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TO:     TIME-SHARING USERS
FROM:  E.M. KLITMAN
SUBJECT: ABSTRACTS OF CTSS LIBRARY Routines

The subroutines listed comprise the standard
CTSS Library, TSLIB2 BSS, with the exceptions
of RAPODG, FM, FM and TRACE. These three
programs, with their associated entry points
DDT, PATCH, CONPAT, TRA and STRACE, form
the standard debugging library, TSLIB2 BSS.
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COM
ORA
ANA

COMARG
GET arguments from the command buffer. May be called from a MAD or FORTRAN routine.

COMFIL
To gain access to a common file.

COMFL
Selects a common file. May be called by a MAD or FORTRAN routine.

COS
SIN
Cosine and sine functions. Floating point.

(CSH)
Reads data from the console. Called implicitly by FORTRAN "READ" and MAD "READ FORMAT" statements.

˜READ
˜READL
˜LOOK
˜SCRDS

DEFBBC
Converts full word binary integers to BCD with leading zeroes.

DELCBC
Converts left half binary integers to BCD with leading zeroes.

DERBC
Converts right half binary integers to BCD with leading zeroes.

DELETE
ERASE
Deletes and erases files. May be called from MAD and FORTRAN programs.

DETCIS
Simulates a FORTRAN function call to XDETMS.

DFAD
DFSB
DFMP
DCEEXIT
DFDP
SFDP

DIM
Positive difference function.

DELETE
To delete a file from a user's directory. The tracks are immediately freed.

ENDRD
To terminate the reading of a file.

ERASE
To delete a file from the user's directory but not free the tracks.

READK
To read information from the disk. To initialize the disk routine for reading.

DREAD
To read from a BCD disk file according to a format.
DSKDMK  Dump continuous blocks of core onto the disk.  CTSS library
DSKLOD  Load continuous blocks of core from the disk.

WRITE   To write a BCD disk file according to a format.  CTSS library

(LFTM)  (LFTM)  Enter the floating point trap mode.  Leave the floating point trap mode.  CTSS library

EOFXIT  Common exit for end-of-file encountered on disk files.  CTSS library

SETEOF  Allows the user to specify his own end-of-file return.  CTSS library

WRDCNT  Returns the count of words read from the file on which the latest end-of-file occurred.  CTSS library

ERROR   Prints diagnostic and trace of the logical path of program flow.  CTSS library

EXIT    Closes out active disk files.  CTSS library
CLKOUT  Saves machine conditions and goes to DORMNT.  CTSS library
ENDJOB  EXIT  EXITM goes to DEAD.  CTSS library

EXMEM   To expand the memory bound from MAD or FORTRAN programs.  CTSS library

EXP     Exponential function. Floating point.  FMS library

EXP(1)  Computes log. Fixed point.  FMS library

EXP(2)  Computes X**K. Floating point number to fixed point power.  FMS library

EXP(3)  Computes X**Y. Floating arguments.  FMS library

FAPDBG  An on-line debugging routine.  CC-236 and supplements
DDT

FILE     Calls the CORE A disk control subroutines concerned with writing files.  CTSS library
. ASIGN
. WRITE
. APEND
. RELRN

FINT    Converts a MAD integer to a FORTRAN integer.  CTSS library
MINT    Converts a FORTRAN integer to a MAD integer.  CTSS library
FLEXPM  Entries for the console commands.
PATCH  PM, PATCH, STOPAT and TRA.
STOPAT
TRA

FLIP  Interchanges rows and columns in
a MAD two-dimensional array.

(FPT)  Floating point trap dispatcher.

FREE  To get and return blocks of free
storage.
FRER  FRET

FSTAT  Returns the module number
and estimated word count of a
file. May be called from a MAD
or FORTRAN program.

GCLC  Get and set the command location
counter, number of the last command
SCLC  in a chain, and the command lists.
SCLS  May be called from FORTRAN or MAD
programs.

GETCFN  Get command file number to which user
GETCF  is switched.

GETCLC  Obtain command location counter.
GETCLS  Obtain a command list.

GETCOM  Gets a word in the user's present
command list.

