2000C FILE INTERFACE PACKAGE FOR DOS-M

(TDFIP)

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2000C FILE INTERFACE PACKAGE FOR DOS-M

The purpose of this package is to enable user programs in DOS-M to easily access 2000C-type files (which have been introduced into DOS-M through the TSB File Handler program). File access is by record number and item (as is done in 2000C) and does not require calculating and referencing of track/sector addresses. Access is provided only to data files, not program files. The programmer should be familiar with 2000C data files (*2000C: A GUIDE TO TIME-SHARED BASIC*, 02000-90016), with the TSB File Handler (*DOS-M/2000C TSB FILE HANDLER*, 5951-1381), and with DOS-M (*Moving-Head Disc Operating System*, 02116-91779).

The TSB File Interface Package is an assembly language program with multiple entry points, each representing a file-access function. The package operates in a minimum 8K core DOS-M, and should be entered into the system as a file with a :STORE,R,*name* directive. At load-time, a program requiring the file interface package would refer to the file by *name*.

The functions of the package are related to its entry points as follows:

Entry	Function
TDFIL	File setup
TDERR	Error setup
TDTYP	Returns type of next data item
TDPRS	Prints a string
TDPRN	Prints a number
TDRDS	Reads a string
TDRDN	Reads a number
TDRFL	Returns length of file and record
TDFPR	Resets pointer to beginning of any record
TDPST	Posts all records to the files
TDSBL	Sets up read/write scramble mask

BUFFERS

Four 256 word input/output buffers are maintained within the package to accommodate up to eight files specified in the "File" function (TDFIL). The ordinal numbers 1 through 4 correspond to the four I/O buffers. Ordinal numbers 5 through 8 correspond to the same I/O buffers as numbers 1 through 4. For example: Files with ordinal numbers 1 and 5 will use the first I/O buffer, 2 and 6 will use the second, 3 and 7 will use the third and 4 and 8 will use the fourth I/O buffer.

LOGICAL READ/WRITE vs PHYSICAL READ/WRITE

To prevent mandatory disc transfers each time a different data item is referenced, each function maintains enough information in core to utilize, if possible, the data contained within its 256-word buffer. If the data to be accessed is already in core a logical Read/Write occurs. This implies that all Writes will cause the 256-word buffer to be flagged so that a physical Write must occur (transferring the 256-word buffer to disc) before the buffer can be used for data not currently contained in it. Any program using this package must be certain that the buffer has been written (if it has been flagged) before program termination. To accomplish this, a "POSTING" function-call is included in the package.

SCRAMBLE MASK

In order to allow for the scramble feature in the 2000C TSB System, a "Scramble" function-call is included which uses the same algorithm as the 2000C. The three-word mask (6 ASCII characters) is initially set to all zeros. All reads and writes are transformed according to this mask. It is the user's responsibility to set up and maintain the mask when required.

CALLING SEQUENCES

The assembly language calling sequence is given for each entry previously mentioned. The equivalent FORTRAN and/or ALGOL sequences can be determined using the rules in the DOS-M manual.

TSB DOS-M FILE SETUP - TDFIL

Purpose

To set up the ordinal representation of the desired file names.

Format

```
                JSB  TDFIL
                DEF  *+n+1      Return Address
                DEF  ADFN1      Address of File Name 1
Ordinal         DEF  ADFN2      Address of File Name 2
Representation  DEF  ADFN3      Address of File Name 3
of Files         :    :
                 :    :
                DEF  ADFNn      Address of File Name n
                return          Continue Execution
                 :
                 :
ADFN1    ASC    3,xxxxx         These 5-character file names must correspond
ADFN2    ASC    3,xxxxx         in format to those files created in DOS-M by
ADFN3    ASC    3,xxxxx         TSBFH.  An initial check is made to insure
  :       :                     that the specified Names correspond to BASIC
ADFNn    ASC    3,xxxxx         data files.
```

Note 1. Maximum value of *n* is 8

Note 2. Each time this function is called, a new ordinal representation is established.

