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March 22, 1965

TO: TIME-SHARING USERS
FROM: E.M. KLIMAN
SUBJECT: ABSTRACTS OF CTSS LIBRARY ROUTINES

The subroutines listed comprise the standard CTSS library, TSLIB1 BSS, with the exceptions of FAPDBG, FLEXPB and TRACE. These three programs, with their associated entry points DDT, PATCH, STOPAT, TRA and STRACE, form the standard debugging library, TSLIB2 BSS.

CTSS LIBRARY ABSTRACTS

March 22, 1965

<u>ROUTINE</u>	<u>ABSTRACT</u>	<u>DOCUMENTATION</u>
ACOS ASIN	Arccosine, arcsine functions. Floating point argument.	FMS library
AKNOLG SETBRK SAVBRK GETBRK	Puts user in input acknowledge mode. Lowers interrupt level. Raises interrupt level. Gets ILC at last interrupt.	CTSS library
ATAN ATN	Arctangent function. Floating point.	FMS library
BCDEC	Converts BCD integers into MAD type integers.	CTSS library
BCOCT	Converts BCD octal integers into MAD type integers.	CTSS library
BREAD	To read from a binary disk file from a MAD or FORTRAN routine.	CTSS library
.BSF .BSR .EFT .RWT	MAD tape routines implicitly called by the MAD statements 'REWIND', 'END OF FILE', and 'BACKSPACE'.	CTSS library
(BST) (EFT) (RWT)	Simulated tape routines implicitly called by FORTRAN 'END FILE', 'REWIND' and 'BACKSPACE' statements.	CTSS library CTSS Manual p. 63
BWRITE	Writes a binary file on the disk from a MAD or FORTRAN program.	CTSS library
BZEL	Blanks out leading zeroes.	CTSS library
CHMODE	Changes the mode of a file.	CTSS library
CHNCOM	Executes the next command in a chain.	CTSS library CTSS Note 1 CTSS Bulletins 51,41
CLOCOF CLOCON	'Turns off' the core storage clock and interval timer. 'Turns on' the core storage clock and interval timer.	CTSS library
CLOUT	Dummy routine called by EXIT if no library routines were called to read or write on the disk.	CTSS library
COLT	Utility routine to handle variable length calling sequences.	CTSS library

COM ORA ANA	Execute the FAP instructions 'COM', 'ORA', and 'ANA'.	CTSS library
COMARG	Get arguments from the command buffer. May be called from a MAD or FORTRAN routine.	CTSS library
COMFIL	To gain access to a common file.	CTSS library
COMFL	Selects a common file. May be called by a MAD or FORTRAN routine.	CTSS library
COS SIN	Cosine and sine functions. Floating point.	FMS library
(CSH) ◦READ ◦READL ◦LOOK ◦SCRDS	Reads data from the console. Called implicitly by FORTRAN 'READ' and MAD 'READ FORMAT' statements.	CTSS library
DEFBC DELBC DERBC	Converts full word binary integers to BCD with leading zeroes. Converts left half binary integers to BCD with leading zeroes. Converts right half binary integers to BCD with leading zeroes.	CTSS library
DELETE ERASE	Deletes and erases files. May be called from MAD and FORTRAN programs.	CTSS library
DETCS	Simulates a FORTRAN function call to XDETRM.	CTSS library
DFAD DFSB DFMP DCEXIT DFDP SFDP	Performs double-precision floating-point operations on numbers stored in consecutive storage locations.	CTSS library
DIM	Positive difference function.	FMS non-library
◦DELETE ◦ENDRD ◦ERASE ◦READK ◦SEEK	To delete a file from a user's directory. The tracks are immediately freed. To terminate the reading of a file. To delete a file from the user's directory but not free the tracks. To read information from the disk. To initialize the disk routine for reading.	CTSS library
DREAD	To read from a BCD disk file according to a format.	CTSS library

DSKDMP	Dump continuous blocks of core onto the disk.	CTSS library
DSKLOD	Load continuous blocks of core from the disk.	
DWRITE	To write a BCD disk file according to a format.	CTSS library
(EFTM)	Enter the floating point trap mode.	CTSS library
(LFTM)	Leave the floating point trap mode.	
EOFXIT	Common exit for ends-of-file encountered on disk files.	CTSS library
SETEOF	Allows the user to specify his own end-of-file return.	
WRDCNT	Returns the count of words read from the file on which the latest end-of-file occurred.	
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.	
ENDJOB		
EXITM	EXITM goes to DEAD.	
DUMP		
PDUMP		
EXMEM	To expand the memory bound from MAD or FORTRAN programs.	CTSS library
EXP	Exponential function. Floating point.	FMS library
EXP(1	Computes $I**J$. 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-216 and supplements
DDT		
.FILE	Calls the Core A disk control subroutines concerned with writing files.	CTSS library
.ASIGN		
.WRITE		
.APEND		
.RELRW		
FINT	Converts a MAD integer to a FORTRAN integer.	CTSS library
MINT	Converts a FORTRAN integer to a MAD integer.	

