receive (LRDRV), I/O Drivers, 14-10
IO.RTT function (TTDRV), I/O Drivers, 2-45
IO.RVB function
F11ACP, I/O Drivers, C-9
MTAACP, I/O Drivers, C-11
open file (DTDRV), I/O Drivers, 6-3
operation (disk driver), I/O Drivers, 5-8
standard function, I/O Drivers, 1-30
VTDRV, I/O Drivers, 4-4
IO.RWD function (tape driver), I/O Drivers, 8-7
IO.RWU function (tape driver), I/O Drivers, 8-7
IO.SAO function (ICDRV/ISDRV), I/O Drivers, 19-15
IO.SDI function, immediate (LSDRV), I/O Drivers, 17-4
IO.SDO function (LSDRV)
IE.RSU return, I/O Drivers, 17-31
immediate, I/O Drivers, 17-4
IO.SEC function
GLUN$, before (RX02), I/O Drivers, 5-12
tape driver, I/O Drivers, 8-8
transmitter (LRDRV), I/O Drivers, 14-5
IO.SMC function (TTDRV), I/O Drivers, 2-59
IO.SMO function (tape driver), I/O Drivers, 8-10
IO.SPB function, space (CTDRV), I/O Drivers, 9-7
IO.SPF function
EOF (CTDRV), I/O Drivers, 9-7
space (CTDRV), I/O Drivers, 9-7

Master Index-147
IO.STA function, data transfer start (LADRV), I/O Drivers, 22-30

IO.STC function
LRDRV
   transmitter, I/O Drivers, 14-5
   mode parameter, I/O Drivers, 14-6
   state parameter, I/O Drivers, 14-6
VTDRV, I/O Drivers, 4-5

IO.STP function
data transfer stop (LADRV), I/O Drivers, 22-30
device-specific (LSDRV), I/O Drivers, 17-9
GRDRV, I/O Drivers, 4-5

IO.SWI function
device-specific (UNIBUS switch driver), I/O Drivers, 24-6

IO.SYN function (communication driver), I/O Drivers, 12-7
set operation, I/O Drivers, 12-7
with IO.INL, I/O Drivers, 12-12

IO.TRM function (communication driver), I/O Drivers, 12-7

IO.UDI function (ICDRV/ISDRV), I/O Drivers, 19-30

IO.UER function (ICDRV/ISDRV), I/O Drivers, 19-31

IO.ULK function (F11ACP), I/O Drivers, C-9

IO.UTI function (ICDRV/ISDRV), I/O Drivers, 19-30

IO.UTY function (ICDRV/ISDRV), I/O Drivers, 19-31

IO.WAL function
half-duplex, I/O Drivers, 3-16
TTDRV, I/O Drivers, 2-47

IO.WBT function
half-duplex, I/O Drivers, 3-16
TTDRV, I/O Drivers, 2-49
VFC (TTDRV), I/O Drivers, 2-75

IO.WLB function
ICDRV/ISDRV, I/O Drivers, 19-32
ignore prompt (TTDRV), I/O Drivers, 2-27
standard function, I/O Drivers, 1-31, 1-32
VFC (TTDRV), I/O Drivers, 2-75
VTDRV, I/O Drivers, 4-4

IO.WLC function (DDDVR), I/O Drivers, 7-4

IO.WNS function (communication driver), I/O Drivers, 12-8

IO.WVB function
F11ACP, I/O Drivers, C-9
open file (DTDRV), I/O Drivers, 6-3
operation (disk driver), I/O Drivers, 5-8
use (half-duplex), I/O Drivers, 3-32
VFC (TTDRV), I/O Drivers, 2-75
VTDRV, I/O Drivers, 4-4

IO.XCL function (XEDRV), I/O Drivers, 13-4, 13-17
error return, I/O Drivers, 13-18
status return, I/O Drivers, 13-18
syntax, I/O Drivers, 13-17

IO.XIN function (XEDRV), I/O Drivers, 13-4, 13-10
error return, I/O Drivers, 13-11
status return, I/O Drivers, 13-11
syntax, I/O Drivers, 13-10

IO.XOP function (XEDRV), I/O Drivers, 13-4, 13-6
syntax, I/O Drivers, 13-6

IO.XRC function (XEDRV), I/O Drivers, 13-4, 13-13
diagnostic, I/O Drivers, 13-19
error return, I/O Drivers, 13-16
status return, I/O Drivers, 13-16
syntax, I/O Drivers, 13-13

IO.XSC function (XEDRV), I/O Drivers, 13-4, 13-7
syntax, I/O Drivers, 13-7

IO.XTM function (XEDRV), I/O Drivers, 13-4, 13-11
diagnostic, I/O Drivers, 13-19
error return, I/O Drivers, 13-13
status return, I/O Drivers, 13-13
syntax, I/O Drivers, 13-11

/IO_PAGE qualifier, Task Builder, 11-38

$IOALT routine, Writing I/O Driver, 2-13, 5-17

$$IOB1 program section
reserved name, Task Builder, E-3

$$IOB2 program section
reserved name, Task Builder, E-3

Master Index-148
$IODON routine, Writing I/O Driver, 2-13, 5-17
IOERR$ macro, I/O Drivers, 1-8
I/O completion code, I/O Drivers, 1-37
$IOFIN routine, Writing I/O Driver, 5-18
use of by ACP, Writing I/O Driver, D-7
/IOP keyword
INSTALL command (MCR), MCR, 3-118
INSTALL command (VMR), System Management, 10-24
RUN command (MCR), MCR, 3-183
Iosb parameter (K-series)
DINP: subroutine, I/O Drivers, 23-17
DOUT: subroutine, I/O Drivers, 23-21
SCOPE: subroutine, I/O Drivers, 23-27
IOT trap instruction, Debugging, 8-5, 9-4
Iout parameter
DOUT: subroutine (K-series), I/O Drivers, 23-21
IOX, System Management, 1-1
command
LOOPBACK, System Management, 4-43
parameter list
Files-11, System Management, 4-8
command mode, System Management, 4-18
commands
ABORT, System Management, 4-24
BADBLOCKS, System Management, 4-25
BUFFERSIZE, System Management, 4-27
categories, System Management, 4-3
COMPAREDATA YES/NO, System Management, 4-28
CONFIGURE, System Management, 4-29
CONTROL C YES/NO, System Management, 4-32

IOX
commands (cont'd.)
CTRL/C, System Management, 4-32
DENSITY, System Management, 4-33
descriptions, System Management, 4-22
DESELECT, System Management, 4-35
ERRORLIMIT, System Management, 4-36
EXECUTE, System Management, 4-37
EXIT, System Management, 4-38
files, System Management, 4-6
FILES11, System Management, 4-39
HELP, System Management, 4-40
in interactive mode, System Management, 4-19
INTERLEAVE, System Management, 4-41
LOGFILE, System Management, 4-42
parameter
by device type, System Management, 4-9
with FILES11, System Management, 4-8
with SELECT, System Management, 4-9
with VERIFY, System Management, 4-9
PARAMETERLIST, System Management, 4-44
parameter list
for NFS volumes, System Management, 4-9
PATTERN, System Management, 4-48
PRINTSUMMARY, System Management, 4-49
PROCEED, System Management, 4-50
RANDOM, System Management, 4-51
RANGE, System Management, 4-52
RECORDS, System Management, 4-53
REPORTERRORS YES/NO, System Management, 4-54

Master Index-149
IOX commands (cont'd.)
RESTART, System Management, 4-55
RETRIES, System Management, 4-56
RUNTIME, System Management, 4-57
SELECT, System Management, 4-58
SPY, System Management, 4-60
START, System Management, 4-61
SUMMARYTIME, System Management, 4-62
syntax, System Management, 4-22
TEMPORARYFILE, System Management, 4-63
VERIFY, System Management, 4-64
VOLUMECHECK, System Management, 4-65
WAIT, System Management, 4-66
WRITECHECK, System Management, 4-67
considerations for, System Management, 4-1
controlling with CTRL/C, System Management, 4-32
data
compare error report, System Management, 4-21
pattern checking, System Management, 4-28
transfer size of, System Management, 4-27
DECTape exercising, System Management, 4-2
defaults
changing during task build, System Management, 4-22
device
exercising steps, System Management, 4-2
status display, System Management, 4-60
testing
time of, System Management, 4-57
disk exercising, System Management, 4-2
IOX (cont'd.)
error messages, System Management, 4-68
execution mode, System Management, 4-18
entering, System Management, 4-18
exercise parameters
general list, System Management, 4-8
exiting, System Management, 4-38
file-structured exercising, System Management, 4-3
increment, System Management, 4-5
indirect command files, System Management, 4-6
installation
on RSX-11M, System Management, 4-4
interleaving with Executive, System Management, 4-66
interval report output frequency,
System Management, 4-62
invoking
on RSX-11M, System Management, 4-5
when installed, System Management, 4-5
when not installed, System Management, 4-5
with an increment, System Management, 4-5
without an increment, System Management, 4-5
nonfile-structured exercising, System Management, 4-3
output type
activity report, System Management, 4-20
interval report, System Management, 4-20
summary report, System Management, 4-20
parameter
command exercising magnetic tape, System Management, 4-12
exercising
device-dependent exercise, System Management, 4-8
Files-11 volumes, System Management, 4-10
parameter (cont’d.)
  NFS volume, System Management, 4-15
general list of exercise parameters, System Management, 4-8
overriding default
  FILES11, System Management, 4-39
  SELECT, System Management, 4-58
showing default with
  PARAMETERLIST, System Management, 4-44
parameter command category,
  System Management, 4-3
pattern
  altering test, System Management, 4-48
displaying test, System Management, 4-48
restarting, System Management, 4-55
running steps, System Management, 4-1
selecting
  NFS volume, System Management, 4-8
starting, System Management, 4-61
task-build file
definition of, System Management, 4-22
task termination, System Management, 4-18
termination, System Management, 4-38
  using PROCEED, System Management, 4-50
test configuration, System Management, 4-29
adding units, System Management, 4-6
displaying, System Management, 4-6
setting up, System Management, 4-6
testing
  removing devices from, System Management, 4-35
  wait-for-event flag, System Management, 4-66
write-check, System Management, 4-67

IP11
industrial I/O subsystem, System Generation (11M), 4-60
power fail, System Generation (11M), 4-60
Ipsset parameter
  ADSWP: subroutine (K-series), I/O Drivers, 23-10
  CLOCK: subroutine
    K-series, I/O Drivers, 23-11
    LADRV, I/O Drivers, 22-7
  CLOCK: subroutine
    K-series, I/O Drivers, 23-12
    LADRV, I/O Drivers, 22-8
  DASWP: subroutine (K-series), I/O Drivers, 23-15
  DISWP: subroutine (K-series), I/O Drivers, 23-18
  DOSWP: subroutine (K-series), I/O Drivers, 23-19
  GTHIST: subroutine (K-series), I/O Drivers, 23-22
  XRATE: subroutine
    K-series, I/O Drivers, 23-30
    LADRV, I/O Drivers, 22-26
/IP switch, Task Builder, 10-22
Ipt parameter (UDDRV)
  RCPT: subroutine, I/O Drivers, 16-25
  RDCS: subroutine, I/O Drivers, 16-27
  RDDI: subroutine, I/O Drivers, 16-28
IQ.Q function (disk driver), I/O Drivers, 5-8
IQ.UMD bit diagnostic function, I/O Drivers, 1-34
IQ.X function (disk driver), I/O Drivers, 5-8
IRAB pool, RMS-11 Macro, 2-5
Irate parameter
  CLOCK: subroutine
    K-series, I/O Drivers, 23-11
    LADRV, I/O Drivers, 22-7
  CLOCK: subroutine
    K-series, I/O Drivers, 23-12
    LADRV, I/O Drivers, 22-8
  DRS: subroutine (LSDRV), I/O Drivers, 17-16
  HIST: subroutine (LSDRV), I/O Drivers, 17-18

Master Index-151
Irate parameter (cont’d.)
RTS: subroutine (LSDRV), I/O Drivers, 17-24
SDAC: subroutine (LSDRV), I/O Drivers, 17-26
SDO: subroutine (LSDRV), I/O Drivers, 17-28
XRAT: subroutine
K-series, I/O Drivers, 23-30
Irbuf parameter
IO.INI function (LADRV), I/O Drivers, 22-29
IRDB: subroutine
read data from input buffer (LSDRV), I/O Drivers, 17-20
I register, Debugging, 2-7, 5-4, 9-10
Irel parameter
RELAY: subroutine (LSDRV), I/O Drivers, 17-22
IRPC directive, MACRO-11, 7-18
IRP directive, MACRO-11, 7-17
IS.CC status return (TTDRV), I/O Drivers, 2-66
IS.CR status return (disk driver), I/O Drivers, 2-66
IS.SEC status return (TTDRV), I/O Drivers, 2-66
IS.SUC status return
UNIBUS switch driver, I/O Drivers, 24-7
IS.SUC success return, I/O Drivers, 1-37, 1-40
AFC11/AD01 converter, I/O Drivers, 15-8
communication driver, I/O Drivers, 12-8
CRDRV, I/O Drivers, 11-7
CTDRV, I/O Drivers, 9-4
DDDVR, I/O Drivers, 7-5
diagnostic success, I/O Drivers, 1-35
disk driver, I/O Drivers, 5-9
DTRVR, I/O Drivers, 6-4
FORTRAN interface value
(AFC11/AD01 converter), I/O Drivers, 15-9
GRDRV, I/O Drivers, 21-3
half-duplex, I/O Drivers, 3-18
ICDRV/ISDRV, I/O Drivers, 19-12
IO.CCI function, I/O Drivers, 19-20
IO.CTI function, I/O Drivers, 19-21
IO.CTY function, I/O Drivers, 19-23
IO.DCI function, I/O Drivers, 19-21
IO.DTI function, I/O Drivers, 19-23
IO.DTY function, I/O Drivers, 19-19
IO.FLN function, I/O Drivers, 19-24
IO.ITI function, I/O Drivers, 19-22
IO.KIL function, I/O Drivers, 19-33
IO.LDI function, I/O Drivers, 19-26
IO.LKE function, I/O Drivers, 19-28

Master Index-152
IS.SUC success return
ICDRV/ISDRV (cont’d.)
IO.LTI function, I/O Drivers, 19-26
IO.LTY function, I/O Drivers, 19-27
IO.MLO function, I/O Drivers, 19-17
IO.MSO function, I/O Drivers, 19-16
IO.NLK function, I/O Drivers, 19-30
IO.ONL function, I/O Drivers, 19-33
IO.RAD function, I/O Drivers, 19-29
IO.RBC function, I/O Drivers, 19-14
IO.SAO function, I/O Drivers, 19-16
IO.UDI function, I/O Drivers, 19-30
IO.UER function, I/O Drivers, 19-31
IO.UTI function, I/O Drivers, 19-31
IO.UTY function, I/O Drivers, 19-31
IO.WLB function, I/O Drivers, 19-32
initialize line
IO.XIN function, I/O Drivers, 13-11
load microcode (XEDRV), I/O Drivers, 13-18
LPDRV, I/O Drivers, 10-5
LSDRV, I/O Drivers, 17-29
PPDRV/PRDRV, I/O Drivers, 18-3
receive message status (XEDRV), I/O Drivers, 13-16
receiver (LRDRV), I/O Drivers, 14-11
tape driver, I/O Drivers, 8-10
transmit line message status (XEDRV), I/O Drivers, 13-13
transmitter (LRDRV), I/O Drivers, 14-7
TTDRV, I/O Drivers, 2-67
UDDRV, I/O Drivers, 16-31
VTDRV, I/O Drivers, 4-6, 4-8, 4-9
XEDRV, I/O Drivers, 13-5, 13-18
IS.TMO status return (TTDRV), I/O Drivers, 2-67
IS.TNC status return (LRDRV)
receiver, I/O Drivers, 14-11
transmitter, I/O Drivers, 14-7
ISA
FORTRAN routines, System Generation (11M), 4-59
industrial/laboratory libraries, System Generation (11M), 4-59
Isb parameter
ADC: subroutine (LSDRV), I/O Drivers, 17-12
ADJLPS: subroutine (LSDRV), I/O Drivers, 17-13
AIRD/AIRDW subroutine (UDDRV), I/O Drivers, 16-18
AISQ/AISQW subroutine (UDDRV), I/O Drivers, 16-19
AO/AOW subroutine (UDDRV), I/O Drivers, 16-20
ASARLN: subroutine (LSDRV), I/O Drivers, 17-14
ASLSLN: subroutine (LSDRV), I/O Drivers, 17-14
CTDI: subroutine (UDDRV), I/O Drivers, 16-21
CTTI: subroutine (UDDRV), I/O Drivers, 16-22
DFTI: subroutine (UDDRV), I/O Drivers, 16-23
DI/DIW: subroutine (UDDRV), I/O Drivers, 16-24
DOM/DOW: subroutine (UDDRV), I/O Drivers, 16-24
DRS: subroutine (LSDRV), I/O Drivers, 17-17
dgeneral (TTDRV), I/O Drivers, 2-10
HIST: subroutine (LSDRV), I/O Drivers, 17-18
I/O completion, I/O Drivers, 1-36
IDIR: subroutine (LSDRV), I/O Drivers, 17-19
IDOR: subroutine (LSDRV), I/O Drivers, 17-20
IO.ATA function (TTDRV), I/O Drivers, 2-20
IO.ATT function, I/O Drivers, 1-27
IO.CCO function (TTDRV), I/O Drivers, 2-23
IO.DET function, I/O Drivers, 1-28

Master Index—153
Isb parameter (cont'd.)

IO.EIO function (TTDRV), I/O Drivers, 2-26
IO.GTS function (TTDRV), I/O Drivers, 2-33
IO.HNG function (TTDRV), I/O Drivers, 2-35
IO.KIL function, I/O Drivers, 1-29
IO.RAL function (TTDRV), I/O Drivers, 2-36
IO.RLB function, I/O Drivers, 1-30
IO.RNE function (TTDRV), I/O Drivers, 2-38
IO.RPR function (TTDRV), I/O Drivers, 2-40
IO.RST function (TTDRV), I/O Drivers, 2-43
IO.RTT function (TTDRV), I/O Drivers, 2-45
IO.RVB function, I/O Drivers, 1-31
IO.SMC function (TTDRV), I/O Drivers, 2-39
IO.SMC function (TTDRV), I/O Drivers, 2-39
IO.TDR function, I/O Drivers, 1-21
IO.TDR function, I/O Drivers, 1-21
IO.WAL function (TTDRV), I/O Drivers, 2-59
IO.WBT function (TTDRV), I/O Drivers, 2-49
IO.WLB function, I/O Drivers, 1-32
IO.WVB function, I/O Drivers, 1-33

LED: subroutine (LSDRV), I/O Drivers, 17-21
omitted, I/O Drivers, 1-39
QIO$ basic syntax, I/O Drivers, 1-8
RCIPT: subroutine (UDDRV), I/O Drivers, 16-26
RELAY: subroutine (LSDRV), I/O Drivers, 17-22
RSTI: subroutine (UDDRV), I/O Drivers, 16-30
RTS: subroutine (LSDRV), I/O Drivers, 17-24
SCTI: subroutine (UDDRV), I/O Drivers, 16-31
SDAC: subroutine (LSDRV), I/O Drivers, 17-26
SDO: subroutine (LSDRV), I/O Drivers, 17-28
SF.GMC function (TTDRV), I/O Drivers, 2-51

ISI field in RAB (cont'd.)
DISCONNECT operation, RMS-11 Macro, 5-27
FIND operation, RMS-11 Macro, 5-49, 5-51, 5-54
FLUSH operation, RMS-11 Macro, 5-56
FREE operation, RMS-11 Macro, 5-58
GET operation, RMS-11 Macro, 5-60, 5-63, 5-67
NXTVOL operation, RMS-11 Macro, 5-70
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-91, 5-95
READ operation, RMS-11 Macro, 5-98, 5-100
REWIND operation, RMS-11 Macro, 5-114
SPACE operation, RMS-11 Macro, 5-120
summary, RMS-11 Macro, 6-121
TRUNCATE operation, RMS-11 Macro, 5-122
UPDATE operation, RMS-11 Macro, 5-124
WAIT operation, RMS-11 Macro, 5-126
WRITE operation, RMS-11 Macro, 5-127, 5-129

I-space
See Instruction space
ISR, Executive, 5-21

Istat parameter (LSDRV)
DRS: subroutine, I/O Drivers, 17-17
HIST: subroutine, I/O Drivers, 17-19
RTS: subroutine, I/O Drivers, 17-24
SDAC: subroutine, I/O Drivers, 17-26
SDO: subroutine, I/O Drivers, 17-28

ISTAT$ macro, I/O Operations, 7-1, 7-2

Istat parameter
RELAY: subroutine (LSDRV), I/O Drivers, 17-22

Istat parameter
IBFSTS: subroutine
K-series, I/O Drivers, 23-23
LADRV, I/O Drivers, 22-17

Master Index-154
Istop parameter (LSDRV)
  DRS: subroutine, I/O Drivers, 17-17
  HIST: subroutine, I/O Drivers, 17-19
  RTS: subroutine, I/O Drivers, 17-24
  SDAC: subroutine, I/O Drivers, 17-27
  SDO: subroutine, I/O Drivers, 17-28

Ist parameter
  RDWD: subroutine (UDDRV), I/O Drivers, 16-30

Isw parameter
  ASUDLN: subroutine (UDDRV), I/O Drivers, 16-20

I symbolic argument
  MACRD-ll, 6-41

Isz parameter (UDDRV)
  CTDI: subroutine, I/O Drivers, 16-21
  CTTI: subroutine, I/O Drivers, 16-22
  ITBDJ$, CPA, B':26
  Item terminator, MACRO-11, 3-2

Itim parameter
  ICLOKB: subroutine (K-series), I/O Drivers, 23-23

Itm parameter
  RDTI: subroutine (UDDRV), I/O Drivers, 16-29

Iun parameter
  DIGO: subroutine (K-series), I/O Drivers, 23-16
  DINP: subroutine (K-series), I/O Drivers, 23-16
  DISWP: subroutine
    K-series, I/O Drivers, 23-18
    LADRV, I/O Drivers, 22-14
  DOSWP: subroutine
    K-series, I/O Drivers, 23-20
    LADRV, I/O Drivers, 22-16
  DOUT: subroutine (K-series), I/O Drivers, 23-20
  LAMSKS: subroutine (LADRV), I/O Drivers, 22-21
  SCOPE: subroutine (K-series), I/O Drivers, 23-27

Iun parameter (cont’d.)
  ASLSLN: subroutine (LSDRV), I/O Drivers, 17-14
  ASUDLN: subroutine (UDDRV), I/O Drivers, 16-20

Ival parameter
  ADINP: subroutine (K-series), I/O Drivers, 23-8
  CVADF: subroutine
    K-series, I/O Drivers, 23-13
    LADRV, I/O Drivers, 22-9
  CVSWG: subroutine (LSDRV), I/O Drivers, 17-15
  FLT16: subroutine
    K-series, I/O Drivers, 23-21
    LADRV, I/O Drivers, 22-17
  IRDB: subroutine (LSDRV), I/O Drivers, 17-19
  LED: subroutine (LSDRV), I/O Drivers, 17-21
  PUTD: subroutine (LSDRV), I/O Drivers, 17-22
  RDWS: subroutine (UDDRV), I/O Drivers, 16-27
  RDDI: subroutine (UDDRV), I/O Drivers, 16-28
  SCTI: subroutine (UDDRV), I/O Drivers, 16-31

Iv parameter
  CTTI: subroutine (UDDRV), I/O Drivers, 16-22

Ivrn parameter (UDDRV)
  RDTI: subroutine, I/O Drivers, 16-29
  RDWD: subroutine, I/O Drivers, 16-30

Iwhen parameter
  STPSWP: subroutine
    K-series, I/O Drivers, 23-29
    LADRV, I/O Drivers, 22-25
  IWTBUF: subroutine
    wait for buffer
    K-series, I/O Drivers, 23-25
    LADRV, I/O Drivers, 22-19

J

Job
  deleting, Batch and Queue, 2-10
  holding, Batch and Queue, 2-1
  modifying, Batch and Queue, 2-1
  releasing, Batch and Queue, 2-1
/JOB_PAGE qualifier
  PRINT command, Batch and Queue, 2-5
/JOBCOUNT job qualifier
  SET QUEUE command, Batch and Queue, 2-20
/JOBCOUNT qualifier
  PRINT command, Batch and Queue, 2-3
Jobname= switch
  PRI command, Batch and Queue, 2-4
Jobname parameter
  DELETE command, Batch and Queue, 2-10
Jobname switch
  QUE /LL command, Batch and Queue, 2-16
/JO switch
  PRI command, Batch and Queue, 2-6
Journal file, Command Language, 4-17

K
  KBF field in RAB, RMS-11 Macro, 4-5
  FIND operation, RMS-11 Macro, 5-52
  GET operation, RMS-11 Macro, 5-63
  offset, RMS-11 Macro, 6-115
  PUT operation, RMS-11 Macro, 5-96
  summary, RMS-11 Macro, 6-122
  K command, Debugging, 2-9, 7-1, 9-12
  ZAP utility, Utilities, 15-16
  KDA50 disk controller, I/O Drivers, 5-4
/KDS switch, CDA, 2-5, 2-6
Kernel data space
  dump, CDA, 3-53
  switch
  See /KDS switch
Kernel instruction space
  dump, CDA, 3-53
  switch
  See /KIS switch
Kernel Mapping Register switch
  See /KMR switch
Kernel stack dump, CDA, 3-1, 3-5
Key, RMS-11 Introduction, 3-6 RMS-11
  User's Guide, 1-5, 1-19, 6-2
  alternate, RMS-11 Introduction, 3-7

Key (cont'd.)
  ALTMODE, Command Language, 3-11
  arrow, Command Language, 3-16
  BACKSPACE, Command Language, 3-12
  buffer address
  See KBF field in RAB
  buffer size
  See KSZ field in RAB
  CAPS LOCK, Command Language, 3-13
  changeable, RMS-11 Introduction, 3-10
    See also XB$CHG mask in FLG field
  characteristics, RMS-11 User's Guide, 6-8
    See also FLG field in KEY block changeable, RMS-11 User's Guide, 6-9
duplicates, RMS-11 User's Guide, 6-8
null, RMS-11 User's Guide, 6-10
COPY, Command Language, 3-13
CTRL, Command Language, 3-17
cursor-control, Command Language, 3-16
data type, RMS-11 Introduction, 3-7
  RMS-11 User's Guide, 6-3
  See also DTP field in KEY block
  2-byte signed integer, RMS-11 User's Guide, 6-3
  4-byte signed integer, RMS-11 User's Guide, 6-4
  4-byte unsigned binary, RMS-11 User's Guide, 6-5
  packed decimal, RMS-11 User's Guide, 6-6
  string, RMS-11 User's Guide, 6-3
DELETE, Command Language, 3-12
duplicate, RMS-11 Introduction, 3-10
  See also XB$DUP mask in FLG field
ENTER, Command Language, 3-16
ESC, Command Language, 3-11
ESCAPE, Command Language, 3-11
LINE FEED, Command Language, 3-12
Key (cont'd.)

match criterion, RMS-11
Introduction, 3-12
See also RB$KGE mask in ROP field
See also RB$KGT mask in ROP field

name
See KNM field in KEY block
NO SCROLL, Command Language, 3-13
null, RMS-11 Introduction, 3-10
See also NUL field in KEY block
number of, RMS-11 User's Guide, 6-2
NUMBERS, Command Language, 3-16
PERIOD, Command Language, 3-16
PF, Command Language, 3-16
position, RMS-11 User's Guide, 6-7
primary, RMS-11 Introduction, 3-7
reference
See KRF field in RAB
REPEAT, Command Language, 3-13
repeating, Command Language, 3-13
RETURN, Command Language, 3-2, 3-11
RMSDES utility
numbering, RMS-11 Utilities, 2-8, 2-28, 2-38
RUBOUT, Command Language, 3-12
SCROLL, Command Language, 3-13
segment, RMS-11 Introduction, 3-10
RMS-11 User's Guide, 6-7
segment, position
See POS field in KEY block
segment, size
See SIZ field in KEY block
segment count
See NSG field in KEY block
SEL, Command Language, 3-11
SHIFT, Command Language, 3-13
size, RMS-11 User's Guide, 6-6
See also TKS field in KEY block
special
table (TTRDV), I/O Drivers, 2-71
special (TTRDV), I/O Drivers, 2-68
TAB, Command Language, 3-21
XAB
See KEY block
KEY block, RMS-11 Introduction, 4-8

KEY block (cont'd.)
chaining to FAB, RMS-11 Macro, 2-12, 2-13
declaring, RMS-11 Macro, 2-8
initializing, RMS-11 Macro, 2-9
summary, RMS-11 Macro, 6-67
Keyboard terminal, Command Language, 3-1, 3-10
Key buffer pool, RMS-11 Macro, 2-6
Key information RMSDSP utility
displaying, RMS-11 Utilities, 5-4
Key name RMSCNV utility, RMS-11 Utilities, 4-10
Key of reference RMSCNV utility, RMS-11 Utilities, 4-10, 4-16
RMSiFL utility, RMS-11 Utilities, 3-8, 3-9
Keypad terminal, Command Language, 3-1, 3-16
VT200-series, Command Language, 3-16
Keypad (EDT), Introduction, 2-3, 2-3
fig.
Key record access, RMS-11
Introduction, 3-12
See also RB$KEY code in RAC field
to indexed files, RMS-11 User's Guide, 5-7, 5-9
to relative files, RMS-11 User's Guide, 4-1
to sequential files, RMS-11 User's Guide, 3-2
Keyword See also individual keyword entries
function, MCR, 1-4
position, MCR, 1-4
syntax, MCR, 1-4
Keyword recognition, transition table, I/O Operations, 7-9
KILL command
EDI utility, Utilities, 2-34
/KIS switch, CDA, 2-5, 2-6
KMC-11 auxiliary processor, I/O Drivers, 10-2
/KMR switch, CDA, 2-10, 2-11
KNM field in KEY block
CREATE operation, RMS-11 Macro, 5-18

Master Index—157
KNM field in KEY block (cont’d.)
DISPLAY operation, RMS-11 Macro, 5-30
offset, RMS-11 Macro, 6-68
OPEN operation, RMS-11 Macro, 5-74
summary, RMS-11 Macro, 6-82
/KN switch
RMSCNV utility, RMS-11 Utilities, 4-10, 4-16
Kount parameter
DIGO: subroutine (K-series), I/O Drivers, 23-16
GTHIST: subroutine (K-series), I/O Drivers, 23-22
KRF field in RAB, RMS-11 Macro, 4-5
CONNECT operation, RMS-11 Macro, 5-7
FIND operation, RMS-11 Macro, 5-51
GET operation, RMS-11 Macro, 5-63
offset, RMS-11 Macro, 6-115
REWIND operation, RMS-11 Macro, 5-114
summary, RMS-11 Macro, 6-123
/KR switch
RMSCNV utility, RMS-11 Utilities, 4-10, 4-16
RMSIFL utility, RMS-11 Utilities, 3-8, 3-9
K-series
device support, System Generation (11M), 4-13
supported hardware, I/O Drivers, 23-1
K-series lab support routine, System Generation (11S), 4-6
KSR-33/35 Teletypewriter, I/O Drivers, 3-2
Ksubr parameter
CALLS macro (K-series), I/O Drivers, 23-31
k symbol, Debugging, 2-1
KSZ field in RAB, RMS-11 Macro, 4-5, 4-6
FIND operation, RMS-11 Macro, 5-52
GET operation, RMS-11 Macro, 5-63
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-96
summary, RMS-11 Macro, 6-124
KW11-K dual programmable real-time clock, I/O Drivers, 23-3
KW11-P
as system clock, System Generation (11M), 4-16
KW11-Y Watchdog timer, System Generation (11M), 4-16
L
LA100 DECprinter, I/O Drivers, 2-4
LA120 DECwriter, I/O Drivers, 2-4, 3-3
LA120 terminal, Introduction, 1-1, 1-1
fig., 1-2
LA12 portable terminal, I/O Drivers, 2-4
LA12 teletypewriter, I/O Drivers, 2-4
LA180 DECprinter, I/O Drivers, 10-3
LA180S DECprinter, I/O Drivers, 2-4, 3-3
LA30 DECwriter, I/O Drivers, 2-4, 3-2
LA30-P, I/O Drivers, 3-30
LA34 DECwriter, I/O Drivers, 2-4
LA36, Command Language, 3-1
LA36 DECwriter, I/O Drivers, 2-4, 3-2
LA38 DECwriter, I/O Drivers, 2-4
LA50 personal printer, I/O Drivers, 2-5
Label, Indirect, 1-5 RMS-11
Introduction, 2-5
block, Task Builder, 2-8
group, Task Builder, B-1
branching to, Indirect, 2-59
defining, Indirect, 2-31
direct-access, Indirect, 2-31
field, MACRO-11, 2-1, 2-2, 2-3
legal character in, MACRO-11, 2-3
terminator, MACRO-11, 3-1
volume, MACRO-11, 3-1
changing, Command Language, 5-37, 5-58
/LABEL keyword
MOUNT command (MCR), MCR, 3-149
Laboratory peripheral (K-series), I/O Drivers, 23-1
Laboratory peripheral accelerator driver (LADRV), I/O Drivers, 22-1
Laboratory peripheral system (LPS11)

See: LSDRV, LAINIT

LAINIT
- microcode loader (LADR), I/O Drivers, 22-20

Lamskb parameter
- LAMSKS: subroutine (LADR), I/O Drivers, 22-20
- SETIBF: subroutine
  - K-series, I/O Drivers, 23-29
  - LADR, I/O Drivers, 22-20

LAMSKS: subroutine
- set masks buffer (LADR), I/O Drivers, 22-20

LAN field in KEY block
- CREATE operation, RMS-11 Macro, 5-19
- DISPLAY operation, RMS-11 Macro, 5-31
- offset, RMS-11 Macro, 6-67
- OPEN operation, RMS-11 Macro, 5-80
- summary, RMS-11 Macro, 6-83

Language
- assembly, Program Development, 1-4 to 1-5
- See also MACRO-11
- compiler, Command Language, 6-2
- high-level
  - overlay program, Task Builder, 3-40

Latch
- unlatch fields
  - DOL/DOLW: subroutine
    - (UDDRV), I/O Drivers, 16-24
  - Latching digital output (UDDRV), I/O Drivers, 16-8

Layered products
- installation, System Generation (11M), 6-12, 6-19
- LB:, Command Language, 5-5, 7-6, 8-7
- MCR, 2-7, 2-11, 3-35, 3-188
- LBLDF$ macro, Task Builder, B-1
- LBN, RMS-11 Introduction, 2-4
  - RMS-11 User's Guide, 8-2 System Management, 5-2, 10-31
- See also Logical Block Number
- See also Placement control

Lbn parameter
- device-specific function
  - DDDRV, I/O Drivers, 7-4
  - DTDRV, I/O Drivers, 6-3

Lbn parameter (cont'd.)
- standard function
  - DDDRV, I/O Drivers, 7-3
  - DTDRV, I/O Drivers, 6-3

LBR, Command Language, 6-29
- object module library, Program Development, 6-4 to 6-6

LBR command
- MCR
  - See LBR utility
- LBR utility, Program Development, 1-9
  - adding a module to a library,
    Program Development, 6-9, 6-10
  - combining library function, Utilities, 10-32
  - command line, Utilities, 10-8
  - /COMPRESS, Program Development, 6-10
  - /CR, Program Development, 6-2, 6-5
  - /CREATE, Program Development, 6-1, 6-4, 6-5
  - default, Utilities, 10-8
  - efficiency, Program Development, 1-9
  - error message, Utilities, 10-33
  - /FULL, Program Development, 6-11
  - /INSERT, Program Development, 6-9, 6-10

LBR command line
- MCR, Program Development, 1-9, 6-2

LBR command line
- device-level module, Error Logging, 4-37
- DEVSM1, Error Logging, 4-36
- /LE, Program Development, 6-11, 6-12

LIBRARY command
- DCL, Program Development, 1-9, 6-1

library file
- creating, Utilities, 10-12
- deleting, Utilities, 10-13
- format, Utilities, 10-2
- inserting module, Utilities, 10-20
- listing, Utilities, 10-21
- replacing module, Utilities, 10-23
- spooling, Utilities, 10-29
- /LIST, Program Development, 6-9, 6-11

Master Index-159
LBR utility (cont'd.)
listing information, Program Development, 6-11, 6-12
/MACRO, Program Development, 6-1, 6-2
macro library, Program Development, 6-1, 6-2, 6-3
module name requirement, Error Logging, 4-17
/NAMES, Program Development, 6-11
/OBJECT, Program Development, 6-1, 6-2, 6-3
.OLB file type, Program Development, 6-4
/REPLACE, Program Development, 6-1, 6-2
replacing a module in a library, Program Development, 6-1, 6-2
restriction, Utilities, 10-8
/RP, Program Development, 6-1, 6-2
/SP, Program Development, 6-1, 6-2
switch, Utilities, 10-9
universal library
replacing module, Utilities, 10-27
universal library file
inserting module, Utilities, 10-20
LBR utility command
MCR, Program Development, 6-2
/LB switch, Task Builder, 10-23, 10-24
DMP utility, Utilities, 11-6
Indirect, Indirect, 2-28
Lbuf parameter
ADSWP: subroutine
K-series, I/O Drivers, 23-9
LADR, I/O Drivers, 22-4
DASWP: subroutine
K-series, I/O Drivers, 23-14
LADR, I/O Drivers, 22-9
DISWP: subroutine
K-series, I/O Drivers, 23-17
LADR, I/O Drivers, 22-12
DOSWP: subroutine
K-series, I/O Drivers, 23-19
LADR, I/O Drivers, 22-14
GTHIST: subroutine (K-series), I/O Drivers, 23-21
LCBDFS$, CDA, B-27, C-43
LC command
EDI utility, Utilities, 2-35
LCH field in FAB, RMS-11 Macro, 3-2
CREATE operation, RMS-11 Macro, 5-13
ENTER operation, RMS-11 Macro, 5-36
ERASE operation, RMS-11 Macro, 5-42
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-74
PARSE operation, RMS-11 Macro, 5-87
REMOVE operation, RMS-11 Macro, 5-104
RENAME operation, RMS-11 Macro, 5-110
SEARCH operation, RMS-11 Macro, 5-117
summary, RMS-11 Macro, 6-53
$LCKPG (Lock page), System Library, 8-30
LCL symbolic argument, MACRO-11, 6-41
LCM symbolic argument, MACRO-11, 6-19
L command, Debugging, 2-10, 6-4, 9-13
/LC switch
DMP utility, Utilities, 11-6
LC symbolic argument, MACRO-11, 6-19
LD$xx symbol, Writing I/O Driver, 3-5
required by INTSV$ macro, Writing I/O Driver, 4-35
Ldelay parameter
ADSWP: subroutine
K-series, I/O Drivers, 23-10
LADR, I/O Drivers, 22-6
DASWP: subroutine
K-series, I/O Drivers, 23-15
LADR, I/O Drivers, 22-11
DISWP: subroutine
K-series, I/O Drivers, 23-18
DISWP: subroutine (LADR), I/O Drivers, 22-13
DOSWP: subroutine
K-series, I/O Drivers, 23-20
LADR, I/O Drivers, 22-16
/LD switch
PIP utility, Utilities, 3-17
LD symbolic argument, MACRO-11, 6-12
LEAVE statement, Error Logging, 5-35
LE condition test argument, MACRO-11, 6-51
LED: subroutine
display in LED lights (LSDRV), I/O Drivers, 17-21
Left-angle bracket ( <), Command Language, 3-14
Left-angle bracket command ( <), Debugging, 2-6, 4-5, 9-9
Legal I/O function mask, Writing I/O Driver, 4-12
/L/E job switch
QUE /MOD command, Batch and Queue, 2-20
/LENGTH job qualifier
SET QUEUE command, Batch and Queue, 2-20
/LENGTH qualifier
BRU utility, Utilities, 7-18
PRINT command, Batch and Queue, 2-5
L error, MACRO-11, 2-1
summary, MACRO-11, D-4
/L/E switch
LBR utility, Utilities, 10-21
PRI command, Batch and Queue, 2-5
Level
indexed files, RMS-11 User's Guide, 5-4
level 0, alternate indexes, RMS-11 User's Guide, 5-5
level 0, primary indexes, RMS-11 User's Guide, 5-5
LEVEL1_INDEX_AREA attribute
RMSDES utility, RMS-11 Utilities, 2-41
Level count
listing, MACRO-11, 6-9, 6-10
Lexical conditionals, Error Logging, 5-36
/L/I:P switch
QUE /LI command, Batch and Queue, 2-15 to 2-16
LIBR
linking to region, Task Builder, 5-15
option, Task Builder, 12-12, 12-13, 12-24
shared region use, Task Builder, 5-15
Librarian utility
See LBR utility
Library, Command Language, 6-28
See also Macro, Object, OTS autoloadable
internal symbol, Task Builder, A-27
symbol, Task Builder, A-26
cluster, Task Builder, 5-44
building, Task Builder, 5-45, 5-49 to 5-53
building rule 1: overlay, Task Builder, 5-45
building rule 2: reference, Task Builder, 5-46
building rule 3: .STB file, Task Builder, 5-47
building rule 4: stack, Task Builder, 5-48
building rule 5: PIC, Task Builder, 5-48
building rule 6: trap, Task Builder, 5-48
building rule summary, Task Builder, 5-45
element, Task Builder, 5-49
overlay description, Task Builder, 5-52
overlay run-time support, Task Builder, 5-53, 5-54
resolving interlibrary reference, Task Builder, 5-52
converting SCAL to CSM, Task Builder, 8-19
creating, Command Language, 6-28, 6-32
CSM
use of CMPRT option, Task Builder, 8-8
use of GBLXCL option, Task Builder, 8-8, 8-9, 8-17
use of RESUP option, Task Builder, 8-9, 8-18, 8-19, 8-20
use of SUPLIB option, Task Builder, 8-9, 8-19
declaring, Task Builder, 10-23, 11-39
default
controlling symbol search, Task Builder, 10-15, 10-19, 11-27, 11-33
global symbol resolution, Task Builder, 3-18

Master Index-161
Library
object module (cont'd.)
system, Program Development, 1-11
using to resolve undefined
global symbols, Program Development, 6-8, 6-9
obtaining information about a user,
Program Development, 6-11, 6-12
OTS, Program Development, 7-2
overlay
high-level language, Task Builder, 3-40
region, Task Builder, 2-19
specifying, Task Builder, 11-66
relocation
resident, Task Builder, A-23
specifying, Task Builder, 11-66
squeezing, Program Development, 6-3
SYSLIB
replacing as default, Task Builder, 10-23, 11-39
system, Command Language, 5-5
macro (RSXMAC.SML), Program Development, 1-5
type of FCSRES, Task Builder, 5-55

Library
default (cont'd.)
specifying, Task Builder, 10-15, 11-27
system search
TKB, Program Development, 4-2
DIGITAL-supplied, Program Development, 1-9
directory, MCR, 3-117, 3-182
extending, Task Builder, 10-17
F4PRES
building, Task Builder, 5-56
FCSRES
non-memory-resident, Task Builder, 5-56
overlaid, Task Builder, 5-55
task linking alternatives, Task Builder, 5-57, 5-58, 5-59
file, Command Language, 6-28
declaring, Task Builder, 10-23, 11-39
system, Command Language, 6-2
linking
CLSTR option, Task Builder, 12-9, 12-10
macro, Command Language, 6-28
Program Development, 6-1 to 6-3
maintaining, Command Language, 6-28
maintenance, Program Development, 6-10, 6-11
modules, Command Language, 6-28
deleting, Command Language, 6-35
extracting, Command Language, 6-36
.FCTR directive, Task Builder, 3-26
inserting, Command Language, 6-32, 6-37
listing, Command Language, 6-39
replacing, Command Language, 6-44
object module, Program Development, 6-4 to 6-6
designating in TKB, Program Development, 6-6 to 6-9
placing in overlay structure,
Task Builder, 10-24, 11-39

Library
default (cont'd.)
system search
TKB, Program Development, 4-2
DIGITAL-supplied, Program Development, 1-9
directory, MCR, 3-117, 3-182
extending, Task Builder, 10-17
F4PRES
building, Task Builder, 5-56
FCSRES
non-memory-resident, Task Builder, 5-56
overlaid, Task Builder, 5-55
task linking alternatives, Task Builder, 5-57, 5-58, 5-59
file, Command Language, 6-28
declaring, Task Builder, 10-23, 11-39
system, Command Language, 6-2
linking
CLSTR option, Task Builder, 12-9, 12-10
macro, Command Language, 6-28
Program Development, 6-1 to 6-3
maintaining, Command Language, 6-28
maintenance, Program Development, 6-10, 6-11
modules, Command Language, 6-28
deleting, Command Language, 6-35
extracting, Command Language, 6-36
.FCTR directive, Task Builder, 3-26
inserting, Command Language, 6-32, 6-37
listing, Command Language, 6-39
replacing, Command Language, 6-44
object module, Program Development, 6-4 to 6-6
designating in TKB, Program Development, 6-6 to 6-9
placing in overlay structure,
Task Builder, 10-24, 11-39

Library
object module (cont'd.)
system, Program Development, 1-11
using to resolve undefined
global symbols, Program Development, 6-8, 6-9
obtaining information about a user,
Program Development, 6-11, 6-12
OTS, Program Development, 7-2
overlay
high-level language, Task Builder, 3-40
region, Task Builder, 2-19
specifying, Task Builder, 11-66
relocation
resident, Task Builder, A-23
specifying, Task Builder, 11-66
squeezing, Program Development, 6-3
SYSLIB
replacing as default, Task Builder, 10-23, 11-39
system, Command Language, 5-5
macro (RSXMAC.SML), Program Development, 1-5
type of FCSRES, Task Builder, 5-55

Master Index-162
LIBRARY/COMPRESS command, 
Command Language, 6-31 to 6-32, 9-19
LIBRARY/CREATE command, 
Command Language, 6-32 to 
6-34, 9-20
LIBRARY/DELETE command, 
Command Language, 6-35 to 
6-36, 9-20
LIBRARY/EXTRACT command, 
Command Language, 6-36 to 6-37, 
9-20
LIBRARY/INSERT command, 
Command Language, 6-37 to 
6-39, 9-21
LIBRARY/LIST command, Command 
Language, 6-39 to 6-43, 9-21
LIBRARY/REMOVE command, 
Command Language, 6-43, 9-21
LIBRARY/REPLACE command, 
Command Language, 6-44 to 6-45, 
9-22
LIBRARY command, Command 
Language, 6-28 to 6-31, 9-19
DCL, Program Development, 1-9, 
6-1

See also LBR utility 
error messages, Command Language, 
6-45 to 6-51 
functions, Command Language, 6-28 
.LIBRARY directive, MACRO-11, 6-57
Library file 
See also LBR utility 
macro 
force search of, MACRO-11, 
6-20 
including in assembly, MACRO-
11, 8-6
Library option, PCS, I/O Operations, 
K-1
/LIBRARY qualifier, MACRO-11, 8-12 
Task Builder, 11-39 to 11-40
Library routine 
communication between, System 
Library, 1-1 to 1-2 
placement of, System Library, 1-2 
search of, System Library, 1-2 
storage, System Library, 1-2
LIBUIC 
See Library directory 
LI command 
EDI utility, Utilities, 2-35 
.LIMIT directive, MACRO-11, 6-39
Limit register, Debugging, 5-3 
/LIMIT switch, CDA, 2-10, 2-11 
Limit switch, Error Logging, 2-3, 2-6 
/LIM switch, Error Logging, 2-3, 2-6 
Line 
dial-up, MCR, 3-247 
local, MCR, 3-248 
displaying, MCR, 3-248 
multiple 
TKB input, Task Builder, 1-7, 
1-8 
remote, MCR, 3-202, 3-247 
terminal 
parallel processing, MCR, 3-252 
serial processing, MCR, 3-251 
TKB input, Task Builder, 1-7 
LINE CHANGE command 
EDI utility, Utilities, 2-35 
Line continuation 
DCL, Command Language, 1-12, 
3-11 
Line definition (XEDRV), I/O Drivers, 
13-23 
Line feed 
CTRL/R (TIDRV), I/O Drivers, 
2-70 
Line-feed character 
record attribute, I/O Operations, 
3-8 
Line feed command, Debugging, 2-5, 
4-3, 9-8 
LINE FEED key, Command Language, 
3-12 
closing location 
ODT, Program Development, 
5-5, 5-7 
displaying word on stack 
ODT, Program Development, 
5-8 
opening location 
ODT, Program Development, 
5-5, 5-7 
LINE key (EDT), Introduction, 2-6 
Line mode (EDT), Introduction, 2-4, 
2-9 
Line-number item 
internal symbol, Task Builder, A-29, 
A-30 
Line printer, Command Language, 5-3 
definition, Batch and Queue, 4-5 
listing format, MACRO-11, 6-5, 6-6 
lowercase, Command Language, 
5-89
Line printer (cont'd.)
options, System Generation (11M),
4-80
physical feature list, I/O Drivers,
10-1
Line printer driver
See LPDRV
/LINES keyword
SET command (MCR), MCR, 3-226
SET command (VMR), System
Management, 10-61
Lines per page switch
See /LINES switch
/LINES switch, CDA, 2-10, 2-11
Line Text Editor
See EDI utility
LINK command, Command Language,
6-2, 6-7 to 6-27, 9-22 to 9-23
Debugging, 1-3 Introduction, 5-3,
5-6 System Management, 15-16
command line
syntax, Task Builder, 11-1, 11-2
DCL, Program Development, 1-5,
4-1, 5-1, 5-9, 6-7
See also TKB
debugger
specifying, Debugging, 10-1
elements, Command Language, 6-24
to 6-26
descriptions, Command Language, 6-2
/OPTION qualifier, Command
Language, 6-4
process, Command Language, 6-4
qualifiers, Command Language, 6-8
to 6-24
abbreviation, Task Builder, 11-3
list, Task Builder, 1-8
/DEBUG, Debugging, 10-1
description, Task Builder, 11-1
to 11-77
designation, Task Builder, 11-3
overriding, Task Builder, 11-3
summary table, Task Builder,
11-3 to 11-10
/SAVE qualifier, Command
Language, 6-5
Linker, MACRO-11, 1-2, 2-2
Linking
ODT
from DCL, Debugging, 1-3
from MCR, Debugging, 1-2
to enable instruction and data
space features, Debugging,
1-3

Linking (cont'd.)
overview of, MACRO-11, 4-1
Linking tasks, Command Language, 6-2
LIST command, System Management,
15-17
EDI utility, Program Development,
2-13
List command
See L command
.LIST directive, MACRO-11, 6-9 to
6-14
arguments for, MACRO-11, 6-10,
6-11, 6-12
Listing
assembly, Program Development,
3-4, 3-5
control, Program Development, 1-4,
1-5, 2-6
directory, Program Development, 3-9
examining at a terminal, Program
Development, 3-6, 7-4
format of, MACRO-11, 6-4
FORTRAN IV, Program
Development, 7-5
global cross-reference, Program
Development, 4-5, 4-6 Task
Builder, 10-11, 11-22
printing, Program Development, 3-8
to 3-9
sample assembly, MACRO-11, H-1,
H-2, H-3
spooling, Program Development,
3-8, 3-9
use in debugging, Program
Development, 5-4
wide
specifying, Task Builder, 10-52,
11-77
LISTING_DIRECTIVES argument,
MACRO-11, 8-11
Listing control
See also .LIST or .NLIST directive
column block, MACRO-11, 6-18
directive, MACRO-11, 6-3 to 6-18
arguments for, MACRO-11,
6-11, 6-12
.IDENT, MACRO-11, 6-16, 6-17
.LIST, MACRO-11, 6-9 to 6-14
.NLIST, MACRO-11, 6-9 to
6-14
.PAGE, MACRO-11, 6-17, 6-18
.REM, MACRO-11, 6-18
.SBTTL, MACRO-11, 6-15, 6-16
.TITLE, MACRO-11, 6-15

Master Index--164
Listing control (cont'd.)
level count, MACRO-11, 6-9, 6-10
MAC task command, MACRO-11, 8-6, 8-7
page ejection, MACRO-11, 6-17
switch, MACRO-11, 8-6, 8-7
/CR, MACRO-11, 8-7
/LI, MACRO-11, 8-6
/NL, MACRO-11, 8-6
/NOSP, MACRO-11, 8-7
/SP, MACRO-11, 8-7
Listing control directive
arguments for, MACRO-11, 6-10
Listing file
FLX utility, Utilities, 4-7
PIP utility, Utilities, 3-24
Listing level count, MACRO-11, 6-9, 6-10
LIST ON PSEUDO DEVICE command
EDI utility, Utilities, 2-36
LIST ON TERMINAL command
EDI utility, Utilities, 2-35
List option
ACNT, System Management, 2-8
/List qualifier, MACRO-11, 8-10
LIST statement, Error Logging, 5-39
/List switch
BAD utility, Utilities, 6-5
/List TTM directive, Program Development, 2-6
/LI switch, MACRO-11, 8-6 Task Builder, 10-25
See also /LIST switch
CMP utility, Utilities, 12-3
FLX utility, Utilities, 4-7
LBR utility, Utilities, 10-21
PIP utility, Utilities, 3-24
/BR, Utilities, 3-25
/FU, Utilities, 3-25
/TB, Utilities, 3-26
QUE /LI command, Batch and Queue, 2-15
VFY utility, Utilities, 9-6
ZAP utility, Utilities, 15-2
Literal declaration, Error Logging, 4-12
Literal record format
internal symbol, Task Builder, A-31
internal symbol, Task Builder, A-30
LITERAL statement, Error Logging, 5-33
LN01 laser printer, I/O Drivers, 10-3
LNK, link task to interrupt
(ICDRV/ISDRV), I/O Drivers, 19-64, 19-66
/LN switch
CMP utility, Utilities, 12-3
LOA, I/O Drivers, 13-5
See also LOAD command
Load
asynchronous example, Task Builder, 4-10
manual
calling sequence, Task Builder, 4-7, 4-8
FORTRAN calling sequence, Task Builder, 4-9 to 4-11
MACRO-11 calling sequence, Task Builder, 4-7 to 4-9
path
autoload, Task Builder, 4-3, 4-4
Loadable crash dump driver
See Crash dump driver
Loadable data base
advantage, Writing I/O Driver, 3-8
assembling, Writing I/O Driver, 3-9
components, Writing I/O Driver, 3-1
development, Writing I/O Driver, 3-1
definition, Writing I/O Driver, 3-8
downloading
with data base, Writing I/O Driver, 3-8
linking
with loadable data base, Writing I/O Driver, 3-3
with resident data base, Writing I/O Driver, 3-3
loading
into memory, Writing I/O Driver, 3-2, 3-12
rebuilding and reincorporating
after debugging, Writing I/O Driver, 3-30
removing
from memory, Writing I/O Driver, 3-2
task-building
mapped system, Writing I/O Driver, 3-10
Loadable driver task-building (cont'd.) unmapped system, Writing I/O Driver, 3-11 with resident data base, Writing I/O Driver, 3-12

Loadable driver restriction (half-duplex), I/O Drivers, 3-35

Load buffer LPA-11 microcode (LADRV), I/O Drivers, 22-29

LOAD command, Writing I/O Driver, 3-4-35

action if UC.PWF set, Writing I/O Driver, 2-4
effect of when loading driver, Writing I/O Driver, 3-8
loading driver, Writing I/O Driver, 3-2, 3-12

LOAD command (MCR), MCR, 1-6, 3-132
format, MCR, 3-132
keywords
/EXP, MCR, 3-133
/HIGH, MCR, 3-133
/PAR, MCR, 3-133
/SIZE, MCR, 3-133
/VEC, MCR, 3-133
parameters, MCR, 3-132

LOAD command (VMR), System Management, 10-33
definition, System Management, 10-33
examples, System Management, 10-34
format, System Management, 10-33
keywords
/PAR, System Management, 10-33
/SIZE, System Management, 10-34
/VEC, System Management, 10-34
notes, System Management, 10-34
parameters, System Management, 10-33

Loading mechanism overlay, Task Builder, 3-16
Load microcode (XEDRV), I/O Drivers, 13-18

LOAD module, Task Builder, 5-55

$$LOAD program section, Task Builder, 5-55

$LOAD program section (cont'd.) reserved name, Task Builder, E-3

$LOAD routine manual load, Task Builder, 4-7

LOC0 field in ALL block offset, RMS-11 Macro, 6-2

LOC1 field in ALL block offset, RMS-11 Macro, 6-2

LOCAL argument, MACRO-11, 8-9

Local assignment device, Command Language, 5-8

Local data block, Program Development, 2-8

Local event flag reading, Executive, 5-158

Local logical assignment, MCR, 3-20

Local macro, Program Development, 2-8
definitions, Program Development, 2-8

LOCAL symbol, Indirect, 2-11

Local symbol, MACRO-11, 3-11, 3-12
Program Development, 1-4, 1-5
automatic creation, MACRO-11, 7-8, 7-9
block, MACRO-11, 3-11, 3-12
enabling, MACRO-11, 6-19, 6-20
definitions, Program Development, 2-7, 2-8
deleting definition, Indirect, 2-52

FDB macro, I/O Operations, 2-27
treatment as user-defined, MACRO-11, 3-7

LOCATE command
EDI utility, Program Development, 2-14, 2-18, 7-4, 7-5, 7-7
Utilities, 2-15, 2-36
Locate mode, I/O Operations, 1-9, 1-10, 2-10 RMS-11 Introduction, 4-6
See also RB$LOC mask in ROP field
file processing, I/O Operations, 3-29

FSR block buffer, I/O Operations, 3-29

GET$ macro, I/O Operations, 3-21, 3-23
indexed files, RMS-11 User's Guide, 7-7
PUT$ macro, I/O Operations, 3-26, 3-30
record attribute, I/O Operations, 3-9
Locate mode (cont'd.)
relative files, RMS-11 User's Guide, 4-13
sequential files, RMS-11 User's Guide, 3-14
task record buffer, I/O Operations, 3-29

Location
See LOC field in ALL block
absolute, Debugging, 2-5, 4-4, 9-9
altering, Debugging, 4-1
branch, Debugging, 4-5
closing, Debugging, 4-2
displaying, Debugging, 4-1
format, Debugging, 4-1
hard
See XBSHRD mask in AOP field
indicator, Debugging, 7-3
opening, Debugging, 4-1
ASCII, Debugging, 4-6
branch offset, Debugging, 4-5
byte, Debugging, 4-2
next sequential, Debugging, 4-3
preceding, Debugging, 4-4
Radix-50, Debugging, 4-7
word, Debugging, 4-2
PC-relative, Debugging, 4-4
reopening last opened, Debugging, 4-2
returning from, Debugging, 4-5
RMSDEF utility, RMS-11 Utilities, A-14

Location counter, Program Development, 1-4, 1-5
See also Current location counter control directive, MACRO-11, 6-36
definition, Task Builder, A-17
modification, Task Builder, A-18
use in debugging, Program Development, 5-3, 5-4

Location indicator
See Register indicator
LOC field in ALL block
CREATE operation, RMS-11 Macro, 5-17
EXTEND operation, RMS-11 Macro, 5-47
offset, RMS-11 Macro, 6-2
RSTS/E, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-12
/LOC keyword
HELP command, MCR, 3-87
Locking, file
See FB$DLK mask in FOP field

Locating buckets, RMS-11 Introduction, 4-3
/LOCK keyword
DISMOUNT command (MCR), MCR, 3-71
MOUNT command (MCR), MCR, 3-149
options
/Nounload, MCR, 3-71
/Unload, MCR, 3-71
/Virtual, MCR, 3-71
LOC symbolic argument, MACRO-11, 6-11

LOG
See LOGIN command
LOGDEV symbol, Indirect, 2-21
$LOGER, Error Logging, 4-23
LOGFILE YES/NO command
IOX, System Management, 4-42
Logging in, Command Language, 3-2
Introduction, 1-5 to 1-6
Logging out, Command Language, 3-2
Logical/physical association, I/O Drivers, 1-2
Logical AND, MACRO-11, 3-2, 3-5
System Management, 12-27
special meaning, MACRO-11, 6-52
Logical assignment, MCR, 3-20 to 3-30, 3-63 to 3-69
assigning, MCR, 3-25, 3-26
deleting, MCR, 3-21, 3-25, 3-27, 3-28
displaying, MCR, 3-29
global, MCR, 2-12, 3-20, 3-64
group, MCR, 2-12, 3-20, 3-64
local, MCR, 2-12, 3-20, 3-64
login, MCR, 2-12, 3-20, 3-64
system, MCR, 3-20
tables, MCR, 3-64
task, MCR, 2-12, 3-20
Logical block, I/O Operations, 5-2
RMS-11 Introduction, 2-3
file device, I/O Operations, 1-7
read (TTRDV), I/O Drivers, 2-43
Logical Block Number, MCR, 3-103, 3-116, 3-189
See also LBN
Logical channel number
See LCH field in FAB
Logical device assignment, CDA, 3-17
Indirect, 2-89 MCR, 2-12, 3-20 to 3-30
device name tables, MCR, 3-20
Logical device assignment (cont’d.)
  displaying, Command Language, 2-5, 5-86
Logical device name, CDA, 3-17 MCR, 2-12
  assigning, MCR, 3-20
  syntax, MCR, 2-12, 3-20
Logical end-of-file directive (/),
  Indirect, 2-66
Logical I/O, I/O Drivers, 1-2
Logical inclusive OR operator,
  MACRO-ll, 3-2, 3-5
  special meaning, MACRO-ll, 6-52
Logical name,
  Command Language, 5-5
  I/O Operations, 1-18
  creating, Executive, 5-32
  deleting, Executive, 5-62
  device, Command Language, 5-5, 5-6, 5-8
  assigning, Command Language, 5-8, 5-21
  deleting, Command Language, 5-29
  table, Command Language, 5-8
  specifying, I/O Operations, 1-19
  translating, Executive, 5-250
  iteratively, Executive, 5-159
  using, I/O Operations, 1-19
Logical name assignment, MCR, 3-20, 3-21, 3-63 to 3-69
  deleting, MCR, 3-65, 3-67
  displaying, MCR, 3-65, 3-68
  expanding, Indirect, 2-92
  global, MCR, 3-21, 3-63, 3-64
  group, MCR, 3-21, 3-63, 3-64
  local, MCR, 3-63, 3-64
  login, MCR, 3-21
  tables, MCR, 3-22, 3-63 to 3-64
  task, MCR, 3-20
  translation, MCR, 3-64
  using, Indirect, 2-2
Logical name translation, I/O
  Operations, 4-9
  ASSIGN command, I/O Operations, 4-9
  expanding file specification string,
  I/O Operations, 4-10
  FDB extension, I/O Operations, 4-15
  iterative, I/O Operations, 4-9
  merging file specification, I/O
  Operations, 4-10
Logical name translation
  name expansion (cont’d.)
  .EXPLG module, I/O Operations, 4-15
  parse file specification, I/O Operations, 4-10
  .PARSE routine
device and unit, I/O Operations, 4-12
  process, I/O Operations, 4-10
  .PRSDV routine, I/O Operations, 4-16
Logical operator, Indirect, 2-22
  See also Operator, binary
Logical OR
  changing mode (XEDRV), I/O Drivers, 13-20
Logical page
  definition, Batch and Queue, 4-5
Logical symbol, Indirect, 2-9
  defining, Indirect, 2-33
  setting, Indirect, 2-80
  testing, Indirect, 2-61, 2-63
Logical test, Indirect, 2-60
Logical unit, I/O Drivers, 1-2
Logical unit number, MCR, 2-10, 3-36, 3-172
  See also LOGICAL UNIT NUMBERS command
  See also LUN
  assigning, MCR, 2-10
  reassigning, MCR, 3-172
LOGICAL UNIT NUMBERS command
  (MCR), MCR, 1-7, 3-140
  error messages, MCR, 3-140
  example, MCR, 3-140
  format, MCR, 3-140
LOGICAL UNIT NUMBERS command
  (VMR), System Management, 10-35
  definition, System Management, 10-35
  example, System Management, 10-35
  format, System Management, 10-35
  parameter, System Management, 10-35
Logical Unit Table
  See LUT
Login
  default logical device, MCR, 3-79
  default logical directory, MCR, 3-79
  disabling, Command Language, 8-4
  enabling, Command Language, 8-4
Login (cont'd.)
logical assignment, MCR, 3-20
UIC, MCR, 2-6
LOGIN.CMD file, Command Language, 3-4
LOGIN.TXT file, Command Language, 3-4
Login assignment
device, Command Language, 5-8
LOGIN command, Command Language, 3-4 to 3-8, 9-23 Introduction, 1-5
to 1-6 MCR, 1-8, 3-79 System Management, 9-6
to 1-6 MCR, 3-84
to 1-6 MCR, 3-84
examples, Command Language, 3-5
/logon keyword
ASSIGN command (MCR), MCR, 3-26, 3-28
Login Transaction Block, System Management, 17-30
/log keyword
DEVICES command (MCR), MCR, 3-60
/logon keyword
SET command (MCR), MCR, 3-226
SET command (VMR), System Management, 10-61
LOGOUT command, Command Language, 3-9 to 3-10, 5-13, 9-23 Introduction, 1-18 System Management, 9-3, 9-7
examples, Command Language, 3-9
HOLD qualifier, Command Language, 3-9
/log switch, Error Logging, 2-3, 2-5, 2-8
New version subswitch, Error Logging, 2-3, 2-6
No limit subswitch, Error Logging, 2-3, 2-5, 2-6
LOGTST
ERROR routines, Error Logging, 4-23
LOGUIC symbol, Indirect, 2-21
/log job switch
/que /MOD command, Batch and Queue, 2-20
%LOK, Error Logging, 5-21
LONG qualifier, Task Builder, 11-41 to 11-48
Lookahead function, Error Logging, 5-21
Loop, Debugging, 3-4
LOOPBACK
parameter command, System Management, 4-43
/lo switch
Indirect, Indirect, 2-4, 2-29
RMSCNV utility, RMS-11 Utilities, 4-10
RMSIFL utility, RMS-11 Utilities, 3-6
VFY utility, Utilities, 9-6
Low core memory
dump, CDA, 1-9, 3-1, 3-20
labels, CDA, 3-20
/lower-case argument, MACRO-11, 8-10
Lowercase, Command Language, 5-89
Lowercase conversion (half-duplex), I/O Drivers, 3-15
Lowercase mode, Indirect, 2-48
/lowercase qualifier
PRINT command, Batch and Queue, 2-4
SET QUEUE command, Batch and Queue, 2-20
/lower keyword
SET command (MCR), MCR, 3-226
SET command (VMR), System Management, 10-61
Low limit register
See L register
Low-memory context, Task Builder, B-10
Low pool, System Management, 13-3, 13-4
event, System Management, 13-2
/low switch
PRI command, Batch and Queue, 2-4
Low-traffic sync (communication driver), I/O Drivers, 12-12
LP11 line printer, I/O Drivers, 10-2
LPA11
22-bit addressing, I/O Drivers, 22-36
data transfer start (LADRV), I/O Drivers, 22-30
data transfer stop (LADRV), I/O Drivers, 22-30
initialize, I/O Drivers, 22-29
IO.STA function (LADRV), I/O Drivers, 22-30

Master Index-169
LPA11 (cont'd.)
IO.STP function (LADRV), I/O Drivers, 22-30
sample program, I/O Drivers, 22-37
LPA11K
function code list, I/O Drivers, B-11
Lpast parameter
device-specific function (GRDRV), I/O Drivers, 21-2
LP command
EDI utility, Utilities, 2-36
LPDRV, I/O Drivers, 10-1
programming hint, I/O Drivers, 10-7
Lpef parameter
device-specific function (GRDRV), I/O Drivers, 21-2
LPP, System Management, 7-2
LPS11, I/O Drivers, 17-2
See also LSDRV
LPS11/AR11 comparison, I/O Drivers, 17-1
LPS11 clock
sampling rate (LSDRV), I/O Drivers, 17-33
LPS function code list, I/O Drivers, B-11
LPSTP: subroutine
stop synchronous function (LSDRV), I/O Drivers, 17-22
LQP02, I/O Drivers, 2-4
LRDRV
transmit, device-specific QIO$, I/O Drivers, 14-3
L register, Debugging, 2-6, 5-3, 6-1, 9-10
LRL field in FAB
- CREATE operation, RMS-11 Macro, 5-20
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-79
summary, RMS-11 Macro, 6-54
/LRU keyword
HOME command, MCR, 3-94
INITVOLUME command, MCR, 3-104
MOUNT command (MCR), MCR, 3-150
LS11 line printer, I/O Drivers, 10-2
LSB symbolic argument, MACRO-11, 6-19, 6-20
LSDRV
measuring elapsed time, I/O Drivers, 17-7
programming hint, I/O Drivers, 17-33
return data, I/O Drivers, 17-7
SYSCEN option, I/O Drivers, 17-1
.LST file type, Program Development, 3-4, 6-11, 7-3, 7-4
.LST module, Error Logging, 4-1
Lsubr parameter
CALLS calling macro (LADRV), I/O Drivers, 22-27
LUN, Command Language, 5-5, 5-7
I/O Drivers, 1-2 Task Builder, 12-41 Writing I/O Driver, 2-19
See also Logical unit number
See also LOGICAL UNIT NUMBERS command
ASUDLN: subroutine (UDDRV), I/O Drivers, 16-20
assigning, Command Language, 5-7 Executive, 5-10, 5-15 I/O Drivers, 1-16
assigning default
ICDRV/ISDSV, I/O Drivers, 19-38
assigning physical device, Task Builder, 12-8
assigning to AR0: (LSDRV), I/O Drivers, 17-14
assigning to LSO: (LSDRV), I/O Drivers, 17-13
assignment
ALUN$ directive, I/O Drivers, 1-4
ASSIGN command, I/O Drivers, 1-4
change, I/O Drivers, 1-4
default, Command Language, 5-7
displaying, Command Language, 7-61
dynamic change, I/O Drivers, 1-4
REASSIGN command, I/O Drivers, 1-4
default by TKB, Program Development, 4-4, 4-5
get information, I/O Drivers, 1-21
AFC11/ADO1 converter, I/O Drivers, 15-2
communication driver, I/O Drivers, 12-4
LUN get information (cont'd.)