GETTIME  Returns the time of day in 60ths
of a second in the logical AG.
Returns the date as "MMDDYY" in
the MG.

GETLOC  To read and set the contents of
SETLOC  an absolute location in core A.

GETMEM  Obtain and set the user's memory
SETMEM  allocation.

GETTH  Gets date and time.

GLOC  Get contents of an absolute location
in core A. May be called from MAD
and FORTRAN programs.

GMEM  To get and set the memory bound from
SMEM  MAD and FORTRAN programs.
GNAM

Get the type of program which called a library routine (MAD, FORTRAN, FAP). If needed, puts file names in correct order.

CTSS library

GTMAM

Finds the first file in a series ...001, ...002, etc. with a given secondary name and deletes the following file in the series.

CTSS library

INDY

Integration of differential equations.

FMS library

DPHV

Truncation. Floating point.

FMS non-library

INT

Input-output Hollerith.

CTSS library

(IOH)

(FIL)

(RTH)

10HSIZ

STQO

IOSET

Compiled into MAD routines during translation of FORTRAN statements involving iterated input-output.

CTSS library

IOPAR

LOAD

DUMP

LOG

MAX0

MAX1

XMAX0

MIN0

MIN1

XMIN0

MOD

MOVEL

MOVEZ

MOVES

MOVIE

A table of all programs in core.

FMS library

CTSS library
**AMIX**
Compares two floating point numbers for more than two differences. Used by MAD routines.

**BCOM**
To alter the first two arguments in the command buffer. May be used by MAD and FORTRAN routines.

**HEXCOM**
To alter the first two arguments in the command buffers. May be used by FAP routines only.

**UCABC**
Binary to printable octal conversion.

**OCDBC**
Address, decrement 5 digits.

**OCCBC**
Right half, left half (6 digits) fields respectively.

**PAKr**
To pack or unpack 8-bit characters right or left justified.

**PCOMT**
To print a comment from a MAD program.

**PRNTP**
Print messages on the console.

**PRNTPA**
Print messages on the console and may be called by MAD and FORTRAN programs.

**PRLIT**
To print a list from a MAD program without using a format statement.

**PRCTD**
To pack or unpack 8-bit characters right or left justified.

**RAHRO**
Random number generator.

**SETU**

**RDATA**
To read, or read and print, a variable amount of input from the console from a MAD program.

**RDFIX**
Read from and print on the console. For FAP programs only.

**REFLX**
Read a line from the console. May be used from MAD and FORTRAN routines.

**RECOUP**
A skeleton subroutine to which (GHI) translate after an I/O error. Calls EXIT. May be replaced by a user to allow for recovery procedures.

**REFMAP**
Recover a file. May be called from a FORTRAN or MAD program.
RESET
Drops from active read or write
status all user's active files.
CTSS library

RENAME
Renames a file.

FSTAT
Obtains the mode, estimated word
count and logical module number of
a file.

FILDR
Obtains a copy of the user's file
directory.

RJUST
Right justifies a BCD word.
CTSS library

(SCH)
(FORTRAN and MAD simulated BCD tape
output routines. Implicitly called
by FORTRAN 'PUNCH' and 'WRITE OUTPUT
TAPE' and MAD 'PUNCH FORMAT' and
'PUNCH ONLINE FORMAT' and 'WRITE
BCD TAPE' statements.
CTSS library

(STM)

PUNCH

PNCHL

TAPWR

SCHAIN
Executes a chain of commands.

SEEK
Activate and close out disk files.
May be called by FORTRAN and MAD
programs.

ASSIGN
APPEND
ENDRD
FILE

SET
MAD list manipulation subprograms.
FMS library

SAVE
RSTOR
SAVRN
RSTRN

SETCLC
Set command location counter.
CTSS library

SETCLS
Set command list. From FAP only.

SETERR
Allows the user to specify his own
error return from library disk
routines.

SETFMT
To simplify FORTRAN calls to the
disk routines.

SETNAM

SETFUL
Set input switch to 12-bit BCD mode.
CTSS library

SETBCD
Set input switch to 5-bit BCD mode.