FLEXPM PATCH STOPAT TRA	Entries for the console commands PM, PATCH, STOPAT and TRA.	CTSS Manual pp. 75-76
FLIP	Interchanges rows and columns in a MAD two-dimensional array.	CTSS library
(FPT)	Floating point trap dispatcher.	CTSS library
FREE FRER FRET	To get and return blocks of free storage.	CTSS library
FSTAT	Returns the node, module number and estimated word count of a file. May be called from a MAD or FORTRAN program.	CTSS library
GCLC GCLS SCLC SCLS	Get and set the command location counter, number of the last command in a chain, and the command lists. May be called from FORTRAN or MAD programs.	CTSS library CTSS Bulletin 42 CTSS Note 1 CTSS Bulletin 17
GETCFN GETCF	Get common file number to which user is switched.	CTSS library
GETCLC GETCLS	Obtain command location counter. Obtain a command list.	CTSS library
GETCOM	Gets a word in the user's present command list.	CTSS library
GETIME	Returns the time of day in 60ths of a second in the logical AC. Returns the date as "MMDDYY" in the MQ.	CTSS library
GETLOC SETLOC	To read and set the contents of an absolute location in core A.	CTSS library
GETMEM SETMEM	Obtain and set the user's memory allocation.	CTSS library
GETTM	Gets date and time.	CTSS library
GLOC	Get contents of an absolute location in core A. May be called from MAD and FORTRAN programs.	CTSS library CTSS Bulletin 17
GMEM SMEM	To get and set the memory bound from MAD and FORTRAN programs.	CTSS library

GNAM	Get the type of program which called a library routine (MAD, FORTRAN, FAP). If needed, puts file names in correct order.	CTSS library
GTNAM	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
INDV DPNV	Integration of differential equations.	FMS library
INT	Truncation. Floating point.	FMS non-library
(IOH) (FIL) (RTN) IOHSIZ STQUO	Input-output Hollerith.	CTSS library
IOSET IOPAR IOEND IOSCP IOITR	Compiled into MAD routines during translations of FORTRAN statements involving iterated input-output.	CTSS library
LDUMP	Dummy subprogram called after ERROR in mathematical subroutines.	FMS library
LJUST	Left justifies a BCD word.	CTSS library
.LOAD .DUMP	Read and write continuous blocks of data to and from core and disk.	CTSS library
LOG	Logarithm (base e) function.	FMS library
MAX0	Maximum, fixed point argument, floating point function.	FMS non-library
MAX1 XMAX0	Maximum, floating-floating, fixed-fixed.	FMS non-library
MIN0	Minimum, fixed point argument, floating point function.	FMS non-library
MIN1 XMIN0	Minimum, floating-floating, fixed-fixed.	FMS non-library
MOD	Remaindering. Floating point.	FMS non-library
MOVE1 MOVE2 MOVE3	Transmits lists between programs. Used by other library routines.	CTSS library
(MOVIE)	A table of all programs in core.	CTSS library

.MTX	Computes linear subscripts for more than two dimensions. Used by MAD routines.	FMS library
NCOM	To alter the first two arguments in the command buffer. May be used by MAD and FORTRAN routines.	CTSS library
NEXCOM	To alter the first two arguments in the command buffers. May be used by FAP routines only.	CTSS library
OCABC OCDBC OCRBC OCLBC	Binary to printable octal conversion. Address, decrement (5 digits), right half, left half (6 digits) fields respectively.	CTSS library
PAKR PAKL UNPAKR UNPAKL	To pack or unpack 6-bit characters right or left justified.	CTSS library
.PCOMT	To print a comment from a MAD program.	CTSS library
PRNTP PRNTPA PRNTPC	Print messages on the console. May be called by MAD and FORTRAN programs.	CTSS library
.PRSLT .PRBCD .PROCT	To print a list from a MAD program without using a format statement.	CTSS library
RANNO SETU	Random number generator.	FMS library
.RDATA .RPDTA	To read, or read and print, a variable amount of input from the console from a MAD program.	CTSS library
RDFLX RDFLXA WRFLXA	Read from and print on the console. For FAP programs only.	CTSS library
RDFLXB REFLXC	Read a line from the console. May be used from MAD and FORTRAN routines.	CTSS library
RECOUP	A skeleton subroutine to which (IOH) transfers after an I/O error. Calls EXIT. May be replaced by a user to allow for recovery procedures.	CTSS library
RENAME	Renames a file. May be called from a FORTRAN or MAD program.	CTSS library

