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DECUS NO.	8-198
TITLE	SYSHLP - Monitor System Utility Program
AUTHOR	David M. Kristol
COMPANY	Moore School of Electrical Engineering University of Pennsylvania Philadelphia, Pennsylvania
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SYSHLP - MONITOR SYSTEM UTILITY PROGRAM

DECUS Program Library Write-up DECUS No. 8-198

INTRODUCTION

Because DNHELP (DECUS No. 8-135) and SYSLUK (DECUS No. 8-141) were used together frequently, they have been combined. Besides more convenient alterations between the the two programs, SYSHLP has improved search coding in the SYSLUK portion

The two programs mentioned above follow.

DNHELP, A DIRECTORY ASSISTOR PROGRAM

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DNHELP is a four-page disk utility program that may reside in core with DIRECTORY and DISKLOOK. It is designed to assist programmers in investigating the contents of the DN and SAM blocks on the disk under the DEC Disk Monitor System.

For any one file (at a time), DNHELP outputs the contents of the associated directory entry, giving its absolute disk location, the program's name in octal and alphanumerics, the load point and start address, and the File type/File number word, also in octal and alphanumerics. Following the directory entry, the block numbers assigned to the file number are printed out. Finally, the (octal) total number of blocks typed is printed, and the program asks for the next user request.

Other Features

1. "?" is typed to illegal requests, and the program recycles to "*IN-"

2. Typing "A < CR >" as a request gives the first available directory entry and the numbers of free blocks.

3. Striking a key during type-out halts printing and causes "*IN-" to be typed out.

4. A "RUBOUT" will erase a request.

5. ↑C(CTRL C) returns control to the monitor.

DNHELP starts at 5ØØØ. System monitor head (DEC Disk [Tape] Monitor System) must be in core at 76ØØ. Calls on SYS I/O. A carriage return initiates execution of a request. The program works with both disk and DECtape. The format for address output (Block Address) is that used by DLOOK and SYSLUK. See the example sequence for typical usage.

```
.HELP
>DIRECTORY ASSISTOR
FORMAT   FILE TYPE/NAME
WHERE FILE TYPE   (A,B,F,U,S)
```

Header message, typed at beginning only

```
*IN-S/LOAD
DN ENTRY AT 177.22
5457  LO  Name
4144  AD
7ØØØ      Load point
7ØØØ      Start address
61Ø4  S Ø S 4  =  System Save   Field Ø   System File   Internal File No. 4
```

*IN-S/LOAD ← System Save File; note "/" as separator

Block number

Word 22 of block 177

```
BLOCK NUMBERS
12
13
14
```

Blocks allocated for File No. 4

```
3 BLOCKS USED

*IN-S/XODH
DN.ENTRY AT 177.53

7Ø57  XO
445Ø  DH
64ØØ
7ØØØ
6311  S 1 S 1 1
BLOCK NUMBERS
42
43
44
45
46
```

Next user request

Field 1

```
5 BLOCKS USED

*IN-A  <----------Request for Available DN entry, numbers of free blocks
DN ENTRY AT 2Ø1.41

Ø
Ø
Ø
Ø
Ø  A Ø U Ø

BLOCK NUMBERS
362
363
364
365
37Ø
372

6 BLOCKS USED <-- 6 free blocks

*IN-UT?  <---------- improper format
*IN-U/TEMP
?  <---------- user file "TEMP" not on disk.

*IN-S/EX C
DN ENTRY AT 177.3

457Ø  EX
43    C
7ØØØ
7ØØØ
61Ø1  S Ø S 1

BLOCK NUM <---- type-out terminated by striking Key
*IN-U/TEMP <---- User save file "TEMP"
DN ENTRY AT 2Ø1.41

6445  TE
556Ø  MP
Ø
Ø
6Ø4Ø  U Ø U 4Ø
      |-------->  User save file
```

BLOCK NUMBERS
321

1 BLOCKS USED

*IN- ←
*IN- ↙ RUBOUT typed
. ←↑ C typed

SYSLUK

DECUS Program Library Write-up

DECUS No. 8-141

Abstract

SYSLUK is a four page utility program for examining and modifying blocks on the system I/O device (i.e., DF32 disk or TCØ1 DECtape). Its operation is independent of whichever monitor head is resident, provided either is there. The user has the facility to examine and modify locations and to perform masked searches.