Note 3. Files with ordinal numbers 1 through 4 each have their own I/O buffers. Numbers 5 through 8 correspond to the same buffers as 1 through 4 respectively.

TSB DOS-M ERROR SETUP - TDERR

Purpose

To setup a one-word buffer in which error numbers are inserted when such conditions occur. If this function is not used, the error number is printed on logical unit 1 (see *DOS-M* Manual) and the program is terminated.

Format

```
        JSB  TDERR
        DEF  *+2        Return Address
        DEF  ERRNO      Error Number Buffer
        return          Continue Execution
         .
         .
         .
ERRNO   BSS  1
```

TSB DOS-M TYPE - TDTYP

Purpose

To provide the user with the type of the next data item (number, string, end-of-file or end-of-record).

Format

```
        JSB   TDTYP
        DEF   *+3
        DEF   TYPFN     Type File Number
        DEF   TYPDI     Type Data Item Buffer
        return          Continue Execution
         :
TYPFN   DEC   a         The value of a represents a file as set up
                        using TDFIL.  If a is positive, a number is
                        returned in TYPDI indicating the next data
                        item:  1 = number; 2 = string; 3 = "end-of-
                        file".  If a is negative, a number is re-
                        turned in TYPDI similar to the above for the
                        file number indicated by -a with the
                        addition of:  4 = "end-of-record".  If a = Ø,
                        an error is issued.
TYPDI   BSS   1         Type of data item returned
                        (See TYPFN above).
```

TSB DOS-M PRINT STRING - TDPRS

Purpose

To allow the user to write (logically) a string of ASCII characters into the next data item in a specified file on disc.

Format

```
        JSB   TDPRS
        DEF   *+5
        DEF   FILNO     File Number
        DEF   RCDNO     Record Number
        DEF   STRLG     String Length
        DEF   BUFFS     Buffer containing ASCII string
        return          Continue Execution
         :
FILNO   DEC   n         n is any number between 1 and the maximum
                        number of files declared with the call to TDFIL.
RCDNO   DEC   m         If m = Ø, a sequential print to the next data
                        item in the file is implied.  If m is between
                        1 and the maximum number of records in the
                        file, the first data item of the indicated
                        record will be written.  See Note 1.
STRLG   DEC   p         The length of the ASCII string (in characters)
                        is indicated by p.  See Note 1.
BUFFS   ASC   r,xxx...  ASCII String to be written
                        r = ENTIER [ (p + 1) / 2 ]
```

Note 1. For sequential access, if there is not enough room in the record for the indicated data, the data is placed in the next record and no error is issued. Data does not overlap records.

Note 2. An "end-of-record" mark will automatically be written into the data item following the one currently being accessed.

TSB DOS-M PRINT NUMBER - TDPRN

Purpose

To allow the user to write (logically) a number (in the BASIC two-word floating point format) into the next data item in a specified file on disc.

Format

```
        JSB  TDPRN
        DEF  *+4
        DEF  FILNO      File Number
        DEF  RCDNO      Record Number
        DEF  BUFFN      Buffer containing 2-word number
        return          Continue Execution
         :
FILNO   DEC  n          Same as TDPRS
RCDNO   DEC  m          Same as TDPRS (See Note 1 also for TDPRS)
BUFFN   BSS  2          2-word number to be printed.  If the 1st word
                        is a 177777(8) (i.e., -1), an "end-of-file"
                        mark will be written into the next data item.
                        If the 1st word is a 177776(8) (i.e., -2), an
                        "end-of-record" mark will be written into the
                        next data item.  If the 1st word does not cor-
                        respond to any of the above conditions, a check
                        is made to determine if it corresponds to the
                        floating point format.  An error is issued if
                        none of the above formats match the data con-
                        tained in BUFFN.
```

TSB DOS-M READ STRING - TDRDS

Purpose

To allow the user to read a string of ASCII characters from the next data item in a specified file on disc.