CRDRV, I/O Drivers, 11-1
CTDRV, I/O Drivers, 9-1
DDDRV, I/O Drivers, 7-1
disk driver, I/O Drivers, 5-5
DTDRV, I/O Drivers, 6-1
GRDRV, I/O Drivers, 21-1
half-duplex, I/O Drivers, 3-4
ICDRV/ISDRV, I/O Drivers, 19-8
LADRV, I/O Drivers, 22-2
LPDRV, I/O Drivers, 10-3
LRDRV, I/O Drivers, 14-2
receive, I/O Drivers, 14-2
transmit, I/O Drivers, 14-2
LSDRV, I/O Drivers, 17-2
PPDRV/PRDRV, I/O Drivers, 18-1
tape driver, I/O Drivers, 8-5
TTDRV, I/O Drivers, 2-7
UDDRV, I/O Drivers, 16-3
UNIBUS switch driver, I/O Drivers, 24-2
VTDRV, I/O Drivers, 4-1

identical
IO.DET/IO.ATT, I/O Drivers, 1-28
information table, I/O Drivers, 1-21
logical/physical association, I/O Drivers, 1-16
number, I/O Drivers, 1-7
physical
logical, I/O Drivers, 1-21
preinitiation processing of, Writing I/O Driver, 2-11
QIO$ basic syntax, I/O Drivers, 1-5
reassigning. Command Language, 5-27 I/O Drivers, 1-3
redirection
ASSIGN command, I/O Drivers, 1-3
table, I/O Drivers, 1-3 Task Builder, B-9, B-10
table entry, Task Builder, B-14
valid number, I/O Drivers, 1-3
LUN, assign with ASLUN routine, I/O Operations, 4-16
Lun parameter (cont'd.)

ALUN$, I/O Drivers, 1-17
AO/AOW subroutine (UDDRV), I/O Drivers, 16-20
ASARLN: subroutine (LSDRV), I/O Drivers, 17-14
ASLSLN: subroutine (LSDRV), I/O Drivers, 17-14
ASUDLN: subroutine (UDDRV), I/O Drivers, 16-20
CLOCKA: subroutine
    K-series, I/O Drivers, 23-1
    LADRV, I/O Drivers, 22-7
CLOCKB: subroutine
    K-series, I/O Drivers, 23-13
    LADRV, I/O Drivers, 22-8
CTDI: subroutine (UDDRV), I/O Drivers, 16-21
CTTI: subroutine (UDDRV), I/O Drivers, 16-22
DFTI: subroutine (UDDRV), I/O Drivers, 16-23
DI/DIW: subroutine (UDDRV), I/O Drivers, 16-24
DOL/DOLW: subroutine (UDDRV), I/O Drivers, 16-24
DOM/DOMW: subroutine (UDDRV), I/O Drivers, 16-25
DSDI: subroutine (UDDRV), I/O Drivers, 16-23
general (TTDRV), I/O Drivers, 2-11
GLUN$ macro, I/O Drivers, 1-21
IO.ATA function (TTDRV), I/O Drivers, 2-20
IO.ATT function, I/O Drivers, 1-27
IO.CCO function (TTDRV), I/O Drivers, 2-23
IO.DET function, I/O Drivers, 1-28
IO.EIO function (TTDRV), I/O Drivers, 2-26
IO.GTS function (TTDRV), I/O Drivers, 2-33
IO.HNG function (TTDRV), I/O Drivers, 2-35
IO.KIL function, I/O Drivers, 1-29
IO.RAL function (TTDRV), I/O Drivers, 2-36
IO.RLB function, I/O Drivers, 1-30
IO.RNE function (TTDRV), I/O Drivers, 2-38
IO.RPR function (TTDRV), I/O Drivers, 2-40
IO.RST function (TTDRV), I/O Drivers, 2-43

Master Index-171
Lun parameter (cont'd.)

IO.RTT function (TTDRV), I/O Drivers, 2-45
IO.RVB function, I/O Drivers, 1-31
IO.SMC function (TTDRV), I/O Drivers, 2-59
IO.WAL function (TTDRV), I/O Drivers, 2-47
IO.WBT function (TTDRV), I/O Drivers, 2-49
IO.WLB function, I/O Drivers, 1-32
IO.WVB function, I/O Drivers, 1-33
IO.XCL function (XEDRV), I/O Drivers, 13-17
IO.XIN function (XEDRV), I/O Drivers, 13-10
IO.XOP function (XEDRV), I/O Drivers, 13-6
IO.XRC function (XEDRV), I/O Drivers, 13-14
IO.XSC function (XEDRV), I/O Drivers, 13-7
IO.XTL function (XEDRV), I/O Drivers, 13-18
IO.XTM function (XEDRV), I/O Drivers, 13-11
LAMSKS: subroutine (LADRV), I/O Drivers, 22-20
QIO$ basic syntax, I/O Drivers, 1-7
RCIPT: subroutine (UDDRV), I/O Drivers, 16-26
RSTI: subroutine (UDDRV), I/O Drivers, 16-30
SCTI: subroutine (UDDRV), I/O Drivers, 16-31
SF.GMC function (TTDRV), I/O Drivers, 2-51
LUT, Command Language, 5-5 I/O Drivers, 1-7 Writing I/O Driver, 2-19
contents, I/O Drivers, 1-3
defined, I/O Drivers, 1-3
specifying, I/O Drivers, 1-3
LV11 line printer, I/O Drivers, 10-2
LVL field in KEY block
DISPLAY operation, RMS-11 Macro, 5-32
offset, RMS-11 Macro, 6-67
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-84
/LW switch
DMP utility, Utilities, 11-7
LX; Error Logging, 3-2

M
M.CTSZ, retrieval pointer block count field size, I/O Operations, F-2
M.EFNU, extension file number, I/O Operations, F-2
M.EFSQ, extension file sequence number, I/O Operations, F-2
M.ERVN, extension relative volume number, I/O Operations, F-2
M.ESQN, map area, I/O Operations, F-2
M.LBSZ, retrieval pointer logical block number field size, I/O Operations, F-2
M.MAX, available retrieval pointer words, I/O Operations, F-3
M.RTRV, retrieval pointer start, I/O Operations, F-3
M.USE, retrieval pointer word count, I/O Operations, F-3
MAC command
MCR, Program Development, 1-4, 3-1, 3-5, 6-3
See also MACRO-11
.MAC file type, Program Development, 3-1
Machine code, binary, Introduction, 5-4, 5-5
Macro, Introduction, 5-11 RMS-11 Introduction, 4-7
See also MACRO-11
call
cross-reference of symbols, Program Development, 3-7, 3-8
resolution, Program Development, 1-4, 1-10, 2-7
unrecognized, Program Development, 2-7
directive
See .MACRO directive
global symbol, I/O Operations, 2-26
LBLDFS$, Task Builder, B-1
library, Program Development, 6-1, 6-2, 6-3
adding modules, Program Development, 6-9, 6-10
creating a user, Program Development, 6-1, 6-2, 6-3

Master Index–172
Macro library (cont'd.)
- definitions, Program Development, 6-3, 6-4
- DIGITAL-supplied, Program Development, 1-9
- listing information, Program Development, 6-3, 6-4
- replacing modules, Program Development, 6-10, 6-11
- search of system, Program Development, 1-5, 1-10, 2-7

library directive
- See .MCALL directive
- local symbol, I/O Operations, 2-27
- run-time exceptions, I/O Operations, 2-22
- FDB address, I/O Operations, 2-24
- initialization, I/O Operations, 2-21
SNAPS$, Task Builder, D-6
SNPBK$, Task Builder, D-6
SNPDFS$, Task Builder, D-6
- symbol definition, Program Development, 1-4, 1-10, 2-7, 6-4

Macro, CALL (K-series), I/O Drivers, 23-31
Macro, CALLS (LADV), I/O Drivers, 22-27
Macro, INITS
- K-series, I/O Drivers, 23-31
- LADV, I/O Drivers, 22-27
- address mode summary, MACRO-11, B-2
- assembling source file, Program Development, 3-1, 3-2
- calling sequence
  - manual load, Task Builder, 4-7
- coding standard, MACRO-11, E-1 to E-16
/CRC, Program Development, 1-8, 3-8
/CROSS_REFERENCE, Program Development, 1-8, 3-7

MACRO-11
data storage (cont'd.)
- definition, Program Development, 2-8
- default search of system library, Program Development, 1-5, 1-10, 2-7
defining local symbols, Program Development, 2-7, 2-8
directives, Program Development, 1-4, 1-5
directive summary, MACRO-11, B-3 to B-8
/DISABLE:GLOBAL, Program Development, 3-1
-disabling global default, Program Development, 3-1, 3-2
/DS:GBL, Program Development, 3-1
error, Program Development, 3-2, 3-3, 3-4
error code:
  - A, Program Development, 3-2, 3-3
  - E, Program Development, 3-4
  - Q, Program Development, 3-4
  - U, Program Development, 3-3
error code summary, MACRO-11, D-1 to D-5
error message, MACRO-11, 8-19, 8-20, 8-21 Program Development, 3-2, 3-5
file specification, MACRO-11, 8-3, 8-4, 8-5
switch, MACRO-11, 8-6
/LIBRARY, Program Development, 6-3
/List, Program Development, 3-1, 3-4, 3-5, 3-7
listing, Program Development, 3-4, 3-5
generation, Program Development, 3-6
location counter, Program Development, 1-4, 1-5
MAC command
- MCR, Program Development, 1-4, 3-1, 3-5, 6-3
macro
cross-reference, Program Development, 3-7, 3-8
directive, MACRO-11, 7-1
expansion, MACRO-11, 7-1

Master Index-173
MACRO-11
  macro (cont'd.)
    terminating, MACRO-11, 7-3
  expansion listing, MACRO-11, 6-9
  keyword indicator, MACRO-11, 3-1
library
  force search of, MACRO-11, 6-20
  including in assembly, MACRO-11, 8-6
library usage, Program Development, 6-3, 6-4
name, MACRO-11, 7-1
nesting, MACRO-11, 7-3
symbol, MACRO-11, 3-6
  Program Development, 1-4, 2-7, 6-4
symbol table, MACRO-11, 3-6, 3-7
macro call, MACRO-11, 7-1, 7-4
  argument in, MACRO-11, 7-4, 7-5
  format, MACRO-11, 7-4
  numeric argument indicator, MACRO-11, 3-3
  unary operator in, MACRO-11, 7-5
MACRO command
  DCL, Program Development, 1-4, 3-1, 3-4, 6-3
macro definition
  argument concatenation, MACRO-11, 7-10, 7-11
  argument in, MACRO-11, 7-4, 7-5, 7-6
  argument limit, MACRO-11, 7-8
  argument passing, MACRO-11, 7-7
deletion, MACRO-11, 7-21
dummy argument, MACRO-11, 7-2
error notice, MACRO-11, 7-15, 7-16
format, MACRO-11, 7-4
keyword argument, MACRO-11, 7-9
name, MACRO-11, 7-2
nesting, MACRO-11, 7-3, 7-5, 7-6
MACRO-11
  macro definition (cont'd.)
    single argument, MACRO-11, 7-16
    special characters in, MACRO-11, 7-6
 MAC task
  command format, MACRO-11, 8-4 to 8-7
cross-reference listing, MACRO-11, 8-16
error message, MACRO-11, 8-19, 8-20, 8-21
listing control, MACRO-11, 8-6, 8-7
running by indirect command, MACRO-11, 8-3
running directly, MACRO-11, 8-2
/ML, Program Development, 6-3, 6-4
/NOOBJECT, Program Development, 3-1
/OBJECT, Program Development, 3-4
object module, Program Development, 3-4, 3-5, 3-6
obsolete functions, MACRO-11, 1-1
operating hints, MACRO-11, F-1
operating procedures, MACRO-11, 8-1
position independent code, MACRO-11, G-1
source file, Program Development, 2-2
cross-referencing symbols
  CRF utility, Utilities, B-1
format, Program Development, 2-1 to 2-3
skeleton, Program Development, 2-4
source input, Program Development, 1-4
/-SP, Program Development, 3-5, 3-8
special character summary, MACRO-11, B-1
statement format, MACRO-11, 2-1
supports routine (LADR), I/O Drivers, 22-26
symbol
  cross-reference, Program Development, 3-7, 3-8
MACRO-11 symbol (cont’d.)
evaluation, Program Development, 1-4, 3-1, 3-2, 6-4
table of contents generation,
Program Development, 2-6
work file, MACRO-11, F-1
MACRO-11 Assembler, Introduction, 5-4, 5-10
MACRO-11 interface
K-series, I/O Drivers, 23-31
LADR V, I/O Drivers, 22-26
MACRO-11 Relocatable Assembler,
Command Language, 6-2
Macro call
See .MCALL directive
MACRO CALL command
EDI utility, Utilities, 2-37
MACRO command, Introduction, 5-4
MACRO-11, 8-8 to 8-12
DCL, Program Development, 1-4, 3-1, 3-4, 6-3
See also MACRO-11
EDI utility, Utilities, 2-36
Macro-declaration macro, RMS-11
Macro, 2-2
Macro definition, MACRO-11, 7-1 to 7-4
attribute, MACRO-11, 7-11 to 7-14
MACRO directive, MACRO-11, 7-1, 7-2, 7-10
MACRO EXECUTE command
EDI utility, Utilities, 2-38
$ macro form, Executive, 1-5
MACRO IMMEDIATE command
EDI utility, Utilities, 2-38
Macro library, Command Language, 6-28
RMSMAC.MLB, RMS-11 Macro, 2-20
RSTS/E, RMS-11 Macro, D-3
Macro Metalanguage
See MML
MAC task, Program Development, 1-4
See also MACRO-11
MAG, I/O Operations, G-11
Magnetic tape, Command Language, 5-3 RMS-11 Introduction, 2-4
RMS-11 Macro, 3-2, 5-20, 5-37, 5-43, 5-77, 5-88, 5-104, 5-111, 5-118
See also Medium
See also Tape

Magnetic tape (cont’d.)
ACP, Command Language, 5-39
ANSI, RMS-11 Macro, 3-2, 5-20, 5-37, 5-43, 5-77, 5-88, 5-104, 5-111, 5-118
preparing, Command Language, 5-12
density
displaying in IOX, System Management, 4-33
specifying in IOX, System Management, 4-33
dismounting, MCR, 3-71
driver, I/O Drivers, 8-1
error retries, System Management, 4-56
exercise
eexample, System Management, 4-12
using SELECT, System Management, 4-12
function code list, I/O Drivers, B-12
initializing, MCR, 3-99
label, MCR, 3-71, 3-100 RMS-11
Introduction, 2-5
mounting, Command Language, 5-48
MCR, 3-143
P/OS, RMS-11 Macro, D-3
positioning
See FB$NEF mask in FOP field
See FB$POS mask in FOP field
See RB$EOF mask in ROP field
record, MCR, 3-152
records tested, System Management, 4-53
rewind-after-closing
See FB$RWC mask in FOP field
rewind-before-creating
See FB$RWO mask in FOP field
rewind-before-opening
See FB$RWO mask in FOP field
RMS-11, Command Language, 5-44
RMSBCK utility, RMS-11 Utilities, 6-7
multivolume, RMS-11 Utilities, 6-9
RMSCNV utility, RMS-11 Utilities, 4-8
RMSDEF utility, RMS-11 Utilities, A-8, A-10
RMSDES utility, RMS-11 Utilities, 2-34
Magnetic tape (cont’d.)
RMSDSP utility, RMS-11 Utilities, 5-3
RMSRST utility, RMS-11 Utilities, 7-8, 7-9
set, Command Language, 5-48
mounting, Command Language, 5-48
tape mark, RMS-11 Introduction, 2-5
testing
altering record count, System Management, 4-53
volume, RMS-11 Introduction, 2-5
Magnetic tape block size
See BLS field in FAB
Magnetic tape kit
copying
on-line, System Generation (11M), 2-19
stand-alone, System Generation (11M), 2-6
MAGTAPE_BLOCK_SIZE attribute
RMSDES utility, RMS-11 Utilities, 2-34
MAG task error messages, I/O Operations, G-15
.MAIN. default name, MACRO-11, 6-15
/MAIN keyword
SET command (MCR), MCR, 3-227
SET command (VMR), System Management, 10-61 to 10-63
Maintenance function (ICDRV/ISDRV), I/O Drivers, 19-32, 19-69
Manual load
error handling, Task Builder, 4-11
/MANUAL switch
BAD utility, Utilities, 6-6
FMT utility, Utilities, 5-8
Map
common, Task Builder, 5-20, 5-21
debugging use, Program Development, 5-2, 5-8
examining at terminal, Program Development, 4-6
file, Task Builder, 1-1
adding cross-reference, Task Builder, 10-11, 11-22
content, Task Builder, 10-37 to 10-44, 11-41 to 11-48
description, Task Builder, 10-37 to 10-44, 11-41 to 11-48
Map file (cont’d.)
exampl, Task Builder, 10-37 to 10-44, 11-41 to 11-48
general, Task Builder, 10-37 to 10-44, 11-41 to 11-48
inhibiting spooling, Task Builder, 10-46, 11-55
LINK command, Task Builder, 1-5, 1-6
printing, Task Builder, 1-3
LINK command, Task Builder, 1-6, 1-7
specifying, Task Builder, 10-26, 11-41, 11-49
full, Program Development, 4-7
generating, Program Development, 4-5, 4-6, 4-7
including SYSLIB contribution, Task Builder, 10-26
multiuser task, Task Builder, 9-7
privileged task, Task Builder, 6-10, 6-11
reducing width, Program Development, 4-5, 4-6
region, Task Builder, 5-20, 5-21
resident region
including symbol definition, Task Builder, 10-26
short
specifying, Task Builder, 10-37
spooling to print, Task Builder, 10-46, 11-55
stack limits, Program Development, 5-8
standard, Program Development, 4-5, 4-6
task
linked to a common, Task Builder, 5-25
MAP$ directive, Executive, 5-123
Map Address Window directive, Executive, 5-122
Map area, I/O Operations, 5-4
file header block, I/O Operations, F-5
MAP attributes, System Management, 12-33 to 12-34
secondary mappings, System Management, 12-35
Map device, System Generation (11M), 4-24
Map file
TKB, Command Language, 6-2

Master Index—176
Map file
TKB (cont'd.) producing, Command Language, 6-13
.MAP file type, Program Development, 4-6
Mapped array
area, Task Builder, 5-61, 5-63
declaration, Task Builder, A-10
declaration entry, Task Builder, A-10
Mapped baseline system
bootstrapping, System Generation (11M), 4-2
Mapped region
declaring address window, Task Builder, 12-45
MAPPED symbol, Indirect, 2-11
Mapped system, System Generation (11M), 1-5 Task Builder, 2-13
Mapping, Executive, 3-2
contiguous task
data space, Executive, 3-3
instruction space, Executive, 3-3
privileged tasks, Executive, 3-19
task, Task Builder, 2-14
window concept, Task Builder, 2-21, 2-22, 2-23
window-to-region
returning current assignment, Executive, 5-108
Mapping register assignment block
allocating, Writing I/O Driver, B-2
figure, Writing I/O Driver, B-3
Mapping table format (ICDRV/ISDRV), I/O Drivers, 19-77
/MAP qualifier, Task Builder, 11-49
designation, Task Builder, 11-2
Map Supervisor D-Space directive, Executive, 5-130
Mark file for delete, I/O Operations, 4-29
Mark-for-deletion
See FB$MKD mask in FOP field
.MARK routine, save file position, I/O Operations, 4-24
Mark Time directive, Executive, 5-125
Mark time request
canceling, Executive, 5-36
Mask parameter
DIGO: subroutine (K-series), I/O Drivers, 23-16
DINP: subroutine (K-series), I/O Drivers, 23-17
Mask parameter (cont'd.)
DOUT: subroutine (K-series), I/O Drivers, 23-20
immediate device-specific function (LSDRV), I/O Drivers, 17-3
synchronous QIO$ function (LSDRV), I/O Drivers, 17-6
Mask register
See M register
Mask symbol
See Code and mask symbol
Mass insertion, RMS-11 User's Guide, 2-18, 7-9
See also RB$MAS mask in ROP field
populating indexed files, RMS-11 User's Guide, 6-28
RMSCNV utility, RMS-11 Utilities, 4-10
Mass-storage device, RMS-11 Introduction, 2-1
errors, Error Logging, 1-1
Master Command Table
See MCT
Master File Directory, I/O Operations, 5-2 MCR, 2-2, 3-94, 3-103, 3-104, 3-150, 3-280
See also MFD
/MA switch, Task Builder, 10-26
RMSCNV utility, RMS-11 Utilities, 4-10
Match criterion, RMS-11 Introduction, 3-12
See also RB$KGE mask in ROP field
See also RB$KGT mask in ROP field
random access, RMS-11 User's Guide, 5-13
MAX_RECORD_NUMBER attribute
RMSCNV utility, RMS-11 Utilities, 4-10
MAXBUF option, Task Builder, 12-25
/MAXEXT keyword
SET command (MCR), MCR, 3-229
SET command (VMR), System Management, 10-63
/MAXIMUM qualifier
BRU utility, Utilities, 7-18
Maximum record number
See also MRN
RMSCNV utility, RMS-11 Utilities, A-9
Maximum record size
RMSCNV utility, RMS-11 Utilities, A-9
/MMAXPKT keyword
  SET command (MCR), MCR, 3-230
  MBC, RMS-11 User's Guide, 2-17
  sequential files, RMS-11 User's Guide, 3-15
MBC field in RAB
  CONNECT operation, RMS-11 Macro, 5-6
  offset, RMS-11 Macro, 6-115
  summary, RMS-11 Macro, 6-125
MBF field in RAB
  CONNECT operation, RMS-11 Macro, 5-6
  offset, RMS-11 Macro, 6-115
  summary, RMS-11 Macro, 6-126
.MBBLUN
  reserved global symbol, Task Builder, E-1
/MB switch
  CMP utility, Utilities, 12-3
Mbuf parameter
  IO.LOD function (LADR), I/O Drivers, 22-30
.MCALL
  for QIO, I/O Drivers, 1-4
  MCALL assembler directive, Executive, 1-5 RMS-11 Macro, 2-2
  MCALL directive, I/O Drivers, 1-16
  I/O Operations, 2-2 MACRO-11, 7-20 Program Development, 1-10, 2-6, 2-7, 3-3
  using with user macro library, Program Development, 6-3, 6-4
.MCALL macro, I/O Drivers, 1-14
  example, I/O Drivers, 1-16
MC command
  EDI utility, Utilities, 2-37
MCL symbolic argument, MACRO-11, 6-20
M command
  EDI utility, Utilities, 2-38
MCR, Command Language, 1-1
  Introduction, 1-5, 5-1 Program Development, 1-1, 1-2, 1-3 System Management, 11-1, 11-2
  CLI default, System Management, 2-3
  creating saved answer file, System Generation (11M), 3-11
  inhibit execution, System Generation (11M), 4-4
  Phase II, System Generation (11M), 5-4
MCR
  inhibit (cont'd.)
    PREPGEN, System Generation (11M), 3-11
    interface, MCR, 1-5
    keywords, MCR, 1-4
    prompt, MCR, 1-3, 2-17
    See also Prompt
    RUN command support, System Generation (11M), 4-32
    summary of commands, MCR, 1-5 to 1-8
    transferring files, System Management, 9-5 to 9-7
    translator table example, System Management, 12-21
MCR CLI command, System Management, 11-5
MCR command, Command Language, 1-6, 9-24 System Management, 12-3
  linking
    ODT, Debugging, 1-2
    ODTID, Debugging, 1-3
    supervisor libraries, Debugging, 1-4
/MCR keyword
  HELP command, MCR, 3-88
  SET command (MCR), MCR, 3-231
MCR mode, Indirect, 2-48
MCR QMG commands
  MCR UFDs, System Management, B-3t
  MCR Unit Control Block, CDA, 3-26
/MC switch
  Indirect, Indirect, 2-27
MC symbolic argument, MACRO-11, 6-11
MCT
  contents, System Management, 12-7
.MDELETE directive, MACRO-11, 7-21
/MD switch
  DMP utility, Utilities, 11-7
MD symbolic argument, MACRO-11, 6-11
MEB symbolic argument, MACRO-11, 6-11
Media, Introduction, 6-7
  failures, System Management, 15-29
Medium
  and I/O time, RMS-11 User's Guide, 2-3

Master Index—178
Medium and record formats and (cont'd.)
file organizations, RMS-11 User's Guide, 1-20
and variable-length format, RMS-11 User's Guide, 2-15
disk retrieval pointers, RMS-11 User's Guide, 8-2
usage, RMS-11 User's Guide, 8-3
placement control, RMS-11 User's Guide, 6-13
sequential files, RMS-11 User's Guide, 3-3
Memory, Command Language, 7-2
Introduction, 6-5 System Management, 14-1
address, MCR, 3-164
allocation file
See Map file
task, Task Builder, 2-6
cache, System Generation (11M), 4-17
compacting space
See SHF
displaying, Command Language, 2-2, 8-9
dump, Task Builder, D-11
dynamic, MCR, 3-118, 3-132, 3-183
E command, Debugging, 6-2
examining memory location
XDT, Debugging, 9-3
F command, Debugging, 6-4
fill command, Debugging, 2-9
fixing tasks in, MCR, 3-75
H register, Debugging, 2-6
image, Task Builder, 2-9
layout
unmapped system, Task Builder, 2-15
L command, Debugging, 6-4
limit register, Debugging, 5-3, 6-1
list command, Debugging, 2-10
listing
format, Debugging, 6-5
location
closing, MCR, 3-165
displaying, MCR, 3-164
inserting values in, MCR, 3-164
opening, MCR, 3-164
L register, Debugging, 2-6

Memory management (cont'd.)
PLAS directives, System Generation (11M), 4-27
specifying for target system, Task Builder, 10-27, 11-50
mapping, MCR, 2-20
N command, Debugging, 6-2
parity support, System Generation (11M), 4-17
partition, Introduction, 6-5 MCR, 2-20
physical
disk-resident overlay, Task Builder, 3-3
memory-resident overlay, Task Builder, 3-6
overlay, Task Builder, 3-5, 3-6, 3-33, 3-34, 3-35
processor memory size, System Generation (11M), 4-12
reducing
to build a task, Task Builder, F-4
usage, Task Builder, 3-1
resident overlay structure, Task Builder, 3-6
saving
overlaid task, Task Builder, 3-9, 3-10
search command, Debugging, 2-9, 2-10, 2-11, 6-2
W command, Debugging, 6-2
/MEMORY_MANAGEMENT qualifier, Task Builder, 11-50
Memory allocation, MACRO-11, 6-46
Memory allocation file
See Map
Memory dump, Task Builder, D-1
Memory errors, Error Logging, 1-1
error logging, Error Logging, 1-6
Memory management, System Library, 7-1
See also Virtual memory management
core blocks release ($RLCB), System Library, 7-4
core blocks request ($RQCB), System Library, 7-3
directives, Executive, 3-1
data structures, Executive, 3-11
summary, Executive, 3-9
fixing tasks, System Management, 10-18, 10-23
Memory management (cont’d.)
initialize ($INIDM), System Library, 7-2
use by task, Task Builder, 2-15
Memory Management Unit, Task Builder, 2-14
Memory-resident overlay, Task Builder, 3-1
loading, Task Builder, 4-1
/MEMSZ switch, CDA, 2-10, 2-11
MEMSZ symbol, Indirect, 2-16
Merged string, RMS-11 Macro, 3-3
Merging file
PIP utility, Utilities, 3-9
M error, MACRO-11, 2-3, 3-1, 3-2, 3-8
summary, MACRO-11, D-4
/MESSAGE
keyword
CLI command, MCR, 3-52
subkeyword
CLI command, MCR, 3-52
Message
assembly-time, RMS-11 Macro, B-1
completion returns, RMS-11 Macro, A-1
diagnostic
eliminating, Task Builder, 10-30, 11-76
error, MCR, A-1 to A-35 Task Builder, H-1 to H-11
virtual memory system, Task Builder, F-5
fatal error completions, RMS-11 Macro, A-16
formatting, System Library, 6-1
ASCII string, System Library, 6-7
carriage return/line feed insertion, System Library, 6-9
date conversion ($DAT), System Library, 6-2
edit directive ($EDMSG), System Library, 6-5
extended ASCII, System Library, 6-8
field mark, System Library, 6-12
file name string, System Library, 6-11
form feed insertion, System Library, 6-8
general, System Library, 6-5
space insertion, System Library, 6-10
Message formatting (cont’d.)
length of, System Library, 6-12
time conversion ($TIM), System Library, 6-3
uppercase text ($CVTUC), System Library, 6-1
inhibiting system queuing, Task Builder, 10-35, 11-57
invocation, Debugging, 1-4
RMSBCK utility, RMS-11 Utilities, C-1
RMSCNV utility, RMS-11 Utilities, C-1
RMSDEF utility, RMS-11 Utilities, A-20
RMSDES utility, RMS-11 Utilities, 2-52
RMSDSP utility, RMS-11 Utilities, C-1
RMSIFL utility, RMS-11 Utilities, C-1
RMSRST utility, RMS-11 Utilities, C-1
sending, Command Language, 3-30, 3-34
system service, MCR, 3-273
Message-oriented driver, I/O Drivers, 12-1
Message-oriented interface (communication driver), I/O Drivers, 12-1
Messages ERLCFL, Error Logging, 5-44
MESSAGE statement, Error Logging, 5-41
/ME switch
PIP utility, Utilities, 3-9, 3-28
ME symbolic argument, MACRO-11, 6-11
Metalanguage, System Management, 12-13
category references, System Management, 12-14
exclusive-OR, System Management, 12-15
optional syntax indicators, System Management, 12-15
production rule, System Management, 12-14
adjective, System Management, 12-14
Metalanguage
   production rule (cont’d.)
   subject, System Management, 12-14
   syntax tree, System Management, 12-14
.MEXIT directive, MACRO-11, 7-3
MFD, Command Language, 4-1, 5-10
   I/O Operations, 5-2
   See also Master File Directory
MFD header, I/O Operations, E-2
MFT, System Management, 9-1
MFT command, System Management, 9-5 to 9-7
/MH switch
   LBR utility, Utilities, 10-22
   Micro/RSX File Transfer Utility
   See MFT
Microcode loading
   LADR, I/O Drivers, 22-34
   LPA11 (LADR), I/O Drivers, 22-34
   XEDRV, I/O Drivers, 13-18
Minus sign operator (-), MACRO-11, 3-4
   See also Operator
Mixed MASSBUS
   * configuration, Error Logging, 4-33
MK11 memory box failures, System Management, 15-33
ML-11, I/O Drivers, 5-4
   /ML assembler switch, RMS-11 Macro, 2-20
.MLB file type, Program Development, 6-1
   /ML switch, MACRO-11, 8-6, 8-7
   RMSCNV utility, RMS-11 Utilities, 4-11
MML, System Management, 12-16
   features, System Management, 12-6 to 12-7
   literals, System Management, 12-20
   nonliterals, System Management, 12-19
   parser functions, System Management, 12-20
   handling of literals, System Management, 12-20
   handling of nonliterals, System Management, 12-19
   translator functions, System Management, 12-20
   handling of literals, System Management, 12-20
MML
   translator functions (cont’d.)
   handling of nonliterals, System Management, 12-19
/MM switch, Task Builder, 10-27
Mn parameter
   device-specific function (UDDRV), I/O Drivers, 16-4
   ICDRV/ISDRV, I/O Drivers, 19-10
   IO.ITU function, I/O Drivers, 19-22
MNT, Command Language, 6-28
Mode
   See also Access mode
   See also Address mode
   See also Record transfer mode
   change (XEDRV), I/O Drivers, 13-20
   compatibility
   task, Task Builder, 10-8, 11-20
   default bit (XEDRV), I/O Drivers, 13-21
   maintenance (communication driver), I/O Drivers, 12-7
   set (communication driver), I/O Drivers, 12-7
   user, Debugging, 9-2
Modem
   TTDRV, I/O Drivers, 2-83
   autobaud, I/O Drivers, 2-83
   auto-call enable, I/O Drivers, 2-52
   default answer speed, I/O Drivers, 2-18, 2-83
   DZ11 remote line, I/O Drivers, 2-83
   set answer speed, I/O Drivers, 2-83
   with DZ11 (half duplex), I/O Drivers, 3-33
Mode parameter
   ADSWP: subroutine
   K-series, I/O Drivers, 23-9
   LADR, I/O Drivers, 22-4
   CLOCKB: subroutine
   K-series, I/O Drivers, 23-13
   LADR, I/O Drivers, 22-8
   DASWP: subroutine
   K-series, I/O Drivers, 23-14
   LADR, I/O Drivers, 22-9
   device-specific (communication driver), I/O Drivers, 12-6
Mode parameter
device-specific function (cont'd.)
  transmit (LRDRV), I/O Drivers, 14-5
DISWP: subroutine
  K-series, I/O Drivers, 23-17
  LADRV, I/O Drivers, 22-12
DOSWP: subroutine
  K-series, I/O Drivers, 23-19
  LADRV, I/O Drivers, 22-15
GTHIST: subroutine (K-series), I/O Drivers, 23-22
IO.CLK function (LADRV), I/O Drivers, 22-29
IO.STC function
  transmitter (LRDRV), I/O
  Drivers, 14-6
Modify option
  ACNT, System Management, 2-7
Modularity
  program, MACRO-11, 6-43
Module
  accessing (UDDRV), I/O Drivers, 16-2
  addressing (ICDRV/ISDRV), I/O
  Drivers, 19-6
calls in overlay, Task Builder, 3-16
  common in root
  improving performance, Task
  Builder, F-6
concatenated object
  using to reduce overhead, Task
  Builder, F-4, F-6
extracting from library, Task Builder, 10-23, 11-39
interrupt connect (ICDRV/ISDRV), I/O
  Drivers, 19-21
linked
  mapped, Task Builder, 2-3
  unmapped, Task Builder, 2-3
name, Task Builder, A-4
  internal symbol, Task Builder, A-27, A-28
name entry format, Task Builder, A-4
object, Task Builder, 1-1
  concatenating, Task Builder, 10-7, 11-21
  extracting by name, Task
  Builder, F-4
  linking, Task Builder, 2-1 to 2-8
  placing in segment
  reducing overhead, Task Builder, F-4, F-6
Module (cont'd.)
  record
  end, Task Builder, A-24
  serviced (UDDRV), I/O Drivers, 16-2
  supported (ICDRV/ISDRV), I/O
  Drivers, 19-3
Module name, Program Development, 2-3, 2-5, 6-5, 6-6, 6-7
table, Program Development, 6-9, 6-10
  macro library, Program
  Development, 6-2, 6-3
  object library, Program
  Development, 6-5, 6-7
Module name table
  See MNT
MODULE statement, Error Logging, 5-32
Module version, Program Development, 2-5
.MOLUN
  reserved global symbol, Task
  Builder, E-1
Monitor Console Routine
  See MCR
MOU
  See also MOUNT command
/MOU keyword
  SAVE command (MCR), MCR, 3-190
MOUNT/CACHE command
disk data caching, System
  Management, 19-6, 19-10
MOUNT/FOREIGN command,
  Command Language, 5-8
MOUNT command, Command
  Language, 5-8, 5-36 to 5-47,
  9-24 to 9-25
  error messages, Command Language,
  5-49 to 5-52
  examples, Command Language, 5-46
  qualifiers, Command Language, 5-38
  to 5-45
MOUNT command (MCR), MCR, 1-6, 3-141
  formats, MCR, 3-142, 3-144
keywords
  /ACP, MCR, 3-145
  /BS, MCR, 3-146
  /CACHE, MCR, 3-146
  /CC, MCR, 3-147
  /DENS, MCR, 3-147
  /FOR, MCR, 2-14, 3-148
MOUNT command (MCR)
keywords (cont'd.)
/FFPRO, MCR, 3-148
/FLock, MCR, 3-149
/FLRU, MCR, 3-150
/[NO]HDR3, MCR, 3-149
/[NO]LABEL, MCR, 3-149
/[NO]SHARE, MCR, 3-152
/[NO]WAIT, MCR, 3-154
/[NO]WRITE, MCR, 3-155
/FRV, MCR, 3-150
/FRVACC, MCR, 3-151
/FRVEXP, MCR, 3-151
/FRVFSD, MCR, 3-151
/FARM, MCR, 3-151
/FP, MCR, 3-151
/IP, MCR, 3-152
/TS, MCR, 3-152
/TUIC, MCR, 3-153
/TULN, MCR, 3-153
/TV, MCR, 3-153
/TVOL, MCR, 3-154
/TVIN, MCR, 3-155
parameters, MCR, 3-142
volume
accessing, MCR, 2-13
mounting, MCR, 2-3
Mount Device Transaction Block,
System Management, 17-28
/MOUNTED qualifier
BRU utility, Utilities, 7-18
MOVE command
EDT editor, Introduction, 2-15
Move mode, I/O Operations, 1-9
RMS-11 Introduction, 4-6
GET$ macro, I/O Operations, 3-21, 3-23
indexed files, RMS-11 User's Guide, 7-7
PUT$ macro, I/O Operations, 3-26, 3-28
relative files, RMS-11 User's Guide, 4-12
sequential files, RMS-11 User's Guide, 3-13
Move to/from User/Supervisor I/D-
Space directive, Executive, 5-133
Moving text (EDT), Introduction, 2-8, 2-15
/MP switch, Task Builder, 10-28
$MPUB1 routine, Writing I/O Driver, 5-20, B-3
$MPUBM routine, Writing I/O Driver, 5-19, B-3
use of
M register, Debugging, 2-6, 5-3, 6-2
.MRKDL routine, mark temporary file
for delete, I/O Operations, 4-29
$$MRKS program section, Task Builder, 5-54
reserved name, Task Builder, E-3
MRKT$ directive, Executive, 5-125
MRL field in KEY block
DISPLAY operation, RMS-11 Macro, 5-32
offset, RMS-11 Macro, 6-68
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-85
relative files, RMS-11 User's Guide, 4-4, 4-5
MRN field in FAB
CREATE operation, RMS-11 Macro, 5-13
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-79
summary, RMS-11 Macro, 6-55
MRS field in FAB
CREATE operation, RMS-11 Macro, 5-12
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-79
summary, RMS-11 Macro, 6-56
MS.ADS address silo, transmitter
(LRDRV), I/O Drivers, 14-5
MS.AUT auto addressing, transmitter
(LRDRV), I/O Drivers, 14-5
MSCP60, Error Logging, 4-9
MSCP80, Error Logging, 4-9
MSCPAT, Error Logging, 4-9
MSCP disks
configuration, System Management, 5-2
MSCPE, Error Logging, 4-9
MSCPEN, Error Logging, 4-9
MSCP8D, Error Logging, 4-9
MSCPTO, Error Logging, 4-9

Master Index-183
Multiple areas
RMSDES utility, RMS-11 Utilities, 2-7, 2-43
Multiple buffers, RMS-11 User's Guide, 2-18
indexed files, RMS-11 User's Guide, 7-9
relative files, RMS-11 User's Guide, 4-15
sequential files, RMS-11 User's Guide, 3-15
Multiple definition error
See error
Multiple expression, MACRO-11, 2-4
Multiple keys
RMSDES utility, RMS-11 Utilities, 2-7, 2-38
Multiple label, MACRO-11, 2-2
Multiple symbol, MACRO-11, 2-4
Multiplexer, MCR, 3-247, 3-254
asynchronous (communication driver), I/O Drivers, 12-1
Multiplication operator, MACRO-11, 3-2, 3-5
Multiplication routine
double-precision multiply ($DMUL), System Library, 3-3
multiply ($MUL), System Library, 3-1
Multiprogramming, MCR, 2-21
Multirequest mode (LADRVP), I/O Drivers, 22-1
Multistream line printer spooling, System Management, 7-1
Multituser operating system tailoring, System Generation (11M), 6-8, 6-18
Multituser protection, System Generation (11M), 4-29
and devices, MCR, 2-13
commands, MCR, 1-8
system, MCR, 2-6
Multituser system, Introduction, 6-2
Multituser task
as an overlaid task, Task Builder, 9-2
building, Task Builder, 9-5
declaring read-only partition, Task Builder, 12-35
defined, Task Builder, 9-1
description, Task Builder, 9-1, 9-7
disk image, Task Builder, 9-2
task description, Task Builder, 9-7
example, Task Builder, 9-5, 9-6, 9-7
task description, Task Builder, 9-7, 9-8
program section allocation, Task Builder, 9-1, 9-2
specifying, Task Builder, 10-29, 11-67
TKB command sequence, Task Builder, 9-7
window block assignment, Task Builder, 9-1, 9-3
/MU switch, Task Builder, 10-29
Multiple file operation, I/O Operations, 5-6
Multiprocessor systems
stand-alone maintenance, System Management, 15-34
MVTS$ directive, Executive, 5-133
/MXF keyword
HOME command, MCR, 3-95
INITVOLUME command, MCR, 3-105

N

NS-family macro, RMS-11 Macro, 2-9
declaring, RMS-11 Macro, C-2

Master Index-184
N$-family macro (cont'd.)
ex ample, RMS-11 Macro, 7-3, 7-7,
7-11, 7-15
N.ANM1 field, ANSI filename string, 1/0 Operations, B-4
N.ANM2 field, remainder of ANSI filename string, 1/0 Operations, B-4
N.DID field, .PARSE routine, 1/0 Operations, 4-13
N.DID field, directory identification, 1/0 Operations, B-2
N.DVNM field, I/O Operations, 4-17
N.DVNM field, ASCII device name, I/O Operations, B-2
N.DVNM field, ASCII tape device name, I/O Operations, B-4
N.FID field .FIND routine, 1/0 Operations, 4-17
.PARSE routine, 1/0 Operations, 4-13
N.FID field, file identification, 1/0 Operations, B-1
N.FNAM field, file name, 1/0 Operations, B-1
N.FTYP field, file type, 1/0 Operations, B-1
N.FVER field, file version number, 1/0 Operations, B-1
N.FVER field, tape file version number, 1/0 Operations, B-4
N.NEXT field, context for next .FIND, 1/0 Operations, B-2
N.NEXT field, tape context for next .FIND, 1/0 Operations, B-4
N.OVPT
low-memory context, Task Builder, B-10
reserved global symbol, Task Builder, E-1
N.STAT field, filename block status word, 1/0 Operations, B-1
N.STAT field, tape filename block status word, 1/0 Operations, B-4
N.UNIT field
FNB (tape), 1/0 Operations, B-4
N.UNIT field, unit number field, 1/0 Operations, B-2
N0 parameter
RLSBUF: subroutine
K-series, I/O Drivers, 23-26
LADRV, I/O Drivers, 22-22
N$SUMR symbol, Writing I/O Driver, B-4
NAM$B macro, RMS-11 Macro, 2-8, C-2
example, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15
NAM$E macro, RMS-11 Macro, 2-9
declaring, RMS-11 Macro, C-2
e xample, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15
NAM block, RMS-11 Introduction, 4-8
chaining to FAB, RMS-11 Macro, 2-12
declaring, RMS-11 Macro, 2-8
identification by
See FFB$FID mask in FOP field initializing. RMS-11 Macro, 2-9
summary, RMS-11 Macro, 6-94
Name format
internal symbol, Task Builder, A-32
global symbol, Task Builder, A-6
/NAME:jobname qualifier
PRINT command, Batch and Queue, 2-4
NAME attribute
RMSDES utility
file section, RMS-11 Utilities, 2-31
key section, RMS-11 Utilities, 2-38
.NAME directive, Task Builder, 3-23, 3-28
attribute
DSK, Task Builder, 3-28
GBL, Task Builder, 3-28
NODSK, Task Builder, 3-28
NOGBL, Task Builder, 3-28
example use, Task Builder, 3-29
summary, Task Builder, 3-51
/NAMED keyword
SET command (MCR), MCR, 3-231
Named variable, Error Logging, 5-8
/NAME keyword
HOME command, MCR, 3-95
/NAME qualifier
SHOW QUEUE command, Batch and Queue, 2-16
NAM field in FAB
chaining NAM block to FAB, RMS-11 Macro, 2-12
NAM field in FAB (cont'd.)
CREATE operation, RMS-11 Macro, 5-9
ENTER operation, RMS-11 Macro, 5-35
ERASE operation, RMS-11 Macro, 5-40
offset, RMS-11 Macro, 6-24
OPEN operation, RMS-11 Macro, 5-72
PARSE operation, RMS-11 Macro, 5-86
REMOVE operation, RMS-11 Macro, 5-102
RENAME operation, RMS-11 Macro, 5-108
SEARCH operation, RMS-11 Macro, 5-116
summary, RMS-11 Macro, 6-57
NAMOF$ macro, RMS-11 Macro, C-2
.NARG directive, MACRO-11, 7-11
element, MACRO-11, 7-12
NB$DEV mask in FNB field
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-111
value, RMS-11 Macro, 6-94
NB$NOD mask in FNB field
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-111
value, RMS-11 Macro, 6-94
NB$QUO mask in FNB field
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-111
value, RMS-11 Macro, 6-94
NB$TYP mask in FNB field
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
OPEN operation, RMS-11 Macro, 5-81
PARSE operation
(set if NB$QUO is set), RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-111
value, RMS-11 Macro, 6-94

NB$VER mask in FNB field
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-111
value, RMS-11 Macro, 6-94

NB$WCH mask in FNB field (cont'd.)
wildcard loop, RMS-11 Macro, 3-10
NB$WDI mask in FNB field
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-111
value, RMS-11 Macro, 6-94

NB$WNA mask in FNB field
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-111
value, RMS-11 Macro, 6-94

NB$WTY mask in FNB field
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-38
ERASE operation, RMS-11 Macro, 5-41, 5-43
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-103, 5-105
RENAME operation, RMS-11 Macro, 5-109, 5-112
SEARCH operation, RMS-11 Macro, 5-116, 5-118
summary, RMS-11 Macro, 6-102
value, RMS-11 Macro, 6-94

NB$WVE mask in FNB field
CREATE operation, RMS-11 Macro, 5-21

Master Index-187
NB$WVE mask in FNB field (cont'd.)

ENTER operation, RMS-11 Macro, 5-37
ERASE operation, RMS-11 Macro, 5-43
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-88
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-111
value, RMS-11 Macro, 6-94

NB condition test argument, MACRO-11, 6-52
NBOF$L macro, I/O Operations, 2-33

Nbs parameter
device-specific function (tape driver), I/O Drivers, 8-8

Nbuf parameter
ADSWP: subroutine (K-series), I/O Drivers, 23-9
DASWP: subroutine
K-series, I/O Drivers, 23-14
LADRV, I/O Drivers, 22-9
DISWP: subroutine
K-series, I/O Drivers, 23-17
LADRV, I/O Drivers, 22-12
DOSWP: subroutine
K-series, I/O Drivers, 23-19
LADRV, I/O Drivers, 22-14
DRS: subroutine (LSDRV), I/O Drivers, 17-17
GTHIST: subroutine (K-series), I/O Drivers, 23-22
HIST: subroutine (LSDRV), I/O Drivers, 17-18
RTS: subroutine (LSDRV), I/O Drivers, 17-24
SDAC: subroutine (LSDRV), I/O Drivers, 17-26
SDO: subroutine (LSDRV), I/O Drivers, 17-28

Nchn parameter
ADSWP: subroutine
K-series, I/O Drivers, 23-11
LADRV, I/O Drivers, 22-6
DASWP: subroutine
K-series, I/O Drivers, 23-15
LADRV, I/O Drivers, 22-11
DISWP: subroutine (LADRV), I/O Drivers, 22-14
DOSWP: subroutine (LADRV), I/O Drivers, 22-16
ISTADC: subroutine (K-series), I/O Drivers, 23-28
SETADC: subroutine (LADRV), I/O Drivers, 22-23
Nchn directive, MACRO-11, 7-13

N command, Debugging, 2-10, 6-2, 6-3
NCT including support for, System Generation (11M), 4-37
NCT (TTDRV), I/O Drivers, 2-18
NDF condition test argument, MACRO-11, 6-52
NE condition test argument, MACRO-11, 6-51
N error, MACRO-11, 3-15
summary, MACRO-11, D-4
Nes parameter
device-specific function (tape driver), I/O Drivers, 8-8

Nested conditional assembly directive, MACRO-11, 6-52

Nesting
macro definition, MACRO-11, 7-5, 7-6

NETNOD symbol, Indirect, 2-21

/NETUIC keyword
SET command (MCR), MCR, 3-234
SET command (VMR), System Management, 10-63

/NETUIC symbol, Indirect, 2-21

Network
connecting to, MCR, 3-247
dial-up, MCR, 3-247
Network Command Terminal
See NCT
Network facilities
RMSCNV utility, RMS-11 Utilities, 4-1
/NEW_VERSION qualifier
BRU utility, Utilities, 7-19

Master Index-188
Newval parameter
IDOR: subroutine (LSDRV), I/O Drivers, 17-20
NEXT & PRINT command
EDI utility, Utilities, 2-16, 2-39
NEXT command
EDI utility, Utilities, 2-16, 2-39
Next-record context, RMS-ll Macro, 4-3
See also Context
NFS
exercise example, System Management, 4-15
testing range of blocks, System Management, 4-52
volume
altering range of test blocks, System Management, 4-52
displaying range of test blocks, System Management, 4-52
error retries, System Management, 4-56
selecting with SELECT, System Management, 4-58
selecting with VERIFY, System Management, 4-8, 4-64
NI definition (XEDRV), I/O Drivers, 13-23
NL:, Command Language, 5-6
NLDRV, I/O Drivers, 20-1
example, I/O Drivers, 20-1
function, I/O Drivers, 20-1
.NLIST BEX directive, Program Development, 2-6
.NLIST directive, MACRO-ll, 6-9 to 6-14
arguments for, MACRO-ll, 6-10, 6-11, 6-12
/NL switch, MACRO-ll, 8-6
.NLUNS
reserved global symbol, Task Builder, E-1
NMBLK$ macro
default filename block, I/O Operations, 2-31
example, I/O Operations, 2-33
NML11, Error Logging, 4-9
/NM switch, Task Builder, 10-30
PIP utility, Utilities, 3-28
/[NO]CV switch
RMSRST utility, RMS-ll Utilities, 7-5, 7-10
/[NO]QU switch
RMSBCK utility, RMS-ll Utilities, 6-5, 6-6, 6-7, 6-10
RMSRST utility, RMS-ll Utilities, 7-6, 7-7, 7-8, 7-12
NOA field in SUM block
DISPLAY operation, RMS-ll Macro, 5-32
offset, RMS-ll Macro, 6-145
OPEN operation, RMS-ll Macro, 5-81
summary, RMS-ll Macro, 6-148
NO attribute, System Management, 12-36
/NOCEX keyword
SET command (MCR), MCR, 3-234
.NOCROSS directive, MACRO-ll, 6-21, 6-22
Node
Node name
specifying, Command Language, 1-10
No echo (half-duplex), I/O Drivers, 3-14
/NOER switch
RMSIFL utility, RMS-ll Utilities, 3-6
/NOINITIALIZE qualifier
BRU utility, Utilities, 7-19
NOK field in SUM block
DISPLAY operation, RMS-ll Macro, 5-32
offset, RMS-ll Macro, 6-145
OPEN operation, RMS-ll Macro, 5-81
summary, RMS-ll Macro, 6-149
Nolabel tape block size (tape driver), I/O Drivers, 8-18
No limit switch, Error Logging, 2-3, 2-6
/NOLOG switch, Error Logging, 2-3, 2-6
/NOLOG switch, Error Logging, 2-3
No log switch, Error Logging, 2-3
/NOLO job switch
QUE /MOD command, Batch and Queue, 2-21
/NOLOW switch
PRI command, Batch and Queue, 2-4
Non-file-structured exercising
IOX, System Management, 4-3
Nonrecoverable errors, System Management, 15-30
Non-RMS-11 files, RMS-11 Introduction, 3-4
Nonsense interrupt logging, Error Logging, 4-22
No-op I/O function mask, Writing I/O Driver, 4-12
/NOPRESERVE qualifier
BRU utility, Utilities, 7-19
NOSAV symbolic argument, MACRO-11, 6-42
NO SCROLL key, Command Language, 3-13 Introduction, 1-16
No sharing
sharing declaration, RMS-11 User’s Guide, 2-7
/NOSO switch
RMSIFL utility, RMS-11 Utilities, 3-8, 3-9, 3-10
No spool switch
See /-SP switch
/NOSP switch, MACRO-11, 8-7
/NOSUPERSEDE qualifier
BRU utility, Utilities, 7-19
Notes module
exit, Error Logging, 4-33
heading, Error Logging, 4-32
MODULE statement, Error Logging, 4-32
NML11, Error Logging, 4-9
note name, Error Logging, 4-32
NRK67, Error Logging, 4-9
NRM05, Error Logging, 4-9
NRM23, Error Logging, 4-9
NT0310, Error Logging, 4-9
NTS11, Error Logging, 4-9
print declaration, Error Logging, 4-32
print number, Error Logging, 4-33
PROCEDURE statement, Error Logging, 4-32
unknown note, Error Logging, 4-33
user written, Error Logging, 4-31
/NOVERIFY switch
FMT utility, Utilities, 5-8
.NOVL
reserved global symbol, Task Builder, E-1
/NOWCHK switch
BAD utility, Utilities, 6-9
NOWIDE argument, MACRO-11, 8-11, 8-12
N parameter
RMVBUF: subroutine
K-series, I/O Drivers, 23-26
LADRV, I/O Drivers, 22-22
NP command
EDI utility, Utilities, 2-16, 2-39
NPR device driver, Writing I/O Driver, B-1
use of SCB field S.MPR, Writing I/O Driver, 4-23
NRK67, Error Logging, 4-9
NRM05, Error Logging, 4-9
NRM23, Error Logging, 4-9
NRZI even parity (tape driver), I/O Drivers, 8-16
NSG field in KEY block
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-68
OPEN operation, RMS-11 Macro, 5-81
summary, RMS-11 Macro, 6-86
$NSIER, Error Logging, 4-22
/NS switch
SLP utility, Utilities, 13-16
.NSTBL
reserved global symbol, Task Builder, E-1
n symbol, Debugging, 2-1
NT0310, Error Logging, 4-9
NTS11, Error Logging, 4-9
.NTYPE directive, MACRO-11, 7-14
NUL field in KEY block
CREATE operation, RMS-11 Macro, 5-19
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-67
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-87
Null
segment
ODL, Task Builder, 3-31
NULL_KEY attribute
RMSDES utility, RMS-11 Utilities, 2-39
NULL_VALUE attribute
RMSDES utility, RMS-11 Utilities, 2-39
Null device, Command Language, 5-6
MCR, 2-11 System Management, 10-39
Null device driver
See NLDRV
Null key, RMS-11 Introduction, 3-10
RMS-11 User's Guide, 6-10
See also NUL field in KEY block
See also XB$NUL mask in FLG field
Number
  floating-point, MACRO-11, 6-33, 6-34
  MACRO-11 treatment, MACRO-11, 3-14
  one's complement, MACRO-11, 6-35, 6-36
  one-word floating-point, MACRO-11, 6-35, 6-36
  packing decimal, MACRO-11, 6-31
  radix control, MACRO-11, 6-31, 6-32
  two's complement operator, MACRO-11, 3-4
Number of arguments
  See .NARG directive
Number sign (#), Command Language, 3-15
  cross-reference listing, Task Builder, 10-12, 10-13, 11-23, 11-24
NUMBERS key, Command Language, 3-16
NUMBER symbol, Indirect, 2-11
Numeric control
  operator, MACRO-11, 6-33
  temporary operator, MACRO-11, 6-35, 6-36
Numeric conversion function, Error Logging, 5-17, 5-18
Numeric directive, MACRO-11, 6-33
Numeric expression, Indirect, 2-22
Numeric symbol, Indirect, 2-9, 2-22
  comparing, Indirect, 2-60
  decrementing, Indirect, 2-44
  defining, Indirect, 2-35
  incrementing, Indirect, 2-65
  radix, Indirect, 2-23
  setting, Indirect, 2-82
  substituting, Indirect, 2-23
  testing, Indirect, 2-61
Numeric to ASCII, System Library, 5-1
  See also ASCII number conversion
  binary byte to octal ($CBTMG), System Library, 5-9
  binary date to decimal ($CBDAT), System Library, 5-2
Numeric to ASCII (cont'd.)
  binary to signed decimal ($CBDSG), System Library, 5-4
  binary to signed octal ($CBOSG), System Library, 5-8
  binary to unsigned decimal ($CBDMG), System Library, 5-3
  binary to unsigned octal ($CBOMG), System Library, 5-7
  double-precision binary to decimal ($CDDMG), System Library, 5-5
  general purpose binary to ASCII ($CBTA), System Library, 5-10
  Radix-50 to ASCII ($C5TA), System Library, 5-11
Num parameter
  immediate device-specific function (LSDRV), I/O Drivers, 17-3
/NU switch
  FLX utility, Utilities, 4-7
/NV subswitch
  PIP utility, Utilities, 3-20
/NV switch
  PIP utility, Utilities, 3-12
NXT field in ALL block
CLOSE operation, RMS-11 Macro, 5-3
CREATE operation, RMS-11 Macro, 5-9
DISPLAY operation, RMS-11 Macro, 5-30
ENTER operation, RMS-11 Macro, 5-35
ERASE operation, RMS-11 Macro, 5-40
EXTEND operation, RMS-11 Macro, 5-46
offset, RMS-11 Macro, 6-2
OPEN operation, RMS-11 Macro, 5-73
PARSE operation, RMS-11 Macro, 5-86
REMOVE operation, RMS-11 Macro, 5-102
RENAME operation, RMS-11 Macro, 5-108
SEARCH operation, RMS-11 Macro, 5-116
summary, RMS-11 Macro, 6-13
NXT field in DAT block
CLOSE operation, RMS-11 Macro, 5-3
NXT field in DAT block (cont'd.)
  CREATE operation, RMS-11 Macro, 5-9
  DISPLAY operation, RMS-11 Macro, 5-30
  ENTER operation, RMS-11 Macro, 5-35
  ERASE operation, RMS-11 Macro, 5-40
  EXTEND operation, RMS-11 Macro, 5-46
  offset, RMS-11 Macro, 6-14
  OPEN operation, RMS-11 Macro, 5-73
  PARSE operation, RMS-11 Macro, 5-86
  REMOVE operation, RMS-11 Macro, 5-102
  RENAME operation, RMS-11 Macro, 5-108
  SEARCH operation, RMS-11 Macro, 5-116
  summary, RMS-11 Macro, 6-19

NXT field in KEY block
  CLOSE operation, RMS-11 Macro, 5-3
  CREATE operation, RMS-11 Macro, 5-9
  DISPLAY operation, RMS-11 Macro, 5-30
  ENTER operation, RMS-11 Macro, 5-35
  ERASE operation, RMS-11 Macro, 5-40
  EXTEND operation, RMS-11 Macro, 5-46
  offset, RMS-11 Macro, 6-67
  OPEN operation, RMS-11 Macro, 5-73
  PARSE operation, RMS-11 Macro, 5-86
  REMOVE operation, RMS-11 Macro, 5-102
  RENAME operation, RMS-11 Macro, 5-108
  SEARCH operation, RMS-11 Macro, 5-116
  summary, RMS-11 Macro, 6-19

NXT field in PRO block (cont'd.)
  CREATE operation, RMS-11 Macro, 5-9
  DISPLAY operation, RMS-11 Macro, 5-30
  ENTER operation, RMS-11 Macro, 5-35
  ERASE operation, RMS-11 Macro, 5-40
  EXTEND operation, RMS-11 Macro, 5-46
  offset, RMS-11 Macro, 6-108
  OPEN operation, RMS-11 Macro, 5-73
  PARSE operation, RMS-11 Macro, 5-86
  REMOVE operation, RMS-11 Macro, 5-102
  RENAME operation, RMS-11 Macro, 5-108
  SEARCH operation, RMS-11 Macro, 5-116
  summary, RMS-11 Macro, 6-111

NXT field in SUM block
  CLOSE operation, RMS-11 Macro, 5-3
  CREATE operation, RMS-11 Macro, 5-9
  DISPLAY operation, RMS-11 Macro, 5-30
  ENTER operation, RMS-11 Macro, 5-35
  ERASE operation, RMS-11 Macro, 5-40
  EXTEND operation, RMS-11 Macro, 5-46
  offset, RMS-11 Macro, 6-145
  OPEN operation, RMS-11 Macro, 5-73
  PARSE operation, RMS-11 Macro, 5-86
  REMOVE operation, RMS-11 Macro, 5-102
  RENAME operation, RMS-11 Macro, 5-108
  SEARCH operation, RMS-11 Macro, 5-116
  summary, RMS-11 Macro, 6-150