.RESEX	Drops from active read or write status all user's active files.	CTSS library
.RENAM	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)	FORTTRAN and MAD simulated BCD tape output routines. Implicitly called by FORTTRAN 'PUNCH' and 'WRITE OUTPUT TAPE' and MAD 'PUNCH FORMAT' and 'PUNCH ONLINE FORMAT' and 'WRITE BCD TAPE' statements.	CTSS library
(STH)		
(STHM)		
.PUNCH		
.PNCHL		
.TAPWR		
SCHAIN	Executes a chain of commands.	CC-238, p.5 CTSS Bulletin 43
SEEK	Activate and close out disk files.	CTSS library
ASSIGN	May be called by FORTTRAN and MAD programs.	
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.	CTSS library
SETFMT	To simplify FORTTRAN calls to the disk routines.	CTSS library
SETNAM		
SETFUL	Set input switch to 12-bit BCD mode.	CTSS library
SETBCD	Set input switch to 6-bit BCD mode.	
.SETUP	Puts program in floating point trap mode, assures that (FPT) has been loaded, and enters the multiple tag (3 tag) mode.	CTSS library
SIMCS	Simulates a FORTTRAN call to XSIMEQ.	CTSS library
SLEEP	Places a user's program in dormant status and then restarts it after a predetermined amount of time.	CTSS library

(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 library CTSS Bulletin 17
SNAP	Common exit for error routines from the disk routines called by library subprograms.	CTSS library
(SPH) (SPHM) PRINT COMNT SPRNT	BCD output routine to the user's console. Implicitly called by FORTRAN 'PRINT' and MAD 'PRINT FORMAT' and 'PRINT ONLINE FORMAT' statements.	CTSS library
SQRT SQR	Square root function. Floating point.	FMS library
SRCH BLK FLK ENDF CLOUT	Keeps track of all active files, handles disk buffer assignments and closes out all active files.	CTSS library
(STB) (WLR) (TSB) (RLR)	FORTRAN binary tape input and output.	CTSS library
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 CTSS Bulletin 9
TAN COT	Tangent and cotangent functions. Floating point.	FMS library
TANH	Hyperbolic tangent function.	FMS library
TIMER JOBTM RSCLCK STOPCL KILLTR TIMLFT RSTRTN	Allows the interval timer clock to be used as an alarm clock or stop watch.	CTSS library CC-193-2
TRACE STRACE	Tracing and debugging program.	MAC-M-168-2

TRANSP (SUBS .SUBS .03310 .03311	Computes linear subscripts of two-dimensional MAD arrays. TRANSP handles an array in transposed form. (SUBS and .SUBS are the entry for special subscripting functions. .03310 and .03311 are the normal function.	CTSS library
(TSH) (TSHM) .TAPRD	FORTRAN and MAD BCD tape input routines.	CTSS library
TSSFIL USRFIL	Allows the user to read CTSS system files from the disk. Allows the user to read his own files from the disk (after having called TSSFIL).	CTSS library
VREAD VWRITE FWRITE SETVBF SETVB	Read records from a disk file. Write line-marked records on a file. Write fixed length records on a file. Set the fixed length of a record. Save as SETVBF. No format statement used with these routines. May be called by FORTRAN and MAD routines.	CTSS library
WRFLX DEAD DORMNT	Writes output on the user's console. Puts the user in 'dead' status. Puts the user in 'dormant' status.	CTSS library
XDIM	Finds the absolute difference between the two arguments. Fixed point.	FMS non-library
XDTRM	Called by MAD and MADTRN programs instead of XDTRM.	CTSS library
XECOM	Executes a command.	CTSS library CC-238, p.3
XFIX	Changes floating point numbers to fixed point numbers.	FMS non-library
XLOC	Finds the location where a variable is stored.	FMS library
XMAX1	Finds the maximum value of a set of floating point numbers. Result is fixed point.	FMS non-library
XMIN1	Minimum, floating arguments, fixed result.	FMS non-library
XMOD	Remaindering. Fixed point.	FMS non-library
XSIGN SIGN	Transfers the sign of the second argument to the first.	FMS non-library

XSIMEQ XDETRM	Solves the matrix $AX=B$. Computes the value of the determinant A . Both are functions to be called from <u>FORTRAN programs only</u> . See XSMEQ and XDTRM.	CTSS library CC-174
XSMEQ	Called by MAD and MADTRN programs instead of XSIMEQ.	CTSS library
ZEL	Zeroes out leading blanks.	CTSS library
.01300	Computes $Y**Z$. Floating point. Used by MAD routines.	FMS library
.01301	Computes $X**K$. X floating point, K fixed point. Used by MAD routines.	FMS library
.01311	Computes $I**J$. Fixed point. Used by MAD routines.	FMS library
.03310 .03311	Computes linear subscripts for two- dimensional MAD arrays.	FMS library