SETUP
Puts program in floating point trap
mode, ensures that (FPT) has been
loaded, and enters the multiple tag
(3 tag) mode.

SIMCS
Simulates a FORTRAN call to XSIMEQ.

SLEEP
Places a user's program in dormant
status and then restarts it after a
predetermined amount of time.
(SLI)  Short list input. Used by FORTRAN routines.  FMS library
(SLO)  Short list output. Used by FORTRAN routines.  FMS library
SLOC  Set A core locations from MAD and FORTRAN programs. For system programmers only.  CTSS Bulletin 17
SNAP  Common exit for error routines from the disk routines called by library subprograms.  CTSS library
(SP)  BCD output routine to the user's console. Implicitly called by FORMAT and PRINT statements.  CTSS library
(SPH)  (SPHM) PRINT
(SPHM) PRINT
(SPHM) COMNT
(SPHM) SPRNT  FORTRAN PRINT and MAD PRINT and FORMAT and PRINT ONLINE FORMAT statements.  CTSS library
SQRT  SQUARE root function. Floating point.  FMS library
SQR
SRCH  Keeps track of all active files, handles disk buffer assignments and closes out all active files.  CTSS library
BLK
FLK
ENDF
CLOUT
(STB)  FORTRAN binary tape input and output.  CTSS library
(WLR)  (TSB)  (RLR)
STOMAP  Prints a storage map of all subprograms loaded into core by the loader.  CTSS library
SYPAR  Enables the user to obtain certain supervisor parameters.  CTSS library
(TAN)  Tangent and cotangent functions. Floating point.  FMS library
COT
TANH  Hyperbolic tangent function.  FMS library
TIMER  Allows the interval timer clock to be used as an alarm clock or stopwatch.  CTSS library
JOBTM
RSCLOCK
STOPCL
KILLTR
TIMLPT
RSTRTN
TRACE  Tracing and debugging program.  HAC-M-168-2
STRACE
TRANSP
(SUBS Computes linear subscripts of two-dimensional MAD arrays. TRANSP han-
SUBS dies an array in transposed form.
.03310 (SUBS and .SUBS are the entry for
.03311 special subscripting functions.
.03310 and .03311 are the normal function.

(TSH) FORTRAN and MAD BCD tape input
(TSHM) routines.
.TAPRD

TSSFIL Allows the user to read CTSS system
USRFIL files from the disk.
(USRFIL) Allows the user to read his own
files from the disk (after having called TSSFIL).

VREAD Read records from a disk file.
VWRITE Write line-marked records on a file.
FWRITE Write fixed length records on a file.
SETVBF Set the fixed length of a record.
SETVB Save as SETVBF. No format statement
used with these routines. May be
called by FORTRAN and MAD routines.

WRFILX Writes output on the user's console.
DEAD Puts the user in 'dead' status.
DORMNT Puts the user in 'dormant' status.

XDIM Finds the absolute difference between
the two arguments. Fixed point.

XDTRM Called by MAD and MADTRM programs
instead of XDTRM.

XECOM Executes a command.

XFIX Changes floating point numbers to
fixed point numbers.

XLOC Finds the location where a variable
is stored.

XMAX1 Finds the maximum value of a set of
floating point numbers. Result is
fixed point.

XMIN1 Minimum, floating arguments, fixed
result.

XMOD Remaindering. Fixed point.

XSIGN Transfers the sign of the second
argument to the first.
XSIMEQ  Solves the matrix AX=B.  CTSS library
XDETRM  Computes the value of the determinant A.  Both are functions to be called from FORTRAN programs only. See XSIMEQ and XDETRM.

XSMEQ  Called by MAD and MADTRN programs instead of XSIMEQ.

ZEL  Zeroes out leading blanks.

.01300  Computes Y=Z.  Floating point.  Used by MAD routines.

.01301  Computes X=K.  X floating point, K fixed point. Used by MAD routines.

.01311  Computes J=K.  Fixed point. Used by MAD routines.

.03310  Computes linear subscripts for two-dimensional MAD arrays.

.03311