NXT field in XAB
  chaining XABs to FAB, RMS-11 Macro, 2-12
  NXTSYM symbol, Indirect, 2-21
  $NXTVOL macro, RMS-11 Macro, 5-70
  RSTS/E, RMS-11 Macro, D-4
NXTVOL operation, RMS-11
Introduction, 4-4
$NXTVOL macro, RMS-11 Macro, 5-70
record stream, RMS-11 Macro, 4-9

O

O$-family symbol
declaring
  ALL block, RMS-11 Macro, C-3, C-4
  DAT block, RMS-11 Macro, C-3, C-4
  FAB field offset, RMS-11 Macro, C-1
  KEY block, RMS-11 Macro, C-3, C-4
  NAM block field offset, RMS-11 Macro, C-2
  PRO block, RMS-11 Macro, C-3, C-4
  RAB, RMS-11 Macro, C-2
  SUM block, RMS-11 Macro, C-3, C-4
  XAB, RMS-11 Macro, C-4

value
  ALL block, RMS-11 Macro, 6-2
  DAT block, RMS-11 Macro, 6-14
  FAB, RMS-11 Macro, 6-22, 6-23, 6-24
  KEY block, RMS-11 Macro, 6-67, 6-68
  NAM block, RMS-11 Macro, 6-94
  PRO block, RMS-11 Macro, 6-108
  RAB, RMS-11 Macro, 6-115
  SUM block, RMS-11 Macro, 6-145
/OA switch
RMSRST utility, RMS-11 Utilities, 7-9, 7-10

$OBF1 program section
reserved name, Task Builder, E-3

$OBF2 program section
reserved name, Task Builder, E-3
OBJECT_BINARY argument, MACRO-11, 8-11

Object code (cont’d.)
  patching, Task Builder, 12-6

Object file
  binary, Command Language, 6-2

Object library
  adding modules, Program Development, 6-9, 6-10
  creating a user, Program Development, 6-4, 6-5, 6-6
  default search of system, Program Development, 1-11, 4-2
  DIGITAL-supplied, Program Development, 1-10, 1-11
  dual use, Program Development, 6-8, 6-9
  listing information, Program Development, 6-11, 6-12
  OTS, Program Development, 7-1, 7-2
  using to resolve undefined global symbols, Program Development, 6-8, 6-9

Object module, Command Language, 6-2
  Introduction, 5-3, 5-4, 5-9
  Task Builder, 1-1
  concatenated, Program Development, 4-3, 4-4
  content, Task Builder, A-1
  default name, MACRO-11, 6-15
  deleting, Command Language, 6-31
  format, Task Builder, A-3
  FORTRAN IV, Program Development, 7-5, 7-6
  input to TKB, Program Development, 4-1
  library, Command Language, 6-28
  See also Library
  See also SYSLIB.OLB
  deleting, Command Language, 6-35
  extracting, Command Language, 6-36
  inserting, Command Language, 6-32, 6-37
  listing, Command Language, 6-39
  replacing, Command Language, 6-44
  linking, Command Language, 6-7
  Task Builder, 2-1 to 2-8
  MACRO-11, Program Development, 1-4, 3-4, 3-5, 3-6
Object module (cont'd.)
name, Command Language, 6-28
MACRO-11, 1-2
name assignment, MACRO-11, 6-15
overriding definition, Task Builder, 12-18
patching
PAT utility, Utilities, 14-1
selective global symbol
using SS to include, Task Builder, 10-48, 10-49, 10-50, 11-61, 11-62, 11-63
storing in library
LBR utility, Utilities, 10-19
system library, Introduction, 5-9
Object module library, I/O Drivers, 1-7
Object Module Patch Utility
See PAT utility
/OBJECT qualifier, MACRO-11, 8-10
Object Time System
See OTS
.OBJ file type, Program Development, 3-4, 7-5
O command, Debugging, 2-10, 7-1, 9-13
ZAP utility, Utilities, 15-17
OCOP, System Management, 12-30
Octal conversion
octal to binary ($COTB), System Library, 4-5
octal to binary double-word (.OD2CT), System Library, 4-2
Octal operator, Debugging, 2-3, 2-7, 2-8
byte mode, Debugging, 9-11
word mode, Debugging, 9-11
OCTAL symbol, Indirect, 2-11
/OCT switch
DMP utility, Utilities, 11-7
.OD2CT (Octal to binary double-word), System Library, 4-2
.ODD directive, MACRO-11, 6-37
ODL
autoload indicator, Task Builder, 4-2
directive, Task Builder, 3-23
.END, Task Builder, 3-23, 3-24
example use of .NAME, Task Builder, 3-29
.FCTR, Task Builder, 3-23, 3-25
introduction, Task Builder, 3-23
ODL directive (cont'd.)
.NAME, Task Builder, 3-23, 3-28
.NAME attributes, Task Builder, 3-28
.PSECT, Task Builder, 3-23, 3-29
.ROOT, Task Builder, 3-23, 3-24
efficiently placing in autoload indicator, Task Builder, 4-6
enabling operator
memory-resident overlay, Task Builder, 10-34, 11-58
file, Task Builder, 3-49
creating
start of procedure, Task Builder, 3-36
with allocation diagram, Task Builder, 3-35 to 3-40
declaring, Task Builder, 10-28, 11-53
.FCTR statement
creating from allocation diagram, Task Builder, 3-38, 3-39
.ROOT directive
creating from allocation diagram, Task Builder, 3-37
virtual address space
allocation diagram, Task Builder, 3-36
introduction, Task Builder, 3-23 to 3-31
multiple tree
defining structure, Task Builder, 3-30 to 3-35
example, Task Builder, 3-31, 3-32
structure, Task Builder, 3-30 to 3-35
operator
comma (.), Task Builder, 3-24
exclamation point (!), Task Builder, 3-24, 3-27
hyphen (-), Task Builder, 3-24
introduction, Task Builder, 3-24
statement
cotree
OFID$x macro, file processing, I/O Operations, 3-14

OFLIN: place unit offline
(I/CDRV/ISDRV), I/O Drivers, 19-70

OFNB$ macro, I/O Operations, 3-1

OFNB$x macro

dataset descriptor, I/O Operations, 3-17
default filename block, I/O Operations, 3-17
file processing, I/O Operations, 3-16

.OLB file type, Program Development, 6-4

See also LBR utility

OLRDF$, CDA, C-47

One's complement operator, MACRO-11, 3-5, 6-32

.ONERR directive, Indirect, 2-67

One-word floating-point number, MACRO-11, 6-35, 6-36

ONLIN: place unit online
(I/CDRV/ISDRV), I/O Drivers, 19-70

On-line definition, System Generation (11M), 1-6

formatting (FMT), System Generation (11M), 4-30

Online, place unit (I/CDRV/ISDRV), I/O Drivers, 19-70

ONLINE command, System Management, 15-22

On-Line Debugging Tool

See ODT

ONLINE MEMORY, System Management, 15-24

On-Line Task Loader (OTL), System Generation (11S), 1-2, 2-7, 2-9

building, System Generation (11S), 4-3

error messages, System Generation (11S), 2-11

exiting, System Generation (11S), 2-8

functions, System Generation (11S), 2-7

invoking, System Generation (11S), 2-8

load devices supported, System Generation (11S), 2-7, 4-3

size, System Generation (11S), 4-3

OOB (TTDRV)
clear, I/O Drivers, 2-61
hello, I/O Drivers, 2-61
include, I/O Drivers, 2-61

:O operator, MACRO-11, 3-5, 6-32

Op code
See Operation code

OP command

EDI utility, Utilities, 2-39

OPE

See OPENREGISTER command

/OPE keyword

OPENREGISTER command, MCR, 3-166

OPEN$ example, I/O Operations, 5-9

macro, I/O Operations, 3-1

macro, file processing, I/O Operations, 3-18

OPEN$R example, I/O Operations, 5-8

macro, shared access, I/O Operations, 1-13

OPEN$x macro

file processing, I/O Operations, 3-2, 3-7

format, file operations, I/O Operations, 3-5

OPEN directive, Indirect, 2-67

OPEN command, Debugging, 8-7

OPEN directive, Indirect, 2-69

Open file

by filename block, I/O Operations, 3-16

by ID, I/O Operations, 2-34, 3-14

existing, I/O Operations, 3-9

for access, I/O Operations, 3-18

for modify, I/O Operations, 3-19

for read, I/O Operations, 3-19

for update and extend, I/O Operations, 3-19

new, I/O Operations, 3-9

no supersede, I/O Operations, 3-18, 3-19

processing, I/O Operations, 3-3

Open line (XEDRV), I/O Drivers, 13-6

OPEN LINE key (EDT), Introduction, 2-7

$OPEN macro, RMS-11 Macro, 5-72

RSTS/E, RMS-11 Macro, D-4

OPEN operation, RMS-11 Introduction, 4-2 RMS-11 Macro, 3-7 RMS-11 User's Guide, 1-18

Master Index-196
OPEN operation (cont’d.)
  BDB requirement, RMS-11 Macro, 2-8
  I/O buffer requirement, RMS-11 Macro, 2-7
  IFAB requirement, RMS-11 Macro, 2-5
  $OPEN macro, RMS-11 Macro, 5-72
remote access, RMS-11 User’s Guide, B-2, B-3
wildcard loop, RMS-11 Macro, 3-10, 3-11
.OPENR directive, Indirect, 2-73
OPENREGISTER command, MCR, 1-8, 3-164
format, MCR, 3-164
keywords
  /AFF, MCR, 3-165
  /CPU, MCR, 3-165
  /KNL, MCR, 3-166
  /KNLD, MCR, 3-166
parameters, MCR, 3-164
Open relay (LSDRV), I/O Drivers, 17-4
OPEN SECONDARY command
EDI utility, Utilities, 2-39
Operand field, MACRO-11, 2-1, 2-4
separator, MACRO-11, 3-2
Operating mode
  disabling, Indirect, 2-46
  enabling, Indirect, 2-47
  initial setting, Indirect, 2-47
  list, Indirect, 2-47
  testing, Indirect, 2-62
See also System allocating system resources, RMS-11 User’s Guide, 8-3
block locking, RMS-11 User’s Guide, 3-6
compatibility, RMS-11 User’s Guide, 3-4
failure, Error Logging, 1-1
FALs, RMS-11 User’s Guide, B-3
mu1tiuser, Introduction, 6-2
protection codes
  and shared access, RMS-11 User’s Guide, 2-5
real-time, Introduction, 6-2
remote access
  RSTS/E, RMS-11 User’s Guide, B-3
Operating system
remote access (cont’d.)
  RSX-11M/M-PLUS, RMS-11 User’s Guide, B-3
  VAX/VMS, RMS-11 User’s Guide, B-1, B-3
return to, Debugging, 2-12
Operation, RMS-11 Introduction, 4-1
RMS-11 Macro, 1-2
asynchronous, RMS-11 Introduction, 4-4
block, RMS-11 Introduction, 4-7
directory, RMS-11 Introduction, 4-1
  RMS-11 User’s Guide, 1-17
indexed files, RMS-11 User’s Guide, 7-10
relative files, RMS-11 User’s Guide, 4-15
sequential files, RMS-11 User’s Guide, 3-15
file, RMS-11 Introduction, 4-2
indexed files, RMS-11 User’s Guide, 7-10
optimizations, RMS-11 User’s Guide, 8-2
relative files, RMS-11 User’s Guide, 4-15
sequential files, RMS-11 User’s Guide, 3-15
from high-level languages, RMS-11 Introduction, 4-7
optimizations, RMS-11 User’s Guide, 8-2
record, RMS-11 Introduction, 4-4
and I/O costs, RMS-11 User’s Guide, 5-17
and indexed files, RMS-11 User’s Guide, 5-9, 5-16
indexed files, RMS-11 User’s Guide, 7-1
optimizations, RMS-11 User’s Guide, 8-2
relative files, RMS-11 User’s Guide, 4-7
sequential files, RMS-11 User’s Guide, 3-7
routine
  calling, RMS-11 Macro, 2-13
return, RMS-11 Macro, 2-14
stream, RMS-11 Introduction, 4-4

Master Index–197
Operation stream (cont'd.)
  indexed files, RMS-11 User's Guide, 7-1
  relative files, RMS-11 User's Guide, 4-7
  sequential files, RMS-11 User's Guide, 3-7
synchronous, RMS-11 Introduction, 4-4
using, RMS-11 Macro, 2-9
Operation code
  commercial instruction, MACRO-11, C-3, C-4
  floating-point, MACRO-11, C-4, C-5
  PDP-11, MACRO-11, C-1, C-2, C-3
Operation macro, RMS-11 Macro, 1-2, 2-9
Operator, Debugging, 2-3, 2-4
  See also SLP utility
  apostrophe ('), Debugging, 2-7, 4-6, 9-10
  arithmetic, Indirect, 2-22
ASCII
  byte mode, Debugging, 4-6
  word mode, Debugging, 4-6
  backslash ('), Debugging, 2-8, 4-2, 4-3, 9-11
binary, MACRO-11, 3-5, 3-6
  addition, MACRO-11, 3-5
  division, MACRO-11, 3-5
  evaluation of multiple, MACRO-11, 3-6
  logical AND, MACRO-11, 3-5
  logical inclusive OR, MACRO-11, 3-5
  multiplication, MACRO-11, 3-5
  precedence with unary, MACRO-11, 3-16
  subtraction, MACRO-11, 3-5
byte mode
  ASCII, Debugging, 2-7, 9-10
  octal, Debugging, 2-8, 4-2, 9-11
  equal sign (=), Debugging, 7-2
  field, MACRO-11, 2-1, 2-3, 2-4
  logical, Indirect, 2-22
  minus sign (-), Debugging, 2-3, 2-4, 9-8
ODL, Task Builder, 3-24
  comma (,), Task Builder, 3-24
  exclamation point (!), Task Builder, 3-24
  hyphen (-), Task Builder, 3-24
Operator
  ODL (cont'd.)
    introduction, Task Builder, 3-24
    percent sign (%), Debugging, 2-7, 4-7, 9-11
    plus sign (+), Debugging, 2-3, 2-4, 9-8
    quotation mark ('), Debugging, 2-7, 4-6, 9-10
Radix-50
  word mode, Debugging, 4-7
  slash (/), Debugging, 2-7, 4-2, 4-3, 9-11
  space, Debugging, 9-8
  unary, MACRO-11, 3-4
    binary radix control, MACRO-11, 3-5, 6-32
    decimal radix control, MACRO-11, 3-5, 6-32
    evaluation of multiple, MACRO-11, 3-4
    macro call use, MACRO-11, 7-5
    minus, MACRO-11, 3-4
    numeric control, MACRO-11, 6-33, 6-35
    octal radix control, MACRO-11, 3-5, 6-32
    one's complement, MACRO-11, 3-5, 6-35, 6-36
    one-word floating-point, MACRO-11, 3-5, 6-35, 6-36
    plus, MACRO-11, 3-4
    precedence over binary, MACRO-11, 3-16
    Radix-50 control, MACRO-11, 3-5, 6-30
    radix control, MACRO-11, 6-31, 6-32, 6-33
    two's complement, MACRO-11, 3-4
    universal, MACRO-11, 3-5
word mode
  ASCII, Debugging, 2-7, 9-10
  octal, Debugging, 2-8, 4-2, 9-11
  Radix-50, Debugging, 2-7, 9-11
Opn parameter
  device-specific function (UDDRV), I/O Drivers, 16-4
  ICDRV/ISDRV, I/O Drivers, 19-10
  IO.MLO function, I/O Drivers, 19-17
  IO.MSO function, I/O Drivers, 19-16

Master Index—198
OPNS$ macro, I/O Operations, 3-1
OPNS$R macro, shared access, I/O Operations, 1-12
OPNS$x macro, file processing, I/O Operations, 3-13
OPNT$D macro, I/O Operations, 3-14
OPNT$ macro, I/O Operations, 3-1
OPNT$W macro, file processing, I/O Operations, 3-13

Optimization
allocating system resources, RMS-11 User's Guide, 8-3
application design, RMS-11 User's Guide, 2-11
DELETE operation, RMS-11 User's Guide, 6-7
disk usage, RMS-11 User's Guide, 8-3
program development, RMS-11 User's Guide, 8-1
PUT operation, RMS-11 User's Guide, 6-7
window turning, RMS-11 User's Guide, 8-3

Option
See also specific options
category, Task Builder, 12-1
CMPT
use in CSM library, Task Builder, 8-8
description, Task Builder, 12-1 to 12-45
entering, Task Builder, 1-9, 1-10, 1-11
FTB supported, Task Builder, G-2
GBLXCL
use in CSM library, Task Builder, 8-8, 8-9, 8-17
general form, Task Builder, 1-9
indirect command file, Task Builder, 1-14
input
LINK command line, Task Builder, 1-9, 1-10
TKB command line, Task Builder, 1-9
linking to a region, Task Builder, 5-15

Option (cont’d.)
separation of argument list, Task Builder, 1-11
summary, Task Builder, 12-2, 12-3, 12-4
supported by FTB, Task Builder, G-2
Task Builder, Task Builder, 1-9
usage
virtual section, Task Builder, 5-61, 5-62
/OPTION qualifier, Task Builder, 11-51 to 11-52
ORG$ macro, RMS-11 Macro, 2-2
Organization
See File organization
See ORG field in FAB
ORGANIZATION attribute
RMSDES utility, RMS-11 Utilities, 2-31
ORG field in FAB
CREATE operation, RMS-11 Macro, 5-11
offset, RMS-11 Macro, 6-23
OPEN operation, RMS-11 Macro, 5-78
summary, RMS-11 Macro, 6-58
OTS
library, Program Development, 7-1, 7-2
usage to extend record buffer, Task Builder, 12-17
$OTS
low-memory context, Task Builder, B-10
reserved global symbol, Task Builder, E-2

Outfile
RMSBCK utility, RMS-11 Utilities, 6-3
RMSCNV utility, RMS-11 Utilities, 4-4
RMSDSP utility, RMS-11 Utilities, 5-3
RMSIFL utility, RMS-11 Utilities, 3-3
RMSRST utility, RMS-11 Utilities, 7-3

Output
ADJLPS: subroutine, use of, I/O Drivers, 17-36
analog (UDDRV), I/O Drivers, 16-19

Master Index-199
Output (cont’d.)

- analog multichannel (ICDRV/ISDRV), I/O Drivers, 19-44
- buffer, intermediate (TTDRV), I/O Drivers, 2-80
- byte, high-order bit (half-duplex), I/O Drivers, 3-33
- digital
  - bistable multiple field (ICDRV/ISDRV), I/O Drivers, 19-45, 19-46
  - bistable multipoint (ICDRV/ISDRV), I/O Drivers, 19-17
  - multipoint momentary (ICDRV/ISDRV), I/O Drivers, 19-16

initiating

- single analog (K-series), I/O Drivers, 23-8
- synchronous A/D (LSDRV), I/O Drivers, 17-25
- synchronous digital (LSDRV), I/O Drivers, 17-27

latching digital (UDDRV), I/O Drivers, 16-8

momentary

- multiple field (ICDRV/ISDRV), I/O Drivers, 19-49
- prompting, VFC (half-duplex), I/O Drivers, 3-28
- remote terminal (ICDRV/ISDRV), I/O Drivers, 19-50
- resuming by CTRL/Q (TTDRV), I/O Drivers, 2-70

suppressing (TTDRV), I/O Drivers, 2-69

suspending by CTRL/S (TTDRV), I/O Drivers, 2-70

terminal (ICDRV/ISDRV), I/O Drivers, 19-32

Output file switches

- RMSBCK utility, RMS-11 Utilities, 6-6
- RMSIFL utility, RMS-11 Utilities, 3-5
- RMSRST utility, RMS-11 Utilities, 7-7

Output listing limit switch

See /LIMIT switch

OUTPUT ON/OFF command

- EDI utility, Utilities, 2-40
- /OUTVOLUME qualifier
- BRU utility, Utilities, 7-20

OVCTC module, Task Builder, 5-54
OVCTL module, Task Builder, 5-54
OVCTR module, Task Builder, 5-54
OVDAT module, Task Builder, 5-54
$$OVDT program section, Task Builder, 5-54

reserved name, Task Builder, E-3

Overflow mode, Indirect, 2-49

Overhead, system

- half-duplex, I/O Drivers, 3-14
- TF.RPR (TTDRV), I/O Drivers, 2-14

Overlapped I/O (disk driver), I/O Drivers, 5-8

Overlay, MCR, 1-5

allocation diagram

creating ODL file, Task Builder, 3-35 to 3-40

and disk usage, RMS-11 User’s Guide, 8-4

autoload vector, Task Builder, 3-21

building, Task Builder, 3-41 to 3-48

memory-resident for region, Task Builder, 5-10

capability, Task Builder, 3-1

choosing a memory-resident, Task Builder, 3-14

cotree, Task Builder, 3-34, 3-35

data base, Task Builder, B-15

data structure, Task Builder, 3-19

linked into root, Task Builder, 3-20, 3-21

defining a multiple tree, Task Builder, 3-31, 3-32

description

effect on performance, Task Builder, F-4

disk-resident, Task Builder, 3-1, 3-2

defined, Task Builder, 4-1

effect of virtual address space, Task Builder, 3-1, 3-2, 3-3

effect on memory, Task Builder, 3-1, 3-2, 3-3

effect

- physical memory, Task Builder, 3-5, 3-6

virtual address space, Task Builder, 3-5, 3-6

error handling, Task Builder, 4-11

example of building, Task Builder, 3-41 to 3-48
Overlay (cont’d.)

high-level language, Task Builder, 3-40
considerations, Task Builder, 3-41
introduction, Task Builder, 2-9
loading
asynchronously, Task Builder, 4-8, 4-10
disk-resident, Task Builder, 4-1
mechanism, Task Builder, 3-16
memory-resident, Task Builder, 4-1
method, Task Builder, 4-1
synchronously, Task Builder, 4-8, 4-9
memory-resident, MCR, 3-183 Task Builder, 3-1, 3-6
conserving physical memory, Task Builder, 3-14
defined, Task Builder, 4-1
effect on physical memory, Task Builder, 3-6
effect on virtual address space, Task Builder, 3-6
region, Task Builder, 5-14
virtual address space, Task Builder, 3-14
multiuser task, Task Builder, 9-2
operator
enabling recognition, Task Builder, 10-34, 11-58
suppression of a memory-resident, Task Builder, 10-34, 11-58
path loading, Task Builder, 4-4
physical memory, Task Builder, 3-33, 3-34, 3-35
program section
specifying, Task Builder, 3-19
region
autoload vector, Task Builder, 5-13, 5-14
building, Task Builder, 5-10
descriptor, Task Builder, 3-20, 3-21
example of building, Task Builder, 5-11
global symbols in .STB file, Task Builder, 5-13, 5-14
restriction, Task Builder, 5-14
.STB file, Task Builder, 5-13, 5-14
run-time, Task Builder, 3-19

Overlay
run-time (cont’d.)
comparison of sizes in routine, Task Builder, 4-16, 4-17
module, Task Builder, 4-16, 5-54, 5-55
routine, Task Builder, 3-19, 4-14 to 4-17
support requirement, Task Builder, 5-14, 5-53
run-time module
ALERR, Task Builder, 4-17
AUTO, Task Builder, 4-16
AUTOT, Task Builder, 4-16
LOAD, Task Builder, 4-17
OVCTC, Task Builder, 4-16
OVCTL, Task Builder, 4-16
OVCTR, Task Builder, 4-16
OVDAT, Task Builder, 4-16
OVIDC, Task Builder, 4-16
OVIDL, Task Builder, 4-16
OVIDR, Task Builder, 4-16
run-time program section
$$ALERR, Task Builder, 4-17
$$AUTO, Task Builder, 4-16, 4-17
$$LOAD, Task Builder, 4-17
$$MRKS, Task Builder, 4-16
$$OVDT, Task Builder, 4-16
$$PDL, Task Builder, 4-16
$$RDSG, Task Builder, 4-16
$$RTQ, Task Builder, 4-16
$$RTR, Task Builder, 4-16
$$RTS, Task Builder, 4-16
$$SGD0, Task Builder, 4-16
$$SGD2, Task Builder, 4-16
segment, Task Builder, 8-14
alignment, Task Builder, 10-8, 11-20
arrangement, Task Builder, 3-15
descriptor, Task Builder, 3-20, 3-21
processing order, Task Builder, 3-17
structure, Task Builder, 3-49
ambiguously defined symbol, Task Builder, 3-16
considerations in creating, Task Builder, 3-1
most effective, Task Builder, 3-2, 3-3
multiple tree, Task Builder, 3-18
multiply defined symbol, Task Builder, 3-16

Master Index-201
Overlay
structure (cont'd.)
specifying library search, Task
Builder, 10-23, 11-39
symbol resolution, Task Builder,
3-16
task, Task Builder, 3-7
global cross-reference, Task
Builder, 4-12, 4-13
memory resident, Task Builder,
3-9
segment call, Task Builder, 3-10
virtual address space, Task
Builder, 3-10
tree
calling segment, Task Builder,
4-4
path, Task Builder, 3-15
root, Task Builder, 3-15
vector
region, Task Builder, 5-13, 5-14
virtual
address space, Task Builder,
3-33, 3-34, 3-35, 3-48
and memory, Task Builder,
3-11 to 3-14
window
block, Task Builder, 3-48
descriptor, Task Builder, 3-20,
3-21
/OVERLAY_DESCRIPTION qualifier,
Task Builder, 11-53
OVERLAY command
EDI utility, Utilities, 2-40
Overlay Description Language
See ODL
Overlay description operator
See ODL
See Operator
Overprint
TTDRV, I/O Drivers, 2-76
VFC (half-duplex), I/O Drivers,
3-28
VFC (LPDRV), I/O Drivers, 10-7
/OVERRIDE switch
BAD utility, Utilities, 6-6
OVIDC module, Task Builder, 5-54
OVIDL module, Task Builder, 5-54
OVIDR module, Task Builder, 5-54
/OVL keyword
SET command (MCR), MCR,
3-236
/OVRACC keyword
MOUNT command (MCR), MCR,
3-151
/OVREXP keyword
MOUNT command (MCR), MCR,
3-151
/OVRPSID keyword
MOUNT command (MCR), MCR,
3-151
/OVR keyword
HOME command, MCR, 3-95
MOUNT command (MCR), MCR,
3-150
$$$OVRS program section
reserved name, Task Builder, E-3
/OVR switch
FMT utility, Utilities, 5-9
OVR symbolic argument, MACRO-11,
6-42
Owner, file
See PRG field in PRO block
/OVER OWNER_UIC qualifier
SHOW QUEUE command, Batch
and Queue, 2-16
OWNER attribute
RMSDES utility, RMS-11 Utilities,
2-34
Owner ID field
tape, I/O Operations, G-2
/OVER OWNER keyword
HOME command, MCR, 3-95
INITVOLUME command, MCR,
3-105
P
P$BDB macro
argument computation, RMS-11
Macro, 2-8
format, RMS-11 Macro, 2-4
P$BUF macro
argument computation, RMS-11
Macro, 2-7
format, RMS-11 Macro, 2-4
P$FAB macro
argument computation, RMS-11
Macro, 2-5
format, RMS-11 Macro, 2-4
P$-family macro
declaring, RMS-11 Macro, C-2
P$IDX macro
argument computation, RMS-11
Macro, 2-5
format, RMS-11 Macro, 2-4
P$RAB macro
argument computation, RMS-11
Macro, 2-5

Master Index-202
P$RAB macro (cont'd.)
format, RMS-11 Macro, 2-4
P$RAXB macro
argument computation, RMS-11 Macro, 2-5, 2-6
format, RMS-11 Macro, 2-4
P1 parameter (XEDRV)
IO.XIN function, I/O Drivers, 13-10
IO.XOP function, I/O Drivers, 13-6
IO.XRC function, I/O Drivers, 13-14
IO.XSC function, I/O Drivers, 13-7
IO.XTM function, I/O Drivers, 13-11
P2 parameter (XEDRV)
IO.XOP function, I/O Drivers, 13-6
IO.XRC function, I/O Drivers, 13-14
IO.XSC function, I/O Drivers, 13-7
IO.XTM function, I/O Drivers, 13-11
P3 parameter (XEDRV)
IO.XOP function, I/O Drivers, 13-6
IO.XRC function, I/O Drivers, 13-14
IO.XTM function, I/O Drivers, 13-11
P4 parameter (XEDRV)
IO.XRC function, I/O Drivers, 13-14
IO.XTM function, I/O Drivers, 13-11
P5 parameter (XEDRV)
IO.XRC function, I/O Drivers, 13-14
IO.XTM function, I/O Drivers, 13-12
P6 parameter (XEDRV)
IO.XRC function, I/O Drivers, 13-14
IO.XTM function, I/O Drivers, 13-12
Packed decimal key, RMS-11 User's Guide, 6-6
See also XB$PAC mask in DTP field
.PACKED directive, MACRO-11, 6-31
Packet information function, Error Logging, 5-22
Packet number, Error Logging, 3-1
Packet number switch, Error Logging, 3-5, 3-8
Packet selection switches, Error Logging, 3-8
PACKET statement, Error Logging, 5-28
Paking decimal number, MACRO-11, 6-31
Padding character (tape driver), I/O Drivers, 8-18
Ethernet message (XEDRV), I/O Drivers, 13-3
Padding character
RMSCNV utility, RMS-11 Utilities, 4-12
RMSIFL utility, RMS-11 Utilities, 3-6
/PAGE.COUNT qualifier
PRINT command, Batch and Queue, 2-4
SET QUEUE command, Batch and Queue, 2-20
PAGE command
EDI utility, Utilities, 2-41
.PAGE directive, MACRO-11, 6-17, 6-18 Program Development, 2-6
Page eject
TADDR, I/O Drivers, 2-75
VFC (half-duplex), I/O Drivers, 3-27
VFC (LPDRV), I/O Drivers, 10-6
Page ejection, MACRO-11, 6-17
PAGE FIND command
EDI utility, Utilities, 2-41
Page header, MACRO-11, 6-4
PAGE key (EDT), Introduction, 2-6
PAGE LOCATE command
EDI utility, Utilities, 2-41
See Virtual memory management
/PA job switch
QUE /MOD command, Batch and Queue, 2-20
Panic Dump routine, Writing I/O Driver, 3-19
sample output, Writing I/O Driver, 3-20
PAR, Task Builder, 2-15
See also PARTITION DEFINITIONS command
Parallel communication link driver
See PCL11
Parameter
DCL, Command Language, 1-8

Master Index-203
Parameter

IOX (cont’d.)

command category, System Management, 4-3

exercising

device-dependent exercise, System Management, 4-8

Files-11 volumes, System Management, 4-10

magnetic tape, System Management, 4-12

NFS volume, System Management, 4-15

list of exercise parameters, System Management, 4-8

overriding default

FILES11, System Management, 4-39

SELECT, System Management, 4-58

showing default with

PARAMETERLIST, System Management, 4-44

QIO$ basic syntax

function-dependent, I/O Drivers, 1-6

optional, I/O Drivers, 1-6

required argument, I/O Drivers, 1-6

Parameter2 parameter (TTDRV)

general, I/O Drivers, 2-11

I/O ATA function, I/O Drivers, 2-21

PARAMETERLIST command

IOX, System Management, 4-44

displaying buffer space, System Management, 4-44

displaying defaults, System Management, 4-44

Parent/offspring tasking, Executive, 4-1

chaining, Executive, 4-2, 5-163, 5-195

connecting, Executive, 4-1, 5-265

directives, Executive, 4-1

requesting task, Executive, 5-212, 5-265

returning status, Executive, 4-3

sending data, Executive, 5-265

sending send-data packet, Executive, 5-195

spawning, Executive, 4-1, 4-5

synchronizing, Executive, 5-38

Parentheses

in overlay, Task Builder, 3-49

with ODL, Task Builder, 3-24

Parenthesis ( ). Command Language, 3-16

Parent task (VTDRV), I/O Drivers, 4-1

Parity, vertical (communication driver), I/O Drivers, 12-12

Parity checking, MCR, 3-239

/Parity keyword

SET command (MCR), MCR, 3-239

SET command (VMR), System Management, 10-66 to 10-67

/Par keyword

INSTALL command (MCR), MCR, 3-119

LOAD command (MCR), MCR, 3-133

LOAD command (VMR), System Management, 10-33

RUN command (MCR), MCR, 3-183

SET command (MCR), MCR, 3-237

SET command (VMR), System Management, 10-64 to 10-66

/Parm keyword

MOUNT command (MCR), MCR, 3-151

PAR option, Task Builder, 12-27, 12-28

building region, Task Builder, 5-2

PARS1M, Error Logging, 4-4

PARS2M, Error Logging, 4-4

PARS3M, Error Logging, 4-4

Parse block

format, Executive, 5-90

returning, Executive, 5-89, 5-135, 5-139

Parse directive, Indirect, 2-75

Parse FCS directive, Executive, 5-135

PARSEM, Error Logging, 4-4

$PARSE macro, RMS-11 Macro, 5-86

eXample, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15

PARSE operation, RMS-11 Introduction, 4-1 RMS-11 Macro, 3-6

BDB requirement, RMS-11 Macro, 2-8

I/O buffer requirement, RMS-11 Macro, 2-7

IFAB requirement, RMS-11 Macro, 2-5
PARSE operation (cont'd.)
$PARSE macro, RMS-11 Macro, 5-86
wildcard initialization, RMS-11
Macro, 3-9
Parse RMS directive, Executive, 5-139
$PARSE routine
device and unit translation, I/O Operations, 4-12
logical name translation, I/O Operations, 4-11
Parser processing, System Management, 12-19
Parser program
tPARS, I/O Operations, 7-12
processing steps, I/O Operations, 7-14
Parsing
command line, I/O Operations, 7-1
complex command lines, I/O Operations, 7-19
UFD, I/O Operations, 7-14
/PAR switch, CDA, 2-5, 2-8
Partition, Command Language, 7-2, 7-41
See also Subpartition
address, MCR, 2-20
accessing, MCR, 3-166
base, Command Language, 7-42
base address, CDA, 3-21
boundary
changing, Command Language, 7-42
cache
specifying, MCR, 3-146, 3-207
common, MCR, 3-116, 3-169
System Management, 14-1
common block, System Management, 10-31
creating, Command Language, 7-41 MCR, 3-237 System Management, 10-54
with SYSVMR.CMD, System Generation (11M), 5-14
declaring, Task Builder, 12-27
defining, MCR, 3-267
definition, MCR, 2-20 System Management, 14-1
displaying, MCR, 3-169, 3-237
DRVFAR, System Generation (11M), 5-10, 5-16
eliminating, Command Language, 7-41 MCR, 3-267
Partition (cont'd.)
EXCOM1, System Generation (11M), 5-15
EXCOM2, System Generation (11M), 5-15
FCPPAR, System Generation (11M), 5-16
fragmentation, System Management, 14-3
GEN, MCR, 3-119, 3-133 System Generation (11M), 5-12, 5-16, 5-17
specifying a base address,
System Generation (11M), 7-4
going parameters, Executive, 5-111
information, Indirect, 2-91
displaying, Command Language, 7-46
loading device driver, MCR, 3-133
main, System Management, 19-4
mapped system, MCR, 2-20
modifying, System Management, 10-55
name, CDA, 3-21 MCR, 2-20, 3-169
naming, MCR, 3-119
naming for target system, Task Builder, C-1
option, Task Builder, 12-27
overriding, System Management, 10-24
PAR14K, System Generation (11M), 5-18
PCB address, CDA, 3-21
region, System Management, 10-18
Task Builder, 5-29
requirement
region, Task Builder, 5-2
shared region, Task Builder, 5-3
size, Command Language, 7-42
MCR, 2-20, 3-169, 3-237
improving performance, Task Builder, F-2
setting, MCR, 3-259
SLPPAR
specifying a base address,
System Generation (11M), 7-5
specifying a base address, System Generation (11M), 5-12
specifying for region, Task Builder, 5-29
Partition (cont’d.)

SPLPAR, System Generation (11M), 5-13, 5-17, 5-18
status flags, CDA, 3-33
SYSPAR, System Generation (11M), 5-12, 5-16, 5-17, 5-18
specifying a base address, System Generation (11M), 7-5
system, MCR, 3-183, 3-267
system-controlled, Command Language, 7-42 MCR, 2-20, 3-118, 3-169 System Generation (11M), 4-37 System Management, 14-1
task
allocating, MCR, 2-20
fixing, MCR, 3-76
installing, MCR, 3-183
relationship between, MCR, 2-20
TTPAR, System Generation (11M), 5-15
type, Command Language, 7-42 MCR, 2-20, 3-169 System Management, 10-65
DEV, MCR, 3-237
DIAG, MCR, 3-238
SYS, MCR, 3-237
unmapped system, MCR, 2-20
user, MCR, 3-267
user-controlled, MCR, 2-20, 3-169 System Management, 14-1
Partition Control Block, MCR, 3-31, 3-134
See also PCB
address, MCR, 3-46, 3-169
PARTITION DEFINITIONS command (MCR), MCR, 1-7, 3-169
display, MCR, 3-169
format, MCR, 3-170
PARTITION DEFINITIONS command (VMR), System Management, 10-36
definition, System Management, 10-36
display, System Management, 10-36
format, System Management, 10-36
Partition display contents, System Management, 10-36
symbol meaning, System Management, 10-36

Partition information dump
attachment descriptor, CDA, 3-34
individual, CDA, 3-33
system, CDA, 3-31
wait queue, CDA, 3-34
/PASS option, MACRO-11, 1-1
Password, Command Language, 3-5

Introduction, 1-5, 3-9
account, MCR, 3-240
adding to account entry, System Management, 2-3
changing, MCR, 2-24 System Management, 2-1, 2-7
characters, System Management, 2-3
contained in account entry, System Management, 2-1
displaying, System Management, 2-5, 2-8
encryption, MCR, 3-240
maximum length, MCR, 3-240
task, MCR, 3-240
/PASSWORD keyword
SET command (MCR), MCR, 3-240

PASTE command
EDI utility, Utilities, 2-42
PASTE key (EDT), Introduction, 2-8
/PASTHRU keyword
SET command (MCR), MCR, 3-241
SET command (VMR), System Management, 10-67

/PA switch
PRI command, Batch and Queue, 2-4

Patch
declaring object level, Task Builder, 12-6
D-space, Task Builder, 12-14
global relative, Task Builder, 12-20

Patching
object module
See PAT utility
source file
See SLP utility
task image file
See ZAP utility

Patch level
RMSBCK utility, RMS-11 Utilities, 6-5
RMSCNV utility, RMS-11 Utilities, 4-9
RMSDEF utility, RMS-11 Utilities, A-5
Patch level (cont'd.)
RMSDSP utility,  RMS-11 Utilities, 5-5
RMSIFL utility,  RMS-11 Utilities, 3-5
RMSRST utility,  RMS-11 Utilities, 7-5
Path load,  Task Builder, 4-3, 4-4
See also Overlay
autolod,  Task Builder, 4-3, 4-4
eample,  Task Builder, 4-4
Pattern
IOX
altering test,  System
Management, 4-48
disploying test,  System
Management, 4-48
PATTERN command
IOX,  System Management, 4-48
/PATTERN switch
BAD utility,  Utilities, 6-6
PAT utility
checksum,  Utilities, 14-6
command line,  Utilities, 14-1
error message,  Utilities, 14-7
file
correction,  Utilities, 14-3
input,  Utilities, 14-3
Task Builder,  Utilities, 14-4
validating file content,  Utilities, 14-6
.PAUSE directive,  Indirect, 2-77
Pbn parameter
device-specific (disk driver),  I/O
Drivers, 5-9
PC
See Program counter
PCB,  CDA, 3-33
See also Partition Control Block
address,  CDA, 3-31
address in DCC,  Writing I/O Driver,
4-14
pointer to,  CDA, 3-33
switches
/PAR,  CDA, 2-5, 2-8
/PCB,  CDA, 2-5, 2-8
PCBDFS$,  CDA, B-31, C-55
/PCB switch,  CDA, 2-5, 2-8
PC correction
internal symbol,  Task Builder, A-29,
A-30
PCL11
hardware,  I/O Drivers, 14-1
receiver driver,  I/O Drivers, 14-1
PCL11 (cont'd.)
transmitter driver,  I/O Drivers,
14-1
PCL11, parallel communication link
driver,  I/O Drivers, 14-1
See also LRDRV
P command,  Debugging, 2-10, 3-3,
3-4, 8-7, 9-13
ODT,  Program Development, 5-7
PC-relative
location,  Debugging, 2-5, 4-4
offset,  Debugging, 2-10, 7-1, 9-13
$$PDLS program section,  Task Builder,
5-54
reserved name,  Task Builder, E-3
PDR,  Task Builder, 2-15
/PD switch
RMSCNV utility,  RMS-11 Utilities,
4-12
RMSIFL utility,  RMS-11 Utilities,
3-6, 3-7, 3-11
Percent sign (%),  Command Language,
3-15, 4-8
See also Wildcard
in register expression,  MACRO-11,
5-2
percent sign operator (%)
See Operator
Performance
See also Speed
improving TKB,  Task Builder, F-1 to
F-11
stall I/O (disk driver),  I/O Drivers,
5-13
Period (.),  Command Language, 3-14
PERIOD key,  Command Language,
3-16
Peripheral device,  Command Language,
5-1
See also Device
Peripheral Interchange Program
See also PIP utility
Peripheral support routine (K-series),
I/O Drivers, 23-1
Permanent symbol table,  MACRO-11,
3-6, 3-7
summary,  MACRO-11, C-1 to C-7
P error,  MACRO-11, 3-12, 3-14, 6-20,
6-38, 7-16
summary,  MACRO-11, D-4
PF command
EDI utility,  Utilities, 2-41
PFCS$ directive,  Executive, 5-135
PF key,  Command Language, 3-16

Master Index-207
Phase I
description, System Generation (11M), 3-1
text, System Generation (11M), 4-98
example, System Generation (11M), 4-98
preparation, System Generation (11M), 4-2
sections, System Generation (11M), 3-2

Phase II
description, System Generation (11M), 3-2, 5-1
text, System Generation (11M), 5-20
input files
RSX11M.OLB, System Generation (11M), 5-1
RSXBLD.CMD, System Generation (11M), 5-1
SGNPARM.CMD, System Generation (11M), 5-1
TTDRVBLD.CMD, System Generation (11M), 5-2
preparation, System Generation (11M), 5-2
sections, System Generation (11M), 3-2, 5-2

Phase III
description, System Generation (11M), 3-4, 7-1
text, System Generation (11M), 7-6
preparation, System Generation (11M), 7-2
Physical/logical association, I/O Drivers, 1-2
Physical device names, CDA, 3-17
Physical I/O, I/O Drivers, 1-2
Physical memory switch
See /DUMP switch
PIC (Position Independent Code), MACRO-11, G-1 to G-4
PIP/ENTER command (RMSBCK), RMS-11 Utilities, 6-3
PIP utility, Command Language, 1-18 Introduction, 5-1 MCR, 2-2
Program Development, 1-8 RMS-11 Utilities, 5-2
accessing files, MCR, 2-3
account file
accessing, System Management, 2-3

PIP utility
account file
cont’d., System Management, 2-3
asterisk (*), Program Development, 3-10
cleaning up a UFD, Program Development, 3-9, 3-10
command functions, Utilities, 3-8
copying Files-11 file, Utilities, 3-8
file control, Utilities, 3-14
command line, Utilities, 3-1
creating a concatenated object
module, Program Development, 4-3, 4-4
deleting directory, MCR, 2-2
deleting files, MCR, 2-2
error code, Utilities, 3-53
error message, Utilities, 3-43
examining listing at terminal, Program Development, 3-6, 4-6, 7-4
file
deleting, Utilities, 3-17
listing, Utilities, 3-24
merging, Utilities, 3-9
protecting, Utilities, 3-29
purging, Utilities, 3-31
renaming, Utilities, 3-33
spooling, Utilities, 3-38
file specification, Utilities, 3-1
default, Utilities, 3-1 to 3-2
wildcard, Utilities, 3-7
/LI, Program Development, 3-9
/ME, Program Development, 4-3, 4-4
printing listing, Program Development, 3-8 to 3-9
/PU, Program Development, 3-10
/SP, Program Development, 3-8
spooling listing, Program Development, 3-8, 3-9
subswitch, Utilities, 3-14
description, Utilities, 3-6
merge, Utilities, 3-11
summary, Utilities, 3-3
switch, Utilities, 3-14
description, Utilities, 3-5
summary, Utilities, 3-3
UFD creating, Utilities, 3-41
wildcard, Utilities, 3-7
/PI switch, Task Builder, 10-31
$PKAVL, CDA, 3-45
$PKAVL symbol
use of
in fault tracing, Writing I/O Driver, 3-28
%PKT, Error Logging, 5-22
PKTDF$, CDA, B-33, C-60
calculating starting LBN, RMS-11 User's Guide, 6-14
cylinder, RMS-11 User's Guide, 6-13, 6-14
indexed files, RMS-11 User's Guide, 6-13
RMSBCK utility, RMS-11 Utilities, 6-1
RMSDEF utility, RMS-11 Utilities, A-14
RMSRST utility, RMS-11 Utilities, 7-1
sector, RMS-11 User's Guide, 6-14
track, RMS-11 User's Guide, 6-13, 6-14
Placement control (F11ACP), I/O Drivers, C-7
PLAS
fixing tasks, System Management, 10-23
PLAS directives
See Memory
Platter, RMS-11 Introduction, 2-1
PL command
EDI utility, Utilities, 2-41
/PLCTL keyword
SET command (MCR), MCR, 3-243
SET command (VMR), System Management, 10-25
RUN command (MCR), MCR, 3-184
/PM switch, Task Builder, 10-32
PMT, MCR, 3-243 System Management, 1-4, 13-1
See also Pool abortable tasks, System Management, 13-7
aborting, System Management, 13-11 to 13-12
action, System Management, 13-11
activation, System Management, 13-3
conditions affecting, System Management, 13-3
controlling pool use, System Management, 13-11
defaults
extreme fragmentation, System Management, 13-6
high pool state, System Management, 13-5
low pool state, System Management, 13-5
functions, System Management, 13-3
installation, System Management, 13-3
messages, System Management, 13-8
output
example of extreme fragmentation, System Management, 13-9 to 13-10
low pool state, System Management, 13-6

PMD
task (cont'd.)
content, Task Builder, D-3 to D-6
example, Task Builder, D-3 to D-6
installation for timely operation, Task Builder, D-1
specifying, Task Builder, 10-32, 11-54
.PMD file type, Program Development, 5-10
/PMD keyword
ABORT command (MCR), MCR, 3-4
INSTALL command (MCR), MCR, 3-119
INSTALL command (VMR), System Management, 10-25
RUN command (MCR), MCR, 3-184
/PM switch, Task Builder, 10-32
PMT, MCR, 3-243 System Management, 1-4, 13-1
See also Pool abortable tasks, System Management, 13-7
aborting, System Management, 13-11 to 13-12
action, System Management, 13-11
activation, System Management, 13-3
conditions affecting, System Management, 13-3
controlling pool use, System Management, 13-11
defaults
extreme fragmentation, System Management, 13-6
high pool state, System Management, 13-5
low pool state, System Management, 13-5
functions, System Management, 13-3
installation, System Management, 13-3
messages, System Management, 13-8
output
example of extreme fragmentation, System Management, 13-9 to 13-10
low pool state, System Management, 13-6

Master Index-209
PMT
parameters (cont'd.)
displaying, Command Language, 8-7
setting, Command Language, 8-4
task-build options, System Management, 13-10
timing, System Management, 13-10
PNC symbolic argument, MACRO-11, 6-20
Pn parameter
ICDRV/ISDRV, I/O Drivers, 19-10
IO.LDI function, I/O Drivers, 19-25
IO.RLB function, I/O Drivers, 1-30
IO.RVB function, I/O Drivers, 1-31
IO.WLB function, I/O Drivers, 1-32
IO.WVB function, I/O Drivers, 1-33
Point parameter
synchronous QIOS$ function
(LSDRV), I/O Drivers, 17-5
POINTER statement, Error Logging, 5-38, 5-39
.POINT routine
file byte position, I/O Operations, 2-11
position file to byte, I/O Operations, 4-22
Pol parameter
immediate device-specific function
(LSDRV), I/O Drivers, 17-3
Pool, Command Language, 7-1
See also Get-space routine
bit map, CDA, 3-15
buffer descriptor block, RMS-11 Macro, 2-8
conditions, System Management, 13-2
largest fragment increases, System Management, 13-5
largest fragment too small, System Management, 13-4
declaring space, RMS-11 Macro, 2-4
definition, System Generation (11M), 1-3 System Management, 13-1
description, System Generation (11M), 4-44
device influence, System Generation (11M), D-5
displaying contents, Command Language, 8-9
displaying information, Command Language, 8-7
dump, CDA, 3-45

Pool (cont'd.)
fragmentation, System Management, 13-1
free, CDA, 3-15
free-space list, RMS-11 Macro, 2-19
I/O buffer, RMS-11 Macro, 2-6
index descriptor block, RMS-11 Macro, 2-5
installing headers in, MCR, 3-122
internal FAB, RMS-11 Macro, 2-5
internal RAB, RMS-11 Macro, 2-5
key buffer, RMS-11 Macro, 2-6
largest fragment, CDA, 3-15
limit
displaying, MCR, 3-244
setting, Command Language, 8-4
MCR, 3-243
monitoring, System Generation (11M), 4-64
number of unallocated fragments, CDA, 3-15
PMT, System Generation (11M), 4-64
primary
installing tasks, MCR, 3-64
size, CDA, 3-15
calculating, System Generation (11M), D-1
displaying, MCR, 3-244
increasing, Command Language, 8-4
setting, MCR, 3-244
specifying, System Generation (11M), 4-44
smallest possible block, CDA, 3-15
space
allocating, MCR, 3-267
task influence, System Generation (11M), D-1
total free bytes, CDA, 3-15
POOL$B macro, RMS-11 Macro, 2-4, C-2
POOL$E macro, RMS-11 Macro, 2-4
declaring, RMS-11 Macro, C-2
Pool, buffer, private (TIDRV), I/O Drivers, 2-79
Pool-declaration macro, RMS-11 Macro, 2-4
declaring, RMS-11 Macro, C-2
Pool fragment size, System Management, 13-13
/POOL keyword
SET command (MCR), MCR, 3-244
SET command (VMR), System Management, 10-69
Pool limits,  *System Management*,  13-12
  high,  *System Management*,  13-12
  low,  *System Management*,  13-12
Pool monitoring interface
Pool Monitoring Support,  *System Management*,  1-4
  receiving,  *System Management*,  13-1
Pool Monitor Task
  See PMT
  /POOLSIZE keyword
  SET command (VMR),  *System Management*,  10-69
Pool statistics dump,  *CDA*,  3-1,  3-15
  /POOL switch,  *CDA*,  2-5,  2-8
Port parameter
  UNIBUS switch driver
    device-specific,  *I/O Drivers*,  24-4
  IO.DPT function,  *I/O Drivers*,  24-6
  POS0 field in KEY block
    offset,  *RMS-11 Macro*,  6-68
  POS1 field in KEY block
    offset,  *RMS-11 Macro*,  6-68
  POS2 field in KEY block
    offset,  *RMS-11 Macro*,  6-68
  POS3 field in KEY block
    offset,  *RMS-11 Macro*,  6-68
  POS4 field in KEY block
    offset,  *RMS-11 Macro*,  6-68
  POS5 field in KEY block
    offset,  *RMS-11 Macro*,  6-68
  POS6 field in KEY block
    offset,  *RMS-11 Macro*,  6-68
  POS7 field in KEY block
    offset,  *RMS-11 Macro*,  6-68
  POS field in KEY block
    CREATE operation,  *RMS-11 Macro*,  5-18
    DISPLAY operation,  *RMS-11 Macro*,  5-31
    offset,  *RMS-11 Macro*,  6-68
POS field in KEY block (cont'd.)
  OPEN operation,  *RMS-11 Macro*,  5-80
  summary,  *RMS-11 Macro*,  6-89
POSITION attribute
  RMSDES utility,  *RMS-11 Utilities*,  2-46
Position independent code,  *MACRO-11, G-1 to G-4*
Positioning
  magnetic tape
    See FB$NEF mask in FOP field
    See FB$POS mask in FOP field
  /POSITION qualifier
  BRU utility,  *Utilities*,  7-20
Position tape (DDDRV),  *I/O Drivers*,  7-4
Position to next file
  tape,  *I/O Operations*,  5-5
  .POSIT routine, return record position,  *I/O Operations*,  4-24
  /POS keyword
  HOME command,  *MCR*,  3-95
  INITVOLUME command,  *MCR*,  3-106
  .POSRC routine, position file to record,  *I/O Operations*,  4-22
Postmortem Dump
  See PMD
  /POSTMORTEM qualifier,  *Task Builder*,  11-54
Powerfail
  disk,  *I/O Drivers*,  1-43
  DMC11 (communication driver),  *I/O Drivers*,  12-12
  QIO$, valid (TM11),  *I/O Drivers*,  8-15
  recovery
    tape driver,  *I/O Drivers*,  8-15
    UNIBUS switch driver,  *I/O Drivers*,  24-6
    tape,  *I/O Drivers*,  1-43
Power-fail recovery,  *System Generation (11M)*,  4-32
  Power failure entry point,  *Writing I/O Driver*,  2-4
  DDT conditions,  *Writing I/O Driver*,  4-11
Power recovery (ICDRV/ISDRV),  *I/O Drivers*,  19-72
Power switch (CRDRV),  *I/O Drivers*,  11-5
  .PPASC routine, convert UIC to ASCII,  *I/O Operations*,  4-8

*Master Index*-211
PPDRV, I/O Drivers, 18-1
PPDRV/PRDRV, programming hint, I/O Drivers, 18-5
Pp parameter
device-specific function (UDDRV), I/O Drivers, 16-5
ICDRV/ISDRV, I/O Drivers, 19-10
IO.MLO function, I/O Drivers, 19-17
PR:O privileged task, Task Builder, 6-2
PR:4 privileged task, Task Builder, 6-2
PR:5 privileged task, Task Builder, 6-2
Pradd parameter
device-specific
half-duplex, I/O Drivers, 3-7
VTDRV, I/O Drivers, 4-4
TTDRV
general, I/O Drivers, 2-11
IO.RPR function, I/O Drivers, 2-41
PPDRV, I/O Drivers, 18-1
Predefined syntax elements, System Management, 12-40
basic data types, System Management, 12-40 to 12-41
common command elements, System Management, 12-42 to 12-43
program control elements, System Management, 12-46
special parser elements, System Management, 12-43 to 12-45
special translator elements, System Management, 12-45 to 12-46
PREPGEN, System Generation (11M), 3-11
See also MCR inhibit
Phase I, System Generation (11M), 4-4
Phase II, System Generation (11M), 5-4
Preset parameter
IO.CLK function (LADRV), I/O Drivers, 22-29
PRG field in PRO block
CLOSE operation, RMS-11 Macro, 5-3
DISPLAY operation, RMS-11 Macro, 5-32
offset, RMS-11 Macro, 6-108
OPEN operation, RMS-11 Macro, 5-81
RSTS/E, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-112
PRI command
file switches, Batch and Queue, 2-3
format, Batch and Queue, 2-3
job switches, Batch and Queue, 2-3
/PRI keyword
ALTER command (MCR), MCR, 3-19
ALTER command (VMR), System Management, 10-8
INSTALL command (MCR), MCR, 3-119
INSTALL command (VMR), System Management, 10-25
RUN command (MCR), MCR, 3-184
Primary index
See also Index
RMSCNV utility, RMS-11 Utilities, 4-1
RMSIFL utility, RMS-11 Utilities, 3-10, 3-11
Primary key, RMS-11 Introduction, 3-7
RMSCNV utility, RMS-11 Utilities, 4-1, 4-16
RMSDEF utility
definition, RMS-11 Utilities, A-10
RMSIFL utility, RMS-11 Utilities, 3-5, 3-6
sorting, RMS-11 Utilities, 3-9
Primary RBNs, System Management, 5-4
Print
open file on LP:, I/O Operations, 8-3
PRINT$ macro, I/O Operations, 8-1
to I/O Operations, 8-3
PRINT command, Batch and Queue, 1-3, 2-2 Command Language, 4-60
to 4-69, 9-25 I/O Operations, 8-3
cannot qualifiers, Batch and Queue, 2-3
DCL, Program Development, 1-12, 3-8
definition, Batch and Queue, 4-6
EDI utility, Utilities, 2-17, 2-42
elements, Batch and Queue, 2-7
Command Language, 4-66 to 4-68
file qualifiers, Batch and Queue, 2-3
format, Batch and Queue, 2-3
MCR, Program Development, 3-9
PRINT command (cont'd.)
    processing, Batch and Queue, 1-4 to 1-6
    qualifications, Command Language, 4-60 to 4-66
Print Despooler Transaction Block,
    System Management, 17-30
.PRINT directive, MACRO-11, 7-15
Printer, Program Development, 1-12
    RMS-11 Macro, 3-1, 5-20, 5-37, 5-42, 5-77, 5-88, 5-104, 5-111, 5-117
/PRINTER_PORT keyword
    SET command (MCR), MCR, 3-242
    SET command (VMR), System Management, 10-69
/PRINTER qualifier, Task Builder, 11-55
PRINT FORMATTING statement,
    Error Logging, 5-41
    keyword string, Error Logging, 5-41, 5-42
Print job, Command Language, 4-60
    definition, Batch and Queue, 4-7
    queued by system tasks
        maps, logs, listings, Batch and Queue, 2-12
    PIP, Batch and Queue, 2-12
    queued by user tasks
        .PRINT, Batch and Queue, 2-13
        .PRINT command, Batch and Queue, 2-13
        submission notification, Batch and Queue, 2-2
Print processor, Batch and Queue, 1-3
    See also Despooler
    definition, Batch and Queue, 4-6
print processors
    installation
        DCL command, System Management, 7-6
        MCR command, System Management, 7-6
/PRINT qualifier
SHOW QUEUE command, Batch and Queue, 2-16
print queue
    initialization
        DCL command, System Management, 7-5
        MCR command, System Management, 7-5
.PRINT routine, error handling, I/O Operations, 8-3

.PRINT subroutine, I/O Operations, 8-1
PRINTSUMMARY command
    IOX, System Management, 4-49
/PRIO job switch
    QUE /MOD command, Batch and Queue, 2-20
PRI option, Task Builder, 12-29
Priority, Introduction, 6-4
    definition, Batch and Queue, 4-7
    task, Command Language, 7-2
    declaring, Task Builder, 12-29
/PRIORITY qualifier
PRINT command, Batch and Queue, 2-5
    SET QUEUE command, Batch and Queue, 2-20
/PRIOR switch
PRI command, Batch and Queue, 2-5
Pri parameter
    IO.ATT function, I/O Drivers, 1-27
    IO.DET function, I/O Drivers, 1-28
    IO.KIL function, I/O Drivers, 1-29
    IO.RLB function, I/O Drivers, 1-30
    IO.RVB function, I/O Drivers, 1-31
    IO.WLB function, I/O Drivers, 1-32
    IO.WVB function, I/O Drivers, 1-33
QIO$ basic syntax, I/O Drivers, 1-8
TDDR
    general, I/O Drivers, 2-11
    IO.ATA function, I/O Drivers, 2-20
    IO.CCO function, I/O Drivers, 2-23
    IO.EIO function, I/O Drivers, 2-26
    IO.GTS function, I/O Drivers, 2-33
    IO.HNG function, I/O Drivers, 2-35
    IO.RAL function, I/O Drivers, 2-36
    IO.RNE function, I/O Drivers, 2-38
    IO.RPR function, I/O Drivers, 2-40
    IO.RST function, I/O Drivers, 2-43
    IO.RTT function, I/O Drivers, 2-45
    IO.SMC function, I/O Drivers, 2-59

Master Index-213
Privileged task (cont'd.)