Format

```
        JSB   TDRDS
        DEF   *+5
        DEF   FILNO     File Number
        DEF   RCDNO     Record Number
        DEF   STRLG     String Length
        DEF   BUFFS     Buffer for ASCII string
        return          Continue Execution
         :
FILNO   DEC   n         Same as TDPRS
RCDNO   DEC   m         Same as TDPRS
STRLG   BSS   1         Length of ASCII string returned here
BUFFS   BSS   q         Similar to TDPRS
```

Note 1. An error will be issued whenever an "end-of-record" or "end-of-file" is encountered for the current data item being accessed in a random access mode. For serial access, only an "end-of-file" will be issued.

TSB DOS-M READ NUMBER - TDRDN

Purpose

To allow the user to read a number (in the BASIC two-word floating point format) from the next data item in a specified file on disc.

Format

```
        JSB  TDRDN
        DEF  *+4
        DEF  FILNO     File Number
        DEF  RCDNO     Record Number
        DEF  BUFFN     Buffer for 2-word number
        return         Continue Execution
         :
FILNO   DEC  n         Same as TDPRS
RCDNO   DEC  m         Same as TDPRS (See Note 1 for TDRDS)
BUFFN   BSS  2         User buffer to contain 2-word number
```

TSB DOS-M READ FILE LENGTH - TDRFL

Purpose

To allow a user program access (read only) to the length of a file and records.

Format

```
        JSB   TDRFL
        DEF   *+3
        DEF   FILNO     File Number
        DEF   BUFFL     Buffer for file length and record length
        return          Continue Execution
         :
FILNO   DEC   n         Same as TDPRS
BUFFL   BSS   2         User buffer.  File length (number of 256-word
                        blocks) returned in BUFFL.  Record length
                        (number of 16-bit words) returned in BUFFL + 1.
```

TSB DOS-M FILE POINTER RESET - TDFPR

Purpose

To allow the user to reset the file pointer (to the next data item) to the beginning of the indicated record number.

Format

```
        JSB  TDFPR
        DEF  *+3
        DEF  FILNO      File Number
        DEF  RCDNO      Record Number
        return          Continue Execution
         :
         :
FILNO   DEC  n          Same as TDPRS
RCDNO   DEC  m          Desired record number to which pointer will
                        be reset.
```

TSB DOS-M POST - TDPST

Purpose

To allow the user to physically write all necessary logical writes previously encountered by the interface package. This is necessary only upon program termination. Posting is automatic when new records are requested with previously flagged records in the buffers.

Format

```
JSB  TDPST
DEF  *+1        Return Address
return          Continue Execution
 :
 :
```

TSB DOS-M SCRAMBLE - TDSBL

Purpose

To set up (or change) the three-word mask (6 ASCII characters) used in all reads and writes. This mask is preset to zero when the package is initially loaded from disc.

Format

```
        TSB  TDSBL
        DEF  *+2
        DEF  SMASK      Scramble Mask
        return          Continue Execution
         :
         :
SMASK   ASC  3,xxxxxx   6 characters used in scramble mask. No
                        check is made to insure that the list
                        represents ASCII characters. When all 3
                        words contain ØØØØØØ8 the mask is ignored.
```

GENERAL ERRORS

Error No.	Error Description
0	No Errors
1	Invalid File Number
2	Invalid Record Number
3	Invalid Data Type Reference
4	End-of-Record
5	End-of-File
6	Invalid No. of Parameters
7	Invalid Buffer Area
8	Invalid Number to be written in TDPRN call
9	Invalid File Name. Not BASIC Data File
10	Invalid String Length

These error numbers are returned in the A-register and ERRNO if the error buffer was set up with TDERR. If the buffer was not set up, a message is printed on logical unit 1 and the calling program terminated.

The format of the message is:

"TSB/DOS-M FILE INTERFACE ERROR NO. *xx*"

where *xx* is one of the above error numbers.