Expressions

Any sequency of octal digits typed is considered an expression whose value is defined by the last four digits. For instance:

Typed	Value
13ØØØ	3ØØØ
75	75
123Ø456	456

Examination

Locations on the system device are addressed by block number (BLOCK) and block address (BLKADR - address within a block). The format for specifying such an address is "BLOCK.BLKADR," where both BLOCK and BLKADR are expressions. If a "." is not typed, BLOCK is assumed to be the last block opened, and the expression typed is taken for BLKADR. To examine a location, the appropriate address expression is entered, followed by a "/". The location's contents are then printed by SYSLUK.

Examples:

Typed	Action
177.3/	open location 3, block 177
20/	open location 2Ø, current block

The program is designed specifically for the DEC Disk (and DECtape) Monitor System and thus accepts a maximum value of 2ØØ for BLKADR. (Block size = 201, addresses Ø → 2ØØ.) Location 2ØØ is the link word of the block.

Maximum block number is set to 27Ø1. While this value is suitable for DECtape, interrogating disk blocks past the appropriate maximum (375 for 1 disk, 773 for 2 disks, etc.) will cause the program to hang in the system I/O routine (SYSIO). The program can be restarted at its starting address with no damage done, however.

Modification

When a location is open, typing an expression followed by a CR stores the expression as the new contents of the location (in a buffer - see "Mode of Operation").

Examine Next

Typing a LF causes the program to act as in "Modification," then open the next location and type its contents.

Search

Typing an address expression followed by "L" sets the lower limit block and block address for searching.

Similarly, typing "U" after an address expression sets the upper limit block and block address.

The search mask may be set by typing an expression followed by "M."

Searches for (non-) matches are requested by typing an expression followed by (<)>. Locations between the lower and upper limits whose contents, when masked, are (not) equal to the inputted expression are printed out.

Searching may be halted at any time by hitting a keyboard key. The current block and block address will be set to the last location checked in the search.

Mode of Operation

When a block is requested that is not in the core buffer, the current block, if still open, is written back on the system device, and the new block is read in. Otherwise the current buffer contents are used. Otherwise the current buffer contents are used. Therefore, modifications are made directly to the buffer, indirectly on the system device.

Closing Blocks

If the user does not wish to write the current block when he is finished examining and/or modifying it, typing "C" will inhibit writing the block, provided no location is open and nothing has been typed. This action will prevent write-lock errors on protected disk or tape. However, since SYSLUK is normally used with all write-protection off, "C" can be used to prevent unwanted changes from being made to the system device.

Return to Monitor

Typing < CTRL > C causes SYSLUK to first write the current block (subject to write-inhibit, above) then transfer control to the resident monitor. SYSLUK also reads one block (after writing, before monitor return), but this need not concern the user.

Errors

Illegal Character: a "?" is typed, followed by CR/LF

Incorrect Syntax: the improper character is echoed, followed by "?" , CR/LF.

System Errors: Read: "RE" is typed, followed by CR/LF.
Write: "WE" is typed, followed by CR/LF. Write errors usually arise from write-locks being on.
"Mysterious Hang": Addressing blocks on nonexistent disks will always cause a hang in SYSIO (with PC > 7642). Restarting the program is a satisfactory solution.

Operation: SYSLUK occupies locations 200-1177, with buffer space using 7377-7577, all in memory field 0. SYSLUK requires the system monitor head to be in core (as it will be if the program is loaded from disk or DECtape).

Start/Restart address is 200.