PR:5, Task Builder, 6-2, 6-4, 6-5, 6-6
PR:5 mapping, Task Builder, 6-4
specifying, Task Builder, 2-26, 6-2, 10-33, 11-56
TKB command sequence, Task
Builder, 6-9
trap, Task Builder, 6-1, 6-2
virtual address space
example, Task Builder, 6-11

Privileged user input
rejection of, System Management,
10-50
Privilege status, MCR, 2-6, 3-2
PRIVIL symbol, Indirect, 2-11
/PRIV keyword
SET command (MCR), MCR, 3-244
SET command (VMR), System
Management, 10-70

PRI field in PRO block
CLOSE operation, RMS-11 Macro,
5-3
DISPLAY operation, RMS-11 Macro,
5-32
offset, RMS-11 Macro, 6-108
OPEN operation, RMS-11 Macro,
5-81
RSTS/E, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-113
PRMS$ directive, Executive, 5-139

PROCEDURE statement, Error Logging,
5-33, 5-34

PROCEED command
See P command
Proceed count, Debugging, 3-4
register, Debugging, 5-4

Process
state, Writing I/O Driver, 2-10
Process control
asynchronous
AFC11/AD01 converter, I/O Drivers, 15-3
ICDRV/ISDRV, I/O Drivers, 19-35
UDDRV, I/O Drivers, 16-15
synchronous
AFC11/AD01 converter, I/O Drivers, 15-3
ICDRV/ISDRV, I/O Drivers, 19-35
UDDRV, I/O Drivers, 16-15

Processing
RMSBCK utility, RMS-11 Utilities, 6-8
data integrity checking, RMS-11 Utilities, 6-9
explicit/implicit filespec, RMS-11 Utilities, 6-9
extended diagnostic messages, RMS-11 Utilities, 6-10
summary listing, RMS-11 Utilities, 6-10
RMSCNV utility, RMS-11 Utilities, 4-14
input file organization, RMS-11 Utilities, 4-16
output file organization, RMS-11 Utilities, 4-15
RMSDEF utility, RMS-11 Utilities, A-1
RMSIFL utility, RMS-11 Utilities, 3-9
building alternate indexes, RMS-11 Utilities, 3-12
command string checking, RMS-11 Utilities, 3-9
loading output file, RMS-11 Utilities, 3-10
reading and sorting input, RMS-11 Utilities, 3-9
sorting alternate key files, RMS-11 Utilities, 3-11
summary, RMS-11 Utilities, 3-1
terminating, RMS-11 Utilities, 3-12

RMSRST utility, RMS-11 Utilities, 7-9
data integrity checking, RMS-11 Utilities, 7-11
explicit/implicit filespec, RMS-11 Utilities, 7-10
 extends diagnostic messages, RMS-11 Utilities, 7-11
restoration account, RMS-11 Utilities, 7-10
summary listing, RMS-11 Utilities, 7-12

Processing blocks, RMS-11
Introduction, 4-1, 4-7 RMS-11 User's Guide, 1-20
Processing files, RMS-11 Introduction, 4-1 RMS-11 User's Guide, 1-16
indexed files, RMS-11 User's Guide, 7-10
relative files, RMS-11 User's Guide, 4-15
sequential files, RMS-11 User's Guide, 3-15
processing records, RMS-11
Introduction, 4-1, 4-3 RMS-11 User's Guide, 1-15
indexed files, RMS-11 User's Guide, 7-1
relative files, RMS-11 User's Guide, 4-7
sequential files, RMS-11 User's Guide, 3-7

Processor
memory size, System Generation (11M), 4-12
rotating pattern in data lights, System Generation (11M), 4-36
valid on RSX-11M, System Generation (11M), 4-11
with switch register, System Generation (11M), 4-11
Processor clock, Debugging, 8-9
turning off, Debugging, 9-3
Processor failures, System Management, 15-32
Processor states, Debugging, 8-2
priority, Debugging, 8-3
Processor Status Word, CDA, 3-2
MCR, 3-31, 3-58
See also PSW
Processor traps
XDT, Debugging, 8-5
Professional Personal Computer file transfer, System Management, 9-1

PRO field in PRO block
CLOSE operation, RMS-11 Macro, 5-3

Master Index-215
Program (cont'd.)
user routines, Program Development, 1-11
version identification, Task Builder, A-10
version number
See Version identifier
virtual section
building a task using, Task Builder, 5-66, 5-67
creating, Task Builder, 5-66, 5-67
Program counter, CDA, 3-2 MCR, 3-31 MACRO-11, 5-1
definition, MACRO-11, 3-10
value, Program Development, 4-8
Program development
optimizing, RMS-11 User's Guide, 8-1
Program example I/O, I/O Operations, D-1
Program identification directive, MACRO-11, 6-16, 6-17
Program interface subroutine (LDRV), I/O Drivers, 22-2
Programming convention, Writing I/O Driver, 2-13
Programming hint
AFC11/AD01 converter, I/O Drivers, 15-10
communication driver, I/O Drivers, 12-11
CRDRV, I/O Drivers, 11-9
CTDRV, I/O Drivers, 9-7
disk driver, I/O Drivers, 5-12
DTDRV, I/O Drivers, 6-7
GRDRV, I/O Drivers, 21-3
half-duplex, I/O Drivers, 3-31
LPDRV, I/O Drivers, 10-7
LSDRV, I/O Drivers, 17-33
PPDRV/PRDRV, I/O Drivers, 18-5
tape driver, I/O Drivers, 8-15
TFDRV, I/O Drivers, 2-82
UDDRV, I/O Drivers, 16-34
XEDRV, I/O Drivers, 13-20
Programming protocol, Writing I/O Driver, 2-14
summary, Writing I/O Driver, 2-16
Programming sequence (XEDRV), I/O Drivers, 13-4
Programming standard, MACRO-11, E-1 to E-16

Program
user (cont'd.)
system routines, Program Development, 1-11
version
identification, Task Builder, A-10
version number
See Version identifier
virtual section
building a task using, Task Builder, 5-66, 5-67
creating, Task Builder, 5-66, 5-67
Program counter, CDA, 3-2 MCR, 3-31 MACRO-11, 5-1
definition, MACRO-11, 3-10
value, Program Development, 4-8
Program development
optimizing, RMS-11 User's Guide, 8-1
Program example I/O, I/O Operations, D-1
Program identification directive, MACRO-11, 6-16, 6-17
Program interface subroutine (LDRV), I/O Drivers, 22-2
Programming convention, Writing I/O Driver, 2-13
Programming hint
AFC11/AD01 converter, I/O Drivers, 15-10
communication driver, I/O Drivers, 12-11
CRDRV, I/O Drivers, 11-9
CTDRV, I/O Drivers, 9-7
disk driver, I/O Drivers, 5-12
DTDRV, I/O Drivers, 6-7
GRDRV, I/O Drivers, 21-3
half-duplex, I/O Drivers, 3-31
LPDRV, I/O Drivers, 10-7
LSDRV, I/O Drivers, 17-33
PPDRV/PRDRV, I/O Drivers, 18-5
tape driver, I/O Drivers, 8-15
TFDRV, I/O Drivers, 2-82
UDDRV, I/O Drivers, 16-34
XEDRV, I/O Drivers, 13-20
Programming protocol, Writing I/O Driver, 2-14
summary, Writing I/O Driver, 2-16
Programming sequence (XEDRV), I/O Drivers, 13-4
Programming standard, MACRO-11, E-1 to E-16

Master Index-216
Program section, Task Builder, 2-2, 5-60
See also individual program section names
absolute, MACRO-11, 6-42, 6-44, 6-45
access-code, Task Builder, 2-4, 2-5
additive displaced relocation, Task Builder, A-21
additive relocation, Task Builder, A-20
adjacency requirement, Task Builder, 10-47, 11-64
allocation, Task Builder, 2-2, 2-4 to 2-8
allocation-code, Task Builder, 2-4, 2-5, 2-6
$$ALVC, Task Builder, 7-10
$$ALVD, Task Builder, 7-10
$$ALVI, Task Builder, 7-10
attribute, Task Builder, 2-2, 2-4
.BLK, Task Builder, 2-3
context saving, MACRO-11, 6-47, 6-48
creating, MACRO-11, 6-43, 6-44
directive, MACRO-11, 6-40 to 6-48
.ASECT, MACRO-11, 6-46, 6-47
.CSECT, MACRO-11, 6-46, 6-47
.PSECT, MACRO-11, 6-40 to 6-45
.RESTORE, MACRO-11, 6-47, 6-48
.SAVE, MACRO-11, 6-47, 6-48
displaced relocation, Task Builder, A-19
extension, Task Builder, 12-15
item
internal symbol, Task Builder, A-29
length, Task Builder, 2-2, 2-4
limit on quantity, MACRO-11, 6-43
local symbol block control, MACRO-11, 6-19, 6-20
making autoloadable, Task Builder, 4-3
name, Task Builder, 2-2, 2-3, 2-4, A-7
applying autoload indicator, Task Builder, 4-3
conflict, Task Builder, 5-8, 5-39, 5-40
entry, Task Builder, A-8

Program section
name (cont’d.)
.FCTR directive argument, Task Builder, 3-26
flag byte, Task Builder, A-8, A-9
resolution, Task Builder, 5-8, 5-39
restriction, Task Builder, 5-8
named in region, Task Builder, 5-14
naming table, System Library, 1-3
ordering, Task Builder, 5-8, 10-36, 10-47, 11-60, 11-64
overlay
allocation, Task Builder, 3-19
run-time, Task Builder, 5-54, 5-55
PSECT, Task Builder, 2-3
relocatable, MACRO-11, 6-44, 6-45
relocation, Task Builder, A-19
relocation-code, Task Builder, 2-4
resolution, Task Builder, 3-19
resolving name, Task Builder, 5-40
save, Task Builder, 2-4, 2-6
scope-code, Task Builder, 2-4, 2-5, 2-7
segregating, Task Builder, 10-36, 10-47, 11-60, 11-64
sequential ordering, Task Builder, 10-36, 10-47, 11-60, 11-64
shared region, Task Builder, 5-8
specifying in overlay, Task Builder, 3-19, 3-29
table, MACRO-11, 1-1
TPARS, I/O Operations, 7-10
type-code, Task Builder, 2-5, 2-7
unnamed, Task Builder, 2-3
virtual, Task Builder, 5-60
allocating physical memory, Task Builder, 5-63
attaching virtual attribute, Task Builder, 5-63
building a task using, Task Builder, 5-65
creating, Task Builder, 5-63, 5-65
FORTRAN run-time support, Task Builder, 5-61, 5-64
option usage, Task Builder, 5-60, 5-61, 5-62
run time support, Task Builder, 5-61
specifying, Task Builder, 12-44

Master Index-217
Program section
  virtual (cont'd.)
    base address, Task Builder, 5-64
    length, Task Builder, 5-60
    physical size, Task Builder, 5-60
    window size, Task Builder, 5-60
  support, Task Builder, 5-64
/PRO keyword
  HOME command, MCR, 3-96
  INITVOLUME command, MCR, 3-106
  MOUNT command (MCR), MCR, 3-151
  USER FILE DIRECTORY command, MCR, 3-281
Prologue, RMS-ll Introduction, 3-15
  relative files, RMS-ll User's Guide, 4-1
Prologue version number
  See PVN field in SUM block
Prompt, Command Language, 1-3
  Introduction, 1-4, 1-10
  binary (TTDRV), I/O Drivers, 2-41
  checkpointing (TTDRV), I/O Drivers, 2-14, 2-40
  CLI string, MCR, 3-49
  CTRL/O (TTDRV), I/O Drivers, 2-14
  default, MCR, 2-14
  explicit, Command Language, 3-18
  Introduction, 1-5
ignoring
  response (half-duplex), I/O Drivers, 3-14
  TTDRV, I/O Drivers, 2-14, 2-40
  MCR, MCR, 1-3, 2-14, 2-16
  ODT, Debugging, 1-4
  pass all (TTDRV), I/O Drivers, 2-26
  read with (TTDRV), I/O Drivers, 2-18
  redisplay (TTDRV), I/O Drivers, 2-28
  RMSBCK utility, RMS-ll Utilities, 6-2
  RMSCNV utility, RMS-ll Utilities, 4-3
Prompt (cont'd.)
  RMSDES utility, RMS-ll Utilities, 2-2
  conditional, RMS-ll Utilities, 2-1, 2-13, 2-15, 2-17, 2-29
  RMSDSP utility, RMS-ll Utilities, 5-2
  RMSIFL utility, RMS-ll Utilities, 3-2
  RMRST utility, RMS-ll Utilities, 7-2
  send and read (TTDRV), I/O Drivers, 2-40
  send pass all (TTDRV), I/O Drivers, 2-12
  task, MCR, 2-14
  XDT, Debugging, 9-4
Prompting
  CLI, System Management, 11-7, 11-8
Prompting output
  TTDRV, I/O Drivers, 2-76
  VFC (half-duplex), I/O Drivers, 2-28
  VFC (LPDRV), I/O Drivers, 10-7
  account, MCR, 2-24, 3-241
  code
    UIC, MCR, 2-3
    common region, MCR, 3-119
    file, MCR, 3-148, 3-152, 3-214
      System Management, 2-3
    See also PRO field in PRO block
      specifying default, MCR, 3-102
      magnetic tape, MCR, 3-151
      multiuser, MCR, 2-6, 2-12, 2-24,
        3-79 System Generation (11M), 4-29
      multiuser commands, MCR, 1-8
      RMSDEF utility, RMS-ll Utilities, A-18
      RMRST utility, RMS-ll Utilities, 7-7
      UIC, MCR, 3-185
      volume, MCR, 3-148, 3-151
      XAB
      See PRO block
PROTECTION attribute
  RMSDES utility, RMS-ll Utilities, 2-33
Protection code
  file
    PIP utility, Utilities, 3-26

Master Index-218
Protection mask, *System Management*, 10-25
/PROTECTION qualifier
BRU utility, *Utilities*, 7-20
Protection UIC, *System Management*, 10-25
Protocol
   Ethernet
      LF$DEF, *I/O Drivers*, 13-3
      LF$EXC, *I/O Drivers*, 13-3
type definition (XEDRV), *I/O Drivers*, 13-23
Prototype task
   fixing, *System Management*, 10-18
Prototype tasks, *System Management*, 10-27
PRS2AM, *Error Logging*, 4-4
PRS2BM, *Error Logging*, 4-4
.PRSDI routine, fill in directory
   information, *I/O Operations*, 4-16
.PRSDV routine, fill in device/unit
   information, *I/O Operations*, 4-16
.PRSFN routine, fill in file name, type,
   version, *I/O Operations*, 4-16
Prsize parameter
device-specific
   half-duplex, *I/O Drivers*, 3-7
   VTDRV, *I/O Drivers*, 4-4
TTDVR
   general, *I/O Drivers*, 2-11
   I.O.RPR function, *I/O Drivers*, 2-41
/PR switch, *Task Builder*, 6-2, 10-33
PPIP utility, *Utilities*, 3-29
PRT...
   See Serial Despooler Task
PRT print spooler, *System Generation*
   (11M), 4-63
PRT task, *System Management*, 1-6
.PSECT
   See .PSECT directive
   See Program section
   .PSECT directive, *MACRO-11*, 3-11,
      6-40, 6-41, 6-42, 6-43, 6-44, 6-45
      *Program Development*, 2-8, 2-9
      *Task Builder*, 3-23, 3-29
   See also Program section
   summary, *Task Builder*, 3-50
   .PSECT directive (cont'd.)
      symbolic argument, *MACRO-11*,
      6-40, 6-41, 6-42
Pseudo device, *Command Language*, 5-1,
   5-4, 5-5, 5-5 to 5-6 *Introduction*,
   3-10 MCR, 2-10 to 2-11
   See also Device
   installing from, *System Management*,
   10-3
   list, *Command Language*, 5-6
   names, *Command Language*, 5-5
   MCR, 2-10
PSW, *Debugging*, B-1 *Executive*, 1-2
   format, *Debugging*, B-1
   register, *Debugging*, 2-6, 5-3
/P switch, *Error Logging*, 3-5, 3-8
$PTBYT routine, *Writing I/O Driver*,
   5-21
$PTLUN
   reserved global symbol, *Task Builder*, E-2
$PTWRD routine, *Writing I/O Driver*,
   5-22
   conditional assembly, *Writing I/O Driver*, 5-1
   inclusion of
      by SYSGEN, *Writing I/O Driver*,
      3-2
/PUB keyword
   MOUNT command (MCR), *MCR*,
      3-152
   SET command (MCR), *MCR*, 3-245
   SET command (VMR), *System Management*, 10-70
Pulse fields
   DOM/DOMW: subroutine (UDDRV),
      *I/O Drivers*, 16-25
   PURGE command, *Command Language*,
      4-39 to 4-41, 9-26 *Introduction*,
      3-6
   DCL, *Program Development*, 3-9
   /PU switch
   PIP utility, *Utilities*, 3-31
   PUT$ macro, *Utilities*, 3-31
   3-28
   FD.RWM parameter
      record I/O, *I/O Operations*,
      2-10
   FDB, file processing, *I/O Operations*,
      3-27
   file processing
      locate mode, *I/O Operations*,
      3-29
PUT$ macro
file processing (cont'd.)
write logical record, I/O
Operations, 3-26
file truncate, I/O Operations, 2-11
fixed-length record, I/O Operations, 3-28
block boundary, I/O Operations, 3-29
block buffer, I/O Operations, 3-29
format, I/O Operations, 3-26
locate mode, I/O Operations, 3-26, 3-30
move mode, I/O Operations, 3-26, 3-28
no truncate, I/O Operations, 2-10
sequenced record, I/O Operations, 3-26
task record buffer, I/O Operations, 3-28
variable-length record, I/O
Operations, 3-28
block boundary, I/O Operations, 3-29
PUT$R macro, I/O Operations, 3-1
example, I/O Operations, 3-31
file processing
write logical record, random
mode, I/O Operations, 3-30
random mode
locate mode execution, I/O
Operations, 3-31
PUT$$ macro, I/O Operations, 3-1
file processing
write logical record, sequential
mode, I/O Operations, 3-33
PUT argument to ORG$ macro,
RMS-11 Macro, 2-3
PUTD: subroutine
put data into output buffer (LSDRV),
I/O Drivers, 17-22
$PUT macro
key access, RMS-11 Macro, 5-95
sequential access, RMS-11 Macro,
5-91
PUT operation, RMS-11 Introduction,
4-4 RMS-11 Macro, 4-10 RMS-11
access modes, RMS-11 Introduction,
4-6
PUT operation (cont'd.)
and key position, RMS-11 User's
Guide, 6-7
and shared access, RMS-11 User's
Guide, 2-6
and stream records, RMS-11 User's
Guide, 2-17
declaring with ORG$ macro,
RMS-11 Macro, 2-3
delayed write, RMS-11 User's Guide,
7-9
duplicate keys, RMS-11 User's Guide,
6-9
indexed files, RMS-11 User's Guide,
7-5, 7-9
key access, RMS-11 User's
Guide, 5-10, 7-6
mass insertion, RMS-11 User's
Guide, 7-9
sequential access, RMS-11 User's
Guide, 5-17, 7-6
initial allocation, RMS-11 User's
Guide, 4-4
key access, RMS-11 User's Guide,
1-15
locate mode, RMS-11 User's Guide,
3-14
move mode
indexed files, RMS-11 User's
Guide, 7-7
relative files, RMS-11 User's
Guide, 4-12
sequential files, RMS-11 User's
Guide, 3-13
optimizing, RMS-11 User's Guide,
6-7
$PUT macro
key access, RMS-11 Macro, 5-95
sequential access, RMS-11 Macro,
5-91
relative files, RMS-11 User's Guide,
4-11
key access, RMS-11 User's
Guide, 4-11
sequential access, RMS-11 User's
Guide, 4-11
sequential access, RMS-11 User's
Guide, 1-15
sequential files, RMS-11 User's
Guide, 3-10
key access, RMS-11 User's
Guide, 3-10
sequential access, RMS-11 User's
Guide, 3-10

Master Index–220
PUT statement, Error Logging, 4-31, 5-39
PVN field in SUM block
DISPLAY operation, RMS-11 Macro, 5-32
offset, RMS-11 Macro, 6-145
OPEN operation, RMS-11 Macro, 5-81
summary, RMS-11 Macro, 6-151
Q
$QERMV, Error Logging, 4-25
Q error, MACRO-11, 3-16, 6-28, 6-29, 6-33, 6-37, 7-8
summary, MACRO-11, D-4
$QINSP routine, Writing I/O Driver, 5-23
QIO
diagnostic, System Generation (11M), 4-30
packet
pre-allocated, System Generation (11M), 4-40
QIO$
ACP interface, I/O Drivers, C-1
device-specific (TTDRV), I/O Drivers, 2-17
directive error status list, I/O Drivers, B-5
directive success status list, I/O Drivers, B-7
parameter list (F11ACP), I/O Drivers, C-2
QIO$C macro, I/O Drivers, 1-15
QIO$ directive, Executive, 5-143
QIO$ directive summary, I/O Operations, C-1
QIO$ function
ACP
closing a file, I/O Drivers, C-13
creating a file, I/O Drivers, C-12
deleting a file, I/O Drivers, C-13
extending a file, I/O Drivers, C-13
opening a file, I/O Drivers, C-13
using, I/O Drivers, C-12
device-specific
half-duplex, I/O Drivers, 3-9
UNIBUS switch driver, I/O Drivers, 24-4
QIO$ function (cont’d.)
standard (UNIBUS switch driver), I/O Drivers, 24-2
summary (ICDRV/ISDRV), I/O Drivers, 19-8
TTDRV, I/O Drivers, 2-18
QIO$ macro, I/O Drivers, 1-14
communication driver, I/O Drivers, 12-5
CRDRV, I/O Drivers, 11-2
CTDRV, I/O Drivers, 9-2
DDDRV, I/O Drivers, 7-2
device-specific function
AFC11/AD01 converter, I/O Drivers, 15-2
communication driver, I/O Drivers, 12-5
CRDRV, I/O Drivers, 11-3
CTDRV, I/O Drivers, 9-3
DDDRV, I/O Drivers, 7-3
disk driver, I/O Drivers, 5-8
DTDRV, I/O Drivers, 6-3
DUDRV, I/O Drivers, 5-9
GRDRV, I/O Drivers, 21-2
half-duplex, I/O Drivers, 3-7
immediate (LS DRV), I/O Drivers, 17-3
LADRV, I/O Drivers, 22-28
list TTDRV, I/O Drivers, 2-19
receive (LRDRV), I/O Drivers, 14-9
synchronous (LS DRV), I/O Drivers, 17-4
tape driver, I/O Drivers, 8-6, 8-7
transmit (LRDRV), I/O Drivers, 14-3
TTDRV, I/O Drivers, 2-8, 2-9, 2-17
UDDRV, I/O Drivers, 16-3
VTDRV, I/O Drivers, 4-3, 4-5
XEDRV, I/O Drivers, 13-4, 13-6
disk driver, I/O Drivers, 5-6
DTDRV, I/O Drivers, 6-2
event flag, I/O Drivers, 1-4
Executive function, I/O Drivers, 1-4
format, basic, I/O Drivers, 1-5, 1-6
general (XEDRV), I/O Drivers, 13-4
GRDRV, I/O Drivers, 21-2
half-duplex, I/O Drivers, 3-6
introduction, I/O Drivers, 1-1
IO.ATT function, I/O Drivers, 1-27
QIO$ macro (cont'd.)
  IO.DET function, I/O Drivers, 1-28
  IO.KIL function, I/O Drivers, 1-29
  IO.RLB function, I/O Drivers, 1-30
  IO.RVB function, I/O Drivers, 1-30
  IO.WLB function, I/O Drivers, 1-31
  IO.WVB function, I/O Drivers, 1-32
issuing hint (tape driver), I/O Drivers, 8-17
  library (XEDRV), I/O Drivers, 13-4
  LPDRV, I/O Drivers, 10-4
  LSDRV, I/O Drivers, 17-2
null argument, I/O Drivers, 1-5
omitting comma in syntax, I/O Drivers, 1-6
power fail, I/O Drivers, 1-43
PPDRV/PRDRV, I/O Drivers, 18-2
standard function
  AFC11/AD01 converter, I/O Drivers, 15-2
  communication driver, I/O Drivers, 12-5
  CRDRV, I/O Drivers, 11-2
  CTDRV, I/O Drivers, 9-2
  DDDRV, I/O Drivers, 7-2
disk driver, I/O Drivers, 5-6
  DTDRV, I/O Drivers, 6-2
  GRDRV, I/O Drivers, 21-2
half-duplex, I/O Drivers, 3-6
  LPDRV, I/O Drivers, 10-4
  LSDRV, I/O Drivers, 17-2
  receive (LRDRV), I/O Drivers, 14-8
tape driver, I/O Drivers, 8-5
  transmit (LRDRV), I/O Drivers, 14-3
  TTDRV, I/O Drivers, 2-8, 2-9
  UDDRV, I/O Drivers, 16-3
  VTDVR, I/O Drivers, 4-2, 4-4
  XEDRV, I/O Drivers, 13-6
standard I/O format (TTDRV), I/O Drivers, 2-8
subfunction use (half-duplex), I/O Drivers, 3-9
syntax element, I/O Drivers, 1-6
tape driver, I/O Drivers, 8-5
  TTDRV, I/O Drivers, 2-8
  UDDRV, I/O Drivers, 16-3
  UNIBUS switch, I/O Drivers, 24-2
valid powerfail (TM11), I/O Drivers, 8-15
  VTDVR, I/O Drivers, 4-2
  XEDRV, I/O Drivers, 13-3, 13-6
QIO$ macro, I/O Drivers, 1-15
QIO$ syntax
  P1,P2,...,P6 parameter, I/O Drivers, 1-9
QIO DEUNA driver
See XEDRV
QIO directive
position of
  in I/O hierarchy, Writing I/O Driver, 2-2
preinitiation processing of, Writing I/O Driver, 2-11
role of
  in I/O processing, Writing I/O Driver, 2-3
QIO Directive Parameter Block (QIO DPB), Writing I/O Driver, 4-6
QIO execution routine, I/O Operations, 4-26
QIOMAC.MAC error codes, I/O Operations, 1-1
QIOW$ directive, Executive, 5-147
QIOW$ directive summary, I/O Operations, C-2
QIOW$ macro, I/O Drivers, 1-14, 1-15
format, I/O Drivers, 1-15
task synchronization, I/O Drivers, 1-5
QMG, Batch and Queue, 1-1 Command Language, 1-17, 2-4, 4-60
Program Development, 1-12
System Generation (11M), 4-38
System Management, 1-2, 7-1
commands, System Management, 7-14
  ASSIGN/QUEUE, System Management, 7-23
  DCL format, System Management, 7-14
  DEASSIGN/QUEUE, System Management, 7-23
  DELETE, System Management, 7-21
  DELETE/QUEUE, System Management, 7-21
  DELETE PROCESSOR, System Management, 7-21
  INITIALIZE, System Management, 7-14
  INITIALIZE/PROCESSOR, System Management, 7-16
  INITIALIZE/QUEUE, System Management, 7-14

Master Index—222
QMG commands (cont’d.)

MCR format, System Management, 7-14
START, System Management, 7-27
START/PROCESSOR, System Management, 7-30
START/QUEUE, System Management, 7-27
START/QUEUE/MANAGER, System Management, 7-27
STOP, System Management, 7-24
STOP/ABORT, System Management, 7-26
STOP/PROCESSOR, System Management, 7-25
STOP/QUEUE, System Management, 7-24
STOP/QUEUE/MANAGER, System Management, 7-24
definition, Batch and Queue, 4-7
dequeuing jobs, Batch and Queue, 2-1
displaying information devices, Command Language, 2-4
queue file, Command Language, 2-4
installation, System Management, 7-2 to 7-9
output, Batch and Queue, 1-3
queuing jobs, Batch and Queue, 2-1
special applications, Batch and Queue, 1-2
starting, System Management, 7-4
DCL command, System Management, 7-4
MCR command, System Management, 7-4
QMGCLI, System Management, 7-1
Q register, Debugging, 2-6, 5-3, 7-2, 9-10
indicator, Debugging, 2-11, 7-3, 9-13
$QRMVF routine, Writing I/O Driver, 5-24
use of
with ACP, Writing I/O Driver, D-6
$QTRAN, System Management, 17-17
$QTRAN1, System Management, 17-18
$QTRAN2, System Management, 17-19
QUA attribute, System Management, 12-38
Qualifier
See also specific qualifiers
BRU utility, Utilities, 7-12
count, CDA, 2-14 to 2-17
date-related, Command Language, 4-8
DCL, Command Language, 1-3 to 1-4 Introduction, 3-1
description, Task Builder, 11-10
floating, Command Language, 1-3 to 1-4
MACRO command, MACRO-11, 8-8
Qualifiers
crash-input, CDA, 2-17 to 2-23
Quantity register
See Q register
QUE /DEL command format, Batch and Queue, 2-10
QUE /HO command format
entry number, Batch and Queue, 2-22
job name, Batch and Queue, 2-22
QUE /LI:DEV command format, Batch and Queue, 2-18
QUE /LI command, Batch and Queue, 2-14
batch queue, Batch and Queue, 1-9
display, Batch and Queue, 2-16 to 2-17
format, Batch and Queue, 2-15
print queue, Batch and Queue, 1-9
QUE /LI display, Batch and Queue, 1-10
switches, Batch and Queue, 2-15
QUE /MOD command example, Batch and Queue, 2-21
file format
switches, Batch and Queue, 2-19
job format
switches, Batch and Queue, 2-19
QUE /REL command format
entry number, Batch and Queue, 2-23
job name, Batch and Queue, 2-23

Master Index-223
Query mode
RMSBCK utility, RMS-11 Utilities, 6-5, 6-6, 6-7, 6-10
RMSRST utility, RMS-11 Utilities, 7-6, 7-7, 7-8, 7-11

Question
default response, System Generation (11M), 3-6
examples, System Generation (11M), 3-6
format, System Generation (11M), 3-5
logical order, System Generation (11M), 3-7

Question mark (?)
ODT, Program Development, 5-3
user input error, Debugging, A-1

Queue, Batch and Queue, 1-1
assignments, Batch and Queue, 1-2
definition, Batch and Queue, 4-7
device
definition, Batch and Queue, 4-3
device-specific, Batch and Queue, 1-2, 4-3
disk file
definition, Batch and Queue, 4-7
displaying information, Batch and Queue, 2-1
general, Batch and Queue, 1-2, 4-5
job
holding, Batch and Queue, 2-1
releasing, Batch and Queue, 2-1
status
altering, Batch and Queue, 2-1

PRINT
definition, Batch and Queue, 4-7
Queue file
displaying information, Command Language, 2-4
Queue I/O Request and Wait directive, Executive, 5-147
Queue I/O Request directive, Executive, 5-143
Queue management subsystem, System Management, 7-1 to 7-2
Queue Manager
See QMG

Queue name parameter
DELETE command, Batch and Queue, 2-10

Queue name switch
PRI command, Batch and Queue, 2-4

Queue optimization, MCR, 3-235
algorithms, MCR, 3-235
fairness-count, MCR, 3-235

/QUEUE qualifier
PRINT command, Batch and Queue, 2-4

Quiet mode, Indirect, 2-49
QUIT command
EDT editor, Introduction, 2-8, 2-9
RMSDES utility, RMS-11 Utilities, 2-2, 2-12, 2-18

Quotation mark ("), Command Language, 1-9
Quotation mark operator ("), See Operator
Quote character, MACRO-11, 6-25
Quoted string

QUPKT, Error Logging, 4-24

R

R$-family macro, RMS-11 Macro, 2-9
declaring, RMS-11 Macro, C-2

R.FIX
file attribute, I/O Operations, 2-5
parameter, fixed-length records, I/O Operations, 3-8

R.SEQ
file attribute, I/O Operations, 2-6
parameter, sequenced records, I/O Operations, 3-8

R.VAR
file attribute, I/O Operations, 2-6
parameter, variable-length records, I/O Operations, 3-8

/R5 switch
DMP utility, Utilities, 11-7
RA60/80/81 tape kit
copying
on-line, System Generation (11M), 2-19

RA60 disk, I/O Drivers, 5-4
RA80 disk, I/O Drivers, 5-4
RA81 disk, I/O Drivers, 5-4

RAB, RMS-11 Introduction, 4-8
declaring, RMS-11 Macro, 2-8
initializing, RMS-11 Macro, 2-9
summary, RMS-11 Macro, 6-115
Random access (cont'd.)
by key, RMS-11 Introduction, 3-12
match criterion, RMS-11 Introduction, 3-12
by RFA, RMS-11 Introduction, 3-11
by VBN, RMS-11 Introduction, 3-12
match criteria, RMS-11 User's Guide, 1-20
match criteria, RMS-11 User's Guide, 1-20
to indexed files, RMS-11 User's Guide, 1-20
5-13
to relative files, RMS-11 User's Guide, 1-20
4-1
to sequential files, RMS-11 User's Guide, 1-20
3-2
Random access mode, I/O Operations, 3-23
Random access mode, record attribute, I/O Operations, 3-9
RANDOM command
IOX, System Management, 4-51
Random I/O, I/O Operations, 2-20
Random mode
PUT$R macro
locate mode execution, I/O Operations, 3-31
write logical record, I/O Operations, 3-30
Range
Trace program, Debugging, 10-3
Range (EDT), Introduction, 2-10 to 2-12
RANGE command
IOX, System Management, 4-52
/RA switch
RMSBCK utility, RMS-11 Utilities, 6-6, 6-7, 6-9
RMSRST utility, RMS-11 Utilities, 7-7, 7-11
RAT field in FAB
CREATE operation, RMS-11 Macro, 5-11, 5-12
offset, RMS-11 Macro, 6-21

Master Index-225
RAT field in FAB (cont’d.)
OPEN operation, RMS-11 Macro, 5-78
summary, RMS-11 Macro, 6-59
FB$BLK mask, RMS-11 Macro, 6-60
RB$ASY mask in ROP field, RMS-11 Macro, 4-1
CONNECT operation, RMS-11 Macro, 5-7
DELETE operation, RMS-11 Macro, 5-25
DISCONNECT operation, RMS-11 Macro, 5-27
FIND operation, RMS-11 Macro, 5-49, 5-51, 5-54
FLUSH operation, RMS-11 Macro, 5-56
FREE operation, RMS-11 Macro, 5-58
GET operation, RMS-11 Macro, 5-60, 5-63, 5-67
NXTVOL operation, RMS-11 Macro, 5-70
PUT operation, RMS-11 Macro, 5-91, 5-95
READ operation, RMS-11 Macro, 5-98, 5-100
REWIND operation, RMS-11 Macro, 5-114
RSTS/E, RMS-11 Macro, D-4
SPACE operation, RMS-11 Macro, 5-120
summary, RMS-11 Macro, 6-131
TRUNCATE operation, RMS-11 Macro, 5-122
UPDATE operation, RMS-11 Macro, 5-124
value, RMS-11 Macro, 5-127, 5-129
RB$BID code in BID field
summary, RMS-11 Macro, 6-116
value, RMS-11 Macro, 6-115
RB$BLL code in BLN field
RSTS/E, RMS-11 Macro, D-4
value, RMS-11 Macro, 6-115
RB$BLN code in BLN field
value, RMS-11 Macro, 6-115
RB$EOF mask in ROP field
CONNECT operation, RMS-11 Macro, 5-7
summary, RMS-11 Macro, 6-132
value, RMS-11 Macro, 6-115
RB$-family symbol
declaring, RMS-11 Macro, C-2
RB$FDL mask in ROP field
DELETE operation, RMS-11 Macro, 5-25
summary, RMS-11 Macro, 6-133
value, RMS-11 Macro, 6-115
RB$KEY code in RAC field, RMS-11 Macro, 4-5
FIND operation, RMS-11 Macro, 5-51
GET operation, RMS-11 Macro, 5-63
PUT operation, RMS-11 Macro, 5-95
value, RMS-11 Macro, 6-115
RB$KGE mask in ROP field, RMS-11 Macro, 4-5, 4-6
FIND operation, RMS-11 Macro, 5-52
GET operation, RMS-11 Macro, 5-64
summary, RMS-11 Macro, 6-134
value, RMS-11 Macro, 6-115
RB$KGT mask in ROP field, RMS-11 Macro, 4-5, 4-6
FIND operation, RMS-11 Macro, 5-52
GET operation, RMS-11 Macro, 5-64
summary, RMS-11 Macro, 6-135
value, RMS-11 Macro, 6-115
RB$LOA mask in ROP field
PUT operation, RMS-11 Macro, 5-92, 5-96
summary, RMS-11 Macro, 6-136
UPDATE operation, RMS-11 Macro, 5-124
value, RMS-11 Macro, 6-115
RB$LOC mask in ROP field, RMS-11 Macro, 4-7
CONNECT operation, RMS-11 Macro, 5-6
GET operation, RMS-11 Macro, 5-61, 5-64, 5-68
PUT operation, RMS-11 Macro, 5-92
summary, RMS-11 Macro, 6-137
value, RMS-11 Macro, 6-115
RB$MAS mask in ROP field
PUT operation, RMS-11 Macro, 5-92
summary, RMS-11 Macro, 6-138
RB$MAS mask in ROP field (cont’d.)
value, RMS-11 Macro, 6-115
RB$RFA code in RAC field, RMS-11
Macro, 4-6
FIND operation, RMS-11 Macro, 5-54
GET operation, RMS-11 Macro, 5-67
value, RMS-11 Macro, 6-115
RB$SEQ code in RAC field, RMS-11
Macro, 4-4
FIND operation, RMS-11 Macro, 5-49
GET operation, RMS-11 Macro, 5-60
PUT operation, RMS-11 Macro, 5-91
value, RMS-11 Macro, 6-115
RB$UIF mask in ROP field, RMS-11
Macro, 4-4
PUT operation, RMS-11 Macro, 5-92, 5-96
summary, RMS-11 Macro, 6-139
value, RMS-11 Macro, 6-115
$RBCAL macro, RMS-11 Macro, C-3
RBF field in RAB, RMS-11 Macro, 4-7, 4-13
CONNECT operation, RMS-11
Macro, 5-7
GET operation, RMS-11 Macro, 5-61, 5-65, 5-68
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-92, 5-93, 5-95
READ operation, RMS-11 Macro, 5-99, 5-101
summary, RMS-11 Macro, 6-128
UPDATE operation, RMS-11 Macro, 5-124
WRITE operation, RMS-11 Macro, 5-127, 5-129
RBNs, System Management, 5-2
primary
secondary
status codes, System Management, 5-2 to 5-3
RC25 disk, I/O Drivers, 5-4
RCIPT: routine
digital input interrupt single-point
(IDCIV/ISDRV), I/O Drivers, 19-48
RCIPT: subroutine
read contact interrupt point
(UDDRV), I/O Drivers, 16-25
RCLOKB: subroutine
read 16-bit clock (K-series), I/O
Drivers, 23-25
RCML$ macro, I/O Operations, 6-12
Cnt parameter
device-specific (UNIBUS switch
driver), I/O Drivers, 24-4
R command, Debugging, 2-11, 9-13
ZAP utility, Utilities, 15-18
RCST$ directive, Executive, 5-149
RCST$ directive summary, I/O
Operations, C-2
/RC switch
DMP utility, Utilities, 11-7
RMSBCK utility, RMS-11 Utilities,
6-7, 6-9
RMSRST utility, RMS-11 Utilities,
7-8, 7-11
VFY utility, Utilities, 9-7
RCT, System Management, 5-1, 5-5
See also Bad Block Replacement
Control Task
and Error Logger, System
Management, 5-5
installation, System Management,
5-2
RCVD$ directive, Executive, 5-151
RCVD$ directive summary, I/O
Operations, C-3
RCVX$ directive, Executive, 5-153
RCVX$ directive summary, I/O
Operations, C-3
RD51 disk, I/O Drivers, 5-5
RD52 disk, I/O Drivers, 5-5
RD:, System Management, 15-1
RDACT: routine
ICDRV/ISDRV
read activation data, I/O
Drivers, 19-66
read activation data example,
I/O Drivers, 19-68
RDAF$ directive, Executive, 5-156 I/O
Drivers, 1-7
RDB, Executive, 3-11
assigning values, Executive, 3-19
format, Executive, 3-11
generating, Executive, 3-13, 3-14
RDBBK$, Executive, 3-13
RDBDFS$, Executive, 3-13
RDCS: changed state
read interrupt point (ICDRV/ISDRV),
I/O Drivers, 19-54

Master Index—227
RDCS: subroutine
read contact interrupt change data
(UOORV), I/O Drivers, 16-26
RDDI: circular buffer
read interrupt data (ICDRV/ISDRV),
I/O Drivers, 19-53
RDDS: subroutine
read contact interrupt data (UOORV),
I/O Drivers, 16-27
RDEF$ directive, Executive, 5-157
.RDFDR routine, read $$FSR2 default
directory string, I/O Operations, 4-2
.RDFPP routine, read $$FSR2 default
file protection word, I/O Operations, 4-5
.RDFUI routine, read default UIC, I/O
Operations, 4-3, 4-4
$RDPAG (Read page), System Library,
8-26
$$RDSG program section, Task Builder,
5-54
reserved name, Task Builder, E-3
/RS switch
RMSBCK utility, RMS-11 Utilities,
6-8, 6-9
RDT field in DAT block
DISPLAY operation, RMS-11 Macro,
5-32
offset, RMS-11 Macro, 6-14
OPEN operation, RMS-11 Macro,
5-81
RSTS/E, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-20
RDTI: circular buffer
read counter data (ICDRV/ISDRV),
I/O Drivers, 19-58
RDTI: subroutine
read timer interrupt data (UOORV),
I/O Drivers, 16-28
RDTI: terminal buffer
read character (ICDRV/ISDRV), I/O
Drivers, 19-61
RDWD: digital interrupt data
read full word (ICDRV/ISDRV),
I/O Drivers, 19-55
RDWD: subroutine
read word contact interrupt data
(UOORV), I/O Drivers, 16-29
RDXF$ directive, Executive, 5-158 I/O
Drivers, 1-7
REA
See REASSIGN command

Read
A/D channel, timed interval
(LSDRV), I/O Drivers, 17-6
activation data (ICDRV/ISDRV),
I/O Drivers, 19-66
example, I/O Drivers, 19-68
after prompt
TTDRV, I/O Drivers, 2-14,
2-18, 2-27, 2-40
VTDRV, I/O Drivers, 4-7
all characters (TTDRV), I/O Drivers,
2-13, 2-26, 2-36, 2-39, 2-42,
2-44, 2-46
check (CRDRV), I/O Drivers, 11-5
checkpointing (TTDRV), I/O
Drivers, 2-14
contact interrupt change data
RDCS: subroutine (UOORV),
I/O Drivers, 16-26
contact interrupt data
RDDI: subroutine (UOORV),
I/O Drivers, 16-27
contact interrupt point
RCIPT: subroutine (UOORV),
I/O Drivers, 16-25
contact sense fields
DI/DIW: subroutine (UOORV),
I/O Drivers, 16-23
converting lowercase (TTDRV), I/O
Drivers, 2-13, 2-27
DDDVR, I/O Drivers, 7-4
default input (TTDRV), I/O Drivers,
2-13, 2-27
destination address (XEDRV), I/O
Drivers, 13-16
digital interrupt data
(ICDRV/ISDRV), I/O Drivers,
19-52
direct access sample subroutine
ICS/ICR register, I/O Drivers,
19-78
direct-access terminator (PRDRV), I/O
Drivers, 18-5
error (tape driver), I/O Drivers,
8-14
Ethernet address (XEDRV), I/O
Drivers, 13-14
full word
digital interrupt data
(ICDRV/ISDRV), I/O
Drivers, 19-55
logical block, I/O Drivers, 1-30
special terminator (TTDRV),
I/O Drivers, 2-43
Read

logical block (cont’d.)
TTDRV, I/O Drivers, 2-13

logical block (communication driver),
I/O Drivers, 12-7

multiple A/D channel
(ICDRV/ISDRV), I/O Drivers, 19-13

no echo
TF.RNE (TTDRV), I/O Drivers, 2-37
TTDRV, I/O Drivers, 2-13, 2-27, 2-29, 2-38, 2-42, 2-44, 2-46

no filter (TTDRV), I/O Drivers, 2-14, 2-27

nondestructive
NFS volumes, System Management, 4-64

pass through (TTDRV), I/O Drivers, 2-14, 2-28

process escape sequence (TTDRV),
I/O Drivers, 2-13, 2-27

protocol type (XEDRV), I/O Drivers, 13-15

reverse (DTDRV), I/O Drivers, 6-7

RSTI: counter module
(ICDRV/ISDRV), I/O Drivers, 19-58

sequential analog input channel
(UDDRV), I/O Drivers, 16-18

single A/D channel (LSDRV), I/O Drivers, 17-12

special terminator (TTDRV), I/O Drivers, 2-14, 2-28, 2-42

TF.RNE, I/O Drivers, 2-37

sync character (communication driver), I/O Drivers, 12-7

tape driver, I/O Drivers, 8-7

terminator (TTDRV)
CTRL/C, I/O Drivers, 2-68

no echo, I/O Drivers, 2-15

table, I/O Drivers, 2-15, 2-45

time out
TF.TMO (TTDRV), I/O Drivers, 2-37

TTDRV, I/O Drivers, 2-15, 2-28, 2-42, 2-44, 2-46

timer interrupt data
RDTI: subroutine (UDDRV), I/O Drivers, 16-28

timer module
RSTI: subroutine (UDDRV), I/O Drivers, 16-30

Read (cont’d.)

virtual block, I/O Drivers, 1-30

word contact interrupt data
RDWD: subroutine (UDDRV), I/O Drivers, 16-29

Read/write

access, MACRO-11, 6-40

access declaration, RMS-11 User’s Guide, 2-6

sharing declaration, RMS-11 User’s Guide, 2-7

Read 16-bit clock (K-series), I/O Drivers, 23-23, 23-25

Read $$FSR2, default directory string,
I/O Operations, 4-2

READ$ macro, I/O Operations, 1-7, 3-1

block access, I/O Operations, 2-12

derf-of-file, I/O Operations, 3-36

example, I/O Operations, 3-35

FD.RWM parameter
block I/O, I/O Operations, 2-10

FDB, file operation, I/O Operations, 3-36

file processing

read virtual block, I/O Operations, 3-33

format

file processing, I/O Operations, 3-34

virtual block number, I/O Operations, 3-34

Readable-block context, RMS-11 Macro, 4-12

Read access, Command Language, 4-9, 4-84 MCR, 2-3

common region, MCR, 3-119

file, MCR, 3-148, 3-213

file open, I/O Operations, 2-15

shared, I/O Operations, 1-13

UFD, MCR, 3-281

volume, MCR, 3-94, 3-96, 3-106, 3-151

Read access (F11ACP), I/O Drivers, C-8

Read-ahead file processing, I/O Operations, 2-19

Read All Event Flags directive, Executive, 5-156

READ command

EDI utility, Utilities, 2-42
Read counter data
circular buffer (ICDRV/ISDRV), I/O Drivers, 19-58
Read data (LSDRV) from input buffer, I/O Drivers, 17-20
from input register, I/O Drivers, 17-4
timed intervals, I/O Drivers, 17-8
Read default UIC, I/O Operations, 4-4
Read digital input (LSDRV), I/O Drivers, 17-19
.READ directive, Indirect, 2-78
Read Event Flag directive, Executive, 5-157
Read Extended Event Flags directive, Executive, 5-158
Read file owner word, I/O Operations, 4-7
Read file protection word default, I/O Operations, 4-5
Read interrupt data circular buffer (ICDRV/ISDRV), I/O Drivers, 19-53
Read interrupt point changed state (ICDRV/ISDRV), I/O Drivers, 19-54
Read logical record file processing, I/O Operations, 3-21
random mode file processing, I/O Operations, 3-24
sequential mode, I/O Operations, 3-26
$READ macro sequential access, RMS-11 Macro, 5-98
VBN access, RMS-11 Macro, 5-100
Read-only access declaration, RMS-11 User's Guide, 2-6
sharing declaration, RMS-11 User's Guide, 2-7
Read-only access, MACRO-11, 6-40
READ operation, RMS-11 Introduction, 4-7 RMS-11 Macro, 4-14
access modes, RMS-11 Introduction, 4-7
$READ macro sequential access, RMS-11 Macro, 5-98
READ operation $READ macro (cont'd.)
VBN access, RMS-11 Macro, 5-100
Read virtual block file processing, I/O Operations, 3-33
Ready recovery LPDRV, I/O Drivers, 10-6
PPDRV, I/O Drivers, 18-4
Real-time system, Introduction, 6-2
REASSIGN command device, I/O Drivers, 1-20
LUN assignment, I/O Drivers, 1-4
REASSIGN command (MCR), MCR, 1-7, 3-172
time messages, MCR, 5-172
examples, MCR, 5-172
format, MCR, 5-172
parameters, MCR, 5-172
REASSIGN command (VMR), System Management, 10-38
definition, System Management, 10-38
examples, System Management, 10-38
format, System Management, 10-38
parameters, System Management, 10-38
Receive error detection, hard (TTDRV), I/O Drivers, 2-77
message (XEDRV), I/O Drivers, 13-13
standard QIO$ (LRDRV), I/O Drivers, 14-8
XEDRV Ethernet, I/O Drivers, 13-3
Receive By Reference directive, Executive, 5-170
Receive By Reference or Stop directive, Executive, 5-173
Receive-by-reference queue packet derequeuing, Executive, 5-170, 5-173
inserting, Executive, 5-228
Receive counter data connect buffer (ICDRV/ISDRV), I/O Drivers, 19-56
Receive Data directive, Executive, 5-151
Receive Data or Exit directive, Executive, 5-153
Receive Data or Stop directive, Executive, 5-149

Master Index-230
Receive interrupt data
  connect buffer (ICDRV/ISDRV),
  I/O Drivers, 19-51
  /RECEIVE qualifier, Task Builder, 11-57
Receiver disconnect (LRDRV), I/O Drivers, 14-11
Receive speed (TTDRV), I/O Drivers, 2-56
Reconfiguration components, System Management, 15-1
  CON, System Management, 15-1
  HRC, System Management, 15-1
  RD., System Management, 15-1
Record, RMS-11 Introduction, 1-1
  RMS-11 User's Guide, 1-1
See also Access mode
  See also Record format
  blocked
  See FB$BLK mask in RAT field
  buffer address
  See RBF field in RAB
data, RMS-11 Introduction, 3-7
deleting
  See DELETE operation
deleting, fast
  See RB$FDL mask in ROP field
  fast deletion
  See RB$FDL mask in ROP field
fixed-length
  PUT$ macro, I/O Operations, 3-28
  R.FIX parameter, I/O Operations, 3-8
format
  See RFM field in FAB
index, RMS-11 Introduction, 3-7
  RMS-11 User's Guide, 5-2, 5-6
locating
  See FIND operation
longest
  See LRL field in FAB
processing, RMS-11 Introduction, 4-1, 4-3 RMS-11 User's Guide, 1-15
reading, Indirect, 2-78
  See also GET operation
replacing
  See UPDATE operation
  sequenced
  PUT$ macro, I/O Operations, 3-26
Record
  sequenced (cont'd.)
    R.SEQ parameter, I/O Operations, 3-8
size
  See RSZ field in RAB
update existing
  See RB$UDIF mask in ROP field
variable-length, I/O Operations, 1-6
  PUT$ macro, I/O Operations, 3-28
  R.VAR parameter, I/O Operations, 3-8
writing
  See PUT operation
Record access, RMS-11 User's Guide, 1-12
  See also Shared access
Record access block
  See RAB field in RAB
Record access initialization, I/O Operations, 2-10
Record access mode
  See Access mode
Record attribute, I/O Operations, 2-6, 3-8
  FD.BLK parameter
    block boundary crossing, I/O Operations, 3-9
  FD.CR, I/O Operations, 2-6
  FD.CR parameter
    line-feed character, I/O Operations, 3-8
  FD.FTN parameter
    FORTRAN carriage-control, I/O Operations, 3-8
  FD.RAN parameter
    random access mode, I/O Operations, 3-9
  FD.RPN parameter
    carriage-control word, I/O Operations, 3-9
    locate mode, I/O Operations, 3-9
    sequential mode, I/O Operations, 3-9
  FD.RTN, I/O Operations, 2-6
  FD.RWM parameter
    process with block I/O, I/O Operations, 3-9
Record buffer task
  locate mode, I/O Operations, 3-29
Record context, RMS-11 Macro, 4-3
Record file address
See RFA
See RFA field in RAB
Record format, RMS-11 Introduction, 3-1 RMS-11 User’s Guide, 1-11, 1-18
and file organizations, RMS-11 User’s Guide, 1-20, 2-15
indexed files, RMS-11 User’s Guide, 6-1
relative files, RMS-11 User’s Guide, 4-2
RMSCNV utility, RMS-11 Utilities, 4-14
RMSDEF utility, RMS-11 Utilities, A-8
sequential files, RMS-11 User’s Guide, 3-3
tape, I/O Operations, 5-4
Record I/O, I/O Operations, 2-10
FSR, I/O Operations, 2-38
FSRZ
  multiple buffering, I/O Operations, 2-38
locate mode, FD.PLC parameter, I/O Operations, 3-6
macro, I/O Operations, 2-10
mode, I/O Operations, 1-9
multiple buffering, I/O Operations, 1-10
operation, I/O Operations, 1-8
random, FD.RAN parameter, I/O Operations, 3-6
synchronization, event flag, I/O Operations, 2-18
Record length
longest
See LRL field in FAB
maximum
See MRL field in FAB
Record Management Services
See RMS-11
Record number
maximum
See MRN field in FAB
Record operation, RMS-11 Introduction, 4-4 RMS-11 Macro, 4-9 RMS-11 User’s Guide, 1-15
Record operation macro, RMS-11 Macro, 1-2
declaring, RMS-11 Macro, C-3
Record-oriented device
See FB$REC mask in DEV field

Record-output characteristic
See RAT field in FAB
Record-output handling, RMS-11 User’s Guide, 1-19
Record processing, RMS-11 Macro, 4-3
Record reference vector
See RRV
RECORDS command
IOX, System Management, 4-53
Record size, RMS-11 User’s Guide, 1-18
FDB, I/O Operations, 3-9
fixed length, I/O Operations, 2-8
indexed files, RMS-11 User’s Guide, 6-1
largest, I/O Operations, 2-8
relative files, RMS-11 User’s Guide, 4-2
sequential files, RMS-11 User’s Guide, 4-2
UPDATE operation, RMS-11 User’s Guide, 2-16
Record stream, RMS-11 Macro, 4-3
Record transfer mode, RMS-11 Introduction, 4-6
indexed files, RMS-11 User’s Guide, 7-6
locate mode, RMS-11 Introduction, 4-6
move mode, RMS-11 Introduction, 4-6
relative files, RMS-11 User’s Guide, 4-12
sequential files, RMS-11 User’s Guide, 3-13
Recoverable errors, System Management, 15-30
Recovery check (CRDRV), I/O Drivers, 11-4
DTDRV, I/O Drivers, 6-6
select, I/O Drivers, 6-7
Recursive Translation of Logical Name directive, Executive, 5-159
RED
See REDIRECT command
REDIRECT command, Writing I/O Driver, 2-6
device, I/O Drivers, 1-20
REDIRECT command (MCR), MCR, 1-6, 3-173
and pseudo devices, MCR, 2-10
error messages, MCR, 3-173
examples, MCR, 3-173
REDIRECT command (MCR) (cont'd.)
   format, MCR, 3-173
   parameters, MCR, 3-173
REDIRECT command (VMR), System Management, 10-39
   definition, System Management, 10-39
   examples, System Management, 10-39
   format, System Management, 10-39
   parameters, System Management, 10-39
   restrictions, System Management, 10-39
Redirection, Command Language, 5-5, 5-24
Redundancy checking (communication driver), I/O Drivers, 12-11
Reentry vector register
   See X register
Reference
   search, Debugging, 6-3
REF field in KEY block, RMS-11 Macro, 2-13
   CLOSE operation, RMS-11 Macro, 5-3
   CREATE operation, RMS-11 Macro, 5-9, 5-18
   DISPLAY operation, RMS-11 Macro, 5-30
   ENTER operation, RMS-11 Macro, 5-35
   ERASE operation, RMS-11 Macro, 5-40
   EXTEND operation, RMS-11 Macro, 5-46
   offset, RMS-11 Macro, 6-67
   OPEN operation, RMS-11 Macro, 5-73, 5-74
   PARSE operation, RMS-11 Macro, 5-86
   REMOVE operation, RMS-11 Macro, 5-102
   RENAME operation, RMS-11 Macro, 5-108
   SEARCH operation, RMS-11 Macro, 5-116
   summary, RMS-11 Macro, 6-90
Region, Executive, 3-4
   absolute, Task Builder, 5-8, 5-9, 5-10
   building precautions, Task Builder, 5-10
   mapping, Task Builder, 5-8, 5-9
Region
   absolute (cont'd.)
      specifying, Task Builder, 5-10
      symbol definition file, Task Builder, 5-10
   address
      accessing, MCR, 3-166
   allocation
      diagram, Task Builder, 5-21
      window block, Task Builder, 5-26
APR
   specifying, Task Builder, 5-7
   assigning reference, Task Builder, 5-24
   attaching, Executive, 3-8, 5-19
   building, Task Builder, 5-18
   and linking, Task Builder, 5-18, 5-19, 5-20
   /CO/LI/PI switch
      interaction of, Task Builder, 5-3
      use of, Task Builder, 5-3
   linking task, Task Builder, 5-22
   to 5-24
   option, Task Builder, 5-18, 5-19
   procedure, Task Builder, 5-18 to 5-20
   with PAR option, Task Builder, 5-2
   /CO/LI/PI switch, Task Builder, 5-6
   /CODE:PIC qualifier, Task Builder, 5-3 to 5-6
   common, MCR, 3-75
      accessing, MCR, 3-120
      installed, MCR, 3-119
      protecting, MCR, 3-119
      status, MCR, 3-46
      synchronizing, MCR, 3-121
      tasks, MCR, 3-47
      unfixing, MCR, 3-284
   definition, Task Builder, 2-17
   descriptor, Task Builder, B-15, B-17, B-21, B-22
   descriptor in overlay, Task Builder, 3-20, 3-21
   detaching, Executive, 5-67
      extent, System Management, 19-3
      format, System Management, 19-4
   dynamic, Executive, 3-5 Task Builder, 2-19, 5-40 to 5-44

Master Index--233
Region (cont'd.)
program section, Task Builder, 5-8
building a linking task, Task Builder, 5-24
protecting, Executive, 3-8
read/write access, System Management, 10-26
read-only, System Management, 10-26
relocatable, Task Builder, 5-6
mapping, Task Builder, 5-6
specifying, Task Builder, 5-7
specifying APR, Task Builder, 5-7
.STB file, Task Builder, 5-10
removing, Command Language, 7-37
MCR, 3-175
resident relocatable, Task Builder, 5-6
resolving program section name, Task Builder, 5-39, 5-40
shareable, Executive, 3-5
/SHAREABLE:COMMON qualifier, Task Builder, 5-3 to 5-6
/SHAREABLE:LIBRARY qualifier, Task Builder, 5-3 to 5-6
shared, Executive, 3-6 Task Builder, 2-19, 5-1
autoload vector, Task Builder, 5-14
/CO/L1/PI switch, Task Builder, 5-6
defined, Task Builder, 5-1
partition requirement, Task Builder, 5-3
restrictions for overlaid, Task Builder, 5-14
specifying
partition, Task Builder, 5-29
position-independent, Task Builder, 10-9, 10-31, 11-18, 11-65, 11-66
static common, Executive, 3-4
.STB file, Task Builder, 5-4, 5-6
for an absolute, Task Builder, 5-10, 5-14
using /CO/L1/PI switch, Task Builder, 5-4
symbol definition file, Task Builder, 5-10
symbol exclusion, Task Builder, 5-13
symbol resolution, Task Builder, 5-12, 5-13
Region (cont'd.)
- task, Executive, 3-4 Task Builder, 2-18
- task-building option, Task Builder, 5-15
- unfixing, System Management, 10-92
- window, Task Builder, 5-17, 5-26

Region Definition Block
- See RDB

Region ID, Executive, 3-5
determining, Executive, 5-19

ReGIS character set, MCR, 3-246

/REGIS keyword
- SET command (MCR), MCR, 3-246
- SET command (VMR), System Management, 10-70

Register, Debugging, 2-6, 5-1
- A, Debugging, 2-6, 5-3, 6-2, 9-10
- address expression, Debugging, 5-1
- address mode, MACRO-11, 5-2 deferred, MACRO-11, 5-3
- B, Debugging, 2-7, 5-4, 9-10
clearing, Debugging, 3-2
breakpoint, Program Development, 5-6
- address, Debugging, 5-4, 9-10
- instruction, Debugging, 5-4, 9-10
- proceed count, Debugging, 5-4, 9-10
- C, Debugging, 2-6, 5-3, 9-10
- indicator, Debugging, 9-12
cache control, CDA, 3-3
- D, Debugging, 2-7, 5-4, 6-2
definition
- control, MACRO-11, 6-20, 6-21
default, MACRO-11, 3-10
- E, Debugging, 2-7, 5-4
- error, CDA, 3-2
- expression, MACRO-11, 5-2
- F, Debugging, 2-6, 4-6, 5-3, 9-10
- G, Debugging, 2-7, 5-4, 9-10
general, CDA, 3-2 Debugging, 5-1, 9-10
- contents, Debugging, 5-2
- examining, Debugging, 5-1
- setting, Debugging, 5-1
- H, Debugging, 2-6, 5-3, 6-1, 9-10
- handling
- control swapping, System Library, 2-2
- save all registers ($SAVAL), System Library, 2-2

Register (cont'd.)
- save registers 0-2 ($SAVVR), System Library, 2-4
- save registers 1-5 ($SAVR1), System Library, 2-5
- save registers 3-5 ($SAVRG), System Library, 2-3
- I, Debugging, 2-7, 5-4, 9-10
- indicator, Debugging, 2-3, 2-8, 2-11
- C register, Debugging, 2-3, 7-3, 9-12
current location (.), Debugging, 2-3, 7-3, 9-8
- Q register, Debugging, 2-3, 7-3, 9-13
internal, Debugging, 5-2
- accessing, Debugging, 5-2
- L, Debugging, 2-6, 5-3, 6-1, 9-10
- M, Debugging, 2-6, 5-3, 6-2
memory management, CDA, 3-2
memory operations, Debugging, 6-1
memory system error, CDA, 3-2
page
- address, CDA, 3-2
description, CDA, 3-2
- percent sign (%) in expression, MACRO-11, 5-2
- Q, Debugging, 2-6, 5-3, 7-2, 9-10
- indicator, Debugging, 9-13
- R, Debugging, 2-7, 5-5, 9-10
clearing, Debugging, 2-11, 5-6, 9-13
setting, Debugging, 2-11, 5-6, 9-13
relocation, Program Development, 5-2, 5-3, 5-4
report, Error Logging, 3-18
- S, Debugging, 2-6, 5-3, 9-10
search limit, Debugging, 6-1
- set, Debugging, 5-4
symbol, MACRO-11, 3-10
term indicator, MACRO-11, 3-2
UNIBUS mapping, CDA, 3-2
- V, Debugging, 2-7, 5-5
volatile, CDA, 3-1, 3-3
- See also Volatile registers
- W, Debugging, 2-6, 5-3
- X, Debugging, 2-6, 5-3, 5-6
- XDT internal, Debugging, 9-10
REGISTER_DEFINITIONS argument, MACRO-11, 8-10
Register access (ICDRV/ISDRV), I/O Drivers, 19-4

Master Index—235
Register access (ICDRV/ISDRV)
(cont'd.)
direct function, I/O Drivers, 19-4
REG symbolic argument, MACRO-11, 6-20, 6-21
Rejecting message (LRDRV), I/O
Drivers, 14-10
/RE job switch
QUE /MOD command, Batch and Queue, 2-21
REL argument to ORG$ macro,
RMS-ll Macro, 2-3
Relative address, CDA, 3-1 Debugging, 2-2
format, Debugging, 2-2
Relative address mode, MACRO-11, 5-8
assemble as absolute, MACRO-11, 6-19
Relative branch location, Debugging, 2-6, 4-5, 9-9
Relative deferred address mode,
MACRO-11, 5-9
Relative file organization, RMS-ll
See also FB$REL code
access declarations, RMS-ll User's Guide, 4-6
allocation
DEQ, RMS-ll User's Guide, 4-4
initial, RMS-ll User's Guide, 4-3
and remote access, RMS-ll User's Guide, B-3
buckets, RMS-ll User's Guide, 4-1
cells, RMS-ll Introduction, 3-5
RMS-ll User's Guide, 4-1
CONNECT operation, RMS-ll
User's Guide, 4-7
contiguity, RMS-ll User's Guide, 4-4
declaring with ORG$ macro,
RMS-ll Macro, 2-3
deferred write, RMS-ll User's Guide, 4-14
DELETE operation, RMS-ll User's Guide, 4-7
design, RMS-ll User's Guide, 4-1
allocation, RMS-ll User's Guide, 4-3
bucket size, RMS-ll User's Guide, 4-2

Relative file organization
design (cont'd.)
MRN, RMS-ll User's Guide, 4-5
record format, RMS-ll User's Guide, 4-2
directory operations, RMS-ll User's Guide, 4-15
DISCONNECT operation, RMS-ll
User's Guide, 4-8
file operations, RMS-ll User's Guide, 4-15
FIND operation, RMS-ll User's Guide, 4-8
FLUSH operation, RMS-ll User's Guide, 4-10
GET operation, RMS-ll User's Guide, 4-10, 4-12, 4-13
I/O techniques, RMS-ll User's Guide, 4-14
MRN, RMS-ll User's Guide, 4-4
multiple access streams, RMS-ll
User's Guide, 4-15
multiple buffers, RMS-ll User's Guide, 4-15
prologue, RMS-ll User's Guide, 4-1
PUT operation, RMS-ll User's Guide, 4-11, 4-12
random access
by key, RMS-ll User's Guide, 4-1
by RFA, RMS-ll User's Guide, 4-1
record operations, RMS-ll User's Guide, 4-7
record size, RMS-ll User's Guide, 4-2
record transfer modes, RMS-ll
User's Guide, 4-12
move mode, RMS-ll User's Guide, 4-12
REWIND operation, RMS-ll User's Guide, 4-12
RRN, RMS-ll Introduction, 3-6
sequential access, RMS-ll User's Guide, 4-1
shared access, RMS-ll User's Guide, 4-6
block access, RMS-ll User's Guide, 4-6
record access, RMS-ll User's Guide, 4-6
sharing declarations, RMS-ll User's Guide, 4-6
Relative file organization (cont’d.)
stream operations, RMS-ll User’s Guide, 4-7
structure, RMS-ll User’s Guide, 4-1
conceptual, RMS-ll User’s Guide, 4-1
UPDATE operation, RMS-ll User’s Guide, 4-12, 4-13
Relative record number
See BKT field in RAB
See RRN
Relay, latch output (LSDRV), I/O Drivers, 17-22
RELAY: subroutine
latch output relay (LSDRV), I/O Drivers, 17-22
RELEASE/ENTRY command,
Command Language, 9-26
RELEASE/JOB command, Command Language, 9-26
RELEASE command
format
entry number, Batch and Queue, 2-23
job name, Batch and Queue, 2-23
Release data buffer (K-series), I/O Drivers, 23-26
Relocatable
address, Debugging, 2-2, 5-6, 9-12
calculating, Debugging, 2-9, 7-1
expression, MACRO-11, 3-17
program section, MACRO-11, 6-44, 6-45
region
See Region
symbol, Task Builder, A-27
relocatable
complex
expression, MACRO-11, 3-18
Relocation
bias, MACRO-11, 2-2, 3-17, 3-18, 4-1
complex, MACRO-11, 4-1 Task Builder, A-22
entry, Task Builder, A-23
operation code, Task Builder, A-22
directory command byte, Task Builder, A-13
directory record, Task Builder, A-12
entry, Task Builder, A-12, A-13
format, Task Builder, A-14
Relocation displaced (cont’d.)
global, Task Builder, A-16
global, Task Builder, A-15
additive, Task Builder, A-16
additive displaced, Task Builder, A-17
internal, Task Builder, A-14
displaced, Task Builder, A-15
library
resident, Task Builder, A-23
overview, MACRO-11, 4-1
program section, Task Builder, A-19
additive, Task Builder, A-20
additive displaced, Task Builder, A-21
displaced, Task Builder, A-19
resident library, Task Builder, A-23
task
mapped system, Task Builder, 2-16
Relocation register, Program Development, 5-2, 5-3, 5-4
See also R register
$RELOC routine, Writing I/O Driver, 5-25
Rel parameter
immediate device-specific function (LSDRV), I/O Drivers, 17-3
REL symbolic argument, MACRO-11, 6-42
REM
See also REMOVE command
.REM directive, MACRO-11, 6-18
/REMOTE keyword
SET command (MCR), MCR, 3-247
SET command (VMR), System Management, 10-71 to 10-72
Remote line
clearing characteristic (TTDRV), I/O Drivers, 2-83
Remote operation
P/OS, RMS-ll Macro, D-3
Remote site powerfail (ICDRV/ISDRV), I/O Drivers, 19-71
Remote terminal
IO.BIO (TTDRV), I/O Drivers, 2-25
monitor example (ICDRV/ISDRV), I/O Drivers, 19-62
REMOVE/REGION command,
Command Language, 7-37
Remove Affinity directive, Executive, 5-162
REMOVE command, Command Language, 7-37, 9-26
REMOVE command (MCR), MCR, 1-7, 3-175, 3-180
error messages, MCR, 3-176
example, MCR, 3-175
format, MCR, 3-175
parameter, MCR, 3-175
REMOVE command (VMR), System Management, 10-40
definition, System Management, 10-40
examples, System Management, 10-40
format, System Management, 10-40
notes, System Management, 10-40
parameters, System Management, 10-40
$REMOVE macro, RMS-11 Macro, 5-102
RSTS/E, RMS-11 Macro, D-4
REMOVE operation, RMS-11
Introduction, 4-1 RMS-11 Macro, 3-6
BDB requirement, RMS-11 Macro, 2-8
I/O buffer requirement, RMS-11 Macro, 2-7
IFAB requirement, RMS-11 Macro, 2-5
$REMOVE macro, RMS-11 Macro, 5-102
wildcard loop, RMS-11 Macro, 3-9, 3-10
nonselective, RMS-11 Macro, 3-10
selective, RMS-11 Macro, 3-11
.RENAME routine, rename file, I/O Operations, 4-26
RENEW command
EDI utility, Program Development, 2-15 Utilities, 2-19, 2-43
Repeat block
indefinite, MACRO-11, 7-3, 7-16 to 7-19
Repeating code block, MACRO-11, 7-19
REPEAT key, Command Language, 3-13
Replacement blocks
See RBNs
Report
interval
output frequency, System Management, 4-62
Report control function, Error Logging, 5-22
REPORTERRORS YES/NO command
IOX, System Management, 4-54
Report Generator
See RPT
Report switch, Error Logging, 3-6, 3-20
.REPT directive, MACRO-11, 7-19
Request and Pass Offspring Information directive, Executive, 5-163
REQUEST command, Command Language, 3-34, 9-27
Request Task directive, Executive, 5-167
R error, MACRO-11, 3-10
summary, MACRO-11, D-4
RES
See RESUME command
Reschedule interval, System Management, 10-43
RESCOM
linking to region, Task Builder, 5-15
option, Task Builder, 12-30, 12-31
shared region use, Task Builder, 5-15
RESEQUENCE command
EDT editor, *Introduction*, 2-12, 2-13
Reserved symbol, *Indirect*, 2-25
MACRO-11, 2-3, 3-1, 3-7
See also Permanent Symbol Table
description, *Task Builder*, E-1 to E-4
Reset counter initial value
SCTI: (ICDRV/ISDRV), *I/O Drivers*, 19-59
RESET key (EDT), *Introduction*, 2-8
Reset switch, *Error Logging*, 2-4, 2-7
Reset switch (CRDRV), 1/0
Drivers, 11-6
Resident
common
name block data, *Task Builder*, B-8
library
name block data, *Task Builder*, B-8
relocation, *Task Builder*, A-23
memory
for TKB performance, *Task Builder*, F-2, F-3
overlay operator
enabling recognition, *Task Builder*, 10-34, 11-58
region
map file
including symbol definition, *Task Builder*, 10-26
using to reduce overhead, *Task Builder*, F-4
/RESIDENT_OVERLAYS qualifier, *Task Builder*, 11-58
Resident data base
assembling, *Writing I/O Driver*, 3-12
example, *Writing I/O Driver*, 6-1
Resident driver
assembling, *Writing I/O Driver*, 3-13
combination with data base, *Writing I/O Driver*, 3-1
definition, *Writing I/O Driver*, 1-1
eexample, *Writing I/O Driver*, 6-1
incorporating, *Writing I/O Driver*, 3-13
linking data base, *Writing I/O Driver*, 3-3
rebuilding and reincorporating
after debugging, *Writing I/O Driver*, 3-29
Resident driver (cont’d.)
task-building, *Writing I/O Driver*, 3-14
RESLIB
linking to region, *Task Builder*, 5-15
option, *Task Builder*, 12-30, 12-31, 12-32
shared region use, *Task Builder*, 5-15
Resource Monitoring Display
See RMD
/RES switch
PRI command, *Batch and Queue*, 2-5
RESTART command
IOX, *System Management*, 4-55
/RESTART qualifier
PRINT command, *Batch and Queue*, 2-5
SET QUEUE command, *Batch and Queue*, 2-21
.RESTORE directive, MACRO-11, 3-11, 6-47, 6-48
Resultant string
See RSA field in NAM block
RESUME command, MCR, 1-7, 3-177
error messages, MCR, 3-177
eexample, MCR, 3-177
format, MCR, 3-177
keyword
/TERM, MCR, 3-177
parameter, MCR, 3-177
Resume Task directive, *Executive*, 5-176
/RE switch
PIP utility, *Utilities*, 3-33
VFY utility, *Utilities*, 9-7
Retadd parameter
device-specific function
receive (LRDRV), *I/O Drivers*, 14-9
transmit (LRDRV), *I/O Drivers*, 14-4
RETRIES command
IOX, *System Management*, 4-56
Retries parameter
device-specific function
receive (LRDRV), *I/O Drivers*, 14-9
transmit (LRDRV), *I/O Drivers*, 14-4
on disk, RMS-11 *User’s Guide*, 8-2
Retrieval pointer count
See RTV field in FAB
Retry count parameter (UNIBUS switch driver)
IO.CON function, I/O Drivers, 24-4
Retry procedure (tape driver), I/O Drivers, 8-14
/RETRY switch
BAD utility, Utilities, 6-6
Return operation, from, RMS-ll Macro, 2-14
Return, automatic carriage (half-duplex), I/O Drivers, 3-31
Return buffer number (K-series), I/O Drivers, 23-24
Return character (TTDRV), I/O Drivers, 2-69
RETURN command
EDI utility, Utilities, 2-19, 2-43
Return command, Debugging, 2-5, 4-2, 9-8
.RETURN directive, Indirect, 2-79
Return from completion handler, RMS-ll Macro, 2-18
RETURN key, Command Language, 3-2, 3-11 Introduction, 1-4 MCR, 2-15
closing location
ODT, Program Development, 5-5, 5-8
displaying new line
EDI utility, Program Development, 2-13
entering text
EDI utility, Program Development, 2-9
half-duplex, I/O Drivers, 3-23, 3-24
terminating input
EDI utility, Program Development, 2-9, 2-10, 2-18, 7-7
TTDRV, I/O Drivers, 2-71
$RETURN macro, RMS-ll Macro, 2-18
RETURN statement, Error Logging, 4-31, 5-33
RETYPE command
EDI utility, Utilities, 2-19, 2-43
Revector control tables, System Management, 5-2
Reverse operation (DTDRV), I/O Drivers, 6-8
speed
DTDRV, I/O Drivers, 6-7
/REVISED qualifier
BRU utility, Utilities, 7-21
Revision date
See also RDT field in DAT block
RMSBCK utility, RMS-ll Utilities, 6-8
Revision number
See RVN field in DAT block
Rewind
importance (CTDRV), I/O Drivers, 9-7
on close or open, I/O Operations, 2-16
tape driver, I/O Drivers, 8-7
volume, I/O Operations, 5-5
REWIND_MAGTAPE attribute
RMSDES utility, RMS-ll Utilities, 2-34
$REWIND macro, RMS-ll Macro, 5-114
RSTS/E magtape device, RMS-ll Macro, D-4
REWIND operation, RMS-ll
Introduction, 4-4 RMS-ll User's Guide, 1-15
indexed files, RMS-ll User's Guide, 7-6
record stream, RMS-ll Macro, 4-9
relative files, RMS-ll User's Guide, 4-12
$REWIND macro, RMS-ll Macro, 5-114
sequential files, RMS-ll User's Guide, 3-11
/reWIND qualifier
BRU utility, Utilities, 7-21
RF11 disk controller, I/O Drivers, 5-1
RFA, RMS-ll Introduction, 3-11, 3-15
relative files, RMS-ll User's Guide, 4-1
sequential files, RMS-ll User's Guide, 3-2
RFA field in RAB, RMS-ll Macro, 4-6
CONNECT operation, RMS-ll Macro, 5-7
FIND operation, RMS-ll Macro, 5-50, 5-52, 5-54
GET operation, RMS-ll Macro, 5-61, 5-65, 5-67

Master Index-240
RFA field in RAB (cont’d.)
offset, RMS-ll Macro, 6-115
PUT operation, RMS-ll Macro, 5-93, 5-96
READ operation, RMS-ll Macro, 5-99, 5-101
summary, RMS-ll Macro, 6-129
WRITE operation, RMS-ll Macro, 5-128, 5-130
RFA record access
See also RB$RFA code in RAC field
to relative files, RMS-ll User’s Guide, 4-1
to sequential files, RMS-ll User’s Guide, 3-2
RFM field in FAB
CREATE operation, RMS-ll Macro, 5-11
offset, RMS-ll Macro, 6-23
OPEN operation, RMS-ll Macro, 5-78
summary, RMS-ll Macro, 6-61
$RFOWN routine, read $$FSR2 file
owner word, I/O Operations, 4-7
$$RGDS program section
reserved name, Task Builder, E-3
RHB field in RAB, RMS-ll Macro, 4-7
GET operation, RMS-ll Macro, 5-61, 5-64, 5-68
offset, RMS-ll Macro, 6-115
PUT operation, RMS-ll Macro, 5-92, 5-96
summary, RMS-ll Macro, 6-130
UPDATE operation, RMS-ll Macro, 5-124
Right-angle bracket (»), Command Language, 3-14
CLI prompt, Command Language, 3-14
Right-angle bracket command (»), Debugging, 2-6, 4-5, 9-9
RK05 disk, I/O Drivers, 5-3
RK05F disk, I/O Drivers, 5-3
RK06/07 disk kit
copying
on-line, System Generation (11M), 2-22
stand-alone, System Generation (11M), 2-12
RK06 disk, I/O Drivers, 5-3
RK07 disk, I/O Drivers, 5-3
RK11 disk controller, I/O Drivers, 5-3
RK611 disk controller, I/O Drivers, 5-3
RL01/02 disk kit
copying
on-line, System Generation (11M), 2-24
stand-alone, System Generation (11M), 2-15
RL01 disk, I/O Drivers, 5-3
RL02 disk, I/O Drivers, 5-3
RL02 exercise
IOX, System Management, 4-10
RL11 disk controller, I/O Drivers, 5-3
Rlast parameter
RCLOKB: subroutine (K-series), I/O Drivers, 23-25
$RLCB (Release core block), System Library, 7-4
$RLCB system routine, RMS-ll Macro, 2-20
RLOG$ directive, Executive, 5-159
RLON$ directive, Executive, 5-159
RLSBUF: subroutine
release data buffer (K-series), I/O Drivers, 23-26
release data buffer (LADRV), I/O Drivers, 22-21
RLSCT FORTRAN subroutine, Task Builder, 5-64, 5-65
RM02/03/05/80 tape kit
copying on-line, System Generation (11M), 2-19
RM02/03 module, Error Logging, 4-37
to 4-49
RM02/03 notes module, Error Logging, 4-67, 4-68
RM02 disk, I/O Drivers, 5-3
RM03 disk, I/O Drivers, 5-3
RM05 disk, I/O Drivers, 5-3
RM80 disk, I/O Drivers, 5-3
RM$F$ directive, Executive, 5-162
RMV, Command Language, 8-9 System Generation (11M), 4-63 System Management, 1-2, 6-1
Active Task Display, System Management, 6-8
altering
from MCR, System Management, 6-9
altering from setup page, System Management, 6-8
Active Task List Page, System Management, 6-1

Master Index-241
RMD

cached device (cont’d.)

Detailed Statistics Page, System Management, 6-1

cache region

detailed statistics
altering from MCR, System Management, 6-18
detailed statistics display, System Management, 6-16
altering from setup page, System Management, 6-17
general statistics
altering from MCR, System Management, 6-16
general statistics display, System Management, 6-14
altering from setup page, System Management, 6-15
General Statistics Page, System Management, 6-1
display pages, System Management, 6-1
error messages, System Management, 6-18
Help display, System Management, 6-3
Help Page, System Management, 6-1
I/O Counts Display
altering
from MCR, System Management, 6-12
from setup page, System Management, 6-12
I/O Counts Page, System Management, 6-1
installation, System Management, 6-2
MCR INSTALL command, System Management, 6-2
RSX-11M systems, System Management, 6-2
invoking, System Management, 6-2
memory display, System Management, 6-4
FREE command, System Management, 6-7
modifying, System Management, 6-7
RATE command, System Management, 6-7

RMD (cont’d.)
Memory Page, System Management, 6-1
pages, System Management, 6-1
running on a slaved terminal, System Management, 6-3
setup command, System Management, 6-2
setup pages, System Management, 6-2
System Statistics Display, System Management, 6-13
altering
from MCR, System Management, 6-14
from setup page, System Management, 6-14
System Statistics Page, System Management, 6-1
task-build command file
altering, System Management, 6-18
Task Header Display, System Management, 6-9
altering
from MCR, System Management, 6-11
from setup page, System Management, 6-10
contents, System Management, 6-10
Task Header Page, System Management, 6-1
using at terminals, System Management, 6-2
RMDEMO, Introduction, 6-9
RMS-11, Command Language, 4-50
installing, System Generation (11M), 6-9
introductory information
Best reference, RMS-11
Introduction
library, Program Development, 1-9, 1-11
magnetic tape, Command Language, 5-44
position of
in I/O hierarchy, Writing I/O Driver, 2-2
reference information
Best reference, RMS-11 Macro
RMSINSTAL.CMD, System Generation (11M), 6-10
RMS-11 (cont’d.)
startup command procedures,

System Generation (11M), 6-11

user information

Best reference, RMS-11 User’s
Guide

using VMR to create partitions,

System Generation (11M), 5-19

utilities

Best reference, RMS-11 Utilities

RMS-11 File Back-Up Utility
See RMSBCK

RMS-11 File Conversion Utility
See RMSCNV

RMS-11 File Definition Utility
See RMSDEF

RMS-11 File Design Utility
See RMSDES

RMS-11 File Display Utility
See RMSDSP

RMS-11 File Restoration Utility
See RMSRST

RMS-11 Indexed File Load Utility
See RMSIFL

RMS-11 string
processing, Executive, 5-139

RMSBCK utility, RMS-11 Introduction,

5-3 RMS-11 Utilities, 1-1, 3-3,

4-5, 5-1, 6-1, 7-1, 7-5, 7-9, 7-10

backup file contents, RMS-11
Utilities, 6-1

backup medium, RMS-11 Utilities,

6-3

/CD switch, RMS-11 Utilities, 6-8,

6-9

command string, RMS-11 Utilities,

6-2, 6-3

container file, RMS-11 Utilities, 6-1

data integrity checking, RMS-11

Utilities, 6-6, 6-7, 6-9

examples, RMS-11 Utilities, 6-10

global switches, RMS-11 Utilities,

6-5

HELP, RMS-11 Utilities, 6-4

/ID switch, RMS-11 Utilities, 6-4,

6-5

indirect command file, RMS-11

Utilities, 6-2

input file switches, RMS-11 Utilities,

6-8

intersystem file transfer, RMS-11

Utilities, 1-2

invoking, RMS-11 Utilities, 6-2

RMSBCK utility (cont’d.)
magnetic tape, RMS-11 Utilities,

6-7

multivolume, RMS-11 Utilities,

6-9

messages, RMS-11 Utilities, C-1

/NOJQU switch, RMS-11 Utilities,

6-5, 6-6, 6-7, 6-10

output file switches, RMS-11

Utilities, 6-6

processing, RMS-11 Utilities, 6-8

data integrity checking, RMS-11

Utilities, 6-9

explicit/implicit filespec, RMS-11

Utilities, 6-9

extended diagnostic messages,

RMS-11 Utilities, 6-10

summary listing, RMS-11

Utilities, 6-10

prompt, RMS-11 Utilities, 6-2

query mode, RMS-11 Utilities, 6-5,

6-6, 6-7, 6-10

/RA switch, RMS-11 Utilities, 6-6,

6-7, 6-9

/RC switch, RMS-11 Utilities, 6-7,

6-9

/RD switch, RMS-11 Utilities, 6-8,

6-9

/RW switch, RMS-11 Utilities, 6-7

/SL switch, RMS-11 Utilities, 6-6,

6-10

summary listing, RMS-11 Utilities,

6-10

/SU switch, RMS-11 Utilities, 6-7

terminating, RMS-11 Utilities, 6-2

RMSCNV utility, Command Language,

4-50 RMS-11 Introduction, 5-2

RMS-11 Utilities, 1-1, 3-1, 4-1

/AF switch, RMS-11 Utilities, 4-5,

4-7, 4-13, 4-15

ASCII stream files, RMS-11 Utilities,

4-3, 4-8

block mode, RMS-11 Utilities, 4-1

/BL switch, RMS-11 Utilities, 4-8

/CA switch, RMS-11 Utilities, 4-8

command string, RMS-11 Utilities,

4-3, 4-4

CTRL/Z

file terminator, RMS-11 Utilities,

4-8

/EO switch, RMS-11 Utilities, 4-8

examples, RMS-11 Utilities, 4-16

/FO switch, RMS-11 Utilities, 4-9,

4-15

Master Index–243
RMSCNV utility (cont’d.)
HELP, RMS-11 Utilities, 4-5
/ID switch, RMS-11 Utilities, 4-5, 4-9
/IM switch, RMS-11 Utilities, 4-9
indirect command file, RMS-11 Utilities, 4-4
intersystem file transfer, RMS-11 Utilities, 1-2, 4-1
invoking, RMS-11 Utilities, 4-3
key name, RMS-11 Utilities, 4-10
key of reference, RMS-11 Utilities, 4-10
IKN switch, RMS-11 Utilities, 4-10, 4-16
IKR switch, RMS-11 Utilities, 4-10, 4-16
ILO switch, RMS-11 Utilities, 4-10
mass insertion mode, RMS-11 Utilities, 4-10
IMA switch, RMS-11 Utilities, 4-10
messages, RMS-11 Utilities, A-1
IML switch, RMS-11 Utilities, A-11
network facilities, RMS-11 Utilities, 4-1
IPD switch, RMS-11 Utilities, 4-12
processing, RMS-11 Utilities, 4-14
input file organization, RMS-11 Utilities, 4-16
output file organization, RMS-11 Utilities, 4-15
prompt, RMS-11 Utilities, 4-3
/SL switch, RMS-11 Utilities, 4-12
summary listing, RMS-11 Utilities, 4-12
supersession, RMS-11 Utilities, 4-13
/SU switch, RMS-11 Utilities, 4-5, 4-7, 4-13, 4-15
terminating, RMS-11 Utilities, 4-4
/TR switch, RMS-11 Utilities, 4-13
/WF switch, RMS-11 Utilities, 4-14
RMSDEF utility, RMS-11 Utilities, 1-1, A-1
alignment, RMS-11 Utilities, A-14
allocation
data, RMS-11 Utilities, A-16
file, RMS-11 Utilities, A-14
alternate key, definition, RMS-11 Utilities, A-11
area definition, RMS-11 Utilities, A-13
area numbers, RMS-11 Utilities, A-16
RMSDEF utility (cont’d.)
block boundaries, RMS-11 Utilities, A-9
bucket size, RMS-11 Utilities, A-15
carriage control, RMS-11 Utilities, A-9
command string, RMS-11 Utilities, A-5
contiguity, RMS-11 Utilities, A-15
default extension quantity, RMS-11 Utilities, A-15
file creation, RMS-11 Utilities, A-19
file organization, RMS-11 Utilities, A-8
file specification, RMS-11 Utilities, A-7
fill numbers, RMS-11 Utilities, A-16
fixed control area, RMS-11 Utilities, A-8
HELP, RMS-11 Utilities, A-5
/ID switch, RMS-11 Utilities, A-5
invoking, RMS-11 Utilities, A-5
location, RMS-11 Utilities, A-14
magnetic tape, RMS-11 Utilities, A-8, A-10
maximum record number, RMS-11 Utilities, A-9
maximum record size, RMS-11 Utilities, A-9
messages, RMS-11 Utilities, A-20
placement control, RMS-11 Utilities, A-14
primary key, definition, RMS-11 Utilities, A-10
processing, RMS-11 Utilities, A-1
protection, RMS-11 Utilities, A-18
record format, RMS-11 Utilities, A-8
terminating, RMS-11 Utilities, A-5
RMSDES utility, RMS-11 Introduction, 5-1
RMSDES utility, RMS-11 Utilities, 1-1, 2-1, 4-2, 5-1
allocation
areas, RMS-11 Utilities, 2-10, 2-25
areas
defining, RMS-11 Utilities, 2-1, 2-42, B-1
and BUCKET_SIZE attribute, RMS-11 Utilities, 2-32
RMSDES utility areas (cont'd.)
and DATA_AREA attribute,
RMS-11 Utilities, 2-40
and INDEX_AREA attribute,
RMS-11 Utilities, 2-41
and LEVEL_INDEX_AREA,
RMS-11 Utilities, 2-41
and SIZE attribute, RMS-11 Utilities, 2-36
by default, RMS-11 Utilities, 2-43
explicitly, RMS-11 Utilities, 2-43
defining by default, RMS-11 Utilities, 2-17, 2-38
CREATE command, RMS-11 Utilities, 2-8
SET ALL command, RMS-11 Utilities, 2-14
defining explicitly, RMS-11 Utilities, 2-17
numbering, RMS-11 Utilities, 2-8, 2-28, 2-43
attributes, RMS-11 Utilities, 2-29
clearing, RMS-11 Utilities, 2-22, 2-25
clearing individual values,
RMS-11 Utilities, 2-26
clearing sections, RMS-11 Utilities, 2-26
displaying, RMS-11 Utilities, 2-15, 2-26
displaying individual values,
RMS-11 Utilities, 2-26
displaying sections, RMS-11 Utilities, 2-27
informational, RMS-11 Utilities, 2-1, 2-17, 2-29
resetting, RMS-11 Utilities, 2-21
RMS-11, RMS-11 Utilities, 2-1, 2-17, 2-29
setting, RMS-11 Utilities, 2-13
setting from data file, RMS-11 Utilities, 2-25
setting from description file, RMS-11 Utilities, 2-24
setting individual values, RMS-11 Utilities, 2-21
setting sections, RMS-11 Utilities, 2-21
CLEAR command, RMS-11 Utilities, 2-6, 2-18, 2-25, 2-26

RMSDES utility CLEAR command (cont'd.)
and PROTECTION attribute,
RMS-11 Utilities, 2-33
defining areas by default,
RMS-11 Utilities, 2-44
in indirect command file,
RMS-11 Utilities, 2-4
with CREATE, RMS-11 Utilities, 2-8, 2-28
with SAVE, RMS-11 Utilities, 2-27
clearing attributes, RMS-11 Utilities, 2-6
commands, RMS-11 Utilities, 2-4
CREATE command, RMS-11 Utilities, 2-7, 2-18, 2-28, 2-31
and INDEX_AREA attribute,
RMS-11 Utilities, 2-41
and LEVEL_INDEX_AREA attribute, RMS-11 Utilities, 2-41
defining areas by default, RMS-11 Utilities, 2-44
defining areas explicitly, RMS-11 Utilities, 2-43
key numbering, RMS-11 Utilities, 2-38
setting attributes, RMS-11 Utilities, 2-21
with GET, RMS-11 Utilities, 2-10, 2-25
creating data files, RMS-11 Utilities, 2-28
CTRL/Z command, RMS-11 Utilities, 2-2, 2-9, 2-18
data file, RMS-11 Utilities, 2-3, 2-17, 2-24
creating, RMS-11 Utilities, 2-3, 2-7, 2-28
GET command, RMS-11 Utilities, 2-10
defaults, RMS-11 Utilities, 2-21
defining areas by default
CREATE command, RMS-11 Utilities, 2-28
description file, RMS-11 Utilities, 2-3, 2-17, 2-24
EXIT command, RMS-11 Utilities, 2-10
GET command, RMS-11 Utilities, 2-10

Master Index-245
RMSDES utility
description file (cont’d.)
SAVE command, RMS-11 Utilities, 2-27
saving the design, RMS-11 Utilities, 2-13
design buffer, RMS-11 Utilities, 2-1
using, RMS-11 Utilities, 2-16
design session, RMS-11 Utilities, 2-1
resuming, RMS-11 Utilities, 2-22
ESC command, RMS-11 Utilities, 2-9, 2-21
examples, RMS-11 Utilities, 2-47
EXIT command, RMS-11 Utilities, 2-3, 2-9, 2-18, 2-27
GET command, RMS-11 Utilities, 2-10, 2-17, 2-24
and PROTECTION attribute, RMS-11 Utilities, 2-33
with SAVE, RMS-11 Utilities, 2-28
HELP command, RMS-11 Utilities, 2-11
indirect command file, RMS-11 Utilities, 2-3
comments, RMS-11 Utilities, 2-4
invoking, RMS-11 Utilities, 2-2
keys
numbering, RMS-11 Utilities, 2-8, 2-28, 2-38
magnetic tape, RMS-11 Utilities, 2-34
messages, RMS-11 Utilities, 2-52
multiple areas, RMS-11 Utilities, 2-7, 2-43
multiple keys, RMS-11 Utilities, 2-7, 2-38
prompt, RMS-11 Utilities, 2-2
conditional, RMS-11 Utilities, 2-1, 2-13, 2-14, 2-15, 2-17, 2-21, 2-29
QUIT command, RMS-11 Utilities, 2-2, 2-12, 2-18
SAVE command, RMS-11 Utilities, 2-13, 2-18, 2-27
setting attributes, RMS-11 Utilities, 2-21
saving the design, RMS-11 Utilities, 2-13, 2-22, 2-27
sections, design buffer, RMS-11 Utilities, 2-1, 2-16, 2-29
RMSDSP utility, RMS-11 Introduction, 5-3 RMS-11 Utilities, 1-1, 5-1, 6-3, 7-5, 7-10
ANSI-standard tape, RMS-11 Utilities, 5-3
/BP switch, RMS-11 Utilities, 5-3, 5-4
command string, RMS-11 Utilities, 5-2, 5-3
container file, RMS-11 Utilities, 5-1, 5-3, 5-4
detailed display, RMS-11 Utilities, 5-4
display information, RMS-11 Utilities, 5-1
examples, RMS-11 Utilities, 5-5
/FS switch, RMS-11 Utilities, 5-2, 5-4
HELP, RMS-11 Utilities, 5-3
/ID switch, RMS-11 Utilities, 5-3, 5-5
indirect command file, RMS-11 Utilities, 5-2
intersystem file transfer, RMS-11 Utilities, 1-2
invoking, RMS-11 Utilities, 5-2
magtape allocation information, RMS-11 Utilities, 5-2
messages, RMS-11 Utilities, C-1
mounting tapes, RMS-11 Utilities, 5-3
prompt, RMS-11 Utilities, 5-2
switches, RMS-11 Utilities, 5-3, 5-4
terminating, RMS-11 Utilities, 5-2
RMSIFL utility, RMS-11 Introduction, 5-2 RMS-11 Utilities, 1-1, 3-1, 4-1, 4-2
calculating file work space, RMS-11 Utilities, 3-12
command string, RMS-11 Utilities, 3-2, 3-3
/DE switch, RMS-11 Utilities, 3-7, 3-10, 3-14
/ER switch, RMS-11 Utilities, 3-5, 3-6
examples, RMS-11 Utilities, 3-14
global switch, RMS-11 Utilities, 3-5
HELP, RMS-11 Utilities, 3-3
/ID switch, RMS-11 Utilities, 3-3, 3-5
indirect command file, RMS-11 Utilities, 3-2
RMSIFL utility (cont'd.)
input file switches, RMS-11 Utilities, 3-7
invoking, RMS-11 Utilities, 3-2
/DR switch, RMS-11 Utilities, 5-8
/LF switch, RMS-11 Utilities, 5-9
/RM switch, RMS-11 Utilities, 5-10
/SE switch, RMS-11 Utilities, 3-11
/TF switch, RMS-11 Utilities, 3-12
/TF switch, RMS-11 Utilities, 3-12
prompt, RMS-11 Utilities, 3-2
/ID switch, RMS-11 Utilities, 3-3, 3-5
terminating, RMS-11 Utilities, 3-2
/RM switch, RMS-11 Utilities, 3-7, 3-11
RMSLIB.OLB (Record Management Services library), Program Development, 1-11
RMSMAC.MLB, RMS-11 Macro, 2-20
RSTS/E, RMS-11 Macro, D-3
RMSMAC.MLB (Record Management Services Library), Program Development, 1-9
RMSRES and I/O paging operations, RMS-11 User's Guide, 8-2
RMSRST utility, RMS-11 Introduction, 5-3 RMS-11 Utilities, 1-1, 4-2, 5-4, 6-1, 6-3, 6-8, 7-1

Master Index–247
RMSRST utility (cont'd.)
/BD switch, RMS-11 Utilities, 7-8, 7-10
command string, RMS-11 Utilities, 7-2, 7-3
data integrity checking, RMS-11 Utilities, 7-6, 7-8, 7-11
elements, RMS-11 Utilities, 7-12
/FR switch, RMS-11 Utilities, 7-7
global switches, RMS-11 Utilities, 7-5
HELP, RMS-11 Utilities, 7-3
/ID switch, RMS-11 Utilities, 7-3, 7-5
indirect command file, RMS-11 Utilities, 7-2
input file switches, RMS-11 Utilities, 7-8
intersystem file transfer, RMS-11 Utilities, 1-2, 7-1, 7-10
/FR switch, RMS-11 Utilities, 7-7
version number conversion, RMS-11 Utilities, 7-5
invoking, RMS-11 Utilities, 7-2
messages, RMS-11 Utilities, C-3
/[NO]CV switch, RMS-11 Utilities, 7-5, 7-10
/[NO]QU switch, RMS-11 Utilities, 7-6, 7-7, 7-8, 7-12
/OA switch, RMS-11 Utilities, 7-9, 7-10
output file switches, RMS-11 Utilities, 7-7
processing, RMS-11 Utilities, 7-9
data integrity checking, RMS-11 Utilities, 7-11
explicit/implicit filespec, RMS-11 Utilities, 7-10
extended diagnostic messages, RMS-11 Utilities, 7-11
restoration account, RMS-11 Utilities, 7-10
summary listing, RMS-11 Utilities, 7-12
prompt, RMS-11 Utilities, 7-2
query mode, RMS-11 Utilities, 7-6, 7-7, 7-8, 7-11
/RA switch, RMS-11 Utilities, 7-7, 7-11
/RC switch, RMS-11 Utilities, 7-8, 7-11
/SE switch, RMS-11 Utilities, 7-3, 7-9

RMSRST utility (cont'd.)
/SL switch, RMS-11 Utilities, 7-6, 7-12
summary listing, RMS-11 Utilities, 7-12
/SU switch, RMS-11 Utilities, 7-8
terminating, RMS-11 Utilities, 7-2
$RMSTAT macro, RMS-11 Macro, C-3
/RM switch
PIP utility, Utilities, 3-35
RMT, System Management, 11-2
RMVBUF: subroutine
remove buffer from device queue
K-series, I/O Drivers, 22-26
LADRV, I/O Drivers, 22-22
/RNDC keyword
SET command (MCR), MCR, 3-248
SET command (VMR), System Management, 10-72
/RNDH keyword
SET command (MCR), MCR, 3-249
SET command (VMR), System Management, 10-72
/RNDL keyword
SET command (MCR), MCR, 3-249
SET command (VMR), System Management, 10-72
$RONLY
state table, I/O Operations, 7-2
cotree, Task Builder, 3-31
null, Task Builder, 3-31
ODL, Task Builder, 3-31
segment, Task Builder, B-14
structure
overlay, Task Builder, 3-21
.ROOT directive, Task Builder, 3-23, 3-24
allocation diagram
creating, Task Builder, 3-37
argument, Task Builder, 3-26
summary, Task Builder, 3-50
/ROPAR keyword
INSTALL command (MCR), MCR, 3-120
RUN command (MCR), MCR, 3-184
ROPAR option, Task Builder, 12-35
'R operator, MACRO-11, 3-5, 6-30
ROP field in RAB, RMS-11 Macro, 4-1, 4-4, 4-5, 4-6, 4-7

Master Index-248
ROP field in RAB (cont’d.)
CONNECT operation, RMS-11
Macro, 5-6, 5-7
DELETE operation, RMS-11 Macro, 5-25
DISCONNECT operation, RMS-11
Macro, 5-27
FIND operation, RMS-11 Macro, 5-49, 5-51, 5-52, 5-54
FREE operation, RMS-11 Macro, 5-58
GET operation, RMS-11 Macro, 5-91, 5-92, 5-95, 5-96
GET operation, RMS-11 Macro, 5-60, 5-61, 5-63, 5-64, 5-67, 5-68
NXTVOL operation, RMS-11 Macro, 5-70
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-91, 5-92, 5-95, 5-96
READ operation, RMS-11 Macro, 5-98, 5-100
REWIND operation, RMS-11 Macro, 5-114
SPACE operation, RMS-11 Macro, 5-120
summary
RB$ASY mask, RMS-11 Macro, 6-131
RB$EOF mask, RMS-11 Macro, 6-132
RB$FDL mask, RMS-11 Macro, 6-133
RB$KGE mask, RMS-11 Macro, 6-134
RB$KGT mask, RMS-11 Macro, 6-135
RB$LOA mask, RMS-11 Macro, 6-136
RB$LOC mask, RMS-11 Macro, 6-137
RB$MAS mask, RMS-11 Macro, 6-138
RB$UIF mask, RMS-11 Macro, 6-139
TRUNCATE operation, RMS-11
Macro, 5-122
UPDATE operation, RMS-11 Macro, 5-124
WRITE operation, RMS-11 Macro, 5-127, 5-129
/RO switch, Task Builder, 10-34
ZAP utility, Utilities, 15-2
RO symbolic argument, MACRO-11, 6-40
Routine
See Completion routine
RP02 disk, I/O Drivers, 5-1
RP03 disk, I/O Drivers, 5-1
RP04/05/06 tape kit
//RO switch
COPYING ON-LINE, System Generation (1M), 2-19
RP04 disk, I/O Drivers, 5-3
RP05 disk, I/O Drivers, 5-3
RP06 disk, I/O Drivers, 5-3
RP11 disk controller, I/O Drivers, 5-1
/RPA keyword
SET command (MCR), MCR, 3-250
SET command (VMR), System Management, 10-73
RPO1$ directive, Executive, 5-164
/RPRI keyword
ALTER command (MCR), MCR, 3-19
/RO switch
LBR utility, Utilities, 10-23
%/RPT, Error Logging, 5-22
RPT, Error Logging, 1-1
command line, Error Logging, 3-2
input file, Error Logging, 3-2
multiple qualifiers, Error Logging, 3-3
report file, Error Logging, 3-2
switches, Error Logging, 3-2
universal library, Error Logging, 3-2
cONTROL function, Error Logging, 5-21
/DA switch, Error Logging, 3-5, 3-8
Date switch, Error Logging, 3-5, 3-8
default file specification, Error Logging, 3-3
/DE switch, Error Logging, 3-5, 3-8
Device switch, Error Logging, 3-5, 3-8
multiple qualifiers, Error Logging, 3-4
error log control file, Error Logging, 1-4
error log file, Error Logging, 1-4
error log packet, Error Logging, 1-4
number, Error Logging, 3-1
error type definition, Error Logging, 1-5
MASTER INDEX-249
RPT (cont’d.)
Format switch, Error Logging, 3-5, 3-11
brief report, Error Logging, 3-11
full report, Error Logging, 3-15
no report, Error Logging, 3-19
register report, Error Logging, 3-18
/P switch, Error Logging, 3-5, 3-11
information required, Error Logging, 3-2
format selection, Error Logging, 3-2
packet selection, Error Logging, 3-2
installation, Error Logging, 3-1
interpreter, Error Logging, 5-1
Packet number switch, Error Logging, 3-5, 3-8
multiple qualifiers, Error Logging, 3-4
/P switch, Error Logging, 3-5, 3-8
report information selection, Error Logging, 1-4, 1-5
Report switch, Error Logging, 3-6, 3-20
report switch
format packet, Error Logging, 3-5
select packet, Error Logging, 3-5
/R switch, Error Logging, 3-6, 3-20
Serial number switch, Error Logging, 3-6, 3-9
multiple qualifiers, Error Logging, 3-4
/SE switch, Error Logging, 3-6, 3-9
subswitch summary, Error Logging, 3-5
switch summary, Error Logging, 3-5
/T switch, Error Logging, 3-7, 3-9
Type switch, Error Logging, 3-7, 3-9
multiple qualifiers, Error Logging, 3-4
Volume label switch, Error Logging, 3-7, 3-10
/V switch, Error Logging, 3-7, 3-10
Width switch, Error Logging, 3-7, 3-21
/W switch, Error Logging, 3-7, 3-21
RPTBLD.BLD file, Error Logging, 3-2
RPT command line
default, Error Logging, 3-4
Date switch, Error Logging, 3-4

RPT command line
default (cont’d.)
Device switch, Error Logging, 3-4
Format switch, Error Logging, 3-4
Packet switch, Error Logging, 3-4
Type switch, Error Logging, 3-4
Width switch, Error Logging, 3-4

$RQCB (Request core blocks), System Library, 7-3
$RQCB system routine, RMS-11 Macro, 2-20
RQST$ directive, Executive, 5-167
$RQVCB (Request virtual core block), System Library, 8-20
RREF$ directive, Executive, 5-170
R register, Debugging, 2-7, 5-5, 9-10
clearing, Debugging, 2-11, 5-6, 9-13
setting, Debugging, 2-11, 5-6, 9-13
RRN, RMS-11 Introduction, 3-12, 3-14, 3-15
See also BKT field in RAB
relative files, RMS-11 Introduction, 3-6 RMS-11 User’s Guide, 4-1
sequential files, RMS-11 Introduction, 3-5 RMS-11 User’s Guide, 3-2
RRST$ directive, Executive, 5-173
RRV, RMS-11 User’s Guide, 5-12, 5-16
RS03 disk, I/O Drivers, 5-1
RS04 disk, I/O Drivers, 5-1
RS11 disk, I/O Drivers, 5-1
RSA field in NAM block, RMS-11 Macro, 3-9
offset, RMS-11 Macro, 6-94
SEARCH operation, RMS-11 Macro, 5-116
summary, RMS-11 Macro, 6-103
RSEF$ directive, I/O Drivers, 1-7
/RSI keyword
RUN command (MCR), MCR, 3-180, 3-181
RUN command (VMR), System Management, 10-44
/R$ keyword
MOUNT command (MCR), MCR, 3-152
RSL field in NAM block
CREATE operation, RMS-11 Macro, 5-21
ENTER operation, RMS-11 Macro, 5-38

Master Index-250
RSL field in NAM block (cont’d.)

ERASE operation, RMS-11 Macro, 5-43
offset, RMS-11 Macro, 6-94
OPEN operation, RMS-11 Macro, 5-81
PARSE operation, RMS-11 Macro, 5-87
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-112
SEARCH operation, RMS-11 Macro, 5-116, 5-117
summary, RMS-11 Macro, 6-104

RSS field in NAM block
offset, RMS-11 Macro, 6-94
SEARCH operation, RMS-11 Macro, 5-116
summary, RMS-11 Macro, 6-105

/R switch
FLX utility, Utilities, 4-4
SLP utility, Utilities, 13-16

RS TI: read counter module (ICDRV/ISDRV), I/O Drivers, 19-58
RS TI: subroutine read timer module (UDDRV), I/O Drivers, 16-30

RSTS/E RMS-11
contrasted with PRO/RMS-11, RMS-11 Macro, D-1
contrasted with RSX-11 RMS-11, RMS-11 Macro, D-3
remote access, RMS-11 User's Guide, B-3

RSUM$ directive, Executive, 5-176
/R switch, Error Logging, 2-4, 2-7, 3-6, 3-20

RSX11.SYS, System Management, 2-3
RSX11D symbol, Indirect, 2-11
RSX11M.OLB
definition, System Generation (11M), 5-1
RSX11M.STB
See Executive symbol table

RSX-11S
characteristics, System Generation (11S), 1-1
device support, System Generation (11S), 1-4
distribution media, System Generation (11S), 3-1
error messages, System Generation (11S), A-1
hardware/software configurations, System Generation (11S), 1-4
kits, System Generation (11S), 3-1
privileged tasks, System Generation (11S), 1-2
software components, System Generation (11S), 1-5
system tasks, System Generation (11S), 4-2
update kit, System Generation (11S), 1-2

RSX-11S System generation
on an RSX-11M host system, System Generation (11S), 5-1
dialog, System Generation (11S), 5-4
on an RSX-11M-PLUS host
dialog, System Generation (11S), 5-4, 6-4
on an RSX-11M-PLUS host system,
System Generation (11S), 6-1
on a VAX/VMS host system, System Generation (11S), 7-1
dialog, System Generation (11S), 7-6

RSXBLD.CMD
definition, System Generation (11M), 5-1

RSXMAC.SML, Executive, 1-5
RSXMAC.SML (System macro library), Program Development, 1-5 to 2-7
RSXTIME, Error Logging, 5-7

RSZ field in RAB, RMS-11 Macro, 4-7, 4-13
GET operation, RMS-11 Macro, 5-61, 5-65, 5-68
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-92, 5-95
READ operation, RMS-11 Macro, 5-99, 5-101
summary, RMS-11 Macro, 6-140
UPDATE operation, RMS-11 Macro, 5-124
RSZ field in RAB (cont'd.)
WRITE operation,  RMS-11 Macro, 5-127, 5-129
RT01 Alphanumeric Display Terminal, I/O Drivers, 3-3
RT02, I/O Drivers, 2-82
RT02 Alphanumeric Display Terminal, I/O Drivers, 2-5
RT02-C Badge Reader, I/O Drivers, 3-32
RT-ll device support
WRITE operation, RMS-11 Macro, 5-127, 5-129
RMS-ll Macro, 5-127, 5-129

RTO /RTOW routine
remote terminal output
(IICDRV/ISDRV), I/O Drivers, 19-50

$$RTQ program section, Task Builder, 5-54
reserved name, Task Builder, E-3

$$RTR program section, Task Builder, 5-54
reserved name, Task Builder, E-4

RTS: subroutine
initiate synchronous A/D sample
(LISDRV), I/O Drivers, 17-23

$$RTS program section, Task Builder, 5-54
reserved name, Task Builder, E-4

/RT switch
FLX utility, Utilities, 4-4

RTV field in FAB
CREATE operation, RMS-11 Macro, 5-13
offset, RMS-11 Macro, 6-23
OPEN operation, RMS-11 Macro, 5-25

RSTS/E, RMS-11 Macro, D-3
summary, RMS-11 Macro, 6-62

RUBOUT character
CRT (TTDRV), I/O Drivers, 2-18
Rubout character
escape sequence (half-duplex), I/O Drivers, 3-25
LPDRV, I/O Drivers, 10-7

RUBOUT key, Command Language, 3-12
half-duplex, I/O Drivers, 3-23, 3-24
TTDRV, I/O Drivers, 2-71

RUN$ directive, Executive, 5-178
RUN command, Command Language, 7-5, 7-11 to 7-15, 9-27, 9-28
Introduction, 3-8, 5-7, 5-11
Program Development, 4-7, 5-2, 7-6
install-run-remove form, Command Language, 7-3, 7-7 to 7-11
/TASK_NAME qualifier, Introduction, 5-11

RUN command (MCR), MCR, 1-8, 3-178
error messages, MCR, 3-186
examples, MCR, 3-185
formats, MCR, 3-178
installing task, MCR, 2-23
keywords
/CKP, MCR, 3-182
/CMD, MCR, 3-182
/EST, MCR, 3-178, 3-182
/INC, MCR, 3-183
/IOP, MCR, 3-183
/PAR, MCR, 3-183
/PMD, MCR, 3-184
/PRI, MCR, 3-184
/ROPAR, MCR, 3-184
/RSI, MCR, 3-180, 3-181
/SLV, MCR, 3-184
/TASK, MCR, 3-184
/TIME, MCR, 3-185
/UIC, MCR, 3-179, 3-180, 3-185

options
absolute time, MCR, 3-178
immediate, MCR, 3-178
install-run-remove, MCR, 2-21, 2-23, 3-140, 3-178
synchronized, MCR, 3-178
time increment, MCR, 3-178
prototype task, MCR, 3-178

RUN command (VMR), System Management, 10-42
definition, System Management, 10-42
formats, System Management, 10-42
to 10-46
keywords
/RSI, System Management, 10-44
/UIC, System Management, 10-44
parameters, System Management, 10-42
restriction, System Management, 10-42
time options, System Management, 10-42
Running VMR, System Management, 10-2
Run Task directive, Executive, 5-177
RUNTIME command
IOX, System Management, 4-57
Run-time initialization
FSR
FINIT$ macro, I/O Operations, 2-40
RUX50 Unibus interface, I/O Drivers, 5-5
RVB field in KEY block
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-68
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-91
RVN field in DAT block
DISPLAY operation, RMS-11 Macro, 5-32
offset, RMS-11 Macro, 6-14
OPEN operation, RMS-11 Macro, 5-81
RSTS/E, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-21
RVN field in NAM block
RSX-11, RMS-11 Macro, D-4
/RW switch
DMP utility, Utilities, 11-7
DSC utility, Utilities, 8-15
FLX utility, Utilities, 4-8
PIP utility, Utilities, 3-36
RMSBCK utility, RMS-11 Utilities, 6-7
RW symbolic argument, MACRO-11, 6-40
RX01 disk, I/O Drivers, 5-3
RX02 disk, I/O Drivers, 5-4
RX11 disk controller, I/O Drivers, 5-3
RX180 disk drive, I/O Drivers, 5-5
RX211 disk controller, I/O Drivers, 5-4
RX50 disk, I/O Drivers, 5-5

S

Sample initiate synchronous A/D (LSDRV), I/O Drivers, 17-23
Sample configuration increasing system throughput, System Management, 15-19
Sampling rate (AFC11), I/O Drivers, 15-11
SAVE
See also SAVE command
$SAVAL (Save all registers), System Library, 2-2 Task Builder, 5-40
SAVE command
EDI utility, Utilities, 2-44
RMSDES utility, RMS-11 Utilities, 2-13, 2-18, 2-27
SAVE command
RMSDES utility (cont’d.)
  setting attributes, RMS-11
Utilities, 2-21
SAVE command (MCR), MCR, 1-8, 3-187
  error messages, MCR, 3-191
  examples, MCR, 3-191
  format, MCR, 3-189
  keywords
    /CSR, MCR, 3-190
    /MOU, MCR, 3-190
    /SFILE, MCR, 3-190
    /WB, MCR, 3-190
SAVE command (VMR), System Management, 10-47
  definition, System Management, 10-47
  example, System Management, 10-48
  format, System Management, 10-47
  keywords
    /BOOT, System Management, 10-47
    /DENS, System Management, 10-48
  notes, System Management, 10-48
  parameters, System Management, 10-47
Saved answer file
See also MCR
See also Standard Function System aborted, System Generation (11M), 3-10
  creating, System Generation (11M), 3-10
  default name, System Generation (11M), 4-6
  definition, System Generation (11M), 3-9
  input, System Generation (11M), 4-6
    Phase II, System Generation (11M), 5-5
  naming conventions, System Generation (11M), 3-10
  output, System Generation (11M), 4-7
    Phase II, System Generation (11M), 5-6
  purpose, System Generation (11M), 3-10
  restrictions, System Generation (11M), 3-9
  Saved answer file
  See also MCR
  See also Standard Function System aborted, System Generation (11M), 3-10
  creating, System Generation (11M), 3-10
  default name, System Generation (11M), 4-6
  definition, System Generation (11M), 3-9
  input, System Generation (11M), 4-6
    Phase II, System Generation (11M), 5-5
  naming conventions, System Generation (11M), 3-10
  output, System Generation (11M), 4-7
    Phase II, System Generation (11M), 5-6
  purpose, System Generation (11M), 3-10
  restrictions, System Generation (11M), 3-9
.SAVE directve, MACRO-11, 6-47, 6-48
  Saved stack pointer, CDA, 3-20
  /SAVE qualifier, Task Builder, 11-59
  Saving the design
    See also Description file
    RMSDES utility, RMS-11 Utilities, 2-22, 2-27
  .SAVR1 (Save registers 1-5), System Library, 2-5
$SAVRG (Save registers 3-5), System Library, 2-3
SAV symbolic argument, MACRO-11, 6-42
$SAVVR (Save registers 0-2), System Library, 2-4
  /SB switch
    DMP utility, Utilities, 11-8
    PIP utility, Utilities, 3-37
  .SBTL directive, MACRO-11, 6-15, 6-16 Program Development, 2-6
SC.MDL, bad data block
    user-controlled file characteristic, I/O Operations, F-4
SC.MDL, file marked for delete
    user-controlled file characteristic, I/O Operations, F-4
SCAA$ directive, Executive, 5-182
SCAL$S directive, Executive, 5-183
SCAL to CSM library
    converting, Task Builder, 8-19
  Scan rate
    Resource Accounting, System Management, 17-6
SCB
description, Writing I/O Driver, 4-19
  relationship of
    with I/O control blocks, Writing I/O Driver, 2-6
  required field, Writing I/O Driver, 3-7
  role of
    in I/O data structure, Writing I/O Driver, 2-20
SCBDFS, CDA, B-39, C-66
SCB field
S.BMSK, Writing I/O Driver, 4-20
S.BMSV, Writing I/O Driver, 4-20
S.CON, Writing I/O Driver, 3-7, 4-22
S.CSR, Writing I/O Driver, 3-7, 4-22
SCB field (cont'd.)
S.CTM, Writing I/O Driver, 4-21
S.FRK, Writing I/O Driver, 3-7, 4-23
S.ITM, Writing I/O Driver, 3-7, 4-21 to 4-22
S.LHD, Writing I/O Driver, 3-7 to 3-8, 4-2, 4-20
S.MPR, Writing I/O Driver, 3-7, 4-23, B-1 to B-2
S.PKT, Writing I/O Driver, 4-23
S.PRI, Writing I/O Driver, 3-7, 4-21
S.RCNT, Writing I/O Driver, 4-20
S.ROFF, Writing I/O Driver, 4-20
S.STS, Writing I/O Driver, 3-7, 4-22
S.VCT, Writing I/O Driver, 3-7, 4-21
/SCB switch, CDA, 2-5, 2-6
SC command
EDI utility, Utilities, 2-44
Scheduling
round-robin interval, System
Generation (11M), 4-41
highest priority, System
Generation (11M), 4-41
lowest priority, System
Generation (11M), 4-42
SCL$ directive, Executive, 5-185
S command, Debugging, 2-11, 3-4, 9-1, 9-14
SCOPE: subroutine
c Control scope (K-series), I/O Drivers, 23-27
Scrolling
terminal, Command Language, 3-13
SCROLL key, Command Language, 3-13
SCTI: routine
resetting counter intial value
(ICDRV/ISDRV), I/O Drivers, 19-59
SCTI: subroutine
initializing timer module (UDDRV), I/O Drivers, 16-30
SDAC: subroutine
initiating synchronous A/D output
(LSDRV), I/O Drivers, 17-25
SDAT$ directive, Executive, 5-187
SDAT$ directive summary, I/O
Operations, C-3
SDIR$ directive, Executive, 5-189
SDO: subroutine
initiating synchronous digital output
(LSDRV), I/O Drivers, 17-27
SDRC$ directive, Executive, 5-192
SDRC$ directive summary, I/O
Operations, C-3
SDRP$ directive, Executive, 5-196
SDRP$ directive summary, I/O
Operations, C-4
/SD switch
PIP utility, Utilities, 3-37
SE.ATA error return (TTDRV), I/O
Drivers, 2-67
SE.BIN error return
half-duplex, I/O Drivers, 3-20
TTDRV, I/O Drivers, 2-67
SE.FIX error return (TTDRV), I/O
Drivers, 2-67
SE.IAA error return (TTDRV), I/O
Drivers, 2-67
SE.NAT error return (TTDRV), I/O
Drivers, 2-67
SE.NIH error return
half-duplex, I/O Drivers, 3-20
TTDRV, I/O Drivers, 2-67
VTDRV, I/O Drivers, 4-8, 4-9
SE.NSC error return (TTDRV), I/O
Drivers, 2-67
SE.SPD error return (TTDRV), I/O
Drivers, 2-67
SE.UPN error return (TTDRV), I/O
Drivers, 2-67
SE.VAL error return
half-duplex, I/O Drivers, 3-20
TTDRV, I/O Drivers, 2-67
Search
argument register, Debugging, 2-6, 5-3, 6-2
byte, Debugging, 6-3
command, Debugging, 6-2
e, Debugging, 6-3
n, Debugging, 6-3
w, Debugging, 6-3
limit register, Debugging, 6-1
mask register, Debugging, 2-6, 5-3, 6-2
memory
command, Debugging, 2-9, 2-10
reference, Debugging, 6-3
word, Debugging, 6-3
SEARCH & CHANGE command
EDI utility, Utilities, 2-44
$SEARCH macro, RMS-11 Macro, 5-116

Master Index-255
$SEARCH macro (cont’d.)
example, RMS-11 Macro, 7-7, 7-15
SEARCH operation, RMS-11
Introduction, 4-1
BDB requirement, RMS-11 Macro, 2-8
I/O buffer requirement, RMS-11 Macro, 2-7
IFAB requirement, RMS-11 Macro, 2-5
$SEARCH macro, RMS-11 Macro, 5-116
wildcard loop, RMS-11 Macro, 3-9
explicit, RMS-11 Macro, 3-11
implicit, RMS-11 Macro, 3-9, 3-10
SEARCH statement, Error Logging, 5-40
Search time
indexed files, RMS-11 User’s Guide, 5-8
Secondary file
closing, Indirect, 2-42
opening, Indirect, 2-69
for appending, Indirect, 2-71
outputting data to, Indirect, 2-43
Secondary index data record
See SIDR
Secondary RBNs, System Management, 5-4
Section
executive options, System Generation (11M), 4-25
host configuration, System Generation (11M), 4-23
peripheral options, System Generation (11M), 4-67
setup, System Generation (11M), 4-3
system options, System Generation (11M), 4-59
target configuration, System Generation (11M), 4-11
Section, design buffer
RMSDES utility, RMS-11 Utilities, 2-1, 2-16, 2-29
area section, RMS-11 Utilities, 2-29, 2-42
file section, RMS-11 Utilities, 2-29, 2-31
key section, RMS-11 Utilities, 2-29, 2-38
key segments, RMS-11 Utilities, 2-41
Section, design buffer
RMSDES utility (cont’d.)
record section, RMS-11 Utilities, 2-29, 2-36
system section, RMS-11 Utilities, 2-29, 2-30
SECT key (EDT), Introduction, 2-6
Sector, RMS-11 Introduction, 2-1
See also Placement control
Security information
DELET$ macro, I/O Operations, 3-42
SEGO-POSITION attribute
RMSDES utility, RMS-11 Utilities, 2-42
Segment
autoloadable
data, Task Builder, 4-6
defining, Task Builder, 4-3
global symbol, Task Builder, 4-7
call, Task Builder, 3-10
to up-tree, Task Builder, 4-4
definition, Task Builder, 3-1
descriptor, Task Builder, B-15 to B-20
overlay, Task Builder, 3-20, 3-21
global symbol
autoload, Task Builder, 4-7
limiting number
reducing overhead, Task Builder, F-4
loading
as part of cotree, Task Builder, 4-3
when called, Task Builder, 4-6, 4-7
load list, Task Builder, B-9
mapping, Task Builder, 2-10, 2-11
disk-resident, Task Builder, 2-10
memory-resident, Task Builder, 2-11
multiple
global symbol, Task Builder, 3-16
global symbol resolution, Task Builder, 3-17
overlay, Task Builder, 3-5
symbol resolution, Task Builder, 3-16
name
applying autoload indicator, Task Builder, 4-3
Segment

name (cont'd.)

.FCTR directive argument, Task
Builder, 3-27

null

ODL, Task Builder, 3-31

overlay

arrangement, Task Builder, 3-15

root structure, Task Builder, 3-21

symbol processing, Task Builder, 3-17

processing order, Task Builder, 3-17

single

overlay, Task Builder, 3-4, 3-8

Segmented key, RMS-11 Introduction, 3-10 RMS-11 User's Guide, 6-7

SEGN_LENGTH attribute

RMSDES utility, RMS-11 Utilities, 2-42

SEGN_POSITION attribute

RMSDES utility, RMS-11 Utilities, 2-42

/SEGREGATE qualifier, Task Builder, 11-60

SELECT command

IOX, System Management, 4-58

Select error (tape driver), I/O Drivers, 8-14

/SELECTIVE_SEARCH qualifier, Task
Builder, 11-61 to 11-63

SELECT key (EDT), Introduction, 2-8

SELECT PRIMARY command

EDI utility, Utilities, 2-45

Select recovery (tape driver), I/O

Drivers, 8-14

SELECT SECONDARY command

EDI utility, Utilities, 2-46

SELECT statement, Error Logging, 5-34, 5-35

SEL key, Command Language, 3-11

SELTM1, Error Logging, 4-4

Semicolon (;)

for comment, Task Builder, 1-14

Semicolon separator (;)

See Separator

Send, Request, and Connect directive, Executive, 5-192

Send By Reference directive, Executive, 5-228 System Generation (11M), 4-28

Send Data directive, Executive, 5-187

Send Data Request and Pass Offspring Control Block directive, Executive, 5-195

SEND directive

enabling for your task, Task Builder, 10-35, 11-57

Send Message directive, Executive, 5-202

Send Next Command directive, Executive, 5-205

Send XOFF (TTDRV), I/O Drivers, 2-16, 2-29, 2-37, 2-42, 2-44

Sense status (LRDRV), I/O Drivers, 14-5

Separating character, MACRO-11, 3-3

Separator

argument (,), Debugging, 2-4, 9-8

argument (.), Debugging, 2-5

Radix-50 (*), Debugging, 2-4, 7-4, 9-8

SEQ argument to ORG$ macro, RMS-11 Macro, 2-3

SEQ symbolic argument, MACRO-11, 6-10

SEQUENCE_NUMBERS argument, MACRO-11, 8-11

Sequenced mode

GETS, I/O Operations, 3-21


See also BKT field in RAB


See also RMSSEQ code in KAC

field
to indexed files, RMS-11 User's Guide, 5-16
to relative files, RMS-11 User's Guide, 4-1
to sequential files, RMS-11 User's Guide, 3-2

Sequential device

See FB$SQD mask in DEV field

Sequential file, I/O Operations, 2-10 appending, Command Language, 4-70 creating, Command Language, 4-10, 4-11

Master Index—257
Sequential file organization, RMS-11
See also FB$SEQ code
access declarations, RMS-11 User's Guide, 3-6
allocation
initial, RMS-11 User's Guide, 3-4
and remote access, RMS-11 User's Guide, B-3
cells, RMS-11 User's Guide, 3-2
CONNECT operation, RMS-11 User's Guide, 3-7
declaring with ORGS macro, RMS-11 Macro, 2-3
defered write, RMS-11 User's Guide, 3-14
design, RMS-11 User's Guide, 3-1
allocation, RMS-11 User's Guide, 3-4
contiguity, RMS-11 User's Guide, 3-4
medium, RMS-11 User's Guide, 3-3
record format, RMS-11 User's Guide, 3-3
directory operations, RMS-11 User's Guide, 3-15
DISCONNECT operation, RMS-11 User's Guide, 3-7
file operations, RMS-11 User's Guide, 3-15
FIND operation, RMS-11 User's Guide, 3-7
FLUSH operation, RMS-11 User's Guide, 3-9
GET operation, RMS-11 User's Guide, 3-9, 3-13, 3-14
I/O techniques, RMS-11 User's Guide, 3-14
MBC, RMS-11 User's Guide, 3-15
multiple access streams, RMS-11 User's Guide, 3-15
multiple buffers, RMS-11 User's Guide, 3-15
Sequential file organization (cont'd.)
PUT operation, RMS-11 User's Guide, 3-10, 3-13
random access
by key, RMS-11 User's Guide, 3-2
by RFA, RMS-11 User's Guide, 3-2
record operations, RMS-11 User's Guide, 3-7
record size, RMS-11 User's Guide, 3-2
record transfer modes, RMS-11 User's Guide, 3-13
locate mode, RMS-11 User's Guide, 3-14, 4-13
move mode, RMS-11 User's Guide, 3-13, 3-14
REWIND operation, RMS-11 User's Guide, 3-11
RRN, RMS-11 Introduction, 3-5
sequential access, RMS-11 User's Guide, 3-2
shared access, RMS-11 User's Guide, 3-5
block access, RMS-11 User's Guide, 3-6
record access, RMS-11 User's Guide, 3-6
record structured files, RMS-11 User's Guide, 3-6
with undefined records, RMS-11 User's Guide, 3-6
sharing declarations, RMS-11 User's Guide, 3-6
stream operations, RMS-11 User's Guide, 3-7
structure, RMS-11 User's Guide, 3-1
physical, RMS-11 User's Guide, 3-1
TRUNCATE operation, RMS-11 User's Guide, 3-12
UPDATE operation, RMS-11 User's Guide, 3-12, 3-13, 3-14
Sequential mode
FD.INS parameter, I/O Operations, 3-6
record attribute, I/O Operations, 3-9
write logical record, I/O Operations, 3-33

Master Index-258
/SEQUENTIAL qualifier, Task Builder, 11-64
Serial number switch, Error Logging, 3-6, 3-9
Serial, nondisk device (RMSIFL), RMS-11 Utilities, 3-1, 3-12
Serial command processing CLI, System Management, 11-8
Serial Despooler See PRT
Serial Despooler Task error messages, System Management, A-2
receive queue operation, System Management, A-1
task-build information, System Management, A-1
text requirements, System Management, A-1
/SERIAL keyword
SET command (MCR), MCR, 3-251
SET command (VMR), System Management, 10-73
Serial line error (ICDRV/ISDRV), I/O Drivers, 19-71
Serviced modules (UDDRV), I/O Drivers, 16-2
/SE switch, Error Logging, 3-6, 3-9 Task Builder, 10-35
RMSRST utility, RMS-11 Utilities, 7-3, 7-9
SET /PLCTL command, System Management, 13-12
SET ACCOUNTING
Resource Accounting, System Management, 17-4
Set Accounting Transaction Block, System Management, 17-26
SETADC: subroutine
set channel information
K-series, I/O Drivers, 23-28
LADRV, I/O Drivers, 22-22
Set Affinity directive, Executive, 5-233
Set clock A rate (K-series), I/O Drivers, 23-11
SET command, Introduction, 1-17 System Management, 15-25
DCL, Command Language, 2-1
RMSDES utility, RMS-11 Utilities, 2-13, 2-17, 2-20, 2-33
allocation, RMS-11 Utilities, 2-10
SET command
RMSDES utility (cont’d.)
and INDEX_AREA attribute, RMS-11 Utilities, 2-41
and LEVEL1_INDEX_AREA attribute, RMS-11 Utilities, 2-41
and PROTECTION attribute, RMS-11 Utilities, 2-33
defining areas by default, RMS-11 Utilities, 2-17, 2-43
defining areas explicitly, RMS-11 Utilities, 2-43
with GET, RMS-11 Utilities, 2-25
SET DEFAULT command, Introduction, 3-9
SET QUEUE command, Introduction, 3-12
SET TERMINAL command, Introduction, 1-17
SET command (MCR), MCR, 1-6, 3-197
error messages, MCR, 3-268 to 3-272
format, MCR, 3-198
keywords
/BUF, MCR, 3-206
/CLI, MCR, 3-118, 3-209
/CRASTDEV, MCR, 3-209
/DCL, MCR, 3-211
/DEF, MCR, 3-212
/HFILL, MCR, 3-220
/HOST, MCR, 3-223
/INQUIRE, MCR, 3-225
/LIBUIC, MCR, 3-225
/LINES, MCR, 3-226
list, MCR, 3-199t to 3-202t
/MAXEXT, MCR, 3-229
/MAXPKT, MCR, 3-230
/MCR, MCR, 3-231
/NETUIC, MCR, 3-234
/[NO]ABAUD, MCR, 3-202
/[NO]ANSI, MCR, 3-203
/[NO]AVO, MCR, 3-204
/[NO]BLKMOD, MCR, 3-205
/[NO]BRO, MCR, 3-205
/[NO]CACHE, MCR, 3-207
/[NO]CRT, MCR, 3-210
/[NO]DEC, MCR, 3-211
/[NO]DPRO, MCR, 2-3, 3-213
/[NO]EBC, MCR, 3-215
/[NO]ECHO, MCR, 3-216

Master Index—259
SET command (MCR)

keywords (cont'd.)

/NOEDIT, MCR, 3-217
/NOESCEQ, MCR, 3-217
/NOFDX, MCR, 3-218
/NOFORMFEED, MCR, 3-219
/NOHHT, MCR, 3-221
/NOHOLD, MCR, 2-17, 3-222
/NOHSYNC, MCR, 3-223
/NOJLOGON, MCR, 3-226
/NOJLOWER, MCR, 3-226
/NOJMAIN, MCR, 3-227
/NOJNAMED, MCR, 3-231
/NOJOPT, MCR, 3-235
/NOJOLLP, MCR, 3-236
/NOJPAR, MCR, 3-237
/NOJPARITY, MCR, 3-239
/NOJASTHRU, MCR, 3-241
/NOJPRINTER_PORT, MCR, 3-242
/NOJPRIV, MCR, 2-19, 3-244
/NOJPUB, MCR, 2-13, 3-245
/NOJREGS, MCR, 3-246
/NOJREMOTE, MCR, 3-247
/NOJPA, MCR, 3-250
/NOJSOPE, MCR, 3-252
/NOJSOBE, MCR, 3-255
/NOJTSYNC, MCR, 3-261
/NOJTYPEAOHEAD, MCR, 3-261
/NOJVFILL, MCR, 3-264
/NOJWCHK, MCR, 3-265
/NOJRWRAP, MCR, 3-266
/NOJCEX, MCR, 3-234
/NOJSOCET, MCR, 3-240
/PLCTL, MCR, 3-243
/POOL, MCR, 3-244
/RND, MCR, 3-248
/RNDH, MCR, 3-249
/RNDL, MCR, 3-249
/SEC, MCR, 3-251
/SC, MCR, 3-251
/SPEED, MCR, 3-254
/SWPC, MCR, 3-256
/SYSUIC, MCR, 3-182, 3-257
/TTERM, MCR, 3-258
/TOP, MCR, 3-259
/UIC, MCR, 2-6, 3-263

nonprivileged options, MCR, 3-197
privileged options, MCR, 3-197

SET command (VMR) (cont'd.)

definition, System Management, 10-50
examples, System Management, 10-83 to 10-87
Executive features, System Management, 10-50
format, System Management, 10-50
keywords

/BOT, System Management, 10-55 to 10-56
/BUF, System Management, 10-57
/HFILL, System Management, 10-59
/LIBUI, System Management, 10-60
/LINES, System Management, 10-61
/MAXEXT, System Management, 10-63
/NEUIC, System Management, 10-63
/[NOJABUAD, System Management, 10-53
/[NO]JANSI, System Management, 10-54
/[NOJAVO, System Management, 10-54
/[NO]BLKMOD, System Management, 10-55
/[NO]BRO, System Management, 10-56
/[NO]CRT, System Management, 10-57
/[NO]DEC, System Management, 10-57
/[NO]EB, System Management, 10-57
/[NO](ECHO, System Management, 10-58
/[NO]EDIT, System Management, 10-58
/[NO]ESCSEQ, System Management, 10-58
/[NO]FDX, System Management, 10-59
/[NO]FORMFEED, System Management, 10-59
/[NO]HHT, System Management, 10-59
/[NO]HSYNC, System Management, 10-60

Master Index-260
SET command (VMR) keywords (cont’d.)

/NOLOGON, System Management, 10-61
/NOLOWER, System Management, 10-61
/NOMAIN, System Management, 10-61 to 10-63
/NOPARITY, System Management, 10-66 to 10-67
/NOPASTHRU, System Management, 10-67
/NOPRINTER-_PORT, System Management, 10-69
/NOPRIV, System Management, 10-70
/NOPUB, System Management, 10-70
/NOREGIS, System Management, 10-70
/NORMALOCK, System Management, 10-71 to 10-72
/NORP, System Management, 10-73
/NOJ SERIAL, System Management, 10-73
/NOJSLAVE, System Management, 10-74
/NOJSOFT, System Management, 10-74
/NOJSUB, System Management, 10-76 to 10-77
/NOJTSYNC, System Management, 10-80
/NOJTYPEAHEAD, System Management, 10-80 to 10-81
/NOJVFILL, System Management, 10-81
/NOJWCHK, System Management, 10-81
/NOJWRAP, System Management, 10-82 to 10-83
/PLCTL, System Management, 10-68
/POOL, System Management, 10-69
/POOLSIZE, System Management, 10-69

SET command (VMR) keywords (cont’d.)

/RND, System Management, 10-72
/RNDH, System Management, 10-72
/RNDL, System Management, 10-72
/SPEED, System Management, 10-75
/SWPC, System Management, 10-77
/SWPR, System Management, 10-77
/SYSUIC, System Management, 10-77
/TTERM, System Management, 10-79 to 10-80
/TOP, System Management, 10-79 to 10-80
/UIC, System Management, 10-81

keyword table, System Management, 10-51 to 10-53
parameter, System Management, 10-51
uses, System Management, 10-50

Set Command Line Interpreter directive, Executive, 5-185
Set counter initial value (ICDRV/ISDRV, I/O Drivers, 19-22
.SETD directive, Indirect, 2-82
.SET [DAY]TIME command, Command Language, 2-1, 8-1, 9-28
.SET DEBUG command, Command Language, 1-2, 1-13 to 1-14, 2-8, 9-29
.SET DEFAULT command, Command Language, 2-5, 4-80 to 4-81, 9-29
Set Default Directory directive, Executive, 5-189
SET DEVICE command, Command Language, 5-88 to 5-90, 9-29
Set Event Flag directive, Executive, 5-199
.SETF$ directive, Executive, 5-199
.SETF directive, Indirect, 2-80
SET FILE command, Command Language, 4-87 to 4-89, 9-29
SET GROUPFLAGS command, Command Language, 6-52, 9-30
$SETGSA macro, RMS-11 Macro, 2-18

Master Index-261
SET HOST/DTE command, System Management, 9-3 to 9-5, 9-6
SET HOST command, Command Language, 1-10 to 1-11, 1-11 to 1-12, 9-30
SETIBF: subroutine set array for buffered sweep
K-series, I/O Drivers, 23-28
LADRV, I/O Drivers, 22-23
/SET keyword
SWITCH REGISTER command, MCR, 3-274
.SETL directive, Indirect, 2-80
$SET macro, RMS-11 Macro, 2-11
Set mode
half-duplex (communication driver), I/O Drivers, 12-7
IO.HDX function (communication driver), I/O Drivers, 12-7
.SETN directive, Indirect, 2-81
Set next buffer (K-series), I/O Drivers, 23-24
SET NODEBUG command, Command Language, 1-13 to 1-14, 2-8
SET NOPARTITION command, Command Language, 9-30
.SETO directive, Indirect, 2-82
Set operational characteristic (LRDRV), I/O Drivers, 14-5
SET PARTITION command, Command Language, 7-41 to 7-45, 9-30
SET PASSWORD command, System Management, 2-1
SET PRIORITY command, Command Language, 7-63 to 7-64, 9-31
SET PROTECTION command, Command Language, 2-6, 4-83 to 4-86, 9-31
SET QUEUE/ENTRY command, Command Language, 9-31
SET QUEUE/JOB command, Command Language, 9-32
SET QUEUE command
example, Batch and Queue, 2-21
file format
qualifiers, Batch and Queue, 2-19
job format
qualifiers, Batch and Queue, 2-19
.SETS directive, Indirect, 2-83
SET statement, Error Logging, 5-31
SET SYSTEM/DIRECTORY command, Command Language, 2-8, 8-7
SET SYSTEM command, Command Language, 8-3 to 8-5, 9-32
qualifiers, Command Language, 8-3 to 8-5
Set System Time directive, Executive, 5-235
.SETT directive, Indirect, 2-80
SET TERMINAL command, Command Language, 2-3, 3-36 to 3-48, 9-33 to 9-34 System Management, 9-3
events, Command Language, 3-47
qualifiers, Command Language, 3-37 to 3-47
SET TIME command, Command Language, 2-1, 8-1, 9-28
SETTIM routine, System Generation (11S), 2-23
Setting attributes (RMSDES)
See Attribute
SF.GMC function
half-duplex, I/O Drivers, 3-11
TTDRV, I/O Drivers, 2-18, 2-51
VTDRV, I/O Drivers, 4-6
SF.SMC function
half-duplex, I/O Drivers, 3-15
TTDRV, I/O Drivers, 2-18, 2-59
VTDRV, I/O Drivers, 4-7
/SFILE keyword
SAVE command (MCR), MCR, 3-190
SFP$ directive, Executive, 5-200
/SF switch
DMP utility, Utilities, 11-8
$$SGD0 program section, Task Builder, 5-54
reserved name, Task Builder, E-4
$$SGD1 program section
reserved name, Task Builder, E-4
$$SGD2 program section, Task Builder, 5-54
reserved name, Task Builder, E-4
SGNBLDDRV.CMD, System Generation (11M), 3-5
SGNKLABCMD, System Generation (11M), 3-5
SGNPARM.CMD definition, System Generation (11M), 5-1
description, System Generation (11M), 7-2

Master Index-262
SGNPARM.CMD (cont’d.)
question, System Generation (11M), 5-4
SGNSTAND.CMD, System Generation
(11M), 3-11
/SG switch, Task Builder, 10-36
/SHAREABLE:[COMMON] qualifier,
Task Builder, 11-65
use in region, Task Builder, 5-3 to
5-6
/SHAREABLE:[LIBRARY] qualifier,
Task Builder, 11-66
use in region, Task Builder, 5-3 to
5-6
/SHAREABLE:[TASK] qualifier, Task
Builder, 11-67
Shareable region, Executive, 3-5
Shared access, RMS-11 Introduction,
2-4 RMS-11 User’s Guide, 1-17
See also Access sharing
See also SHR field in FAB
access declarations, RMS-11 User’s
Guide, 2-6
read/write, RMS-11 User’s
Guide, 2-6
read-only, RMS-11 User’s Guide,
2-6
and high-level languages, RMS-11
User’s Guide, 2-7
application design consideration,
bucket locking, RMS-11 User’s
Guide, 2-7
deferred write
to relative files, RMS-11 User’s
Guide, 4-14
file, I/O Operations, 1-12
file open, I/O Operations, 2-15,
3-13
multiple access streams, RMS-11
User’s Guide, 2-9, 2-10
programming considerations,
RMS-11 User’s Guide, 2-10
sharing declarations, RMS-11 User’s
Guide, 2-7
no sharing, RMS-11 User’s
Guide, 2-7
read/write, RMS-11 User’s
Guide, 2-7
read-only, RMS-11 User’s Guide,
2-7
system protection codes, RMS-11
User’s Guide, 2-5

Shared access (cont’d.)
to indexed files, RMS-11 User’s
Guide, 7-1
block access, RMS-11 User’s
Guide, 7-1
record access, RMS-11 User’s
Guide, 7-1
to relative files, RMS-11 User’s
Guide, 4-6
block access, RMS-11 User’s
Guide, 4-6
record access, RMS-11 User’s
Guide, 4-6
to sequential files, RMS-11 User’s
Guide, 3-5
record structured, RMS-11 User’s
Guide, 3-6
with undefined records, RMS-11
User’s Guide, 3-6

Shared region, Executive, 3-6 Task
Builder, 5-1
See also Region
/SHARE keyword
MOUNT command (MCR), MCR, 3-152

Sharing
See Shared access
Sharing code or data, MACRO-11, 6-45
Sharing declaration, RMS-11 User’s
Guide, 2-7
indexed files, RMS-11 User’s Guide,
7-1
no sharing, RMS-11 User’s Guide,
2-7
read/write, RMS-11 User’s Guide,
2-7
read-only, RMS-11 User’s Guide,
2-7
relative files, RMS-11 User’s Guide,
4-6
sequential files, RMS-11 User’s
Guide, 3-6

SHDDFS$, CDA, C-69
SHF, System Management, 1-4
algorithms
first pass, System Management,
14-5
second pass, System Management, 14-1
conventions, System Management,
14-1
installation, System Management,
14-3

Master Index-263
SHF (cont'd.)
monitoring with RMD, System Management, 14-4
overhead, System Management, 14-3
performance, System Management, 14-3
removal, System Management, 14-5
shuffling
dynamic common regions, System Management, 14-5
fixed tasks, System Management, 14-5
partition sections, System Management, 14-5
static common regions, System Management, 14-5
size, System Management, 14-3
$SHFCT
changing contents, System Management, 14-3
SHF support, System Generation (11M), 4-37
$SHFTM, System Management, 14-3
SHIFT key, Command Language, 3-13
SHOW/TASKS/ACTIVE command, Command Language, 2-5
SHOW ALL command
RMSDES utility
defining areas by default, RMS-11 Utilities, 2-17
defining areas explicitly, RMS-11 Utilities, 2-43
SHOW ASSIGNMENTS command, Command Language, 2-5, 5-86 to 5-87, 9-35
SHOW CLOCK _ QUEUE command, Command Language, 7-65, 9-35
SHOW command, Introduction, 1-10
DCL, Command Language, 2-1
RMSDES utility, RMS-11 Utilities, 2-15, 2-18, 2-26
allocation, RMS-11 Utilities, 2-10
and PROTECTION attribute, RMS-11 Utilities, 2-33
SHOW ALL, RMS-11 Utilities, 2-4
setting attributes, RMS-11 Utilities, 2-21
with GET, RMS-11 Utilities, 2-25
SHOW DEFAULT command, Introduction, 1-15, 3-9
SHOW command (cont'd.)
SHOW DEVICES command,
Introduction, 3-10
SHOW MEMORY command,
Introduction, 6-9
SHOW QUEUE command,
Introduction, 3-12
SHOW TASKS command,
Introduction, 1-18, 5-4
SHOW TERMINAL command,
Introduction, 1-17
SHOW TIME command,
Introduction, 1-10, 3-10
SHOW USERS command,
Introduction, 1-18, 3-10
SHOW [DAYS]TIME command,
Command Language, 2-2, 8-3, 9-35
SHOW DEFAULT command,
Command Language, 2-5, 4-82, 9-35
SHOW DEFAULTS command,
Command Language, 3-2
SHOW DEVICES command, Command Language, 2-3, 3-3, 1-3, 3-91 to 3-94, 9-36
SHOW GROUPFLAGS command,
Command Language, 6-53, 9-36
SHOW HOST command, Command Language, 9-36
SHOW ID command
RMSDES utility, RMS-11 Utilities, 2-16
SHOW MEMORY command, Command Language, 2-2, 8-9 to 8-12, 9-36
SHOW PARTITIONS command,
Command Language, 7-46 to 7-48, 9-37
SHOW PROCESSOR command,
Command Language, 2-4, 9-37
format, Batch and Queue, 2-18
/SHOW qualifier, MACRO-11, 8-11
SHOW QUEUE/FULL command,
Command Language, 2-4
SHOW QUEUE command, Batch and Queue, 2-14 Command Language, 2-4, 9-37
batch queue, Batch and Queue, 1-9
display, Batch and Queue, 2-16 to 2-17
format, Batch and Queue, 2-15
print queue, Batch and Queue, 1-9
qualifiers, Batch and Queue, 2-15

Master Index-264
SHOW QUEUE command (cont'd.)
SHOW QUEUE display, Batch and Queue, 1-10
/show switch, Error Logging, 2-10, 2-11
Show switch, Error Logging, 2-4
SHOW SYSTEM/DIRECTORY
command, Command Language, 2-8, 8-7
SHOW SYSTEM command, Command Language, 8-6 to 8-7, 9-38
qualifiers, Command Language, 8-6 to 8-7
SHOW TASK/LOGICAL_UNITS
command, Command Language, 7-61 to 7-62
SHOW TASK:taskname/DYNAMIC
command, Command Language, 7-57 to 7-59, 9-38
SHOW TASKS/ACTIVE/DYNAMIC
command, Command Language, 7-59 to 7-61, 9-39
SHOW TASKS/ACTIVE command, Command Language, 3-2, 7-2, 7-49 to 7-54
SHOW TASKS/DYNAMIC command, Command Language, 7-57, 9-38
SHOW TASKS/INSTALLED/DEVICE
command, Command Language, 7-56 to 7-57
SHOW TASKS/INSTALLED command, Command Language, 2-6, 7-54 to 7-56
SHOW TASKS command, Command Language, 2-5, 7-49 to 7-62, 9-38
SHOW TERMINAL command, Command Language, 2-2, 3-49
to 3-59, 9-39 to 9-40
examples, Command Language, 3-53 to 3-59
qualifiers, Command Language, 3-50 to 3-52
SHOW TIME command, Command Language, 2-2, 8-3, 9-35
SHOW USERS command, Command Language, 2-6, 8-8, 9-40
SHR field in FAB (cont'd.)
summary, RMS-11 Macro, 6-63
WRITE operation, RMS-11 Macro, 5-127, 5-129
/sh switch, Error Logging, 2-4, 2-10, 2-11 Task Builder, 10-37
Shuffler
See SHF
Shutdown
RSX-11M system
element, System Management, 8-5
procedure, System Management, 8-4
SHUTUP
elements
RSX-11M, System Management, 8-2
input, System Management, 8-2
invoking, System Management, 8-1
output, System Management, 8-2
prerequisites to running, System Management, 8-1
SHUTUP.CMD, System Management, 8-3
example of file, System Management, 8-4
SHUTUP program, System Management, 1-3, 8-1
SIDR, RMS-11 User's Guide, 5-5, 7-9
c changeable keys, RMS-11 User's
Guide, 6-10
duplicate keys, RMS-11 User's Guide, 6-9
Signalling
definition, Error Logging, 5-40
SIGNAL statement, Error Logging, 5-40, 5-41
SIGNAL STOP statement, Error Logging, 5-41
Significant event, Executive, 2-1
Introduction, 6-6
declaring, Executive, 5-61, 5-125, 5-187
list, Executive, 2-1
Single ASCII character indicator, MACRO-1, 3
Single-directory device
See FB$SDI mask in DEV field
Single file operation, I/O Operations, 5-6
Single-precision routine
See Integer routine

Master Index—265
Single space
TTDRV, I/O Drivers, 2-75
VPC
half-duplex, I/O Drivers, 3-27
LPDRV, I/O Drivers, 10-6
SIZ0 field in KEY block
offset, RMS-11 Macro, 6-68
SIZ1 field in KEY block
offset, RMS-11 Macro, 6-68
SIZ2 field in KEY block
offset, RMS-11 Macro, 6-68
SIZ3 field in KEY block
offset, RMS-11 Macro, 6-68
SIZ4 field in KEY block
offset, RMS-11 Macro, 6-68
SIZ5 field in KEY block
offset, RMS-11 Macro, 6-68
SIZ6 field in KEY block
offset, RMS-11 Macro, 6-68
SIZ7 field in KEY block
offset, RMS-11 Macro, 6-68
Sizb parameter
device-specific function (UDDRV), I/O Drivers, 16-4
ICDRV/ISDRV, I/O Drivers, 19-10
IO.CCI function, I/O Drivers, 19-19
IO.CTI function, I/O Drivers, 19-21
IO.CTY function, I/O Drivers, 19-23
IO.WLB function, I/O Drivers, 19-32
SIZE attribute
RMSDES utility, RMS-11 Utilities, 2-36
SIZE command
EDI utility, Utilities, 2-46
/SIZE keyword
LOAD command (MCR), MCR, 3-133
LOAD command (VMR), System Management, 10-34
Size parameter
device-specific
AFC11/AD01 converter, I/O Drivers, 15-3
communication driver, I/O Drivers, 12-6
CRDRV, I/O Drivers, 11-3
DDDDR, I/O Drivers, 7-4
disk driver, I/O Drivers, 5-9
DTDRV, I/O Drivers, 6-3
GRDRV, I/O Drivers, 21-2
Size parameter
device-specific (cont’d.)
half-duplex, I/O Drivers, 3-7
receiving (LRDRV), I/O Drivers, 14-9
tape driver, I/O Drivers, 8-8
transmitting (LRDRV), I/O Drivers, 14-4
UDDRV, I/O Drivers, 16-5
VTDRV, I/O Drivers, 4-3
F11ACP, I/O Drivers, C-5
general (TTDRV), I/O Drivers, 2-11
ICDRV/ISDRV, I/O Drivers, 19-10
IO.CCO function (TTDRV), I/O Drivers, 2-23
IO.EIO function (TTDRV), I/O Drivers, 2-26
IO.GTS function (TTDRV), I/O Drivers, 2-33
IO.RAL function (TTDRV), I/O Drivers, 2-36
IO.RBC function (ICDRV/ISDRV), I/O Drivers, 19-14
IO.RLB function, I/O Drivers, 1-30
IO.RNE function (TTDRV), I/O Drivers, 2-38
IO.RPR function (TTDRV), I/O Drivers, 2-41
IO.RST function (TTDRV), I/O Drivers, 2-44
IO.RTT function (TTDRV), I/O Drivers, 2-46
IO.RVB function, I/O Drivers, 1-31
IO.SMC function (TTDRV), I/O Drivers, 2-60
IO.WAL function (TTDRV), I/O Drivers, 2-47
IO.WBT function (TTDRV), I/O Drivers, 2-50
IO.WLB function, I/O Drivers, 1-32
IO.WVB function, I/O Drivers, 1-33
SF.GMC function (TTDRV), I/O Drivers, 2-51
standard function
communication driver, I/O Drivers, 12-5
CRDRV, I/O Drivers, 11-2
CTDRV, I/O Drivers, 9-3
DDDDR, I/O Drivers, 7-3
disk driver, I/O Drivers, 5-7
DTDRV, I/O Drivers, 6-3
LPDRV, I/O Drivers, 10-4
PPDRV/PRDRV, I/O Drivers, 18-2
Size parameter
standard function (cont'd.)
tape driver, I/O Drivers, 8-6
synchronous QIO$ function (LSDRV), I/O Drivers, 17-5
SIZ field in KEY block
CREATE operation, RMS-11 Macro, 5-18
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-68
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-92
Skeleton source file
MACRO-11, Program Development, 2-4
Slash (/), Command Language, 3-16
EDI utility, Program Development, 2-16
ODT, Program Development, 5-4
Slash operator
See also Operator
double (/), Task Builder, 1-12, 1-13, 1-17
single (/), Task Builder, 1-7, 1-11, 1-12, 1-13, 1-17
/SLAVE keyword
SET command (MCR), MCR, 3-252
SET command (VMR), System Management, 10-74
/SLAVE qualifier, Task Builder, 11-68
/SLOW qualifier, Task Builder, 11-69
Slow Task Builder
See Slow TKB
Slow TKB, Task Builder, F-4
to improve performance, Task Builder, F-11
SLP utility
Command Language, 4-20, 4-74
audit trail, Utilities, 13-16
changing value, Utilities, 13-17
deleting, Utilities, 13-19
setting
length, Utilities, 13-17
position, Utilities, 13-17
suppressing, Utilities, 13-18
checksum, Utilities, 13-3
direct command file, Utilities, 13-20
error message, Utilities, 13-20
file
input, Utilities, 13-2
listing, Utilities, 13-3
SLP utility
file (cont'd.)
output, Utilities, 13-3
processing, Utilities, 13-4
source
creating, Utilities, 13-14
updating, Utilities, 13-9
indirect command file, Utilities, 13-8
initiating (invoking), Utilities, 13-1
operator, Utilities, 13-9
switch, Utilities, 13-14
/SL switch, Error Logging, 2-4, 2-7
Task Builder, 10-45
CMP utility, Utilities, 12-3
RMSBCK utility, RMS-11 Utilities, 6-6, 6-10
RMSCNV utility, RMS-11 Utilities, 4-12
RMSRST utility, RMS-11 Utilities, 7-6, 7-12
/SL switch (TKB), System Management, 10-27
$SL utility, reserved name, Task Builder, E-4
/SLV keyword
INSTALL command (MCR), MCR, 3-120
INSTALL command (VMR), System Management, 10-27
and/SL switch (TKB), System Management, 10-27
and prototype tasks, System Management, 10-27
RUN command (MCR), MCR, 3-184
$S macro form, Executive, 1-6
processing errors, Executive, 1-7
SMSS$, Error Logging, 1-4
SMSS$ directive, Executive, 5-202
SMSS$ directive summary, I/O Operations, C-4
$SNAP, Program Development, 1-7, 1-8, 5-9, 5-10
subset of Postmortem Dump Task, Program Development, 5-9, 5-10
SNAP$ macro, Task Builder, D-6
format, Task Builder, D-8, D-9
Snapshot dump, Task Builder, D-2, D-6, D-11
See also $SNAP
call to, Task Builder, D-10

Master Index-267
Snapshot dump (cont'd.)
  example, Task Builder, D-9, D-10, D-11
  macro, Task Builder, D-2
  SNPBK$ macro, Task Builder, D-5
  macro format
    for creating, Task Builder, D-6, D-7
  SNPBK$ macro, Task Builder, D-6
  format, Task Builder, D-7
  SNPDF$ macro, Task Builder, D-6
  SNXC$ directive, Executive, 5-205
Soft error, System Management, 15-30
  definition, Error Logging, 1-3
  limit switch, Error Logging, 2-4, 2-7
/SOFT keyword
  SET command (MCR), MCR, 3-253
  SET command (VMR), System Management, 10-74
Software Performance Monitor
  See SPM.
Sorting (RMSIFL)
  alternate key, RMS-11 Utilities, 3-11, 3-12, 3-13
  alternate key files, RMS-11 Utilities, 3-7
  bypassing primary key sort, RMS-11 Utilities, 3-8, 3-9
  input file organization, RMS-11 Utilities, 3-9
  primary key, RMS-11 Utilities, 3-9
  work files, RMS-11 Utilities, 3-7, 3-13
Sort option
  ACNT, System Management, 2-10
Sort routine error code
  RMSIFL utility, RMS-11 Utilities, D-1
Sort work files (RMSIFL), RMS-11 Utilities, 3-1, 3-10, 3-12
  allocating space
    primary key sort, RMS-11 Utilities, 3-13
  device allocation, RMS-11 Utilities, 3-7
SOURCE argument, MACRO-11, 8-11
SOURCE attribute
  RMSDES utility, RMS-11 Utilities, 2-30
Source file, Introduction, 5-3, 5-4, 5-5
  See also SLP utility
  case control in, MACRO-11, 6-19
Source file
  FORTRAN IV (cont'd.)
    adding debugging statements,
      Program Development, 7-7
    blank line, Program Development, 7-3
    comment line, Program Development, 7-3
    creating, Program Development, 7-2, 7-3
    editing, Program Development, 7-4, 7-5, 7-7, 7-9
MACRO-11
  assembling, Program Development, 3-1, 3-2
  creating from a skeleton, Program Development, 2-12
  editing, Program Development, 2-13 to 2-18
  error, Program Development, 3-2, 3-3, 3-4
  format, Program Development, 2-1 to 2-3
  skeleton, Program Development, 2-4
  inserting lines, Program Development, 2-18
  listing, Program Development, 3-4, 3-5, 3-6
  macro library call, Program Development, 6-3, 6-4
  preface, Program Development, 2-1
  maintaining, Command Language, 4-20
  terminating input in, MACRO-11, 6-39
Source language, Introduction, 5-3
Source Language Input Program
  See SLP utility
Source line format, MACRO-11, 2-5
Space
  application design consideration,
    RMS-11 User's Guide, 2-4, 8-1
  disk space recovery, System Generation (11M), 6-3, 6-14
  Space function (CTDRV), I/O Drivers, 9-7
$SPACE macro, RMS-11 Macro, 5-120
$SPACE macro (cont'd.)
  RSTS/E, RMS-11 Macro, D-4  Specify Power Recovery AST directive, 
  SPACE operation, RMS-11  Executive, 5-210
    Introduction, 4-7 RMS-11 Macro,  Specify Receive-By-Reference AST 
    4-14 directive, Executive, 5-231
  access modes, RMS-11 Introduction, Specify Receive Data AST directive, 
    4-7  Executive, 5-222
$SPACE macro, RMS-11 Macro,  Specify Requested Exit AST directive, 
      5-120  Executive, 5-224
  Space operator  Specify SST Vector Table for Debugging
    See Operator  Aid directive, Executive, 5-242
  SPACE symbol, Indirect, 2-16  Specify SST Vector Table for Task
t  Spacing  directive, Executive, 5-244
  abort  Speed
    tape driver, I/O Drivers, 8-16 application design consideration, 
    TK50, I/O Drivers, 8-16 RMS-11 User's Guide, 2-3, 8-1
    end-of-volume (tape driver), I/O /SPEED keyword
      Drivers, 8-16
    Spanning blocks, RMS-11 Introduction, SET command (MCR), MCR, 3-254
      4-2 RMS-11 User's Guide, 1-16, SET command (VMR), System 
      1-19, 3-1 Management, 10-75
    variable-length records, RMS-11 SPM, System Generation (11M), 4-65
      User's Guide, 2-16 SPND$S directive, Executive, 5-209
    Spawn directive, Executive, 5-212 Spool
    Spawning, Executive, 4-5  definition, Batch and Queue, 4-8
    SP command  Spooled device, Batch and Queue, 1-3, 
    EDI utility, Utilities, 2-45  2-1
    SPEA$ directive, Executive, 5-207  definition, Batch and Queue, 4-8
    Special buffer handling, Writing I/O line printer, Batch and Queue, 1-3
      Driver, 6-9  output, Batch and Queue, 1-3
    example, Writing I/O Driver, 6-9 to Spooling, I/O Operations, 8-1
      6-11  file
    Special character, MACRO-11, 3-1 PIP utility, Utilities, 3-38
      3-2, 3-3  library file
    assembler  LBR utility, Utilities, 10-29
      summary, MACRO-11, B-1 output, Batch and Queue, 2-1
    key, MCR, 2-15 to 2-18  .PRINT subroutine, I/O Operations, 
    state table, I/O Operations, 7-8  8-1
    Special key  SPRA$ directive, Executive, 5-210
    table (TTDRV), I/O Drivers, 2-71 /-SP switch, CDA, 2-10, 2-12
    Special symbol, Indirect, 1-4, 2-9 /SP switch, MACRO-11, 8-7 Task
      format, Indirect, 2-9  Builder, 10-46
      logical, Indirect, 2-10 CMP utility, Utilities, 12-3
      numeric, Indirect, 2-11 DMP utility, Utilities, 11-8
      string, Indirect, 2-17 FLX utility, Utilities, 4-8
      type, Indirect, 2-9 LBR utility, Utilities, 10-29
    Specify Command Arrival AST PIP utility, Utilities, 3-38
      directive, Executive, 5-182 SLP utility, Utilities, 13-15
    Specify Floating Point Processor SPWN$ directive, Executive, 5-212
      Exception AST directive,  IOX
      Executive, 5-200  in EXECUTE command, System
    Specify Parity Error AST directive, Management, 4-37
      Executive, 5-207
    /SQ switch, Task Builder, 10-47
    IOX

Master Index–269
SQ switch (continued)
SLP utility, Utilities, 13-16
Square bracket (#[]), Command Language, 3-16
SRC symbolic argument, MACRO-11, 6-11
SRDA$ directive, Executive, 5-222
SRE$ directive, Executive, 5-224
SREF$ directive, Executive, 5-229
S register, Debugging, 2-6, 5-3, 9-10
SREX$ directive, Executive, 5-224
SRRA$ directive, Executive, 5-231
/SQ switch
PIP utility, Utilities, 3-39
SRTI routine, Task Builder, 8-13
SS.MAS state setting, transmitter (LRDRV), I/O Drivers, 14-4
SS.NEU state setting, transmitter (LRDRV), I/O Drivers, 14-4
SS command
EDI utility, Utilities, 10-29
SSM See SYSTEM SERVICE MESSAGE command
/SS switch, Task Builder, 10-48, 10-49, 10-50
LBR utility, Utilities, 10-29
symbol definition file
  reducing overhead, Task Builder, 2-46
SST, Executive, 2-5
ODT, Program Development, 5-8
relation to Postmortem Dump, Program Development, 1-7
role in task termination, Program Development, 4-8, 4-9
service routine, Executive, 2-6
  specifying, Executive, 5-242, 5-244
stack content register, Debugging, 2-7, 5-4
  vector
  address
    declaring, Task Builder, 12-29
    handling, Debugging, 2-11
    register, Debugging, 2-7, 5-5
XDT, Debugging, 8-4
SST fault
abnormal, Writing I/O Driver, 3-27
internal, Writing I/O Driver, 3-26
SST routine
interrupt, I/O Drivers, 1-11
Stack
  declaring size, Task Builder, 12-36
Stack check, card reader (CRDRV), I/O Drivers, 11-6
Stack Depth Indicator
  See $STKDP
STACK option, Task Builder, 12-36
Stack pointer
  definition, MACRO-11, 3-10
  kernel, CDA, 3-2, 3-5
  user, CDA, 3-2
Stack structure
  abnormal SST fault, Writing I/O Driver, 3-27
  data items on stack, Writing I/O Driver, 3-28
  internal SST fault, Writing I/O Driver, 3-26
Staddb parameter
ICDRV/ISDRV, I/O Drivers, 19-10
IO.WLB function, I/O Drivers, 19-32
Stadd parameter
device-specific
  AFC11/AD01 converter, I/O Drivers, 15-2
  communication driver, I/O Drivers, 12-6
  CRDRV, I/O Drivers, 11-3
  DDDRV, I/O Drivers, 7-4
  disk driver, I/O Drivers, 5-8
  DTDRV, I/O Drivers, 6-3
  GRDRV, I/O Drivers, 21-2
  half-duplex, I/O Drivers, 3-8
  receive (LRDRV), I/O Drivers, 14-9
  tape driver, I/O Drivers, 8-8
  transmit (LRDRV), I/O Drivers, 14-4
UDDRV, I/O Drivers, 16-4
VTDRV, I/O Drivers, 4-3
general (TTDRV), I/O Drivers, 2-11
ICDRV/ISDRV, I/O Drivers, 19-10
IO.CCI function (ICDRV/ISDRV), I/O Drivers, 19-19
IO.CCO function (TTDRV), I/O Drivers, 2-23
IO.CTI function (ICDRV/ISDRV), I/O Drivers, 19-21
IO.CTY function (ICDRV/ISDRV), I/O Drivers, 19-23
IO.EIO function (TTDRV), I/O Drivers, 2-26

Master Index-270
Stand-alone

definition, System Generation (11M), 1-6

Stand-Alone Configuration and Disk
Sizing Program (CNF)

See BRU64K
See BRUSYS

Standard function list (TTDRV), I/O
Drivers, 2-19

Standard Function System, System
Generation (11M), 1-2

See also Saved answer file
description, System Generation (11M),
3-11

options included, System Generation
(11M), 3-12

purpose, System Generation (11M),
3-11

question, System Generation (11M),
4-7

restriction, System Generation (11M),
3-12

START/PROCESSOR command,
Command Language, 9-41

START/QUEUE/MANAGER
command, Command Language,
9-42

START/QUEUE command, Command
Language, 9-42

START/UNBLOCK command,
Command Language, 7-27, 9-42

START command, Command Language,
7-26, 9-41

lOX, System Management, 4-61

Start-of-segment symbol, Task
Builder, A-26

STARTUP.CMD, System Generation
(11M), 6-8, 6-18 System
Management, 7-1

RMS procedures, System Generation
(11M), 6-11

Startup command file, Introduction,
2-2

STATE$ macro, I/O Operations, 7-1,
7-2

State change
read interrupt point (ICDRV/ISDRV),
I/O Drivers, 19-54

Statement

format, MACRO-11, 2-1

MACRO-11, Program Development,
1-4
Statement

MACRO-11 (cont’d.)
format, Program Development, 2-3
State parameter
device-specific function
transmit (LRDRV), I/O Drivers, 14-4
IO.STC function
transmitter (LRDRV), I/O Drivers, 14-6
$STATE program section, I/O Operations, 7-2
State setting, transmitter (LRDRV), I/O Drivers, 14-4
State table, I/O Operations, 7-1
arrangement of syntax types, I/O Operations, 7-7
initializing, I/O Operations, 7-2
rejecting transitions, I/O Operations, 7-18
special character, I/O Operations, 7-8
using subexpressions, I/O Operations, 7-18
Static common region, Executive, 3-4
checkpointing, System Management, 14-2
resident common, System Management, 14-2
resident libraries, System Management, 14-2
shuffling, System Management, 14-4
Statistics block, I/O Operations, H-1
Stat parameter
device-specific (communication driver), I/O Drivers, 12-6
device-specific function (VTDRV), I/O Drivers, 4-3
Status
completion (VTDRV), I/O Drivers, 4-6
end-of-volume
unlabeled tape (tape driver), I/O Drivers, 8-16
I/O, I/O Drivers, 1-36
I/O (CRDRV), I/O Drivers, 11-7
I/O completion (VTDRV), I/O Drivers, 4-5
I/O condition, I/O Drivers, 1-38
I/O directive, I/O Drivers, 1-37
IO.XOP function (XEDRV), I/O Drivers, 13-6
Status (cont’d.)
resetting transport (tape driver), I/O Drivers, 8-17
AFC11/ADO1 converter, I/O Drivers, 15-4, 15-8
communication driver, I/O Drivers, 12-8
CRDRV, I/O Drivers, 11-3, 11-7
CTDRV, I/O Drivers, 9-4
DDDRV, I/O Drivers, 7-5
disk driver, I/O Drivers, 5-9, 5-10
DTDRV, I/O Drivers, 6-4
first word content
K-series, I/O Drivers, 23-32
LADRV, I/O Drivers, 22-31
UDDRV, I/O Drivers, 16-15
FORTRAN (ICDRV/ISDRV), I/O Drivers, 19-35, 19-36
GRDRV, I/O Drivers, 21-3
half-duplex, I/O Drivers, 3-13, 3-15, 3-16, 3-17, 3-18, 3-26
K-series, I/O Drivers, 23-6, 23-32
LADRV, I/O Drivers, 22-2, 22-30
LPDRV, I/O Drivers, 10-5
LRDRV, I/O Drivers, 14-4, 14-5, 14-7, 14-11
LSDRV, I/O Drivers, 17-9, 17-10, 17-31, 17-34
PPDRV/PRDRV, I/O Drivers, 18-3
tape driver, I/O Drivers, 8-10, 8-11
TTDRV, I/O Drivers, 2-10, 2-43, 2-51, 2-59, 2-63, 2-75, 2-77, 2-80
UDDRV, I/O Drivers, 16-7, 16-15, 16-16, 16-31
UNIBUS switch driver, I/O Drivers, 24-6, 24-7
VTDRV, I/O Drivers, 4-7, 4-8, 4-9
4-word (LADRV), I/O Drivers, 22-31
XEDRV, I/O Drivers, 13-6, 13-7, 13-10, 13-11, 13-14, 13-16, 13-17, 13-18
Status code
ERROR
definition, Batch and Queue, 4-4
SEVERERROR
definition, Batch and Queue, 4-4
SUCCESS
definition, Batch and Queue, 4-4

Master Index-272
Status code
WARNING (cont'd.)
  definition, Batch and Queue, 4-4
Status code, binary value, I/O Drivers, 1-37
Status Control Block
See SCB
Status parameter (XEDRV)
  IO.XCL function, I/O Drivers, 13-17
  IO.XIN function, I/O Drivers, 13-10
  IO.XRC function, I/O Drivers, 13-14
  IO.XSC function, I/O Drivers, 13-7
  IO.XTL function, I/O Drivers, 13-18
  IO.XTM function, I/O Drivers, 13-11
Status return
  communication driver, I/O Drivers, 12-8
  CRDRV, I/O Drivers, 11-3, 11-7
  CTDRV, I/O Drivers, 9-4
  DDRV, I/O Drivers, 7-4
  disk driver, I/O Drivers, 5-9
  DTDRV, I/O Drivers, 6-4
  FORTRAN (ICDRV/ISDRV), I/O Drivers, 19-35
  FORTRAN, interface value list
    (UDDRV), I/O Drivers, 16-33
  GRDRV, I/O Drivers, 21-3
  half-duplex, I/O Drivers, 3-17
  ICDRV/ISDRV, I/O Drivers, 19-12
  IO.XCL function (XEDRV), I/O Drivers, 13-18
  IO.XIN function (XEDRV), I/O Drivers, 13-11
  IO.XRC function (XEDRV), I/O Drivers, 13-16
  IO.XTL function (XEDRV), I/O Drivers, 13-18
  IO.XTM function (XEDRV), I/O Drivers, 13-13
  LPDRV, I/O Drivers, 10-4
  LSDRV, I/O Drivers, 17-29
  PPDRV/PDRV, I/O Drivers, 18-3
  receiver (LRDRV), I/O Drivers, 14-11
  summary (ICDRV/ISDRV), I/O Drivers, 19-36
  tape driver, I/O Drivers, 8-10
  transmitter (LRDRV), I/O Drivers, 14-6
Status return (cont'd.)
  TTDRV, I/O Drivers, 2-63
  UDDRV, I/O Drivers, 16-31
  UNIBUS switch driver, I/O Drivers, 24-7
  VTDRV, I/O Drivers, 4-7
  word 1 (ICDRV/ISDRV), I/O Drivers, 19-36
  XEDRV, I/O Drivers, 13-5
  Status word (F11ACP)
  FNN, I/O Drivers, C-7
STB file
  absolute region, Task Builder, 5-10
  content, Task Builder, 5-6
  excluding symbol, Task Builder, 12-22
  for region, Task Builder, 5-4, 5-6
  system-owned, Task Builder, 12-12
  for user-owned region, Task Builder, 12-31
  interaction of /CO/LI/PI switch, Task Builder, 5-4
  LINK command, Task Builder, 1-6
  program sections, Task Builder, 5-6
  reducing overhead, Task Builder, F-4
  region
    system-owned, Task Builder, 12-24
    relocatable region, Task Builder, 5-10
    system-owned, Task Builder, 12-37
    user-owned, Task Builder, 12-33
  symbol inclusion, Task Builder, 12-19
  use of /CO/LI/PI switch, Task Builder, 5-6
  /STB switch, CDA, 2-2, 2-10, 2-12
STB parameter
device-specific
  AFC11/AD01 converter, I/O Drivers, 15-3
  device-specific function (UDDRV), I/O Drivers, 16-5
  ICDRV/ISDRV, I/O Drivers, 19-11
  IORBC function, I/O Drivers, 19-14
  STD, Command Language, 7-1, 7-2
See also System Task Directory
STD
entry (cont’d.) 
including, Command Language, 7-28
removing, Command Language, 7-37

/STD switch, CDA, 2-5, 2-8
Step command 
See S command

STIM$ directive, Executive, 5-235
$STKDP, CDA, 4-2 Debugging, 8-3, 8-6, 9-1
$STKDP pointer 
use of
in fault tracing, Writing I/O Driver, 3-23
STLO$ directive, Executive, 5-238
$STMAP routine, Writing I/O Driver, 5-26, B-2 to B-3
use of
to obtain UMRs, Writing I/O Driver, B-1
$STMP1 routine, Writing I/O Driver, 5-27, B-2, B-3
use of
to obtain UMRs, Writing I/O Driver, B-1
STOP/ABORT command, Command Language, 9-42
STOP/BLOCK command, Command Language, 7-24 to 7-25, 9-43
STOP/PROCESSOR command, Command Language, 9-43
STOP/QUEUE/MANAGER command, Command Language, 9-44
STOP/QUEUE command, Command Language, 9-43
STOP/$S directive, Executive, 5-240
STOP/ABORT command, Introduction, 3-13
Stop-bit synchronization, Executive, 2-12
directives, Executive, 2-13
STOP directive, Indirect, 2-84
Stop directive, Executive, 5-240
Stop for Logical OR of Event Flags directive, Executive, 5-238
Stop for Single Event Flag directive, Executive, 5-241
Stop I/O
in-progress request (LSDRV), I/O Drivers, 17-9
Stop switch
card reader (CRDRV), I/O Drivers, 11-6
Stop synchronous function (LSDRV), I/O Drivers, 17-22
Storage
data, RMS-11 Introduction, 2-1
Storage map, file header, I/O Operations, E-2
$STORE macro, RMS-11 Macro, 2-10
text, RMS-11 Macro, 7-3, 7-7, 7-11, 7-15
$STPC routine 
use of
by ACP, Writing I/O Driver, D-7
STPSWP: subroutine
stop sweep
K-series, I/O Drivers, 23-29
LADRV, I/O Drivers, 22-24
%STR, Error Logging, 5-23, 5-24
Stream, RMS-11 Macro, 4-2
See also Access stream access, RMS-11 Introduction, 4-3
connecting
See CONNECT operation disconnecting
See DISCONNECT operation
internal identifier
See ISI field in RAB
unlocking bucket
See FREE operation
writing buffers
See FLUSH operation
Stream context
advancing to next volume
See NXTVOL operation repositioning
See REWIND operation
Stream operation, RMS-11 Introduction, 4-4 RMS-11 User’s Guide, 1-15
See also Operation
block stream, RMS-11 Macro, 4-13
record stream, RMS-11 Macro, 4-8
Stream operation macro, RMS-11 Macro, 1-2
declaring, RMS-11 Macro, C-3
Stream record format, RMS-11 Introduction, 3-4 RMS-11 User’s Guide, 1-11, 2-16
See also FB$STM code in RRM field terminators, RMS-11 Introduction, 3-4 RMS-11 User’s Guide, 2-16
String quoting, Command Language, 1-9
String constant, Indirect, 2-24
String conversion function, Error Logging, 5-19
String expression, Indirect, 2-24
String handling function, Error Logging, 5-23, 5-24
String key, RMS-11 User's Guide, 6-3
See also XB$STG mask in DTP field segmented, RMS-11 User's Guide, 6-7
String symbol, Indirect, 2-9, 2-24
comparing, Indirect, 2-60
defining, Indirect, 2-38
setting, Indirect, 2-83
testing, Indirect, 2-61
STRLEN symbol, Indirect, 2-16
Structure
indexed files
  conceptual, RMS-11 User's Guide, 5-4
relative files, RMS-11 User's Guide, 4-1
  conceptual, RMS-11 User's Guide, 4-1
  sequential files, RMS-11 User's Guide, 3-1
  physical, RMS-11 User's Guide, 3-1
TKB
  size, Task Builder, F-3
STSE$ directive, Executive, 5-241 I/O Drivers, 1-10
STS field in FAB, RMS-11 Macro, 2-14, 3-5
CLOSE operation, RMS-11 Macro, 5-4
CREATE operation, RMS-11 Macro, 5-21
DISPLAY operation, RMS-11 Macro, 5-32
ENTER operation, RMS-11 Macro, 5-38
ERASE operation, RMS-11 Macro, 5-43
EXTEND operation, RMS-11 Macro, 5-47
offset, RMS-11 Macro, 6-22

STS field in FAB (cont'd.)
  OPEN operation, RMS-11 Macro, 5-82
  PARSE operation, RMS-11 Macro, 5-89
  REMOVE operation, RMS-11 Macro, 5-105
  RENAME operation, RMS-11 Macro, 5-112
  SEARCH operation, RMS-11 Macro, 5-118
  summary, RMS-11 Macro, 6-64
STS field in RAB, RMS-11 Macro, 2-14, 4-2
CONNECT operation, RMS-11 Macro, 5-8
DELETE operation, RMS-11 Macro, 5-26
DISCONNECT operation, RMS-11 Macro, 5-27
FIND operation, RMS-11 Macro, 5-50, 5-53, 5-55
FLUSH operation, RMS-11 Macro, 5-56
FREE operation, RMS-11 Macro, 5-58
GET operation, RMS-11 Macro, 5-62, 5-65, 5-68
NXTVOL operation, RMS-11 Macro, 5-70
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-93, 5-97
READ operation, RMS-11 Macro, 5-99, 5-101
REWRITE operation, RMS-11 Macro, 5-115
SPACE operation, RMS-11 Macro, 5-120
summary, RMS-11 Macro, 6-141
TRUNCATE operation, RMS-11 Macro, 5-122
UPDATE operation, RMS-11 Macro, 5-125
WRITE operation, RMS-11 Macro, 5-128, 5-130
STV field in FAB, RMS-11 Macro, 2-14, 3-5
CLOSE operation, RMS-11 Macro, 5-4
CREATE operation, RMS-11 Macro, 5-21
DISPLAY operation, RMS-11 Macro, 5-32

Master Index-275
STV field in FAB (cont’d.)
ENTER operation, RMS-11 Macro, 5-38
ERASE operation, RMS-11 Macro, 5-43
EXTEND operation, RMS-11 Macro, 5-47
offset, RMS-11 Macro, 6-22
OPEN operation, RMS-11 Macro, 5-82
PARSE operation, RMS-11 Macro, 5-89
REMOVE operation, RMS-11 Macro, 5-105
RENAME operation, RMS-11 Macro, 5-112
SEARCH operation, RMS-11 Macro, 5-118
summary, RMS-11 Macro, 6-65
STV field in RAB, RMS-11 Macro, 2-14, 4-2
CONNECT operation, RMS-11 Macro, 5-8
DELETE operation, RMS-11 Macro, 5-26
DISCONNECT operation, RMS-11 Macro, 5-27
FIND operation, RMS-11 Macro, 5-50, 5-53, 5-55
FLUSH operation, RMS-11 Macro, 5-56
FREE operation, RMS-11 Macro, 5-58
GET operation, RMS-11 Macro, 5-62, 5-65, 5-68
NXTVOL operation, RMS-11 Macro, 5-70
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-93, 5-97
READ operation, RMS-11 Macro, 5-99, 5-101
REWIND operation, RMS-11 Macro, 5-115
SPACE operation, RMS-11 Macro, 5-120
summary, RMS-11 Macro, 6-142
TRUNCATE operation, RMS-11 Macro, 5-122
UPDATE operation, RMS-11 Macro, 5-125
WRITE operation, RMS-11 Macro, 5-128, 5-130
SU$-family symbol declaring, RMS-11 Macro, C-3
value, RMS-11 Macro, A-1
Subconditional assembly, MACRO-11, 6-53, 6-54
Subexpression, parsing complex command lines, I/O Operations, 7-19
Subfunction (TTDRV) allowed, I/O Drivers, 2-18
list device-specific, I/O Drivers, 2-19
standard, I/O Drivers, 2-19
modifier, extended I/O, I/O Drivers, 2-25
Subfunction bit half-duplex, I/O Drivers, 3-8, 3-9, 3-10
TTDRV, I/O Drivers, 2-12
/SUB keyword
SET command (MCR), MCR, 3-255
SET command (VMR), System Management, 10-76 to 10-77
Subpacket definition, Error Logging, 4-69
dispatch module, Error Logging, 4-69 to 4-71
DSP1M1, Error Logging, 4-72
DSP1P1, Error Logging, 4-72
DSP2M1, Error Logging, 4-73
DSP2P1, Error Logging, 4-73
DSP3M1, Error Logging, 4-73
DSP3P1, Error Logging, 4-73
DSP4M1, Error Logging, 4-74
DSP4P1, Error Logging, 4-74
DSP5M1, Error Logging, 4-74
DSP5P1, Error Logging, 4-74
DSP6M1, Error Logging, 4-74
DSP6P1, Error Logging, 4-74
DSP7M1, Error Logging, 4-75
DSP7P1, Error Logging, 4-75
SUBPACKAGE statement, Error Logging, 5-29
Subpartition, Command Language, 7-41
See also Partition base address, MCR, 3-255
defining, MCR, 3-267
definition, MCR, 2-20
displaying, MCR, 3-256
eliminating, MCR, 3-256, 3-267
setting, MCR, 3-255
size, MCR, 3-255
task, MCR, 2-21

Master Index-276
Subroutine, Introduction, 5-8
  calling, Indirect, 2-58
  high-level language, Executive, 1-9
  error conditions, Executive, 1-19
  optional arguments, Executive, 1-10
  specifying task names, Executive, 1-11
  returning from, Indirect, 2-79
Subroutine, synchronous (LSDRV), I/O Drivers, 17-10
Subroutine linkage
  standard (K-series), I/O Drivers, 23-31
  standard MACRO-11 (LADRV), I/O Drivers, 22-27
Subroutine linkage (K-series), I/O Drivers, 23-31
SUBSTITUTE command
  EDT editor, Introduction, 2-15
Substitution format control string, Indirect, 2-26
Substitution mode
  Indirect, Indirect, 1-3, 2-48
  Introduction, 4-2
Substring searching, Indirect, 2-85
Subsystem
  IC and IS, System Generation (11M), 4-93
Subtraction operator, MACRO-11, 3-2, 3-5
Success
  handler, RMS-11 Macro, 2-17
Success return
  LSDRV, I/O Drivers, 17-29
  UDDRV, I/O Drivers, 16-31
SUM block, RMS-11 Introduction, 4-8
  chaining to FAB, RMS-11 Macro, 2-12
  declaring, RMS-11 Macro, 2-8
  initializing, RMS-11 Macro, 2-9
  summary, RMS-11 Macro, 6-145
.SUML1
  reserved global symbol, Task Builder, E-2
Summary listing
  RMSBCK utility, RMS-11 Utilities, 6-10
  RMSCNV utility, RMS-11 Utilities, 4-12
Summary listing (cont’d.)
  RMSRST utility, RMS-11 Utilities, 7-12
Summary report
  generated by PRINTSUMMARY, System Management, 4-49
  IOX, System Management, 4-20
SUMMARYTIME command
  IOX, System Management, 4-62
Summary XAB
  See SUM block
SUPERSEDE attribute
  RMSDES utility, RMS-11 Utilities, 2-35
/SUPERSEDE qualifier
  BRU utility, Utilities, 7-21
Supersession
  See also FB$SUP mask in FOP field
  RMSBCK utility, RMS-11 Utilities, 6-7
  RMSCNV utility, RMS-11 Utilities, 4-7, 4-13
  RMSDEF utility, RMS-11 Utilities, A-7
  RMSRST utility, RMS-11 Utilities, 7-8
Support
  of ICS11 by ICDRV, I/O Drivers, 19-3
  of ICS11 by UDDRV, I/O Drivers, 19-3
Support routine
  feature list (K-series), I/O Drivers, 23-3
  generation (K-series), I/O Drivers, 23-4, 23-5
  interface (K-series), I/O Drivers, 23-6
  invoking (K-series), I/O Drivers, 23-31
  MACRO-11 (LADRV), I/O Drivers, 22-26
  program use (K-series), I/O Drivers, 23-5
use (K-series), I/O Drivers, 23-4
Suspend directive
  I/O Drivers, 23-4
/SU switch
  PIP utility, Utilities, 3-12
  RMSBCK utility, RMS-11 Utilities, 6-7
  RMSCNV utility, RMS-11 Utilities, 4-5, 4-7, 4-13, 4-15
  RMSRST utility, RMS-11 Utilities, 7-8

Master Index-277
SVDB$ directive, *Executive*, 5-242
SVTK$ directive, *Executive*, 5-244

Sw1 parameter
device-specific function (VTDRV),
I/O Drivers, 4-4

Sw2 parameter
IO.STC function (VTDRV), I/O Drivers, 4-6

Sweep
initiate A/D synchronous (K-series), I/O Drivers, 23-8
stop (K-series), I/O Drivers, 23-29

Switch, *Indirect*, 2-27
MCR, 2-5

See also individual switch entries
See also *Keyword*

analysis, CDA, 2-3 to 2-8
argument, MCR, 2-6
BAD utility, *Utilities*, 6-5
BRU utility, *Utilities*, 7-12
CMP utility, *Utilities*, 12-2
conflict, *Task Builder*, 10-1
CRF utility, *Utilities*, B-1
cross-reference control, MACRO-11, 8-16, 8-17
default
modifying, *Task Builder*, F-7 to F-11
description, *Task Builder*, 10-5 to 10-54
designation, *Task Builder*, 10-1
DMP utility, *Utilities*, 11-3
DSC utility, *Utilities*, 8-9
file specification, MACRO-11, 8-6, 8-7
FLX utility, *Utilities*, 4-3
FMT utility, *Utilities*, 5-7
format, MACRO-11, 8-5, 8-6
FTB supported, *Task Builder*, G-1
function, CDA, 2-9 to 2-12
function control, MACRO-11, 8-6, 8-7
LBR utility, *Utilities*, 10-9
listing control, MACRO-11, 8-6, 8-7
macro library, MACRO-11, 8-6, 8-7
modifying default, *Task Builder*, F-7 to F-11
overriding, *Task Builder*, 10-1
PAT utility, *Utilities*, 14-6
PIP utility, *Utilities*, 3-14
RMSCNV utility, RMS-11 *Utilities*, 6-4, 6-5
RMSCNK utility, RMS-11 *Utilities*, 4-5, 4-7

Switch (cont’d.)
RMSDSP utility, RMS-11 *Utilities*, 5-3, 5-4
RMSIFL utility, RMS-11 *Utilities*, 3-3, 3-5
RMSRST utility, RMS-11 *Utilities*, 7-3, 7-5
SLP utility, *Utilities*, 13-14

*keyword*
summarized in, *Task Builder*, 10-2, 10-3, 10-4
BAD, *Utilities*, A-12
BRU, *Utilities*, A-13
CMP, *Utilities*, A-22
DMP, *Utilities*, A-20
DSC, *Utilities*, A-16
EDI, *Utilities*, A-1
FLX, *Utilities*, A-9
FMT, *Utilities*, A-11
LBR, *Utilities*, A-18
PAT, *Utilities*, A-24
SLP, *Utilities*, A-23
VFY, *Utilities*, A-17
ZAP, *Utilities*, A-25
syntax, *Task Builder*, 10-1
VFY utility, *Utilities*, 9-4
ZAP utility, *Utilities*, 15-2

 See also *individual switch entries*

DMP utility, *Utilities*, 11-3
DSC utility, *Utilities*, 8-9
file specification, MACRO-11, 8-6, 8-7
FLX utility, *Utilities*, 4-3
FMT utility, *Utilities*, 5-7
format, MACRO-11, 8-5, 8-6
FTB supported, *Task Builder*, G-1
function, CDA, 2-9 to 2-12
function control, MACRO-11, 8-6, 8-7
LBR utility, *Utilities*, 10-9
listing control, MACRO-11, 8-6, 8-7
macro library, MACRO-11, 8-6, 8-7
modifying default, *Task Builder*, F-7 to F-11
overriding, *Task Builder*, 10-1
PAT utility, *Utilities*, 14-6
PIP utility, *Utilities*, 3-14
RMSCNV utility, RMS-11 *Utilities*, 6-4, 6-5
RMSCNK utility, RMS-11 *Utilities*, 4-5, 4-7

SWITCH command, *System Management*, 15-27
Switching access modes, RMS-11
Introduction, 3-13

Switch register
question, *System Generation (11M)*, 4-11

Switch State directive, *Executive*, 5-246
Switch switch, *Error Logging*, 2-4, 2-8
Delete subswitch, *Error Logging*, 2-4, 2-9
New version subswitch, *Error Logging*, 2-4, 2-9

/SWPC keyword
SET command (MCR), MCR, 3-256
SET command (VMR), *System Management*, 10-77

/SWPR keyword
SET command (VMR), *System Management*, 10-77

SWSTS directive, *Executive*, 5-246
$SWSTK routine, Writing I/O Driver, 5-28

/SW switch, *Error Logging*, 2-4, 2-8

SY: Command Language, 4-2, 4-4, 5-6
MCR, 2-4, 2-7, 2-11, 3-79, 3-212

Master Index-278
SY: (cont'd.)
user device logical, MCR, 3-21
SYDISK symbol, Indirect, 2-21
Symbol, Indirect, 1-3 RMS-11
  Introduction, 4-7
affecting search, Task Builder, 2-7
code and mask, RMS-11
  Introduction, 4-7
control directive, MACRO-11, 6-48, 6-49
cross-reference, Program
  Development, 3-7, 3-8
cross-reference listing, Task Builder,
  10-12, 11-23, 11-24
control of, MACRO-11, 6-22
declaration flag byte, Task Builder,
  A-7
defining, Indirect, 2-4
definition ambiguous, Task Builder, 3-41
  including in SYSLIB.OLB (UDDR), I/O Drivers,
  16-12
  local (half-duplex), I/O Drivers,
  3-13
SYSLIB.OLB, Task Builder, 2-7
deleting definition, Indirect, 2-52
directory record declare global, Task Builder,
  A-2
end of global, Task Builder,
  A-11
internal, Task Builder, A-24
displaying, Indirect, 2-96
field-offset, RMS-11 Introduction,
  4-7
full search in overlays specifying, Task Builder, 10-19,
  11-33
global, Introduction, 5-5, 5-9
MACRO-11, 1-2 Program
  Development, 1-5
  address of ODT SST routine, Task Builder,
  12-26
  ambiguously defined in overlay, Task Builder,
  3-16
  autoloadable segment, Task Builder, 4-7
cross-reference listing, Task Builder,
  10-12, 10-13, 11-23, 11-24
declaration definition in task, Task Builder, 12-18
Symbol (cont'd.)
global default library resolution, Task
  Builder, 3-18
definition, MACRO-11, 3-8, 6-49
directory record, Task Builder,
  A-2
  format, Task Builder, A-4
  end of directory record, Task Builder,
  A-11
entry point, Program
  Development, 1-4
excluding in task, Task Builder,
  12-22
from the default library, Task Builder, 3-18
internal, Task Builder, A-28
multiply defined, Task Builder,
  3-16
name, Task Builder, A-6
name entry, Task Builder, A-6
overlaid region .STB file, Task Builder,
  5-13, 5-14
overlay search sequence, Task Builder, 3-17
resolution, Program
  Development, 1-4, 1-5, 4-2 Task Builder,
  3-16, 3-17
cotree, Task Builder, 3-17
resolution in multisegment task, Task Builder, 3-16
search sequence in overlay, Task Builder, 3-16
task inclusion, Task Builder,
  12-19
internal autoloadable library, Task Builder, A-26, A-27
end-of-module record format, Task Builder, A-32
global, Task Builder, A-28
line-number, Task Builder,
  A-29, A-30
literal record, Task Builder,
  A-30
format, Task Builder, A-30
module name, Task Builder,
  A-27, A-28
name, Task Builder, A-30
format, Task Builder, A-32
item, Task Builder, A-30, A-31

Master Index-279
Symbol

internal (cont'd.)
  name entry, Task Builder, A-5
  overall format, Task Builder, A-24, A-25
  PC correlation, Task Builder, A-29, A-30
  program section item, Task Builder, A-29
  record, Task Builder, A-30
  relocatable/relocated, Task Builder, A-27
  start-of-segment, Task Builder, A-25, A-26
  task identification, Task Builder, A-26
  TKB generated, Task Builder, A-25

local, Introduction, 5-5 Program Development, 1-4, 1-5, 2-7, 2-8
defining (TTDRV), I/O Drivers, 2-33
definition, Program Development, 2-7, 2-8
obtaining, I/O Drivers, 1-7
macro
definition, Program Development, 1-4, 1-10, 2-7, 6-4
MACRO-11 evaluation, Program Development, 1-4, 3-1, 3-2
marking undefined reference, MACRO-11, 6-21
name, Indirect, 2-9
number of processed for performance, Task Builder, F-3
reserved, MACRO-11, 2-3, 3-1
resolution
global, Task Builder, 2-7, 2-8
global in cotree, Task Builder, 3-17
multisegment task, Task Builder, 3-17
saved answer, System Generation (1IM), A-1
search
  selective, Task Builder, 10-48, 10-49, 10-50, 11-61, 11-62, 11-63
substituting, Indirect, 2-25
table, Indirect, 2-4, 2-25 MACRO-11, 1-1, 1-2
search order, MACRO-11, 3-7

Symbol (cont'd.)
  TKB reserved, Task Builder, E-1 to E-4
type, Indirect, 2-9
defining, Indirect, 2-9
logical, Indirect, 2-9
numeric, Indirect, 2-9
string, Indirect, 2-9
undefined, MACRO-11, 3-8
global, Task Builder, 2-7
user-defined, MACRO-11, 3-6, 3-7, 3-8
using, Indirect, 2-9
/SYMBOL_TABLE qualifier, Task Builder, 11-70
designation, Task Builder, 11-2
Symbol-declaration macro, RMS-11 Macro, 2-2
Symbol Definition File
/IM switch, System Management, 10-2
relationship to system image file, System Management, 10-1
specifying, System Management, 10-2
VMR requirements, System Management, 10-1
Symbol definition file
See .STB file
Symbolic offset, Executive, 1-7
for system data structures, Writing I/O Driver, C-1
SYMBOLS argument, MACRO-11, 8-11
SYM symbolic argument, MACRO-11, 8-12
SYMTYP symbol, Indirect, 2-16
SYN argument to RAB$B macro, RMS-11 Macro, 2-8
RSTS/E, RMS-11 Macro, D-4
Sync character (communication driver), I/O Drivers, 12-8
specifying, I/O Drivers, 12-8
Synchronous
  D/A sweep (K-series), I/O Drivers, 23-14
digital input sweep
    K-series, I/O Drivers, 23-17
    LSDRV, I/O Drivers, 17-15
digital output sweep (K-series), I/O Drivers, 23-19
process control
    ICDRV/ISDRV, I/O Drivers, 19-35

Master Index-280
Synchronous process control (cont'd.)
UDDRV, I/O Drivers, 16-15
subroutine (LSDRV), I/O Drivers, 17-10
trap, I/O Drivers, 1-10
Synchronous operation, RMS-11
Introduction, 4-4
See also RB$ASY mask in ROP field
Synchronous system trap
See SST
Syn parameter
device-specific (communication driver), I/O Drivers, 12-6
Syntax, Introduction, 1-14
element, defining, I/O Operations, 7-2
error
See Q error
LINK command line, Task Builder, 11-1, 11-2
rule
summary, Task Builder, 1-16 to 1-19
state table, I/O Operations, 7-7
Syntax elements
attributes, System Management, 12-26
SYS$LOGIN
user directory logical, MCR, 3-21
SYSCM
use of
in fault isolation, Writing I/O Driver, 3-23
SYSCM pointer
$CRAVL, Writing I/O Driver, 3-28
$HEADR, Writing I/O Driver, 3-24, 3-27
$PKAVL, Writing I/O Driver, 3-28
$STKDP, Writing I/O Driver, 3-23, 3-27
$TKTCB, Writing I/O Driver, 3-24, 3-27
SYSDEV symbol, Indirect, 2-21
SYSGEN (cont’d.)
introduction, System Generation (11M), 1-1
minimum requirements, System Generation (11M), 1-1, 4-2
operating environments, System Generation (11M), 2-3
on-line
RSX-11M host, System Generation (11M), 2-3
RSX-11M-PLUS host, System Generation (11M), 2-4
VAX-11 RSX host, System Generation (11M), 2-4
stand-alone, System Generation (11M), 2-3
overview, System Generation (11M), 1-2
phase, System Generation (11M), 3-1
Phase I, System Generation (11M), 3-4
Phase II, System Generation (11M), 5-1
Phase III, System Generation (11M), 7-1
planning suggestions, System Generation (11M), 1-1
PREPGEN, System Generation (11M), 3-11
See also MCR inhibit
Phase I, System Generation (11M), 4-2
Phase II, System Generation (11M), 5-4
question
format, System Generation (11M), 3-5
logical order, System Generation (11M), 3-7
Standard Function System, System Generation (11M), 3-11
terminology, System Generation (11M), 1-3
SYSID symbol, Indirect, 2-21
SYSLIB
including contribution in map, Task Builder, 10-26
replacing as default, Task Builder, 10-23, 11-39
SYSLIB.OLB, Program Development, 1-11
for symbol definition, Task Builder, 2-7

Master Index—281
SYSLOGIN.CMD file, Command Language, 3-4
/-SYS switch, CDA, 2-5, 2-8
SYSTB file
creation of
by SYSGEN, Writing I/O Driver, 3-1
System
attribute
displaying, Command Language, 8-6
setting, Command Language, 8-3
baseline, System Generation (11M), 1-5
bootstrapping, MCR, 3-35
restrictions, MCR, 3-36
unsaved, MCR, 3-36
with XDT, MCR, 3-36
valid device, MCR, 3-35
checkpoint file, MCR, 3-11
device, CDA, 1-5
default, MCR, 3-79
switches, CDA, 2-6
directive, Program Development, 1-9, 1-10 System Generation (11M), 4-38
directory, Command Language, 8-7
MCR, 3-182
displaying, Command Language, 8-6, 8-7
setting, Command Language, 8-3, 8-7
file, Command Language, 5-10
host, System Generation (11M), 1-6
displaying, Command Language, 1-11 to 1-12
setting, Command Language, 1-10 to 1-11
host and target, Task Builder, C-1, C-2
identification, MCR, 3-79
information, CDA, 3-1
switch
See /-SYS switch
information dump, CDA, 1-8
library
contributions (in map), Program Development, 4-7
macro (RSXMAC.SML), Program Development, 1-5, 1-9, 1-10
contents, Program Development, 1-9
System
library (cont'd.)
search, Program Development, 1-5, 1-10, 2-7
object (SYSLIB.OLB), Program Development, 1-11
contents, Program Development, 1-11
search, Program Development, 1-11, 4-2
logical assignment, MCR, 3-20
macro library, MACRO-11, 1-1
See also .MCALL directive
maintenance commands, MCR, 1-8
mapped, MCR, 2-20, 3-164 System Generation (11M), 1-5 Task Builder, 2-14
physical and virtual space, Task Builder, 2-14
task relocation, Task Builder, 2-16
UIC, MCR, 3-257
multiuser protection, Command Language, 3-3
multiuser setup, System Generation (11M), 6-8, 6-18
naming, System Generation (11M), 4-65
object library, I/O Drivers, 1-37
object module library, I/O Drivers, 1-8 Task Builder, 2-7
See also Library
See also SYSLIB.OLB
on-line, System Generation (11M), 1-6
option
feature symbols, Executive, 5-86
testing, Executive, 5-86
overhead (TTDRV)
IO.RPR, I/O Drivers, 2-40
TF.RPR, I/O Drivers, 2-14, 2-27
performance
stall I/O (disk driver), I/O Drivers, 5-13
pool
displaying contents, Command Language, 8-9
displaying information, Command Language, 8-7
dump, CDA, 3-45
System pool (cont'd.)
  increasing, Command Language, 8-4
  setting limits, Command Language, 8-4
switch
  See /POOL switch
powerfail
  recovery (UNIBUS switch driver), I/O Drivers, 24-6
requirements, CDA, 1-1
saved
  installing task, MCR, 3-116
stand-alone, System Generation (11M), 1-6
target, System Generation (11M), 1-6
memory management, Task Builder, 10-27, 11-50
task, Program Development, 1-1
spawning, Executive, 4-5
time
  setting, Executive, 5-235
trap, Executive, 2-5
UIC, MCR, 2-3
unmapped, MCR, 2-20, 2-21 System Generation (11M), 1-5 Task Builder, 2-13, 2-14
UIC, MCR, 3-257
unsaved, System Generation (11M), 1-6, 6-1
  installing task, MCR, 3-116
/SYSTEM_LIBRARY_DISPLAY qualifier, Task Builder, 11-71
System Account Block, System Management, 17-3, 17-24
System Activity Display Programs (RSD), System Generation (11S), 2-24
characteristics, System Generation (11S), 2-24
display fields, System Generation (11S), 2-24
supporting options, System Generation (11S), 2-25
System Common
  See SYSCM
System common, CDA, 3-6
active task, CDA, 3-6
alphabetized dump, CDA, 3-1, 3-9
boot device, CDA, 3-6
dump, CDA, 3-1, 3-9 to 3-14
  stack depth indicator, CDA, 4-2
labels, CDA, 3-9 to 3-14
System common (cont'd.)
  network UIC, CDA, 3-6
  partition address, CDA, 3-6
  stack depth, CDA, 3-6
  system size, CDA, 3-6
  TCB address, CDA, 3-6
  UIC, CDA, 3-6
System-controlled partition, System Management, 14-1
conventions, System Management, 14-2
definition, System Management, 14-2
extending memory for task, Task Builder, 12-16
fragmentation
  causes of, System Management, 14-3
subpartitions of, System Management, 14-2
waiting tasks, System Management, 14-2
System data structure macro definition, Writing I/O Driver, C-1
  ABODF$, Writing I/O Driver, C-3
  CLKDF$, Writing I/O Driver, C-4
  DCBDF$, Writing I/O Driver, C-6
  EPKDF$, Writing I/O Driver, C-7
  F11DF$, Writing I/O Driver, C-14
  HDRDFS, Writing I/O Driver, C-19
  HWDDFS, Writing I/O Driver, C-21
  ITBDFS, Writing I/O Driver, C-24
  LCBDFS, Writing I/O Driver, C-25
  MTADF$, Writing I/O Driver, C-26
  PCBSD$, Writing I/O Driver, C-30
  PSDK$, Writing I/O Driver, C-32
  SCBDFS, Writing I/O Driver, C-37
  TCBDFS, Writing I/O Driver, C-39
  UCBSD$, Writing I/O Driver, C-42
System date
  displaying, Command Language, 2-1
  setting, Command Language, 2-1
System device
  states, System Management, 15-2
System directory, Command Language, 7-6
  displaying, Command Language, 2-8
  setting, Command Language, 2-8
System disk
  RMSBCK utility, RMS-11 Utilities, 6-1
  RMSRST utility, RMS-11 Utilities, 7-1
System file names conventions, *System Management*, B-4
System file types, *System Management*, B-5t to B-6t
System generation and CDA, CDA, 1-1
  feature (half-duplex), *I/O Drivers*, 3-28
  incorporating driver, *Writing I/O Driver*, 3-1
  option (TTDRV), *I/O Drivers*, 2-17, 2-77
System image
  See also SYSVMR.CMD
  file
  location, MCR, 3-187
  saving, MCR, 3-187
  devices, MCR, 3-187
  size, MCR, 3-187
  transporting, MCR, 3-36, 3-190
System Image File
  assigning SY: and LB:; *System Management*, 10-1
  bootstrap, *System Management*, 10-1
  creating, *System Management*, 10-18
  relationship to symbol definition file, *System Management*, 10-1
  size, *System Management*, 10-18
  VMR prompt, *System Management*, 10-3
System Image Preservation Program
  (SIP), *System Generation (11S)*, 1-2, 2-16, 2-18
  building, *System Generation (11S)*, 4-4
  error messages, *System Generation (11S)*, 2-19
  invoking, *System Generation (11S)*, 2-17
  operation, *System Generation (11S)*, 2-18
  size, *System Generation (11S)*, 4-4
/SYSTEM keyword
ASSIGN command (VMR), *System Management*, 10-10
System libraries, *Command Language*, 5-5
  macro, *System Generation (11S)*, 4-9
  object, *System Generation (11S)*, 4-9
System libraries (cont’d.)
  subset FCS resident, *System Generation (11S)*, 4-9
System Macro Library, *Executive*, 1-5
  *I/O Drivers*, 1-4
System recovery, *System Management*, 15-31
  methods, *System Management*, 15-31
SYSTEM SERVICE MESSAGE
  command, *Error Logging*, 1-3
  MCR, 1-8, 3-273
  example, MCR, 3-273
  format, MCR, 3-273
System state register convention,
  *Writing I/O Driver*, 5-1
System statistics
SYSTEM symbol, *Indirect*, 2-16
System Task Directory, MCR, 1-5, 3-116, 3-182, 3-189
  *System Generation (11S)*, 2-7
  *System Management*, 10-31
  See also STD
  dump, CDA, 3-44
  installing task, MCR, 2-23, 3-179
  removing task, MCR, 3-175
  switch
    See /STD switch
System time
  displaying, *Command Language*, 2-1
  setting, *Command Language*, 2-1
System Time Change Transaction
  Block, *System Management*, 17-29
System UFDs, *System Management*, B-3t to B-4t
  example, *System Management*, B-3
/SYSUIC keyword
  SET command (MCR), MCR, 3-257
  SET command (VMR), *System Management*, 10-77
SYSUIC symbol, *Indirect*, 2-21
SYSVMR.CMD
  creating partition structure, *System Generation (11M)*, 5-14
  creating RMS partitions, *System Generation (11M)*, 5-19
  description, *System Generation (11M)*, 3-3
  edit, *System Generation (11M)*, 5-14
  on mapped systems, *System Generation (11M)*, 5-14
SYSVMR.CMD (cont'd.)

on unmapped systems, System Generation (11M), 5-17
restriction, System Generation (11M), 3-4

VMR
invoking from on-line host, System Generation (11M), 5-18

SYTYP symbol, Indirect, 2-21
SYUNIT symbol, Indirect, 2-16

/SZ switch
LBR utility, Utilities, 10-30

T-bit trace trap, Task Builder, 10-51, 11-75
TA11 tape cassette, I/O Drivers, 9-1
Tab character
  half-duplex, I/O Drivers, 3-15
  TTDRV, I/O Drivers, 2-69
  vertical, I/O Drivers, 2-69

TAB key, Command Language, 3-21
  Introduction, 5-9

Table
  definition, Error Logging, 5-36
  RPT use, Error Logging, 5-36
  storage, Task Builder, F-2 to F-7
  memory
    improving performance, Task Builder, F-2

Table Driven Parse
See TPARS

Table of contents
  sample listing, MACRO-11, 6-16
  text generation, MACRO-11, 6-15

Table parameter (TTDRV)
  general, I/O Drivers, 2-11
  IO.RTT function, I/O Drivers, 2-46

TABLE statement, Error Logging, 5-37

TAB ON/OFF command
  EDI utility, Utilities, 2-46

TAL
  See TASKLIST-ATL command
  /TAL switch, CDA, 2-5, 2-8

Tape
  See also Medium
  ANSI file structure, I/O Operations, 5-1
  backing up
    BRU utility, Utilities, 7-1
  comparing
    DSC utility, Utilities, 8-14

Tape (cont'd.)
  control task, I/O Operations, G-11
  conventional backup
    BRU utility, Utilities, 7-4
  copying
    BRU utility, Utilities, 7-1
    data format, I/O Operations, 1-7
    density, I/O Drivers, 8-9
    end-of-file label, I/O Operations, G-9
    end-of-volume label, I/O
      Operations, G-8
  file processing, I/O Operations, 5-4
  fixed length records, I/O Operations, 1-7
  formatting
    FLX utility, Utilities, 4-4
  full backup
    BRU utility, Utilities, 7-3
    logical EOT (CTDRV), I/O Drivers, 9-8
  mounting
    BRU utility, Utilities, 7-2
  no label, block size (tape driver), I/O Drivers, 8-18
  owner ID field, I/O Operations, G-2
  position (DDDRV), I/O Drivers, 7-4
  position, file open, I/O Operations, 2-16
  positioning, I/O Operations, G-17
  position to next file, I/O Operations, 5-5
  power fail, I/O Drivers, 1-43
  processing example, I/O Operations, 5-8
  read, indirect command file, I/O Operations, G-19
  record format, I/O Operations, 5-4
  restoring
    BRU utility, Utilities, 7-1
    selective backup
      BRU utility, Utilities, 7-3
    setting block size
      PIP utility, Utilities, 3-15
    structure (CTDRV), I/O Drivers, 9-6
  transferring data
    DSC utility, Utilities, 8-26
    translation, I/O Operations, G-17
    unlabeled, I/O Operations, G-16
    block size, I/O Operations, G-16
    user file label, I/O Operations, G-9

Master Index-285
Tape (cont'd.)

user volume label, I/O Operations, G-3
variable length record, I/O Operations, 1-7
verifying VFY utility, Utilities, 9-1
volume access, I/O Operations, 5-5
volume label, I/O Operations, G-1
/TAPE_LABEL qualifier
BRU utility, Utilities, 7-21
Tape density switch
See /DENS switch
Tape driver, I/O Drivers, 8-1
consecutive tape mark, I/O Drivers, 8-17
device characteristic, I/O Drivers, 8-3
programming hint, I/O Drivers, 8-15
resetting transport status, I/O Drivers, 8-17

Tape file attributes, specifying, I/O Operations, G-17
header block, I/O Operations, G-10
header label, I/O Operations, G-3
header label (HDR1), I/O Operations, G-4
header label (HDR2), I/O Operations, G-5
header label (HDR3), I/O Operations, G-6
identifier processing, I/O Operations, G-7
label, I/O Operations, G-1
structure, I/O Operations, G-9

Tape handling
end-of-tape, I/O Operations, G-10
Tape mark, RMS-11 Introduction, 2-5
Tape standard, ANSI, I/O Operations, G-1

TARGET attribute
RMSDES utility, RMS-11 Utilities, 2-30

Target system, Task Builder, C-1 to C-5
creating a backup copy, System Generation (11M), 6-9, 6-19
definition, System Generation (11M), 1-6
description, Task Builder, C-1, C-2

Target system (cont'd.)
installing layered products in,
System Generation (11M), 6-12, 6-19
saving, System Generation (11M), 6-2
nonstandard unmapped, System Generation (11M), 6-13
transferring example, Task Builder, C-3 to C-5
task, Task Builder, C-1
to host, Task Builder, C-2
transferring to different type of disk,
System Generation (11M), 6-5, 6-15

TAS
See TASKLIST command

Task, Command Language, 7-1
Introduction, 5-1, 5-2
abort, Program Development, 4-8
aborted, MCR, 3-283
aborting, Command Language, 7-16
Executive, 5-8, 5-224 MCR, 2-24, 3-3
CRDRV, I/O Drivers, 11-10
DTDRV, I/O Drivers, 6-8
LPDRV, I/O Drivers, 10-7
tape driver, I/O Drivers, 8-16
VT11/GRDRV, I/O Drivers, 21-4

access
system-owned common or library, Task Builder, 12-12, 12-24
user-owned common, Task Builder, 12-30
user-owned library, Task Builder, 12-30
accessing, MCR, 3-122
access rights, MCR, 2-20
access to commons, System Management, 10-25
activating, Executive, 5-167
activating, unsolicited interrupt (ICDRV/ISDRV), I/O Drivers, 19-24
active, Command Language, 7-1
Introduction, 6-5 MCR, 1-5, 2-23, 3-14, 3-76
displaying, MCR, 3-31
displaying information, Command Language, 7-2, 7-49
Task
active (cont’d.)
list, MCR, 3-31
active file
declaring number, Task Builder, 12-7
additional memory, Task Builder, 12-16
address
accessing, MCR, 3-166
space
allocating, MCR, 3-183
windows
declaring additional, Task Builder, 12-45
addressing, Executive, 3-1
after exit, System Management, 10-92
Ancillary Control Processor
specifying, Task Builder, 10-5, 11-11
assigning physical device to LUN,
Task Builder, 12-8
attached, MCR, 1-3, 2-15, 2-19
attaching slave attribute, Task Builder, 10-45, 11-68
attributes
list of, Task Builder, 10-37, 11-41 to 11-49
blocked, I/O Drivers, 1-10 MCR, 2-21, 3-283
priority, MCR, 3-34
blocking, Command Language, 7-24
Executive, 5-270, 5-272
breakpoints
setting, Program Development, 5-6
building, Command Language,
6-2 MCR, 3-123 Program Development, 4-1, 7-6
command line, Task Builder, 1-2
default partition, MCR, 3-119
description, System Generation (11M), 6-4
device driver, MCR, 3-134
for target system, Task Builder, C-1
header, MCR, 3-123
name, MCR, 3-121
nonprivileged task, System Generation (11M), 7-2
building time, Task Builder, F-2
canceling, MCR, 3-45

Task (cont’d.)
canceling time-synchronized requests, Executive, 5-60
catchall, MCR, 3-179
chaining, Executive, 4-2, 5-195
changing
priority, Executive, 5-13
size, Executive, 5-84
state, Executive, 1-22, 1-24
changing name, Task Builder, 12-38
checkpoint (VTDRV), I/O Drivers, 4-5
checkpointability
disabling, Executive, 5-66
enabling, Executive, 5-77
checkpointable, Command Language, 7-2 System Management, 10-18
Task Builder, 10-6
specifying, Command Language,
7-28 Task Builder, 10-6, 10-10, 11-13, 11-14
checkpointing, MCR, 2-20, 3-33, 3-75, 3-117, 3-118, 3-182 System Management, 10-22, 10-28
CLI
removing, MCR, 3-175
common
fixing, MCR, 3-75
installing, MCR, 3-120, 3-184
unfixing, MCR, 3-284
common region
mapping count, MCR, 3-46
synchronizing, MCR, 3-121
completion routine, Task Builder, 12-11
connecting, Executive, 4-1, 5-192, 5-265
control commands, MCR, 1-7
conventional
autoload vector, Task Builder, B-17
disk image, Task Builder, 7-5
correcting, Program Development, 4-9
CPU affinity
removing, Executive, 5-162
creating, Command Language, 6-7
MCR, 2-21
dynamic region, Task Builder, 5-40 to 5-44
multiuser, Task Builder, 10-29, 11-67
Task

Task (cont'd.)
exiting, MCR, 1-5
exiting, CTRL/Z (TTDRV), I/O Drivers, 2-70
exiting with status, Executive, 5-82
extending, MCR, 3-118
memory, Task Builder, 12-16
program section, Task Builder, 12-15
to partition length, Task Builder, 12-16
extension size, System Management, 10-24
external header specifying, Task Builder, 10-53, 11-31
file
LINK command, Task Builder, 1-5
file identification, System Management, 10-32
fixed, Debugging, 5-6, 9-2 System Management, 10-18
fixing in memory, MCR, 3-75
restrictions, MCR, 3-75
floating point processor in specifying, Task Builder, 10-18, 11-17
format buffer
declaring length, Task Builder, 12-17
getting parameters, Executive, 5-119
global relative patch declaring, Task Builder, 12-20
global symbol excluding, Task Builder, 12-22
including, Task Builder, 12-19
global symbol definition declaring, Task Builder, 12-18
global symbol reference declaring, Task Builder, 12-21
header, Task Builder, 2-8, 2-9
allocating additional checkpoint space, Task Builder, 10-6, 11-14
checkpoint area within, Task Builder, B-9
controlling creation, Task Builder, 10-20, 11-35
external, MCR, 3-122
fixed part, Task Builder, B-11, B-12
installing, MCR, 3-122

Task data (cont'd.)
needed by system to install, Task Builder, B-1
task image, Task Builder, B-4, B-5, B-6
debugging, Executive, 5-242 MCR, 3-58 Program Development, 4-9, 7-7, 7-8, 7-9
declaring
execution priority, Task Builder, 12-29
maximum stack size, Task Builder, 12-36
number of LUNs, Task Builder, 12-41
object-level patch, Task Builder, 12-6
ODT SST vector, Task Builder, 12-26
default conditions, Program Development, 4-4, 4-5, 4-7, 4-8
definition, MCR, 2-19
delaying, Executive, 5-125
detaching from region, Executive, 5-67
device independence, MCR, 2-12
disable offspring (VTDRV), I/O Drivers, 4-5
disk image, Task Builder, 2-8
displaying, MCR, 3-275
displaying information, Command Language, 2-5, 7-57
dormant, Command Language, 7-1
Introduction, 6-5 MCR, 2-23, 3-116
D-space
overlay structure, Task Builder, 3-22
dynamic memory, MCR, 3-183
enabling
Postmortem Dump, Task Builder, 10-32, 11-54
T-bit trace trapping, Task Builder, 10-51, 11-75
event driven, I/O Drivers, 1-11
event flags, MCR, 3-77
executing, Command Language, 7-5
MCR, 3-116
in parallel, Indirect, 2-95
resources, MCR, 3-117
execution termination, System Management, 4-24

Master Index–288
<table>
<thead>
<tr>
<th>Task</th>
<th>Task installed (cont'd.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>header (cont'd.)</td>
<td>dormant, <em>Command Language</em>, 7-28</td>
</tr>
<tr>
<td>options, MCR, 3-123</td>
<td>executing, <em>Command Language</em>, 7-6, 7-11</td>
</tr>
<tr>
<td>space for floating-point context, <em>Task Builder</em>, 10-18, 11-17</td>
<td>LUNs displaying, <em>Command Language</em>, 7-61</td>
</tr>
<tr>
<td>variable part, <em>Task Builder</em>, B-12</td>
<td>removing, <em>Command Language</em>, 7-7 Executive, 1-24</td>
</tr>
<tr>
<td>host to target system transferring example, <em>Task Builder</em>, C-3 to C-5</td>
<td>unfixing, <em>Command Language</em>, 7-40</td>
</tr>
<tr>
<td>identifying partition, <em>Task Builder</em>, 12-27</td>
<td>installing, <em>Command Language</em>, 7-1, 7-7, 7-28 MCR, 1-5, 2-23, 3-116, 3-120</td>
</tr>
<tr>
<td>image, <em>Program Development</em>, 1-6, 4-1, 7-6 <em>Task Builder</em>, B-1, B-14</td>
<td>time limit, MCR, 3-121</td>
</tr>
<tr>
<td>creating, <em>Program Development</em>, 4-1, 4-2, 7-5, 7-6</td>
<td>install options, <em>System Management</em>, 10-29</td>
</tr>
<tr>
<td>on disk</td>
<td>label block 0, <em>Task Builder</em>, B-7</td>
</tr>
<tr>
<td>linked to overlaid library, <em>Task Builder</em>, B-2</td>
<td>label block 1, <em>Task Builder</em>, B-9</td>
</tr>
<tr>
<td>image file, MCR, 3-35, 3-116, 3-175, 3-179, 3-182, 3-187</td>
<td>linking, <em>Command Language</em>, 6-2</td>
</tr>
<tr>
<td>creating, MCR, 2-21</td>
<td>counter interrupt (ICDRV/ISDRV), I/O Drivers, 19-26</td>
</tr>
<tr>
<td>installing, MCR, 2-21</td>
<td>digital interrupt (ICDRV/ISDRV), I/O Drivers, 19-25</td>
</tr>
<tr>
<td>patching</td>
<td>error interrupt (ICDRV/ISDRV), I/O Drivers, 19-27</td>
</tr>
<tr>
<td>ZAP utility, <em>Utilities</em>, 15-1</td>
<td>ICS/ICR common block, I/O Drivers, 19-76</td>
</tr>
<tr>
<td>STD entry, MCR, 1-5</td>
<td>terminal interrupt (ICDRV/ISDRV), I/O Drivers, 19-27</td>
</tr>
<tr>
<td>including debugging aid (ODT), <em>Task Builder</em>, 10-14, 11-25, 11-26</td>
<td>to interrupt (ICDRV/ISDRV), I/O Drivers, 19-64, 19-66</td>
</tr>
<tr>
<td>information</td>
<td>to region, <em>Task Builder</em>, 5-15</td>
</tr>
<tr>
<td>displaying, <em>Command Language</em>, 7-57</td>
<td>to several libraries, <em>Task Builder</em>, 12-9, 12-10</td>
</tr>
<tr>
<td>inhibiting queuing message, <em>Task Builder</em>, 10-35, 11-57</td>
<td>loading, MCR, 3-75</td>
</tr>
<tr>
<td>initiation</td>
<td>partition, MCR, 3-133</td>
</tr>
<tr>
<td>IOX EXECUTE command, <em>System Management</em>, 4-37</td>
<td>logical assignment, MCR, 3-20</td>
</tr>
<tr>
<td>installed, <em>Command Language</em>, 7-1</td>
<td>logical unit number (LUN), <em>Task Builder</em>, 12-41</td>
</tr>
<tr>
<td>MCR, 1-5</td>
<td>macro calls, <em>Program Development</em>, 6-3, 6-4</td>
</tr>
<tr>
<td>blocking, MCR, 3-34</td>
<td>map, <em>Program Development</em>, 4-5</td>
</tr>
<tr>
<td>displaying, MCR, 3-276</td>
<td>full, <em>Program Development</em>, 4-7</td>
</tr>
<tr>
<td>displaying information, <em>Command Language</em>, 7-49, 7-54, 7-56</td>
<td></td>
</tr>
</tbody>
</table>
Task (cont’d.)
offspring (VTDRV), I/O Drivers, 4-1
overlaid, Task Builder, 3-7
global cross-reference, Task
Builder, 4-12, 4-13
memory resident, Task Builder, 3-9
memory saving, Task Builder, 3-9, 3-10
segment call, Task Builder, 3-10
virtual address space, Task
Builder, 3-10
overlay, MCR, 3-118
introduction, Task Builder, 2-9
overlaying, Executive, 3-1
parent, Executive, 4-1
parent (VTDRV), I/O Drivers, 4-1
partition, MCR, 2-20
declaring, Task Builder, 12-27
installing, MCR, 3-183, 3-267
specifying size, MCR, 3-118, 3-183
system-controlled, MCR, 3-118
patching
with object code, Task Builder, 12-6
Postmortem Dump, Task Builder, D-1
priority, Command Language, 7-2
MCR, 2-21, 3-257
altering, MCR, 3-3, 3-19
base, MCR, 3-243
changing, Command Language, 7-63
running, MCR, 3-3, 3-19
specifying, Command Language, 7-29 MCR, 3-119, 3-184
static, MCR, 3-19
privileged, Debugging, 9-1 MCR, 2-20, 3-183
See also Privileged task
break through (TTDRV), I/O
Drivers, 2-16
break-through write (TTDRV), I/O Drivers, 2-17
debugging with ZAP, Debugging, 8-8
mapping, Executive, 3-19, 5-246
Processor Status Word, MCR, 3-58
program section order
effect in creating, Task Builder, 10-36, 10-47, 11-60, 11-64

Task
map (cont’d.)
linked to a common, Task
Builder, 5-25
standard, Program Development, 4-5, 4-6
mapping, MCR, 3-118, 3-183 Task
Builder, 2-14, 2-18, 2-19, 2-20
to 2-23
maximum record buffer size
declaring, Task Builder, 12-25
memory, Task Builder, 2-9
memory allocation, Task Builder, 2-6
memory management
use of, Task Builder, 2-15
memory management support,
System Management, 10-18
memory-resident overlay operator
enabling, Task Builder, 10-34, 11-58
memory-resident overlay segment
changing alignment, Task
Builder, 10-8, 11-20
multisegment
See also Overlay
global symbol resolution, Task
Builder, 3-17
overlay, Task Builder, 3-5
multiuser, Task Builder, 2-26
See also Multiuser task
declaring read-only partition,
Task Builder, 12-35
specifying, Task Builder, 10-29, 11-67
name, Command Language, 7-2
Introduction, 5-11
CLI, System Management, 11-4
default, Command Language, 7-3
removing from STD, Command
Language, 7-37
specifying, Command Language, 7-30
naming, MCR, 1-5, 2-14, 2-21, 2-22, 2-24, 3-121, 3-185
nonprivileged, MCR, 2-20
directive restrictions, Executive, 1-25
object file, MCR, 2-21
object library routines, Program
Development, 6-6
ODT vector, Task Builder, 12-26
offspring, Executive, 4-1

Task (cont’d.)
offspring (VTDRV), I/O Drivers, 4-1
overlaid, Task Builder, 3-7
global cross-reference, Task
Builder, 4-12, 4-13
memory resident, Task Builder, 3-9
memory saving, Task Builder, 3-9, 3-10
segment call, Task Builder, 3-10
virtual address space, Task
Builder, 3-10
overlay, MCR, 3-118
introduction, Task Builder, 2-9
overlaying, Executive, 3-1
parent, Executive, 4-1
parent (VTDRV), I/O Drivers, 4-1
partition, MCR, 2-20
declaring, Task Builder, 12-27
installing, MCR, 3-183, 3-267
specifying size, MCR, 3-118, 3-183
system-controlled, MCR, 3-118
patching
with object code, Task Builder, 12-6
Postmortem Dump, Task Builder, D-1
priority, Command Language, 7-2
MCR, 2-21, 3-257
altering, MCR, 3-3, 3-19
base, MCR, 3-243
changing, Command Language, 7-63
running, MCR, 3-3, 3-19
specifying, Command Language, 7-29 MCR, 3-119, 3-184
static, MCR, 3-19
privileged, Debugging, 9-1 MCR, 2-20, 3-183
See also Privileged task
break through (TTDRV), I/O
Drivers, 2-16
break-through write (TTDRV), I/O Drivers, 2-17
debugging with ZAP, Debugging, 8-8
mapping, Executive, 3-19, 5-246
Processor Status Word, MCR, 3-58
program section order
effect in creating, Task Builder, 10-36, 10-47, 11-60, 11-64
Task (cont’d.)
  prompt, MCR, 1-3, 2-14
  protecting, MCR, 3-122, 3-185
  prototype
    installing, MCR, 3-121
  read activating data (ICDRV/ISDRV), I/O Drivers, 19-28
  reassigning, MCR, 3-172
  rebuilding user-written, System Generation (11M), 6-6, 6-16
  receiving next CLI command, Executive, 5-205
  reexecuting, System Management, 10-18
  relocation, Task Builder, 2-2
    mapped system, Task Builder, 2-16
  remove interrupt link (ICDRV/ISDRV), I/O Drivers, 19-68
    example, I/O Drivers, 19-69
  removing, Command Language, 7-37 MCR, 3-175
    System Management, 10-18
  requesting, Executive, 5-167, 5-192, 5-195, 5-212, 5-265
  resident, Introduction, 6-5 MCR, 3-75
  resident common
    system-owned, Task Builder, 12-12, 12-24
  resident library
    system-owned, Task Builder, 12-12, 12-24
  restrictions for fixing, System Management, 10-18
  resuming, Command Language, 7-21, 7-26, 7-27
    Executive, 5-176
    MCR, 3-177
  returning status, Executive, 4-3, 5-75
  running, Executive, 5-177
    Introduction, 5-2 MCR, 1-5, 2-11, 2-20, 2-24, 3-178 to
    3-186
    Program Development, 4-7, 4-8, 7-6
  options
    immediate, MCR, 3-186
    install-run-remove, MCR, 3-186
  reschedule interval, MCR, 3-180
  UIC, MCR, 3-185
  uninstalled, MCR, 3-179

Task (cont’d.)
  scheduling, Command Language, 7-7, 7-11
  single segment
    overlay, Task Builder, 3-4, 3-8
  size, MCR, 3-118 RMS-11 User’s Guide, 2-5
    System Management, 10-63
  displaying, Command Language, 8-6
  extending, Command Language, 8-3
  slaved, MCR, 3-120, 3-184
  specifying, Task Builder, 10-45, 11-68
  spooling print job, I/O Operations, 8-1
  SST, Program Development, 4-8
  SST vector address
    declaring, Task Builder, 12-39
  stack size
    declaring, Task Builder, 12-36
  status flags, Command Language, 7-51 to 7-52
    displaying, MCR, 3-31
    list of, MCR, 3-32 to 3-33
  stopping, Executive, 5-238, 5-240, 5-241
  stopping (?), Command Language, 7-24
    Task Builder, 2-8
  label block, Task Builder, 2-8
  subpartition, MCR, 2-21
  suspending, Executive, 5-209, 5-268, 5-270, 5-272
  system, MCR, 3-257
    Program Development, 1-1
    library contributions, Program Development, 4-7
    mapping status of, Task Builder, 10-26
  system size, System Management, 10-18
  terminal
    attached, MCR, 2-19
    slave, MCR, 2-19
  terminating, Executive, 5-78, 5-80
  termination, Program Development, 4-8
Task (cont’d.)
termination (TKTN), System Generation (11M), 4-31
testing, Indirect, 2-61, 2-62
time-based schedule request
declaring UIC, Task Builder, 12-40
time limit
specifying, MCR, 3-185
traceable
specifying, Task Builder, 10-51, 11-75
transfer (starting) address
default, Program Development, 4-3, 4-8
defining, Program Development, 2-7
transferring command line,
Executive, 5-106
UIC, MCR, 3-263
declaring, Task Builder, 12-40
specifying, Command Language, 7-30 MCR, 3-122
unblocked, MCR, 3-283
unfixing, MCR, 3-284
unfixing from memory, System Management, 10-92
uninstalled
executing, Command Language, 7-7
unlinking (ICDRV/ISDRV)
from all digital interrupt, I/O Drivers, 19-30
from all interrupt, I/O Drivers, 19-30
from counter interrupt, I/O Drivers, 19-30
from error interrupt, I/O Drivers, 19-31
from interrupt, I/O Drivers, 19-29
from terminal interrupt, I/O Drivers, 19-31
unloading, MCR, 3-75
unstopping, Executive, 5-256
user
data space definition, Task Builder, 7-1
vector address
declaring system SST trap, Task Builder, 12-39
virtual program section
specifying, Task Builder, 12-44
window, Task Builder, 2-19 to 2-23

Task (cont’d.)
with external headers, System Management, 10-28
with resident headers, System Management, 10-28
XEDRV connection, I/O Drivers, 13-22
Task/File Patch Program
See ZAP utility
Task Account Block, System Management, 17-3, 17-22
Task buffer descriptor, I/O Operations, 3-10
Task build
aborting, Command Language, 6-3, 6-11
Task Builder, Introduction, 5-6 to 5-7
Best reference, Task Builder
See also Linker
See also TKB
and remote access code, RMS-11 User’s Guide, B-1
fast
See FTB
Task-build file
location of IOX, System Management, 4-22
Task Control Block, System Management, 10-31
See also TCB
Task Control Block switch
See /ACT switch
See /ATL switch
Task data space
dump, CDA, 3-53
switch
See /TDS switch
Task dump, CDA, 3-48
window blocks, CDA, 3-48
Task execution
aborting, Debugging, 1-5
beginning, Debugging, 2-9, 3-2, 9-12
continuing, Debugging, 2-10, 3-3
resuming, Debugging, 1-5, 3-4
Task Exit directive, Executive, 5-80
Task header
dump, CDA, 3-28
Directive Status Word, CDA, 3-28
File Control Block, CDA, 3-29
Logical Unit Table, CDA, 3-28
Task header
dump (cont’d.)
  Page Description Register, CDA, 3-29
  swapping priority, CDA, 3-28
  window blocks, CDA, 3-29
mapped system, Writing I/O Driver, 3-25
pointer to, CDA, 3-20
role of
  in I/O data structure, Writing I/O Driver, 2-19
switch
  See /HDR switch
unmapped system, Writing I/O Driver, 3-24
Task identification symbol, Task Builder, A-26
Task image, Command Language, 6-2
  Introduction, 5-3
  file, Command Language, 7-5, 7-7
  Introduction, 5-6
  specifying name, Command Language, 7-28
Task instruction space
dump, CDA, 3-53
switch
  See /TIS switch
/TASK keyword
INSTL command (MCR), MCR, 3-121
INSTL command (VMR), System Management, 10-27
RUN command (MCR), MCR, 3-184
TASKLIST-ATL command, MCR, 1-7, 3-275
  examples, MCR, 3-275
  format, MCR, 3-275
  parameters, MCR, 3-275
TASKLIST command (MCR), MCR, 1-7, 3-276
  error messages, MCR, 3-277
  examples, MCR, 3-276
  format, MCR, 3-276
  parameters, MCR, 3-276
TASKLIST command (VMR), System Management, 10-88
  definition, System Management, 10-88
  display contents, System Management, 10-88
  examples, System Management, 10-88 to 10-89
TASKLIST command (VMR) (cont’d.)
  format, System Management, 10-88
  parameter, System Management, 10-88
Task loader
loadable, System Generation (11M), 4-26
nonresident, System Generation (11M), 4-26
Task map, Debugging, 1-2, 1-3, 5-6
TASK option, Task Builder, 12-38
Task option
  list, Executive, 5-248
  testing, Executive, 5-248
/TASK qualifier, Task Builder, 11-72
to 11-73
designation, Task Builder, 11-2
Task record buffer, I/O Operations, 3-23
Task region, Executive, 3-4
/TASKS keyword
  COMMON BLOCK DIRECTORY
  command, MCR, 3-46
  /TASK subkeyword, MCR, 3-52
  /TASK switch, CDA, 2-5, 2-8
Task Termination Notification program
  See TKN
Task virtual address space switch, CDA, 2-8
/TAS switch, CDA, 2-5, 2-8
/TB switch
  CMP utility, Utilities, 12-3
  PIP utility, Utilities, 3-26
TC.8BC characteristic (TTDRV), I/O Drivers, 2-55
TC.ABD characteristic (TTDRV), I/O Drivers, 2-52
TC.ACD characteristic (TTDRV), I/O Drivers, 2-52
TC.ACR characteristic (TTDRV), I/O Drivers, 2-52
TC.ANI characteristic (TTDRV), I/O Drivers, 2-52
TC.ASP characteristic (TTDRV), I/O Drivers, 2-52, 2-56
  baud rate, modem support, I/O Drivers, 2-83
TC.AVO characteristic (TTDRV), I/O Drivers, 2-52
TC.BIN characteristic (TTDRV), I/O Drivers, 2-52
TC.BLK characteristic (TTDRV), I/O Drivers, 2-52

Master Index: 293
TC.CTS characteristic (TTDRV), I/O
Drivers, 2-52, 2-57
TC.DEC characteristic (TTDRV), I/O
Drivers, 2-52
TC.DLU characteristic (TTDRV), I/O
Drivers, 2-52
modem support, I/O Drivers, 2-83
TC.EDT characteristic (TTDRV), I/O
Drivers, 2-52
TC.EPA characteristic (TTDRV), I/O
Drivers, 2-53
TC.ESQ characteristic (TTDRV), I/O
Drivers, 2-53
TC.FDX characteristic
TDDRV, I/O Drivers, 2-53
VTDRV, I/O Drivers, 4-7
TC.HFF characteristic (TTDRV), I/O
Drivers, 2-53
TC.HFL characteristic (TTDRV), I/O
Drivers, 2-53
TC.HHT characteristic (TTDRV), I/O
Drivers, 2-53
TC.HLD characteristic
half-duplex, I/O Drivers, 3-33
TDDRV, I/O Drivers, 2-53, 2-56
side effect, I/O Drivers, 2-62
TC.HSY characteristic (TTDRV), I/O
Drivers, 2-53
TC.ICS characteristic (TTDRV), I/O
Drivers, 2-53
TC.ISL characteristic (TTDRV), I/O
Drivers, 2-53
TC.LPP characteristic (TTDRV), I/O
Drivers, 2-53
TC.MHU characteristic (TTDRV), I/O
Drivers, 2-53
buffer, I/O Drivers, 2-60
processing, I/O Drivers, 2-60
TC.NBR characteristic (TTDRV), I/O
Drivers, 2-53
TC.NEC characteristic
half-duplex
echo, solicited input, I/O
Drivers, 3-14
TDDRV, I/O Drivers, 2-54
TC.OOB characteristic (TTDRV), I/O
Drivers, 2-54
buffer, I/O Drivers, 2-62
processing, I/O Drivers, 2-60, 2-61
TC.PAR characteristic (TTDRV), I/O
Drivers, 2-54
TC.PPT characteristic (TTDRV), I/O
Drivers, 2-54
TC.PRI characteristic (TTDRV), I/O
Drivers, 2-54
TC.PTH characteristic (TTDRV), I/O
Drivers, 2-54
TC.RAT characteristic (TTDRV), I/O
Drivers, 2-54
TC.RGS characteristic (TTDRV), I/O
Drivers, 2-54
TC.RSP characteristic (TTDRV), I/O
Drivers, 2-54, 2-56
TC.SCP characteristic
TDDRV, I/O Drivers, 2-54
VTDRV, I/O Drivers, 4-7
TC.SFC characteristic (TTDRV), I/O
Drivers, 2-54
TC.SLV characteristic (TTDRV), I/O
Drivers, 2-54
TC.SMR characteristic (half-duplex), I/O Drivers, 3-33
TC.SSC characteristic (TTDRV), I/O
Drivers, 2-54
buffer, I/O Drivers, 2-61
processing, I/O Drivers, 2-60
side effect, I/O Drivers, 2-62
TC.TBF characteristic (TTDRV), I/O
Drivers, 2-54, 2-58
TC.TBM characteristic (TTDRV), I/O
Drivers, 2-55
TC.TBS characteristic (TTDRV), I/O
Drivers, 2-55
TC.TLC characteristic (TTDRV), I/O
Drivers, 2-55
TC.TMM characteristic (TTDRV), I/O
Drivers, 2-55
TC.TPP characteristic
terminal type value (TTDRV), I/O
Drivers, 2-56
TC.TSY characteristic (TTDRV), I/O
Drivers, 2-55
TC.TTP characteristic
half-duplex, I/O Drivers, 3-12, 3-16
TDDRV, I/O Drivers, 2-55, 2-57
VTDRV, I/O Drivers, 4-7
TC.VFL characteristic (TTDRV), I/O
Drivers, 2-55
TC.WID characteristic (TTDRV), I/O
Drivers, 2-55
TC.XSP characteristic (TTDRV), I/O
Drivers, 2-55, 2-56
TC11 magnetic tape unit, I/O Drivers, 6-1
TCB, Command Language, 7-1 MCR, 3-31, 3-34
address of, CDA, 3-21, 3-24
creating, MCR, 3-116
installing, MCR, 3-120
pointer to current, CDA, 3-20
removing, MCR, 3-116
saving, MCR, 3-189
TCBDFS, CDA, B-41, C-71
/TCB switch, CDA, 2-5, 2-8
/TDS switch, CDA, 2-5, 2-8
/PIP utility, Utilities, 3-40
TDX, Indirect, 2-2
TE10 magnetic tape unit, I/O Drivers, 8-1
TE16 magnetic tape unit, I/O Drivers, 8-1
Tef parameter
device-specific function
receive (LRDRV), I/O Drivers, 14-9
Telephone
dial command string, System Management, 9-4
Teleprinter listing format, MACRO-11, 6-7, 6-8
See also Listing control
Teletypewriter, I/O Drivers, 2-3
Temporary file
See FB$TMP mask in FOP field
TEMPORARYFILE command
IOX, System Management, 4-63
Term
definition of, MACRO-11, 3-15, 3-16
Terminal, Introduction, 1-1, 1-6 RMS-11 Macro, 3-1, 5-20, 5-37, 5-42, 5-77, 5-88, 5-104, 5-111, 5-117
attached, Command Language, 3-2
MCR, 2-19
half-duplex, I/O Drivers, 3-11
several (half-duplex), I/O Drivers, 3-34
VTDRV, I/O Drivers, 4-4
attribute
displaying, Command Language, 2-2
setting, Command Language, 2-2
baud rate, Indirect, 2-16 System Management, 9-2
Terminal baud rate (cont’d.)
setting, MCR, 3-254
buffer, MCR, 3-261
read character (ICDRV/ISDRV), I/O Drivers, 19-56
character
deleting, Command Language, 3-12, 3-20
characteristic
displaying, Command Language, 2-2, 3-49
setting, Command Language, 2-2, 3-36
characteristics
get multiple
TTDRV, I/O Drivers, 2-51
VTDRV, I/O Drivers, 4-6
implicit (TTDRV), I/O Drivers, 2-57
return (half-duplex), I/O Drivers, 3-11
set
TTDRV, I/O Drivers, 2-59
VTDRV, I/O Drivers, 4-7
setting, MCR, 3-197, 3-202 to 3-267
VTDRV, I/O Drivers, 4-6
characteristic table
half-duplex, I/O Drivers, 3-12
TTDRV, I/O Drivers, 2-52
VTDRV, I/O Drivers, 4-7
CLI
default, MCR, 3-79
cursor control (TTDRV), I/O Drivers, 2-80
definition of, MCR, 2-14
detach (VTDRV), I/O Drivers, 4-4
directory
default, MCR, 2-7
disconnect (TTDRV), I/O Drivers, 2-35
disconnect input (ICDRV/ISDRV), I/O Drivers, 19-24
displaying, MCR, 3-60
displaying information, Command Language, 3-2, 3-49
driver
full-duplex, MCR, 3-219
half-duplex, MCR, 3-258
emulation, System Management, 9-1 to 9-5
examining a listing, Program Development, 3-6, 3-7

Master Index–295
Terminal (cont'd.)

VT100, *Introduction*, 1-1, 1-2, 1-3
fig.
fig.
write (half-duplex), *I/O Drivers*, 3-11

Terminal argument indicator, *MACRO-11*, 3-2

Terminal characteristics

displaying, *Command Language*, 3-2
setting, *Command Language*, 3-2

Terminal device

See FB$TRM mask in DEV field

Terminal driver, *I/O Drivers*, 3-1
full-duplex
See TTDRV
half-duplex
supported devices, *I/O Drivers*, 3-1
supported interface, *I/O Drivers*, 3-2
virtual, *I/O Drivers*, 4-1

Terminal emulation, *System Management*, 1-3
establishing, *System Management*, 9-3
terminating, *System Management*, 9-3

Terminal expression indicator,
*MACRO-11*, 3-2

Terminal keyboard, *Command Language*, 3-1, 3-10

Terminal keypad, *Command Language*, 3-1, 3-16

VT200-series, *Command Language*, 3-16

Terminal number, *Command Language*, 3-1

Terminal output
interrupting, *Command Language*, 3-18
skipping, *Command Language*, 3-19

Terminal register indicator, *MACRO-11*, 3-2

Terminating

*RMSBCK* utility, *RMS-11 Utilities*, 6-2
*RMSMCNV* utility, *RMS-11 Utilities*, 4-4
*RMSDES* utility, *RMS-11 Utilities*, 2-2, 2-9, 2-12

Terminating (cont'd.)

*RMSDSP* utility, *RMS-11 Utilities*, 5-2
*RMSIFL* utility, *RMS-11 Utilities*, 3-2
processing, *RMS-11 Utilities*, 3-12
*RMSRST* utility, *RMS-11 Utilities*, 7-2

Terminating directive
See *.END* directive

Terminator


/TERM keyword

ABORT command (MCR), *MCR*, 3-4
ACTIVE command, *MCR*, 3-14
ALLOCATE command (MCR), *MCR*, 3-16
ALTER command (MCR), *MCR*, 3-19
ASSIGN command (MCR), *MCR*, 3-28, 3-29
BLOCK command, *MCR*, 3-34
DISMOUNT command (MCR), *MCR*, 3-71
RESUME command, *MCR*, 3-177
SET command (MCR), *MCR*, 3-258
SET command (VMR), *System Management*, 10-78 to 10-79
UNBLOCK command, *MCR*, 3-283
UNSTOP command, *MCR*, 3-287
t error, *MACRO-11*, 3-15, 5-10, 6-23
summary, *MACRO-11*, D-4

$TESTBITS macro, *RMS-11 Macro*, 2-17

Test configuration

IOX

pattern altering, *System Management*, 4-48
pattern displaying, *System Management*, 4-48
setup, *System Management*, 4-6

.*TESTDEVICE* directive, *Indirect*, 2-87
.*TEST* directive, *Indirect*, 2-85
.*TESTFILE* directive, *Indirect*, 2-89
Test for Specified System Feature
directive, *Executive*, 5-86
Test for Specified Task Feature
directive, *Executive*, 5-248
.*TESTPARTITION* directive, *Indirect*, 2-91
TE trap, *Debugging*, 1-5

Master Index–297
Tevf parameter
device-specific function (UDDRV),
I/O Drivers, 16-4
ICDRV/ISDRV, I/O Drivers, 19-11
IO.CCI function, I/O Drivers, 19-19
IO.CTI function, I/O Drivers, 19-21
IO.CTY function, I/O Drivers, 19-23
IO.LDI function, I/O Drivers, 19-25
IO.LKE function, I/O Drivers, 19-28
IO.LTI function, I/O Drivers, 19-26
IO.LTY function, I/O Drivers, 19-27

Text
buffer, Program Development, 1-3
displaying on terminal, Indirect,
2-33, 2-35, 2-38
editor, Program Development, 1-3,
1-4
See also EDI utility
See also EDT editor
information record, Task Builder,
A-11, A-12
format, Task Builder, A-12
TF.AST subfunction (TTDRV), I/O
Drivers, 2-12
TF.BIN subfunction (TTDRV), I/O
Drivers, 2-12
IO.EIO function, I/O Drivers, 2-26
IO.RPR function, I/O Drivers, 2-41
TF.CCO subfunction (TTDRV), I/O
Drivers, 2-12
IO.EIO function, I/O Drivers, 2-26
IO.WAL function, I/O Drivers,
2-48
IO.WBT function, I/O Drivers, 2-50
TF.ESQ subfunction (TTDRV), I/O
Drivers, 2-12
IO.ATA function, I/O Drivers, 2-22
TF.NOT subfunction (TTDRV), I/O
Drivers, 2-13
IO.ATA function, I/O Drivers,
2-20, 2-22
TF.RAL subfunction (TTDRV), I/O
Drivers, 2-13
IO.EIO function, I/O Drivers, 2-26
IO.RNE function, I/O Drivers, 2-39
IO.RPR function, I/O Drivers, 2-42
TF.RAL subfunction (TTDRV) (cont’d.)
IO.RST function, I/O Drivers, 2-44
IO.RTT function, I/O Drivers, 2-46
TF.RCU subfunction (TTDRV), I/O
Drivers, 2-13
IO.EIO function, I/O Drivers, 2-27
IO.RTT function, I/O Drivers, 2-46
IO.WAL function, I/O Drivers,
2-48
IO.WBT function, I/O Drivers, 2-50
TF.RDI subfunction (TTDRV), I/O
Drivers, 2-13
IO.EIO function, I/O Drivers, 2-27
TF.RES subfunction (TTDRV), I/O
Drivers, 2-13
IO.EIO function, I/O Drivers, 2-27
TF.RLB subfunction (TTDRV), I/O
Drivers, 2-13
TF.RLU subfunction (TTDRV), I/O
Drivers, 2-13
IO.EIO function, I/O Drivers, 2-27
TF.RNE subfunction (TTDRV), I/O
Drivers, 2-13
IO.EIO function, I/O Drivers, 2-27
IO.RAL function, I/O Drivers, 2-37
IO.RPR function, I/O Drivers, 2-42
IO.RST function, I/O Drivers, 2-44
IO.RTT function, I/O Drivers, 2-46
TF.RNF subfunction (TTDRV), I/O
Drivers, 2-14
IO.EIO function, I/O Drivers, 2-27
TF.RPT subfunction (TTDRV), I/O
Drivers, 2-14
ignore prompt, I/O Drivers, 2-27
IO.EIO function, I/O Drivers, 2-27
TF.RST subfunction (TTDRV), I/O
Drivers, 2-28
IO.EIO function, I/O Drivers, 2-28
TF.RAL subfunction (TTDRV), I/O
Drivers, 2-28
IO.EIO function, I/O Drivers, 2-28
IO.RAL function, I/O Drivers, 2-37
IO.RNE function, I/O Drivers, 2-39
IO.RPR function, I/O Drivers, 2-42
set TF.RNE subfunction, I/O
Drivers, 2-14
TF.RTT subfunction (TTDRV), I/O
Drivers, 2-15
IO.EIO function, I/O Drivers, 2-28
with TF.RAL subfunction, I/O
Drivers, 2-15
with TF.RNF subfunction, I/O
Drivers, 2-15

Master Index-298
TF.RTT subfunction (TTDRV) (cont’d.)
with TF.TNE subfunction, I/O
Drivers, 2-15

TF.TMO subfunction (TTDRV), I/O
Drivers, 2-15
IO.EIO function, I/O Drivers, 2-15
IO.RAL function, I/O Drivers, 2-37
IO.RNE function, I/O Drivers, 2-37, 2-39
IO.RPR function, I/O Drivers, 2-42
IO.RST function, I/O Drivers, 2-44
IO.RTT function, I/O Drivers, 2-46
TF.TNE subfunction (TTDRV), I/O
Drivers, 2-15
IO.EIO function, I/O Drivers, 2-29
TF.WAL subfunction (TTDRV), I/O
Drivers, 2-15
IO.CCO function, I/O Drivers, 2-24
IO.EIO function, I/O Drivers, 2-29
IO.WBT function, I/O Drivers, 2-50
TF.WBT subfunction (TTDRV), I/O
Drivers, 2-16
break-through write, I/O Drivers, 2-17, 2-24
IO.CCO function, I/O Drivers, 2-24
IO.EIO function, I/O Drivers, 2-29
IO.WAL function, I/O Drivers, 2-48
TF.WIR subfunction (TTDRV), I/O
Drivers, 2-16
IO.EIO function, I/O Drivers, 2-29
TF.WLB subfunction (TTDRV), I/O
Drivers, 2-16
TF.XCC subfunction (TTDRV), I/O
Drivers, 2-16
IO.ATA function, I/O Drivers, 2-20, 2-22
TF.XOF subfunction (TTDRV), I/O
Drivers, 2-16
IO.EIO function, I/O Drivers, 2-29
IO.RNE function, I/O Drivers, 2-39
IO.RPR function, I/O Drivers, 2-42
IO.RST function, I/O Drivers, 2-44
TFEA$ directive, Executive, 5-248
Throughput
improving TKB, Task Builder, F-1 to F-11
overlay
high-level language, Task Builder, 3-40
TL, Command Language, 5-6 MCR, 2-11

Ticks parameter
synchronous QIOS$ function
(LSDRV), I/O Drivers, 17-5
TICLPP symbol, Indirect, 2-16
TICWID symbol, Indirect, 2-16
%TIM, Error Logging, 5-25
TIM
See TIME command
$TIM (Time conversion), System Library, 6-3

Time
displaying, System Management, 10-90
getting parameters, Executive, 5-117
setting, Executive, 5-235 System Management, 10-90
system
displaying, Command Language, 2-1, 8-3
setting, Command Language, 2-1, 8-1
TIME command (MCR), MCR, 1-6, 3-278
examples, MCR, 3-279
format, MCR, 3-278
parameters, MCR, 3-278
TIME command (VMR), System Management, 10-90
definition, System Management, 10-90
examples, System Management, 10-90
formats, System Management, 10-90
notes, System Management, 10-91
parameters, System Management, 10-90
Time conversion
time ($TIM), System Library, 6-3
Time handling function, Error Logging, 5-25
/TIME keyword
INSTALL command (MCR), MCR, 3-121
RUN command (MCR), MCR, 3-185
Time out
count (TTDRV), I/O Drivers, 2-15
LADRV, I/O Drivers, 22-35
parameter (UNIBUS switch driver)
IO.DPT function, I/O Drivers, 24-5
read (TTDRV), I/O Drivers, 2-28
Time out (cont'd.)
unsolicited input (TTDRV), I/O Drivers, 2-17
Timeout mode, Indirect, 2-49
Time parameter
RCLOKB subroutine (K-series), I/O Drivers, 23-25
Timesharing, Introduction, 6-3
TISPED symbol, Indirect, 2-16
/TIS switch, CDA, 2-5, 2-8
.TITLE directive, MACRO-11, 6-15
Program Development, 2-3, 2-5, 6-7
TITYPE symbol, Indirect, 2-17
TK25 magnetic tape unit, I/O Drivers, 8-2
TK50 magnetic tape unit, I/O Drivers, 8-2
TKB, Command Language, 6-2 MCR, 2-20, 3-3, 3-122, 3-183 Program Development, 1-5, 1-6
command line, Task Builder, 1-2
/CR, Program Development, 1-8, 4-6, 5-2
/CROSS_REFERENCE, Program Development, 1-8, 4-5, 5-1
/DA, Program Development, 5-2
/DA switch, Debugging, 10-1
/DEBUG, Program Development, 5-1
debugger
specifying, Debugging, 10-1
error, Program Development, 4-2, 4-8, 4-9
examples, Command Language, 6-5
/FAST, Program Development, 4-4
fast version, Program Development, 4-4
format, Command Language, 6-5
function, Task Builder, 2-1 to 2-28
GBLPAT option, Debugging, 10-3
Generating
cross-reference listing, Program Development, 4-5, 4-6
map
full, Program Development, 4-7
standard, Program Development, 4-5, 4-6
/INCLUDE, Program Development, 6-7, 6-8, 6-9

TKB (cont'd.)
input, Program Development, 1-5, 1-6
invoking, Command Language, 6-2, 6-7
/LB, Program Development, 6-7, 6-8, 6-9, 7-8
/LIBRARY, Program Development, 6-8, 6-9, 7-8
LINK command
DCL, Program Development, 1-5, 4-1, 5-1, 5-9, 6-7
linking
ODT, Debugging, 1-2
ODTID, Debugging, 1-3
supervisor libraries, Debugging, 1-4
/LONG, Program Development, 4-7
/MA, Program Development, 4-7
/MAP, Program Development, 4-5, 4-7, 5-1, 5-9, 6-7, 6-8, 6-9
map file, Command Language, 6-2
producing, Command Language, 6-13
/NOTASK, Program Development, 4-5
/NOWIDE, Program Development, 4-5
object library
designation, Program Development, 6-4, 6-5
use, Program Development, 6-8, 6-9
option, Command Language, 6-2, 6-4, 6-14 Task Builder, 1-9
list, Command Language, 6-16
to 6-19
restarting, Task Builder, 12-5
output, Program Development, 1-6
PDT utility, Utilities, 14-4
/PM, Program Development, 5-9
/POSTMORTEM, Program Development, 5-9
qualifiers, Task Builder, 11-74
search of system library
default, Program Development, 1-11
/-SH, Program Development, 4-7
slow
specifying, Task Builder, 11-69
to improve performance, Task Builder, F-11
switch, Task Builder, 10-1
/CP, MCR, 3-117
TKB
switch (cont'd.)
/D, MCR, 3-59
/IP, MCR, 3-118, 3-183
/XH, MCR, 3-123
symbol
undefined, Program Development, 4-2
/SYSTEM_LIBRARY_DISPLAY Program Development, 4-7
/TASK, Program Development, 5-1, 6-7, 6-8, 6-9
task
object file, MCR, 2-9, 2-21
priority, MCR, 2-21
TKB command
MCR, Program Development, 1-5, 4-1, 5-2, 5-9, 6-7
transfer (starting) address
default, Program Development, 4-3
UNITs option, Debugging, 6-2
/-WI, Program Development, 4-6
TKB command
MCR, Program Development, 1-5, 4-1, 5-2, 5-9, 6-7
See also TKB
TKS field in KEY block
DISPLAY operation, RMS-11 Macro, 5-31
offset, RMS-11 Macro, 6-68
OPEN operation, RMS-11 Macro, 5-81
summary, RMS-11 Macro, 6-93
$TKTCB pointer
use of
in fault tracing, Writing I/O Driver, 3-24
TKTN, Command Language, 7-19 MCR, 3-3 System Generation (11M), 4-31
System Generation (11S), 1-2, 2-20
abort message, Program Development, 4-8
error messages, System Generation (11S), 2-21
invoking, System Generation (11S), 2-21
messages, Command Language, 7-19
to 7-20 MCR, 3-5 to 3-8, A-1
to A-35
format, MCR, 3-5
using with PMD, Program Development, 1-7
TLOG$ directive, Executive, 5-250
TLON$ directive, Executive, 5-250
TM02 formatter, I/O Drivers, 8-1
/TM02 switch
DSC utility, Utilities, 8-22
TM03 formatter, I/O Drivers, 8-1
Tmo parameter
device-specific function
half-duplex, I/O Drivers, 3-8
VTDRV, I/O Drivers, 4-4
TTDIV, I/O Drivers, 2-11
IO.RAL function, I/O Drivers, 2-36
IO.RNE function, I/O Drivers, 2-38
IO.RPR function, I/O Drivers, 2-41
IO.RST function, I/O Drivers, 2-44
IO.RTT function, I/O Drivers, 2-46
VTDRV, I/O Drivers, 4-4
Tname parameter (ICDRV/ISDRV),
I/O Drivers, 19-11
IO.LDI function, I/O Drivers, 19-25
IO.LKE function, I/O Drivers, 19-27
IO.LTI function, I/O Drivers, 19-26
IO.LTY function, I/O Drivers, 19-27
IO.NLK function, I/O Drivers, 19-30
IO.UDI function, I/O Drivers, 19-30
IO.UER function, I/O Drivers, 19-31
IO.UTI function, I/O Drivers, 19-30
TOC symbolic argument, MACRO-11, 6-12
TOF command
EDI utility, Utilities, 2-19, 2-47
TOP command
EDI utility, Utilities, 2-20, 2-47
TOP key (EDT), Introduction, 2-6
/TOP keyword
SET command (MCR), MCR, 3-259
SET command (VMR), System Management, 10-79 to 10-80
TOP OF FILE command
EDI utility, Utilities, 2-19, 2-47
Tout parameter
device-specific (UNIBUS switch
driver), I/O Drivers, 24-4

Master Index–301
TPARS
  built-in variable, I/O Operations, 7-5
coding, I/O Operations, 7-1, 7-7
command line parsing, I/O Operations, 7-1
creating parser program, I/O Operations, 7-12
invoking, I/O Operations, 7-11
macro, I/O Operations, 7-1
options word, I/O Operations, 7-11
programming examples, I/O Operations, 7-14
program section, I/O Operations, 7-10
register usage, I/O Operations, 7-11
state table, I/O Operations, 7-1
subexpression, I/O Operations, 7-7
transition, I/O Operations, 7-1
Trace mode, Indirect, 2-49
Trace program, Debugging, 10-2
debugging, Debugging, 10-2
/TRACE qualifier, Task Builder, 11-75
Track, RMS-11 Introduction, 2-1
See also Placement control
Track, bad sector (disk driver), I/O Drivers, 5-12
TRAN$ macro, I/O Operations, 7-1
Transaction Account Block, System Management, 17-3
Transaction file
  account block linkages, System Management, 17-38
  account blocks, System Management, 17-11, 17-20
  system account block (SAB), System Management, 17-11
task account block (TAB), System Management, 17-11
transaction account blocks, System Management, 17-11
  accumulation fields, System Management, 17-33
  block diagrams, System Management, 17-22
card reader job data, System Management, 17-3
card reader spooling block, System Management, 17-36
crash recovery block, System Management, 17-35
Transaction file (cont'd.)
DATATRIEVE-11, System Management, 17-16
device allocation, deallocation, or dismount data, System Management, 17-2
device mount data, System Management, 17-2
device statistics block, System Management, 17-37
device usage data, System Management, 17-3
disk accounting block, System Management, 17-36
element, System Management, 17-12
header area, System Management, 17-32
invalid login block, System Management, 17-36
login data, System Management, 17-2
offset definitions, System Management, 17-32
print despoofer block, System Management, 17-36
print job data, System Management, 17-2
set accounting block, System Management, 17-35
size, System Management, 17-5
system account block (SAB), System Management, 17-35
system data, System Management, 17-2
system time change, System Management, 17-3
system time change block, System Management, 17-36
task data, System Management, 17-1
user account block, System Management, 17-33
user data, System Management, 17-1
Transfer (starting) address
  defining, Program Development, 2-7
  system treatment of default, Program Development, 4-3, 4-8
Transfer address, program, MACRO-11, 6-39
Transfer address entry, Task Builder, A-6
Transfer function
  processing, Writing I/O Driver, 4-13
Transient failures, System Management, 15-29
Transition table
  recognition of keyword, I/O Operations, 7-9
Translate Logical Name String directive, Executive, 5-250
Translator processing, System Management, 12-19
Transmission, validation (communication driver), I/O Drivers, 12-11
Transmit
  auxiliary buffer (XEDRV), I/O Drivers, 13-12
  line message (XEDRV), I/O Drivers, 13-11
  message (LRDRV), I/O Drivers, 14-5
  pad enable bit (XEDRV), I/O Drivers, 13-20
  requirement (XEDRV), I/O Drivers, 13-13
  set protocol type (XEDRV), I/O Drivers, 13-12
  speed (TTDRV), I/O Drivers, 2-56
  standard function (LRDRV), I/O Drivers, 14-3
  timeslice constraints (LRDRV), I/O Drivers, 14-6
  XEDRV, Ethernet, I/O Drivers, 13-3
Transparent spooling, System Management, 7-1
Trap
  Debugging, 1-5, 2-11, 5-5, 8-4, A-2
  calling up-tree segments, Task Builder, 4-4
  multiple
    defined, Task Builder, 3-30 to 3-35
    defining, Task Builder, 3-31, 3-32
    example, Task Builder, 3-32
    structure, Task Builder, 3-18, 3-32
overlay diagram
  virtual address space, Task Builder, 3-24
structure
  defining, Task Builder, 3-49
  defining multiple, Task Builder, 3-31
  multiple, Task Builder, 3-31
Tree structure
  indexed file organization, RMS-ll Introduction, 3-7
/ TR keyword
  MOUNT command (MCR), MCR, 3-152
.TRLUN
  reserved global symbol, Task Builder, E-2
.TRNCL routine, truncate file, I/O Operations, 4-29
/ TR switch, Task Builder, 10-51
  Indirect, Indirect, 2-27
  PIP utility, Utilities, 3-40
  RMSCNV utility, RMS-ll Utilities, 4-13
  RMSIFL utility, RMS-ll Utilities, 3-7, 3-11
  SLP utility, Utilities, 13-15
  TRUE symbol, Indirect, 2-11
 $TRUNCATE macro, RMS-ll Macro, 5-122
Truncate mode, Indirect, 2-49
TRUNCATE operation, RMS-ll
  Introduction, 4-4 RMS-ll Macro, 4-11 RMS-ll User's Guide, 1-15
  and shared access, RMS-ll User's Guide, 2-6
  sequential files, RMS-ll User's Guide, 3-12
$TRUNCATE macro, RMS-ll Macro, 5-122
Truncation
  byte storage, MACRO-ll, 6-23
  floating-point, MACRO-ll, 6-34
Truncation (cont'd.)
print line (LPDRV), I/O Drivers, 10-7
RMSCNV utility, RMS-11 Utilities, 4-13
RMSIFL utility, RMS-11 Utilities, 3-7
terminal line (half-duplex), I/O Drivers, 3-31
TRUNCATION argument, MACRO-11, 8-10
TS03 magnetic tape unit, I/O Drivers, 8-1
TS11 magnetic tape unit, I/O Drivers, 8-1
.TSK file type, Program Development, 4-1
$$TSKP program section
reserved name, Task Builder, E-4
/TSK switch, CDA, 2-8
TSKV option, Task Builder, 12-39
TST attribute, System Management, 12-39
T505 magnetic tape unit, I/O Drivers, 8-2
/T switch, Error Logging, 3-7, 3-9
TTDRV, I/O Drivers, 2-1
features, I/O Drivers, 2-1
input line length, I/O Drivers, 2-3
interface support, I/O Drivers, 2-3
LOA special case, Writing I/O Driver, 3-5
options, System Generation (11M), 4-49
programming hint, I/O Drivers, 2-82
subfunction bit, I/O Drivers, 2-12
terminal support, I/O Drivers, 2-2
TTDRVBLD.CMD
definition, System Generation (11M), 5-2
TTM symbolic argument, MACRO-11, 6-12
TTSYM
half-duplex, I/O Drivers, 3-8, 3-13
system module (TTDRV), I/O Drivers, 2-33
TTSYNC (TTDRV), I/O Drivers, 2-70
/TTSYNC keyword
SET command (MCR), MCR, 3-261
SET command (VMR), System Management, 10-80
TU10 magnetic tape unit, I/O Drivers, 8-1
TU16 magnetic tape unit, I/O Drivers, 8-1
TU45 magnetic tape unit, I/O Drivers, 8-1
TU58 DECTAPE II, I/O Drivers, 7-1
TU60 dual cassette transport, I/O Drivers, 9-1
TU77 magnetic tape unit, I/O Drivers, 8-1
TU80 magnetic tape unit, I/O Drivers, 8-1
TU81 magnetic tape unit, I/O Drivers, 8-2
Two's complement operator, MACRO-11, 3-4
Two-byte signed integer key, RMS-11 User's Guide, 6-3
Typeahead buffer, System Management, 9-5
clearing, Command Language, 3-21
Typeahead buffer (TTDRV), I/O Drivers, 2-78
/TYPEHEAD keyword
SET command (MCR), MCR, 3-261
SET command (VMR), System Management, 10-80 to 10-81
TYPE attribute
RMSDES utility, RMS-11 Utilities, 2-38
TYPE command, Command Language, 4-57 to 4-59, 9-44 Introduction, 1-14, 3-7
DCL, Program Development, 3-6, 4-6, 7-4
EDI utility, Program Development, 2-13, 2-14, 2-17 Utilities, 2-47
/TYPE keyword
ALLOCATE command (MCR), MCR, 3-16
Type switch, Error Logging, 3-7, 3-9
U
U$$NCT parameter (XEDRV), I/O Drivers, 13-2
U$$NPC parameter (XEDRV), I/O Drivers, 13-2
U$$NRS parameter (XEDRV), I/O Drivers, 13-2
U$$NTS parameter (XEDRV), I/O Drivers, 13-2
UBF field in RAB, RMS-11 Macro, 4-7, 4-13
CONNECT operation, RMS-11 Macro, 5-6
GET operation, RMS-11 Macro, 5-61, 5-64, 5-67
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-92, 5-96
READ operation, RMS-11 Macro, 5-98, 5-100
summary, RMS-11 Macro, 6-143
UC.CON, contiguous file user-controlled file characteristic, I/O Operations, F-4
UC.DLK, file improperly closed user-controlled file characteristic, I/O Operations, F-4
UCB, Command Language, 5-5 MCR, 3-116
description, Writing I/O Driver, 4-23
figure, Writing I/O Driver, 4-26
negative offset, Writing I/O Driver, 4-9
relationship of
with I/O control blocks, Writing I/O Driver, 2-6
required field, Writing I/O Driver, 3-7
role of
in I/O data structure, Writing I/O Driver, 2-20
with ACP, Writing I/O Driver, D-9
UCBDF$S, CDA, B-45, C-75
UCB field
U.ATT, Writing I/O Driver, 3-7, 4-31
U.BUF, Writing I/O Driver, 4-31
U.CLI, Writing I/O Driver, 4-25
U.CNT, Writing I/O Driver, 4-32, B-1
U.CTL, Writing I/O Driver, 2-9, 3-7, 4-10, 4-27
U.CW1, Writing I/O Driver, 3-7, 4-29
U.CW2, Writing I/O Driver, 3-7, 4-30
U.CW3, Writing I/O Driver, 3-7, 4-30
U.CW4, Writing I/O Driver, 3-7, 4-31
UCB field (cont'd.)
U.DCB, Writing I/O Driver, 3-6 to 3-8, 4-9, 4-27
U.ERHC, Writing I/O Driver, 4-25
U.ERHL, Writing I/O Driver, 4-24
U.ERSC, Writing I/O Driver, 4-24
U.ERSL, Writing I/O Driver, 4-24
U.IOC, Writing I/O Driver, 4-24
U.LUIC, Writing I/O Driver, 4-25
U.MUP, Writing I/O Driver, 4-25
U.OWN, Writing I/O Driver, 4-27
U.RED, Writing I/O Driver, 3-7 to 3-8, 4-27
U.SCB, Writing I/O Driver, 3-7 to 3-8, 4-31
U.ST2, Writing I/O Driver, 3-7, 4-29
U.STS, Writing I/O Driver, 3-7, 4-28
U.UNIT, Writing I/O Driver, 3-7, 4-29
/UCB switch, CDA, 2-5, 2-6
U command, Debugging, 2-11
UC ON/OFF command
EDI utility, Utilities, 2-48
UDA50 disk controller, I/O Drivers, 5-4
UDC
function code list, I/O Drivers, B-15
UDC11, I/O Drivers, 16-1
compatibility (ICDRV/ISDRV), I/O Drivers, 19-6
creating driver, I/O Drivers, 16-1
defining configuration (UDDRV), I/O Drivers, 16-10
UDCOM.MAC
defining configuration (UDDRV), I/O Drivers, 16-10
UDDRV, I/O Drivers, 16-1
numbering convention, I/O Drivers, 16-34
programming hint, I/O Drivers, 16-34
U error, MACRO-11, 3-8, 3-9, 3-15, 6-20, 6-21, 7-20
marking undefined symbol, MACRO-11, 6-21
summary, MACRO-11, D-4
UFD, Command Language, 4-1 I/O Operations, 5-2 MCR, 2-2, 3-1
System Management, B-1
See also Directory
UFD (cont’d.)
See also USER FILE DIRECTORY
command
and UIC, MCR, 2-2
command, MCR, 2-2
contents, MCR, 2-2
conventions, System Management, 1-6
command line, Task Builder, 1-15, 1-16
creating, Command Language, 4-10, 4-13 MCR, 2-2
PIP utility, Utilities, 3-41
default, MCR, 2-2
deleting, MCR, 2-2
format, MCR, 2-2
group number, MCR, 2-2 System Management, B-1
Accounting tasks, System Management, B-2
DCL files, System Management, B-1
Executive files, System Management, B-1
FCP files, System Management, B-1
FCS files, System Management, B-2
K-Series files, System Management, B-2
Line printer despooler, System Management, B-2
MCR files, System Management, B-1
On-line configuration, System Management, B-2
Privileged utility tasks, System Management, B-1
Queue Manager files, System Management, B-2
RMD files, System Management, B-1
SYSGEN Indirect command files, System Management, B-2
listing file
PIP utility, Utilities, 3-24
member number, MCR, 2-2 System Management, B-2
object modules, System Management, B-2
SLP correction files, System Management, B-2
Source modules, System Management, B-2

UFD (cont’d.)
validating, Utilities, 9-5
UFD Group Number Identification
Table, System Management, B-1t to B-2t
UFD Member Number Identification
Table, System Management, B-2t to B-3t
/UFD qualifier
BRU utility, Utilities, 7-21
/UF switch
PIP utility, Utilities, 3-41
UIC, Command Language, 3-4, 4-2
I/O Operations, 5-2 MCR, 2-2, 2-6, 3-1, 3-81 System Management, 10-25
and UFD, MCR, 2-2, 3-212, 3-280
ASCII-binary conversion, I/O Operations, 4-7, 4-8
authorized, System Management, 2-1
contained in account entry, System Management, 2-1, 2-7, 2-9
declaring in task, Task Builder, 12-40
default, MCR, 2-6
displaying, System Management, 2-5, 2-8
distinction by password, System Management, 2-1
event flags, MCR, 3-77
group
access count, MCR, 3-77
login, MCR, 2-6
option, Task Builder, 12-40
password, MCR, 3-79
privilege status, MCR, 2-6
protection, MCR, 2-6
read/write defaults, I/O Operations, 4-3, 4-4
running tasks, MCR, 3-178
setting, System Generation (11M), 4-2
symbol, Indirect, 2-21
system task, MCR, 3-257
task
specifying, Command Language, 7-30 MCR, 3-122
terminal, MCR, 2-6
setting, MCR, 3-263
user categories
group, MCR, 2-3
owner, MCR, 2-3
system, MCR, 2-3

Master Index—306
UIC
user categories (cont'd.)
world, MCR, 2-3
volume
specifying, MCR, 3-153
[uic] switch
QUE /LI command, Batch and Queue, 2-16
/UIC keyword
HOME command, MCR, 3-96
INITVOLUME command, MCR, 3-107
INSTALL command (MCR), MCR, 3-121
INSTALL command (VMR), System Management, 10-28
MOUNT command (MCR), MCR, 3-153
RUN command (MCR), MCR, 3-178, 3-180, 3-185
RUN command (VMR), System Management, 10-44
SET command (MCR), MCR, 3-263
SET command (VMR), System Management, 10-81
/UI switch
FLX utility, Utilities, 4-8
$ULA (Universal library), System Library, B-1
ULGF$5 directive, Executive, 5-253
UMAP$ directive, Executive, 5-254
UMDIOS diagnostic function, I/O Drivers, 1-34
Unary operator, MACRO-11, 3-4
binary radix control, MACRO-11, 3-5
decimal radix control, MACRO-11, 3-5
evaluation of multiple, MACRO-11, 3-4
macro call use, MACRO-11, 7-5
octal radix control, MACRO-11, 3-5
one's complement, MACRO-11, 3-5, 6-35, 6-36
one-word floating-point, MACRO-11, 3-5, 6-35, 6-36
precedence over binary, MACRO-11, 3-16
Radix-50 control, MACRO-11, 3-5, 6-30
radix control, MACRO-11, 6-31, 6-32, 6-33
universal, MACRO-11, 3-3, 3-5
UNB
See UNBLOCK command
UNBLOCK command, MCR, 1-8, 3-283
examples, MCR, 3-283
format, MCR, 3-283
keyword
/TERM, MCR, 3-283
parameters, MCR, 3-283
Unconditional assembly, MACRO-11, 6-53
UND C key (EDT), Introduction, 2-7
Undefined record format, RMS-11 Introduction, 3-4 RMS-11 User's Guide, 1-11, 2-17
See also FB$UDF code in RFM field
Undefined symbol
See U error
Undeleting text (EDT), Introduction, 2-7
Underline (-), ODT, Program Development, 5-2
Underscore (_), Command Language, 3-15
DCL, Command Language, 1-8
Underscore command (_), Debugging, 2-5, 4-4, 9-9
UND L key (EDT), Introduction, 2-7
UND W key (EDT), Introduction, 2-7
Unexpected traps or interrupts, Error Logging, 1-6
UNF
See UNFIX command
UNFIX command, Command Language, 7-40, 9-44
UNFIX command (MCR), MCR, 1-8, 3-284
error messages, MCR, 3-284
examples, MCR, 3-284
formats, MCR, 3-284
parameters, MCR, 3-284
UNFIX command (VMR), System Management, 10-92
definition, System Management, 10-92
example, System Management, 10-92
format, System Management, 10-92
parameters, System Management, 10-92
UNIBUS
run specifications, MCR, 3-117

Master Index--307
UNIBUS Mapping Register  
static allocation of  
during system generation,  
Writing I/O Driver, B-4

UNIBUS switch driver, I/O Drivers, 24-1

AST  
CPU disconnect, I/O Drivers, 24-3  
failed CPU response, I/O Drivers, 24-3  
other CPU connect, I/O Drivers, 24-3  
power failure, I/O Drivers, 24-3  
switched to other CPU, I/O Drivers, 24-3  
attaching task, I/O Drivers, 24-2  
error return, I/O Drivers, 24-7  
FORTRAN usage, I/O Drivers, 24-8  
function code list, I/O Drivers, B-15  
power-fail recovery, I/O Drivers, 24-6  
standard functions, I/O Drivers, 24-2  
status return, I/O Drivers, 24-7  
system power-fail recovery, I/O Drivers, 24-6  
use, I/O Drivers, 24-1

Unit assignment  
 improving performance, Task Builder, F-2, F-3

Unit Control Block  
See UCB

Unit information  
.PRSDV routine, I/O Operations, 4-16  
Unit number field, I/O Operations, 2-34  
Unit off-line (ICDRV/ISDRV), I/O Drivers, 19-72  
Unit-record device, RMS-11  
Introduction, 3-5 RMS-11 Macro, 3-2, 5-20, 5-37, 5-43, 5-77, 5-88, 5-104, 5-111, 5-117  
RMSCNV utility, RMS-11 Utilities, 4-5

UNITS option, Task Builder, 12-41  
/UNIT switch  
DSC utility, Utilities, 8-22

Universal library  
command procedure, Indirect, 2-28  
creating, System Library, B-1  
file  
inserting module  
LBR utility, Utilities, 10-20  
replacing module  
LBR utility, Utilities, 10-27

Universal unary operator  
See Unary operator

UNL  
See UNLOAD command

Unlabeled tape, I/O Operations, G-16  
Unlabeled tape, end-of-volume (tape driver), I/O Drivers, 8-16  
Unlabeled tape block size, I/O Operations, G-16

UNLINK command, System Management, 15-28  
/UNL keyword  
MOUNT command (MCR), MCR, 3-153

UNLINK  
 remove task interrupt link  
(ICDRV/ISDRV), I/O Drivers, 19-68  
example, I/O Drivers, 19-69

UNLOAD command  
unloading driver, Writing I/O Driver, 3-2

UNLOAD command (MCR), MCR, 1-8, 3-285  
error messages, MCR, 3-285  
example, MCR, 3-285  
format, MCR, 3-285  
keyword  
/VEC, MCR, 3-285  
parameter, MCR, 3-285

UNLOAD command (VMR), System Management, 10-93  
definition, System Management, 10-93  
example, System Management, 10-93  
format, System Management, 10-93  
keyword  
/VEC, System Management, 10-93  
parameter, System Management, 10-93  
restrictions, System Management, 10-93

Unloading  
LADRV, I/O Drivers, 22-35

Master Index-308
Unloading (cont'd.)
tape driver, I/O Drivers, 8-7
UNLOCK command, Command
Language, 4-78 to 4-79, 9-45
Unlock Group Global Event Flags
directive, Executive, 5-253
$UNLPG (unlock page), System
Library, 8-31
Unmap Address Window directive,
Executive, 5-254
Unmapped system, Task Builder, 2-13,
2-14
definition, System Generation (11M),
1-5
question, System Generation (11M),
4-6
UNS
See UNSTOP command
UNSAVE command
EDI utility, Utilities, 2-48
Unsaved system
bootstrap, System Generation (11M),
6-2
nonstandard unmapped, System
Generation (11M), 6-12
definition, System Generation (11M),
1-6
Unsolicited interrupt (ICDRV/ISDRV),
I/O Drivers, 19-6
data, continual monitoring, I/O
Drivers, 19-51
processing, I/O Drivers, 19-17,
19-18, 19-64
UNSTOP command, MCR, 1-8, 3-287
elements, MCR, 3-287
format, MCR, 3-287
keywords
/TERM, MCR, 3-287
parameter, MCR, 3-287
Unstop Task directive, Executive,
5-256
/UN switch
PIP utility, Utilities, 3-42
Unt parameter
ALUN$ macro, I/O Drivers, 1-17
UPD argument to ORG$ macro,
RMS-11 Macro, 2-3
Update
applying, System Generation (11M),
2-29
on-line, System Generation (11M),
2-32
stand-alone, System Generation
(11M), 2-30
Update (cont'd.)
command procedure, System
Generation (11M), 2-28
errors, System Generation (11M),
2-34
installing, System Generation (11M),
2-26
layered product files, System
Generation (11M), 2-35
package, System Generation (11M),
2-27
preparations, System Generation
(11M), 2-28
$UPDATE macro, RMS-11 Macro,
5-124
UPDATE operation, RMS-11
Introduction, 4-4 RMS-11 Macro,
and record size, RMS-11 User's
Guide, 2-16
and shared access, RMS-11 User's
Guide, 2-6, 2-10
and stream records, RMS-11 User's
Guide, 2-17
changeable keys, RMS-11 User's
Guide, 6-10
declaring with ORG$ macro,
RMS-11 Macro, 2-3
defered write, RMS-11 User's Guide,
7-9
duplicate keys, RMS-11 User's Guide,
6-9
indexed files, RMS-11 User's Guide,
5-14, 7-6, 7-9
move mode, RMS-11 User's Guide,
3-14
indexed files, RMS-11 User's
Guide, 7-7, 7-8
relative files, RMS-11 User's
Guide, 4-12, 4-13
sequential files, RMS-11 User's
Guide, 3-13
relative files, RMS-11 User's Guide,
4-12
sequential files, RMS-11 User's
Guide, 3-12
$UPDATE macro, RMS-11 Macro,
5-124
/UPDATE switch
BAD utility, Utilities, 6-6
Uppercase conversion (half-duplex),
I/O Drivers, 3-15
UPPERCASE ON/OFF command
EDI utility, Utilities, 2-48

Master Index—309
User Identification Code
See UIC
Userid parameter
IO.STP function (LADRV), I/O Drivers, 22-30
/USER keyword
DISMOUNT command (MCR), MCR, 3-71
User mode, Debugging, 3-2
command, Debugging, 2-11
setting, Debugging, 2-11
User volume label
tape, I/O Operations, G-3
User-written encryption routines support, System Management, 2-1

.USLU1
reserved global symbol, Task Builder, E-2

.USLU2
reserved global symbol, Task Builder, E-2

%USR, Error Logging, 5-25
USRTB file
content, Writing I/O Driver, 3-12
$USRTB label, Writing I/O Driver, 3-13
USTP$ directive, Executive, 5-256
USZ field in RAB, RMS-11 Macro, 4-7, 4-13

CONNECT operation, RMS-11 Macro, 5-6
GET operation, RMS-11 Macro, 5-61, 5-64, 5-67
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-92, 5-96
READ operation, RMS-11 Macro, 5-98, 5-100
summary, RMS-11 Macro, 6-144

Utility, Introduction, 5-1 RMS-11
Introduction, 5-1
cmd line format, Utilities, 1-4
editing
EDI utility, Utilities, 1-2
file manipulation
FLX utility, Utilities, 1-2
PIP utility, Utilities, 1-2
file specification
default, Utilities, 1-4
format, Utilities, 1-4
indirect command file, Utilities, 1-9
invoking, Utilities, 1-6
DCL, Utilities, 1-6

User Identification Code
See UIC
Userid parameter
IO.STP function (LADRV), I/O Drivers, 22-30
/USER keyword
DISMOUNT command (MCR), MCR, 3-71
User mode, Debugging, 3-2
command, Debugging, 2-11
setting, Debugging, 2-11
User volume label
tape, I/O Operations, G-3
User-written encryption routines support, System Management, 2-1

.USLU1
reserved global symbol, Task Builder, E-2

.USLU2
reserved global symbol, Task Builder, E-2

%USR, Error Logging, 5-25
USRTB file
content, Writing I/O Driver, 3-12
$USRTB label, Writing I/O Driver, 3-13
USTP$ directive, Executive, 5-256
USZ field in RAB, RMS-11 Macro, 4-7, 4-13

CONNECT operation, RMS-11 Macro, 5-6
GET operation, RMS-11 Macro, 5-61, 5-64, 5-67
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-92, 5-96
READ operation, RMS-11 Macro, 5-98, 5-100
summary, RMS-11 Macro, 6-144

Utility, Introduction, 5-1 RMS-11
Introduction, 5-1
cmd line format, Utilities, 1-4
editing
EDI utility, Utilities, 1-2
file manipulation
FLX utility, Utilities, 1-2
PIP utility, Utilities, 1-2
file specification
default, Utilities, 1-4
format, Utilities, 1-4
indirect command file, Utilities, 1-9
invoking, Utilities, 1-6
DCL, Utilities, 1-6

User Identification Code
See UIC
Userid parameter
IO.STP function (LADRV), I/O Drivers, 22-30
/USER keyword
DISMOUNT command (MCR), MCR, 3-71
User mode, Debugging, 3-2
command, Debugging, 2-11
setting, Debugging, 2-11
User volume label
tape, I/O Operations, G-3
User-written encryption routines support, System Management, 2-1

.USLU1
reserved global symbol, Task Builder, E-2

.USLU2
reserved global symbol, Task Builder, E-2

%USR, Error Logging, 5-25
USRTB file
content, Writing I/O Driver, 3-12
$USRTB label, Writing I/O Driver, 3-13
USTP$ directive, Executive, 5-256
USZ field in RAB, RMS-11 Macro, 4-7, 4-13

CONNECT operation, RMS-11 Macro, 5-6
GET operation, RMS-11 Macro, 5-61, 5-64, 5-67
offset, RMS-11 Macro, 6-115
PUT operation, RMS-11 Macro, 5-92, 5-96
READ operation, RMS-11 Macro, 5-98, 5-100
summary, RMS-11 Macro, 6-144

Utility, Introduction, 5-1 RMS-11
Introduction, 5-1
cmd line format, Utilities, 1-4
editing
EDI utility, Utilities, 1-2
file manipulation
FLX utility, Utilities, 1-2
PIP utility, Utilities, 1-2
file specification
default, Utilities, 1-4
format, Utilities, 1-4
indirect command file, Utilities, 1-9
invoking, Utilities, 1-6
DCL, Utilities, 1-6

Master Index-310
Utility
invoking (cont'd.)
installed, Utilities, 1-7
MCR, Utilities, 1-6
uninstalled, Utilities, 1-9
listed, Utilities, 1-1
program maintenance, Utilities, 15-1
CMP utility, Utilities, 1-3
PAT utility, Utilities, 1-3
SLP utility, Utilities, 1-3
ZAP utility, Utilities, 1-4
programming
DMP utility, Utilities, 1-3
LBR utility, Utilities, 1-3
spawning, Executive, 4-5
using from DCL, Command Language, 1-18
volume maintenance
BAD utility, Utilities, 1-2
BRU utility, Utilities, 1-3
DSC utility, Utilities, 1-3
FMT utility, Utilities, 1-2
VFY utility, Utilities, 1-3
Utility, RMS-11
Best reference, RMS-11 Utilities
Utility programs, Program Development, 1-8, 1-9

V
Val parameter
CVADF: subroutine
K-series, I/O Drivers, 23-13
LADRV, I/O Drivers, 22-9
FLT16: subroutine
K-series, I/O Drivers, 23-21
LADRV, I/O Drivers, 22-17
Value parameter
IO:SMC function (TTDRV), I/O Drivers, 2-60
Variable, Debugging, 2-1
testing, Indirect, 2-85
Variable-length record block boundary
PUT$ macro, I/O Operations, 3-29
See also FB$VAR code in RFM field and medium, RMS-11 User's Guide, 2-15
Variable Receive Data directive, Executive, 5-257
Variable Receive Data or Exit directive, Executive, 5-261
Variable Receive Data or Stop directive, Executive, 5-259
Variable Send, Request, and Connect directive, Executive, 5-265
Variable Send Data directive, Executive, 5-263
Variable with fixed control
See VFC
Var parameter
ADC: subroutine (LSDRV), I/O Drivers, 17-12
VARRAY option, Task Builder, 12-42, 12-43
VAX/VMS
DCL, Command Language, 1-19
remote access, RMS-11 User's Guide, B-1, B-3
VAX/VMS file transfer, System Management, 9-1, 9-5
VAX-11 RSX file transfer, System Management, 9-1, 9-5
VBN, RMS-11 Introduction, 2-4
See also BKT field in RAB areas, RMS-11 User's Guide, 6-10
VBN access, RMS-11 Introduction, 3-12, 4-7 RMS-11 User's Guide, 1-20
See also BKT field in RAB
/VB switch
CMP utility, Utilities, 12-3
VCB
role of
in I/O data structure, Writing I/O Driver, 2-20
V command, Debugging, 2-11
ZAP utility, Utilities, 15-17
/VEC keyword
LOAD command (MCR), MCR, 3-133
LOAD command (VMR), System Management, 10-34
UNLOAD command (MCR), MCR, 3-285
UNLOAD command (VMR), System Management, 10-93
/VEC switch
BAD utility, Utilities, 6-9
DSC utility, Utilities, 8-23

Master Index-311
Vector altering using CNF, System Generation (11M), 2-5
autoloading, Task Builder, 4-4, 4-5, B-15, B-16
conventional task, Task Builder, B-17
eliminating unnecessary, Task Builder, 4-6
data transfer size, System Generation (11M), 4-40
definition, System Generation (11M), 1-4
floating, System Generation (11M), E-4
interrupt, System Generation (11M), 4-17
ODT, Task Builder, 12-26
overlaid region
I- and D-space task, Task Builder, 5-13, 5-14
reentry register, Debugging, 5-3, 5-6
SST address, Task Builder, 12-29
task header
extension area format, Task Builder, B-13
Verification device
BAD utility, Utilities, 6-3
file structure
VFY utility, Utilities, 9-1
task image file content
See ZAP utility
VERIFY command
IOX, System Management, 4-64
effect on NFS volume, System Management, 4-8
VERIFY ON/OFF command
EDI utility, Utilities, 2-49
/VERIFY qualifier
BRU utility, Utilities, 7-22
/VERIFY switch
DSC utility, Utilities, 8-18
FMT utility, Utilities, 5-9
Verify Utility
See VFY utility
Version identifier
See also .IDENT directive
assembler, MACRO-11, 6-4
standard, MACRO-11, E-14
Version number file, Command Language, 4-3

Version number file (cont’d.)
changing, Command Language, 4-47
default, Command Language, 4-4
RMSBCK utility, RMS-11 Utilities, 6-5
RMSCNV utility, RMS-11 Utilities, 4-9
RMSDEF utility, RMS-11 Utilities, A-5
RMSDES utility, RMS-11 Utilities, 2-16
RMSDSP utility, RMS-11 Utilities, 5-5
RMSIFL utility, RMS-11 Utilities, 3-5
RMSRST utility, RMS-11 Utilities, 7-5
Version number directive, MACRO-11, 6-16, 6-17
VERSN symbol, Indirect, 2-22
Vertical format control
See VFC
See VFC parameter
/VE switch
FLX utility, Utilities, 4-8
$VEXT
low-memory context, Task Builder, B-10
reserved global symbol, Task Builder, E-2
VFC
half-duplex, I/O Drivers, 3-27
double space, I/O Drivers, 3-27
format
internal vertical, I/O Drivers, 3-28
overprint, I/O Drivers, 3-28
page eject, I/O Drivers, 3-27
prompting output, I/O Drivers, 3-28
single-space, I/O Drivers, 3-27
LPDRV, I/O Drivers, 10-6
character, I/O Drivers, 10-6
double space, I/O Drivers, 10-6
format, internal vertical, I/O Drivers, 10-7
internal, I/O Drivers, 10-7
overprint, I/O Drivers, 10-7
page eject, I/O Drivers, 10-6
prompting output, I/O Drivers, 10-7
VFC
LPDRV (cont'd.)
single space, I/O Drivers, 10-6
TTDRV, I/O Drivers, 2-75
character table, I/O Drivers, 2-75
VFC carriage control
See FB$PRN mask in RAT field
VFC header buffer address
See RHB field in RAB
Vfc parameter
device-specific (half-duplex), I/O Drivers, 3-8
QIO$ macro (VTDRV), I/O Drivers, 4-4
standard function (LPDRV), I/O Drivers, 10-4
TTDRV
general, I/O Drivers, 2-11
IO.CCO function, I/O Drivers, 2-23
IO.RPR function, I/O Drivers, 2-41
IO.WAL function, I/O Drivers, 2-47
IO.WBT function, I/O Drivers, 2-50
VFC record format, RMS-11
Introduction, 3-2 RMS-11 User's Guide, 1-11, 2-16
See also FB$VFC code in RFM field
/VFILL keyword
SET command (MCR), MCR, 3-264
SET command (VMR), System Management, 10-81
VFY utility, Command Language, 4-87
command line, Utilities, 9-2
error message, Utilities, 9-11
file error reporting, Utilities, 9-8
operation mode, Utilities, 9-3
switch, Utilities, 9-4
summary, Utilities, 9-4
validity check, Utilities, 9-3
/VI keyword
HOME command, MCR, 3-96
MOUNT command (MCR), MCR, 3-153
$VIRT, Task Builder, 12-42, 12-43
Virtual array, Task Builder, 12-42, 12-43
example, Task Builder, 12-42, 12-43
Virtual block, RMS-11 Introduction, 2-3
file device, I/O Operations, 1-7

Virtual block (cont'd.)
file extension, I/O Operations, 2-9
Virtual block number
See BKT field in RAB
See VBN
READ$ macro, I/O Operations, 3-34
WRITE$ macro, I/O Operations, 3-38
Virtual I/O, I/O Drivers, 1-2
Virtual memory management, System Library, 8-1
See also Memory management address conversion ($CVRL), System Library, 8-24
$ALBLK routine, System Library, 8-10
allocate ($ALVRT), System Library, 8-16
allocate small virtual block ($ALSVB), System Library, 8-18
$ALSVB routine, System Library, 8-19
$ALVRT routine, System Library, 8-17
core allocation, System Library, 8-8
core blocks request ($RQVCB), System Library, 8-20
$CVLOK routine, System Library, 8-24
$CVRL routine, System Library, 8-25
error handling, System Library, 8-2
$EXTSK routine, System Library, 8-14
find page ($FNOPG), System Library, 8-27
$FNOPG routine, System Library, 8-28
$GTCOR routine, System Library, 8-12
initialize ($INIVM), System Library, 8-5
$IVIVM routine, System Library, 8-7
$LCKPG routine, System Library, 8-31
library, Program Development, 1-11
library file, System Library, 8-4
lock page ($LCKPG), System Library, 8-30
memory storage
allocate block ($ALBLK), System Library, 8-9

Master Index—313
Virtual memory management
memory storage (cont'd.)
extend task ($EXTSK), System
Library, 8-13
get core ($GTCOR), System
Library, 8-11
page lock ($CVLOK), System Library, 8-22
$RDPAG routine, System Library, 8-27
read page ($RDPAG), System Library, 8-27
$RQVCB routine, System Library, 8-21
task builder requirements, System
Library, 8-3
unlock page ($UNLPG), System Library, 8-31
$UNLPG routine, System Library, 8-31
write marked page ($WRMPG), System
Library, 8-28
write page ($WRPAG), System Library, 8-14
$WRMPG routine, System Library, 8-29
$WRPAG routine, System Library, 8-15
Virtual Monitor Console Routine
See VMR
Virtual terminal
creating, Executive, 5-54
deallocating, Executive, 5-73
Virtual-to-logical block mapping
VMLIB.OLB (Virtual memory
management library), Program
Development, 1-11
VMR, System Generation (11S), 1-5
System Management, 1-3
See also SYSVMR.CMD
command
abbreviations, System
Management, 10-4
descriptions, System
Management, 10-7 to
10-93
format, System Management, 10-7
format, System Management, 10-4
keywords, System Management, 10-4
VMR
command (cont'd.)
keyword values, System
Management, 10-5
names, System Management, 10-4
parameters, System Management, 10-4
syntax, System Management, 10-4
types, System Management, 10-1
comments, System Management, 10-5
definition, System Management, 10-1
editing SYSVMR.CMD, System
Generation (11M), 5-14
error messages, System Management, 10-94 to 10-112
establishing system features, System
Generation (11M), 6-9, 6-19
exiting, System Management, 10-3
file specifications
components, System
Management, 10-5
default
device, System Management, 10-5
directory, System
Management, 10-6
file name, System
Management, 10-6
file types, System
Management, 10-6
version number, System
Management, 10-6
device name, System
Management, 10-5
directory, System Management, 10-6
file names, System Management, 10-6
file type, System Management, 10-6
format, System Management, 10-5
/IM switch, System Management, 10-7
specifying, System Management, 10-5
version number, System
Management, 10-6
version number range, System
Management, 10-6

Master Index-314
VMR (cont’d.)
indirect command file, System Management, 10-3
installing from LB:, System Management, 10-3
introduction, System Management, 10-1
invoking from on-line host, System Generation (11M), 5-18
prompt, System Management, 10-3
relationship to MCR, System Management, 10-1
running, System Management, 10-2
starting, System Management, 10-1, 10-2 to 10-4
system image file
assigning SY: and LB:, System Management, 10-1
bootstrap, System Management, 10-1
relationship to symbol definition file, System Management, 10-1
VMR commands
ALTER, System Management, 10-8
ASSIGN, System Management, 10-9
CANCEL, System Management, 10-11
CONFIGURATION, System Management, 10-12
DEVICES, System Management, 10-16
FIX, System Management, 10-18
INSTALL, System Management, 10-21
LOAD, System Management, 10-33
LUNS, System Management, 10-35
PARTITION DEFINITIONS, System Management, 10-36
REASSIGN, System Management, 10-38
REDIRECT, System Management, 10-39
REMOVE, System Management, 10-40
RUN, System Management, 10-42
SAVE, System Management, 10-47
SET, System Management, 10-50
TASKLIST, System Management, 10-88
TIME, System Management, 10-90
UNFIX, System Management, 10-92
UNLOAD, System Management, 10-93
VMSTIME, Error Logging, 5-7
Volatile registers, CDA, 3-1
dump, CDA, 3-2 to 3-4
/VOL keyword
MOUNT command (MCR), MCR, 3-154
Volume, Command Language, 4-1, 5-1, 5-3, 5-4
accessing
dismounted, MCR, 3-142
advancing to next
See NXTVOL operation
allocating, MCR, 3-152
backing up
BRU utility, Utilities, 7-1
backup, Command Language, 5-73
bit density, MCR, 3-147
compressing
DSC utility, Utilities, 8-3
DECTape
initializing, MCR, 3-99
default extend size, I/O Operations, 2-9
density
changing, Command Language, 5-70
setting, Command Language, 5-59
directories, MCR, 3-150
directory listing
FLX utility, Utilities, 4-7
dismounting, Command Language, 5-53 MCR, 3-70
displaying free space
PIP utility, Utilities, 3-23
VFY utility, Utilities, 9-5
displaying information, MCR, 3-153
examining data
DMP utility, Utilities, 11-1
file
default number, Command Language, 5-62
deleting
FLX utility, Utilities, 4-7
maximum number
changing, Command Language, 5-71
setting, Command Language, 5-62
recovering lost
VFY utility, Utilities, 9-6
Volume
file (cont'd.)
FLX utility, Utilities, 4-4
Files-11, Command Language, 5-3
MCR, 2-1, 3-35
backing up, Command Language, 5-73
formatting, Command Language, 5-57
home block, MCR, 3-93
initializing, MCR, 3-99 to 3-116
level 401, Command Language, 5-62
level 402, Command Language, 5-62
protecting with TEMPORARYFILE, System Management, 4-63
restoring, Command Language, 5-73
foreign, Command Language, 5-3, 5-8, 5-38 MCR, 2-1
accessing, MCR, 2-2
displaying information, MCR, 3-153
mounting, MCR, 2-2, 3-148, 3-151
formatting
FLX utility, Utilities, 4-4
FMT utility, Utilities, 5-1
home block, MCR, 3-149
identifier, MCR, 3-144, 3-154
index file
unlocking, MCR, 3-153
initializing, MCR, 2-1
BRU utility, Utilities, 7-17
FLX utility, Utilities, 4-2
label, Command Language, 5-37, 5-58 MCR, 3-70, 3-100, 3-150
changing, Command Language, 5-71
listing file-ID
VFY utility, Utilities, 9-6
locating bad block
BAD utility, Utilities, 6-1
FMT utility, Utilities, 5-1
VFY utility, Utilities, 9-7
locking, MCR, 3-149
magnetic tape, Command Language, 5-3 RMS-11 Introduction, 2-5
labelling, MCR, 3-147, 3-149
protecting, MCR, 3-151
record, MCR, 3-152
mounting, Command Language, 5-36
MCR, 2-3, 3-141
Volume
mounting (cont'd.)
Files-11, MCR, 3-142
foreign, MCR, 3-148
magnetic tape, MCR, 3-142, 3-143
nonprivileged, MCR, 3-142
shared, MCR, 3-152
mounting with ACP, MCR, 3-148, 3-149
NFS
altering block range, System Management, 4-52
displaying block range, System Management, 4-52
error retries, System Management, 4-56
list of parameter commands for, System Management, 4-9
selecting
with IOX, System Management, 4-58
with VERIFY, System Management, 4-64
nonshared, MCR, 3-142
owner
changing, Command Language, 5-71
specifying, Command Language, 5-42, 5-63
private
mounting, MCR, 3-148
protecting, MCR, 3-102, 3-151
protection, Command Language, 4-9
changing, Command Language, 5-71
code, Command Language, 4-10
setting, Command Language, 5-40
public, MCR, 3-142, 3-152
dismounting, MCR, 3-71
mounting, MCR, 3-152
setting, MCR, 3-152
record type, MCR, 3-147
recovering
lost block
VFY utility, Utilities, 9-7
lost file
VFY utility, Utilities, 9-6
space
DSC utility, Utilities, 8-3
restoring
BRU utility, Utilities, 7-1
Master Index-316
Volume
selecting (cont'd.)
  Files-11 for IOX, System Management, 4-8
NFS for IOX, System Management, 4-8
shared, MCR, 3-142
UIC
  specifying, MCR, 3-153
unloading, MCR, 3-149
unmounted attach (DTDRV), I/O Drivers, 6-2
verifying, Utilities, 9-1
  block
  VFY utility, Utilities, 9-7
virtual, MCR, 3-149
write-protecting, Command Language, 5-42
VOLUMECHECK command
IOX, System Management, 4-65
Volume Control Block
  See VCB
Volume Home Block, Command Language, 5-57
  changing, Command Language, 5-70
  displaying information, Command Language, 5-71
Volume ID, Command Language, 5-38, 5-48
Volume Identifier
  See Volume ID
Volume label
tape, I/O Operations, G-1
  user, I/O Operations, G-3
Volume label switch, Error Logging, 3-7
Volume rewind, I/O Operations, 5-5
Vout parameter (ICDRV/ISDRV), I/O Drivers, 19-11
  IO.SAO function, I/O Drivers, 19-16
VRCD$ directive, Executive, 5-257
VRCD$ directive summary, I/O Operations, C-5
VRCS$ directive, Executive, 5-259
VRCS$ directive summary, I/O Operations, C-5
VRCS$ directive, Executive, 5-261
VRCS$ directive summary, I/O Operations, C-5
V register, Debugging, 2-7, 5-5
VS60 graphic display, I/O Drivers, 21-1

VS60 Graphics Display
  See GRDRV
VSDA$ directive, Executive, 5-263
VSDA$ directive summary, I/O Operations, C-6
VSECT option, Task Builder, 12-44
VSRC$ directive, Executive, 5-265
VSRC$ directive summary, I/O Operations, C-6
/V switch, Error Logging, 3-7
VT05B terminal, I/O Drivers, 2-5, 3-3
VT100 DECscope, I/O Drivers, 2-6, 3-4
VT100 terminal, Command Language, 3-1 Introduction, 1-1, 1-3 fig.
VT101 DECscope, I/O Drivers, 2-6
VT102 DECscope, I/O Drivers, 2-6
VT105 DECscope, I/O Drivers, 2-6
VT11 graphic display, I/O Drivers, 21-1
VT11 Graphics Display
  See GRDRV
VT131 DECscope, I/O Drivers, 2-6
VT200-series terminal, Command Language, 3-1
  keypad, Command Language, 3-16
VT220 terminal, I/O Drivers, 2-6
  Introduction, 1-1, 1-3 fig.
VT240 terminal, I/O Drivers, 2-6
VT241 terminal, I/O Drivers, 2-7
VT50H terminal, I/O Drivers, 2-5, 3-3
VT50 terminal, I/O Drivers, 2-5, 3-3
VT52 terminal, Command Language, 3-1 I/O Drivers, 2-5, 3-4
VT55 terminal, I/O Drivers, 2-5, 3-4
VT61 terminal, I/O Drivers, 2-6, 3-4
VTDRV, I/O Drivers, 4-1

W

WAIT$ macro
  file processing, I/O Operations, 3-1
    block I/O completion, I/O Operations, 3-40
    format
      file operations, I/O Operations, 3-40
      with READ$ and WRITE$, I/O Operations, 3-40
      with READ$ or WRITE$, I/O Operations, 3-33
WAIT command
  IOX, System Management, 4-66
  .WAIT directive, Indirect, 2-94

Master Index-317
Wait for buffer (K-series), I/O Drivers, 23-25
Wait for Logical OR of Event Flags directive, Executive, 5-270
Wait for Significant Event directive, Executive, 5-268
Wait for Single Event Flag directive, Executive, 5-272
/WAIT keyword
MOUNT command (MCR), MCR, 3-154
$WAIT macro, RMS-ll Macro, 5-126
RSTS/E, RMS-ll Macro, D-4
WAIT operation, RMS-ll Introduction, 4-4
block stream, RMS-ll Macro, 4-14
record stream, RMS-ll Macro, 4-9
$/WAIT macro, RMS-ll Macro, 5-126
/WARNINGS qualifier, Task Builder, 11-76
WB role of
in I/O data structure, Writing I/O Driver, 2-19 to 2-20
/WB keyword
INSTALL command (MCR), MCR, 3-118, 3-122
INSTALL command (VMR), System Management, 10-28
SAVE command (MCR), MCR, 3-190
WCC field in NAM block offset, RMS-ll Macro, 6-94
PARSE operation, RMS-ll Macro, 5-87
SEARCH operation, RMS-ll Macro, 5-116, 5-118
summary, RMS-ll Macro, 6-107
/WD switch
DMF utility, Utilities, 11-8
.WFOWN routine, write $$FSR2 default file owner word, I/O Operations, 4-7
/WF switch
RMSCNV utility, RMS-ll Utilities, 4-14
WHILE/UNTIL/DO statement, Error Logging, 5-35
WIDE argument, MACRO-ll, 8-11, 8-12
/WIDE qualifier, Task Builder, 11-77
Width switch, Error Logging, 3-7, 3-21
Wildcard, Introduction, 3-1 to 3-3
RMS-ll Introduction, 4-1
asterisk (*), Command Language, 3-15, 4-6 to 4-8
character, MCR, 2-7
directory context
See WDI field in NAM block file context
See WCC field in NAM block file name, I/O Operations, 4-19
file specification, Command Language, 4-6
BRU utility, Utilities, 7-7
FLX utility, Utilities, 4-3
PIP utility, Utilities, 3-7
file type, I/O Operations, 4-19
operation
See NB$WCH mask in FNB field percent sign (%), Command Language, 3-15, 4-8
Wildcard context (F11ACP)
FNB, I/O Drivers, C-7
Wildcard loop, RMS-ll Macro, 3-8
Window, RMS-ll User’s Guide, 8-2
Task Builder, 2-19 to 2-23
Window (cont'd.)
- block, Task Builder, 2-19
- for a region, Task Builder, 5-18
- overlay, Task Builder, 3-48
- definition block, Task Builder, 2-21
- descriptor, Task Builder, B-15, B-17, B-20, B-21
- overlay, Task Builder, 3-20, 3-21

I- and D-space task, Task Builder, 7-4
- option, Task Builder, 12-45
- region, Task Builder, 5-17, 5-26
- task, Task Builder, 2-19 to 2-23
- wrap around
  - virtual section, Task Builder, 5-60

Window Block
- See WB

Window Definition Block
- See WDB

Window pointer
- number, I/O Operations, 2-16

Window size parameter (FIIACP), I/O Drivers, C-6
/WINDOWS qualifier
- BRU utility, Utilities, 7-22
/WIN keyword
- HOME command, MCR, 3-97
- INITVOLUME command, MCR, 3-107
- MOUNT command (MCR), MCR, 3-155

/WI switch, Task Builder, 10-52
/WK, Command Language, 5-6
/WLT switch
- FMT utility, Utilities, 5-9
/$$WNDWS program section
- reserved name, Task Builder, E-4

WNDWS option, Task Builder, 12-45

Word, RMS-11 Introduction, 2-1
- location
  - displaying, Debugging, 4-2, 4-3
  - opening, Debugging, 4-2, 4-3
  - underscore command (_), Debugging, 4-5

.WORD directive, MACRO-11, 6-24, 6-25
- implicit, MACRO-11, 2-1, 2-4, 6-25
- WORD key (EDT), Introduction, 2-6

Word mode
- changing to byte mode, Debugging, 4-3

operator
- ASCII, Debugging, 2-7, 9-10
- octal, Debugging, 2-7, 4-2, 9-11
- Radix-50, Debugging, 2-7, 9-11

Work file
- access
  - system overhead, Task Builder, F-2, F-5 to F-7
  - assembler, MACRO-11, F-1
  - contiguity, Task Builder, F-3
  - parameters, Task Builder, F-2
  - performance, Task Builder, F-2
  - changing device to improve, Task Builder, F-2, F-5
  - reads, Task Builder, F-2
  - reducing size, Task Builder, F-5, F-6
  - reference, Task Builder, F-2
  - improving performance, Task Builder, F-6
  - size, Task Builder, F-2
  - writes, Task Builder, F-2

Wraparound
- automatic, remote line (TTDRV), I/O Drivers, 2-83
  - half-duplex, I/O Drivers, 3-29
- output line, I/O Drivers, 3-29
/WRAP keyword

SET command (MCR), MCR, 3-266
SET command (VMR), System Management, 10-82 to 10-83

W register, Debugging, 2-6, 5-3

Writable-block context, RMS-11 Macro, 4-12

Write
- all character
  - half-duplex, I/O Drivers, 3-16
  - TTDRV, I/O Drivers, 2-15, 2-24, 2-29, 2-50
  - block transfer length (DTDRV), I/O Drivers, 6-7
- break-through
  - half-duplex, I/O Drivers, 3-16
  - multi-echo (half-duplex), I/O Drivers, 3-16
  - privileged (TTDRV), I/O Drivers, 2-16
  - TF.WBT (TTDRV), I/O Drivers, 2-24, 2-29
  - TTDRV, I/O Drivers, 2-16, 2-17, 2-24, 2-48, 2-49
  - DDDRV, I/O Drivers, 7-4
Write (cont'd.)
error (tape driver), \textit{I/O Drivers}, 8-14
file owner word, \textit{I/O Operations}, 4-7
logical block, \textit{I/O Drivers}, 1-31, 1-32
TTDRV, \textit{I/O Drivers}, 2-16, 2-47
no sync (communication driver), \textit{I/O Drivers}, 12-8
NRZI (tape driver) \textit{I/O Drivers}, 8-16
gap all (TTDRV), \textit{I/O Drivers}, 2-29, 2-47
redisplay input (TTDRV), \textit{I/O Drivers}, 1-32
reverse (DTDRV), \textit{I/O Drivers}, 6-7
verify (CTDRV), \textit{I/O Drivers}, 9-8
Write \$FSR2
default directory string, \textit{I/O Operations}, 4-3
WRITE$ macro, \textit{I/O Operations}, 1-7, 3-1
block access, \textit{I/O Operations}, 2-12
example, \textit{I/O Operations}, 3-39
extending file, \textit{I/O Operations}, 3-39
FD.RWM parameter
block I/O, \textit{I/O Operations}, 2-10
FDB, \textit{I/O Operations}, 3-39
file processing, \textit{I/O Operations}, 3-37
write virtual block, \textit{I/O Operations}, 3-37
format, \textit{I/O Operations}, 3-37
virtual block number, \textit{I/O Operations}, 3-38
Write access, \textit{Command Language}, 4-10, 4-84 \textit{MCR}, 2-3
common region, \textit{MCR}, 3-119
file, \textit{MCR}, 3-148, 3-213
file open, \textit{I/O Operations}, 2-15
shared, \textit{I/O Operations}, 1-12
UFD, \textit{MCR}, 3-281
volume, \textit{MCR}, 3-94, 3-96, 3-106, 3-151
Write access (F11ACP), \textit{I/O Drivers}, C-8
Write-behind file processing, \textit{I/O Operations}, 2-19
Write-behind operation, FD.WBH parameter, \textit{I/O Operations}, 3-12
Write-check
enabling in IOX, \textit{System Management}, 4-67
WRITECHECK command
IOX, \textit{System Management}, 4-67
WRITE command
EDI utility, \textit{Utilities}, 2-49
EDT editor, \textit{Introduction}, 2-16
Write data
into output register (LSDRV), \textit{I/O Drivers}, 17-4
timed intervals, \textit{I/O Drivers}, 17-8
to D/A converter
timed intervals (LSDRV), \textit{I/O Drivers}, 17-8
Write default UIC, \textit{I/O Operations}, 4-4
Write digital output (LSDRV), \textit{I/O Drivers}, 17-20
Write file protection word
default, \textit{I/O Operations}, 4-5
WRITE GROUP statement, \textit{Error Logging}, 5-31
Write image
clock control register (LADRV), \textit{I/O Drivers}, 22-29
/WRITE keyword
MOUNT command (MCR), \textit{MCR}, 3-155
Write-lock
software support, \textit{System Generation (11M)}, 4-35
Write logical record
file processing, \textit{I/O Operations}, 3-26
random mode, \textit{I/O Operations}, 3-30
sequential mode, \textit{I/O Operations}, 3-33
$WRITE macro
sequential access, \textit{RMS-11 Macro}, 5-127
VBN access, \textit{RMS-11 Macro}, 5-129
WRITE operation, \textit{RMS-11 Introduction}, 4-7 \textit{RMS-11 Macro}, 4-14
access modes, \textit{RMS-11 Introduction}, 4-7
and shared access, \textit{RMS-11 User's Guide}, 2-6
$WRITE macro
sequential access, \textit{RMS-11 Macro}, 5-127

\textit{Master Index--320}
WRITE operation
$WRITE macro (cont'd.)
  VBN access, RMS-11 Macro, 5-129
WRITE statement, Error Logging, 4-30, 5-31
Write virtual block
  file processing, I/O Operations, 3-37
$WRMPG (Write marked page), System Library, 8-28
$WRPAG (Write page), System Library, 8-14
WSIG$S directive, Executive, 5-268
/W switch, Error Logging, 3-7, 3-21
WTSE$ directive, Executive, 5-272 I/O Drivers, 1-4, 1-10
WTSE$ macro, I/O Drivers, 1-14, 1-15, 1-24
equivalent, I/O Drivers, 1-25
X
X$-family macro, RMS-11 Macro, 2-9
declaring
  ALL block, RMS-11 Macro, C-3
  DAT block, RMS-11 Macro, C-3
  KEY block, RMS-11 Macro, C-3
  PRO block, RMS-11 Macro, C-3
  SUM block, RMS-11 Macro, C-3
XAB
  See also ALL block
  See also DAT block
  See also KEY block
  See also PRO block
  See also SUM block
  chaining to FAB, RMS-11 Macro, 2-12
XAB$B macro, RMS-11 Macro, 2-8, C-3
XAB$BT macro, RMS-11 Macro, C-4
XAB$E macro, RMS-11 Macro, 2-9
declaring, RMS-11 Macro, C-3
XAB field in FAB
  chaining XABs to FAB, RMS-11 Macro, 2-12
CLOSE operation, RMS-11 Macro, 5-3
CREATE operation, RMS-11 Macro, 5-9
DISPLAY operation, RMS-11 Macro, 5-29
XAB field in FAB (cont’d.)
  ENTER operation, RMS-11 Macro, 5-35
  ERASE operation, RMS-11 Macro, 5-40
  EXTEND operation, RMS-11 Macro, 5-46
  offset, RMS-11 Macro, 6-24
  OPEN operation, RMS-11 Macro, 5-73
  PARSE operation, RMS-11 Macro, 5-86
  REMOVE operation, RMS-11 Macro, 5-102
  RENAME operation, RMS-11 Macro, 5-108
  SEARCH operation, RMS-11 Macro, 5-116
  summary, RMS-11 Macro, 6-66
  XABOF$ macro, RMS-11 Macro, C-4
  XB$ALL code in COD field, RMS-11 Macro, 2-8
  summary, RMS-11 Macro, 6-10
  value, RMS-11 Macro, 6-2
  XB$BN2 code in DTP field
  CREATE operation, RMS-11 Macro, 5-18
  DISPLAY operation, RMS-11 Macro, 5-31
  OPEN operation, RMS-11 Macro, 5-80
  value, RMS-11 Macro, 6-67
  XB$BN4 code in DTP field
  CREATE operation, RMS-11 Macro, 5-18
  DISPLAY operation, RMS-11 Macro, 5-31
  OPEN operation, RMS-11 Macro, 5-80
  value, RMS-11 Macro, 6-67
  XB$CHG mask in FLG field
  CREATE operation, RMS-11 Macro, 5-19
  DISPLAY operation, RMS-11 Macro, 5-31
  OPEN operation, RMS-11 Macro, 5-80
  value, RMS-11 Macro, 6-76
  XB$CTG mask in AOP field
  CREATE operation, RMS-11 Macro, 5-18
  EXTEND operation, RMS-11 Macro, 5-47

Master Index-321
XB$CTG mask in AOP field (cont'd.)
OPEN operation, RMS-11 Macro, 5-79
RSTS/E, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-6
value, RMS-11 Macro, 6-2
XB$CYL mask in ALN field
RSTS/E, RMS-11 Macro, D-3, D-4
XB$DAT code in COD field, RMS-11
Macro, 2-8
summary, RMS-11 Macro, 6-17
value, RMS-11 Macro, 6-14
XB$DTL code in BLN field
summary, RMS-11 Macro, 6-15
value, RMS-11 Macro, 6-14
XB$DUP mask in FLG field
CREATE operation, RMS-11 Macro, 5-19
DISPLAY operation, RMS-11 Macro, 5-31
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-77
value, RMS-11 Macro, 6-67
XB$-£amily symbol declaring
ALL block, RMS-11 Macro, C-3, C-4
DAT block, RMS-11 Macro, C-3, C-4
KEY block, RMS-11 Macro, C-3, C-4
PRO block, RMS-11 Macro, C-3, C-4
SUM block, RMS-11 Macro, C-3, C-4
XAB, RMS-11 Macro, C-4
XB$HRD mask in AOP field
CREATE operation, RMS-11 Macro, 5-17
EXTEND operation, RMS-11 Macro, 5-47
OPEN operation, RMS-11 Macro, 5-79
RSTS/E, RMS-11 Macro, D-4
RSX-11, RMS-11 Macro, D-4
summary, RMS-11 Macro, 6-7
value, RMS-11 Macro, 6-2
XB$IN2 code in DTP field
CREATE operation, RMS-11 Macro, 5-18
DISPLAY operation, RMS-11 Macro, 5-31
OPEN operation, RMS-11 Macro, 5-80
value, RMS-11 Macro, 6-67
XB$IN4 code in DTP field
CREATE operation, RMS-11 Macro, 5-18
DISPLAY operation, RMS-11 Macro, 5-31
OPEN operation, RMS-11 Macro, 5-80
value, RMS-11 Macro, 6-67
XB$INI mask in FLG field
DISPLAY operation, RMS-11 Macro, 5-31
OPEN operation, RMS-11 Macro, 5-80
value, RMS-11 Macro, 6-67
XB$KEY code in COD field, RMS-11
Macro, 2-8
summary, RMS-11 Macro, 6-70
value, RMS-11 Macro, 6-67
XB$KYL code in BLN field
summary, RMS-11 Macro, 6-69
value, RMS-11 Macro, 6-67
XB$LAL code in BLN field
summary, RMS-11 Macro, 6-9
value, RMS-11 Macro, 6-2
XB$LBN mask in ALN field
CREATE operation, RMS-11 Macro, 5-17
EXTEND operation, RMS-11 Macro, 5-47
RSTS/E, RMS-11 Macro, D-3, D-4
value, RMS-11 Macro, 6-2
XB$NUL mask in FLG field
CREATE operation, RMS-11 Macro, 5-19
DISPLAY operation, RMS-11 Macro, 5-31
OPEN operation, RMS-11 Macro, 5-80
summary, RMS-11 Macro, 6-78
value, RMS-11 Macro, 6-67
XB$PAC code in DTP field
CREATE operation, RMS-11 Macro, 5-18
DISPLAY operation, RMS-11 Macro, 5-31
OPEN operation, RMS-11 Macro, 5-80
value, RMS-11 Macro, 6-67
XB$PRL code in BLN field
summary, RMS-11 Macro, 6-109

Master Index-322
XB$PRL code in BLN field (cont’d.)
value, RMS-11 Macro, 6-108
XB$PRO code in COD field, RMS-11
Macro, 2-8
summary, RMS-11 Macro, 6-110
value, RMS-11 Macro, 6-108
XB$SML code in BLN field
summary, RMS-11 Macro, 6-146
value, RMS-11 Macro, 6-145
XB$STG code in DTP field
CREATE operation, RMS-11 Macro, 5-18
DISPLAY operation, RMS-11 Macro, 5-31
OPEN operation, RMS-11 Macro, 5-80
value, RMS-11 Macro, 6-67
XB$SUM code in COD field, RMS-11
Macro, 2-8
summary, RMS-11 Macro, 6-147
value, RMS-11 Macro, 6-145
XB$VBN mask in ALN field
CREATE operation, RMS-11 Macro, 5-17
EXTEND operation, RMS-11 Macro, 5-47
RSTS/E, RMS-11 Macro, D-3, D-4
value, RMS-11 Macro, 6-2
XBAOP$ macro, RMS-11 Macro, C-4
XBDOP$ macro, RMS-11 Macro, C-4
XBKOP$ macro, RMS-11 Macro, C-4
XBPOF$ macro, RMS-11 Macro, C-4
XBSOF$ macro, RMS-11 Macro, C-4
X command
ODT, Debugging, 1-4, 2-12 Program
Development, 5-8
XDT, Debugging, 9-1, 9-14
ZAP utility, Utilities, 15-16
XDT, CDA, 1-2, 1-3, 1-6, 1-7
Debugging, 8-1 System Generation
(T1M), 4-35
See also Executive Debugging Tool
BPT
inserting with OPEN,
Debugging, 8-7
restoring instruction, Debugging,
8-8
setting, Debugging, 8-7
bug check, Debugging, 9-4
commands, Debugging, 9-8
debugging
driver, Debugging, 9-2
driver code, Writing I/O Driver,
3-17 to 3-18
XDT
debugging (cont’d.)
privileged task, Debugging, 9-1
entering, Debugging, 8-4
BPT instruction, Debugging, 8-7
BRK command, Debugging, 8-7
from hung system, Debugging,
8-9
virgin system boot, Debugging,
8-6
examining memory location,
Debugging, 9-3
including in system, Debugging, 8-1
loadable, Debugging, 8-2
error code, Debugging, 9-5
certainty code, Debugging, 9-5
ODT features and commands not
included, Writing I/O Driver,
3-17
operators, Debugging, 9-8
SST, Debugging, 8-4
trap entry codes, Debugging, 8-5
XEDRV
address pairs, Ethernet, I/O Drivers,
13-3
asynchronous I/O, I/O Drivers,
13-21
buffer
diagnostic, I/O Drivers, 13-19
maximum size, I/O Drivers,
13-21
minimum size, I/O Drivers,
13-21
protocol address pair, I/O
Drivers, 13-8
read destination address, I/O
Drivers, 13-16
read Ethernet address, I/O
Drivers, 13-14
read protocol type, I/O Drivers,
13-15
set characteristic, I/O Drivers,
13-7
set destination address, I/O
Drivers, 13-12
set multicast address, I/O
Drivers, 13-9
set protocol type, I/O Drivers,
13-12
change mode, I/O Drivers, 13-20
connecting to task, I/O Drivers,
13-22
default mode bit, I/O Drivers,
13-21

Master Index—323
XEDRV
microcode loader (cont'd.)
UML...., I/O Drivers, 13-5
multicast address mode, I/O
Drivers, 13-2
open line, I/O Drivers, 13-6
pad enable bit, transmit, I/O
Drivers, 13-20
physical address mode, I/O
Drivers, 13-2
programming hint, I/O Drivers,
13-20
programming sequence, I/O Drivers,
13-4
protocol, Ethernet, I/O Drivers,
13-3
protocol/address pair
buffer, I/O Drivers, 13-8
protocol address pair
buffer, I/O Drivers, 13-8
QIO$ macro, I/O Drivers, 13-3
general, I/O Drivers, 13-4
QIO$ macro library
EXEMC.MLB, I/O Drivers, 13-4
read destination address
buffer, I/O Drivers, 13-16
read Ethernet address
buffer, I/O Drivers, 13-14
read protocol type
buffer, I/O Drivers, 13-15
receive, Ethernet, I/O Drivers,
13-3
receive message, I/O Drivers,
13-13
set characteristic
buffer, I/O Drivers, 13-7
Ethernet, I/O Drivers, 13-7
set destination address
buffer, I/O Drivers, 13-12
set multicast address
buffer, I/O Drivers, 13-9
set protocol type
buffer, I/O Drivers, 13-12
status return, I/O Drivers, 13-5
IO.XIN function, I/O Drivers,
13-11
IO.XRC function, I/O Drivers,
13-16
IO.XTM function, I/O Drivers,
13-13
task requirement, I/O Drivers,
13-2
transmit, Ethernet, I/O Drivers,
13-3
transmit line message
IO.XTM function, I/O Drivers,
13-11

Master Index—324
XEDRV (cont'd.)
U$$NCT parameter, I/O Drivers, 13-2
U$$NPC parameter, I/O Drivers, 13-2
U$$NRS parameter, I/O Drivers, 13-2
U$$NTS parameter, I/O Drivers, 13-2
use, I/O Drivers, 13-1
/XHR keyword
INSTALL command (MCR), MCR, 3-122
/XH switch, Task Builder, 10-53
XOFF, I/O Drivers, 3-15
send (TDRV), I/O Drivers, 2-16, 2-29, 2-37, 2-42, 2-44
XOFF bit (TDRV), I/O Drivers, 2-70
XON/XOFF protocol, System Management, 9-2
XON bit (TDRV), I/O Drivers, 2-70
.XQIO routine, execute QIO, I/O Operations, 4-26
.XQT directive, Indirect, 2-95
XRATE: subroutine
compute clock rate and preset
K-series, I/O Drivers, 23-30
LADRV, I/O Drivers, 22-25
X register, Debugging, 2-6, 5-3, 5-6
x symbol, Debugging, 2-1
/XT switch, Task Builder, 10-54
$xxDAT label, Writing I/O Driver, 3-9
$xxEND label, Writing I/O Driver, 3-9
$xxINP symbol, Writing I/O Driver, 3-5
$xxINT symbol, Writing I/O Driver, 3-5
$xxOUT symbol, Writing I/O Driver, 3-5
$xxTBL label
on DDT, Writing I/O Driver, 4-10
$xxTBL symbol, Writing I/O Driver, 3-5
Y
/®Y switch
FMT utility, Utilities, 5-9
Z
ZAP utility (cont'd.)
command
carriage return, Utilities, 15-7
general purpose, Utilities, 15-7
summary, Utilities, 15-15
open/close location, Utilities, 15-7
summary, Utilities, 15-11
command line, Utilities, 15-6
element, Utilities, 15-8
debugging privileged task, Debugging, 8-8
error message, Utilities, 15-23
example, Utilities, 15-18
indirect command file, Utilities, 15-6
initiating (invoking), Utilities, 15-5
inserting breakpoint, Debugging, 8-8
location
addressing, Utilities, 15-4
closing, Utilities, 15-13
change, Utilities, 15-13
displaying, Utilities, 15-12
verifying, Utilities, 15-18
opening, Utilities, 15-12
specifying, Utilities, 15-10
modifying system image, Debugging, 8-8
ODT on-line debugger, Utilities, 15-1
operating mode, Utilities, 15-2
register
setting value, Utilities, 15-18
relocation biases, Utilities, 15-4
switch, Utilities, 15-2
task image file, Utilities, 15-3
I- and D-space, Utilities, 15-3
multiuser, Utilities, 15-3
resident library, Utilities, 15-3
terminating, Utilities, 15-5
Z command, Debugging, 2-12
Zero byte, appending to character string, MACRO-11, 6-28
Z error, MACRO-11, 5-4
summary, MACRO-11, D-5
/ZE switch
FLX utility, Utilities, 4-8

Master Index-325