

11/3/71

SYS MOUNT (II)

**NAME** mount -- mount file system

**SYNOPSIS** sys mount; special; name / mount = 21.; not in assembler

**DESCRIPTION** mount announces to the system that a removable file system has been mounted on special file special; from now on, references to file name will refer to the root file on the newly mounted file system. Special and name are pointers to null-terminated strings containing the appropriate path names.

Name must exist already. If it had useful contents, they are inaccessible while the file system is mounted.

Almost always, name should be a directory so that an entire file system, not just one file, may exist on the removable device.

**FILES**

**SEE ALSO** umount

**DIAGNOSTICS** Error bit (c-bit) set if special is inaccessible or dir does not exist.

**BUGS** At most one removable device can be mounted at a time. The use of this call should be restricted to the super-user.

**OWNER** ken, dmr

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SYS OPEN (II)

**NAME** open -- open for reading or writing

**SYNOPSIS** sys open; name; mode / open = 5.  
(descriptor in r0)

**DESCRIPTION** open opens the file name for reading (if mode is 0) or writing (if mode is non-zero), name is the address of a string of ASCII characters representing a path name, terminated by a null character.

The file descriptor should be saved for subsequent calls to read (or write) and close.

In both the read and write case the file pointer is set to the beginning of the file.

If the last link to an open file is removed, the file is not destroyed until it is closed.

**FILES**

**SEE ALSO** creat, read, write, close

**DIAGNOSTICS** The error bit (c-bit) is set if the file does not exist, if one of the necessary directories does not exist or is unreadable, or if the file is not readable.

**B UGS**

**OWNER** ken, dmr

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SYS QUIT (II)

**NAME** quit -- turn off quit signal

**SYNOPSIS** sys quit; flag / quit = 26.

**DESCRIPTION** When flag is 0, this call disables quit signals from the typewriter (ASCII FS). When flag is 1, quits are re-enabled, and cause execution to cease and a core image to be produced. When flag is an address in the program, a quit causes control to be sent to that address.

Quits should be turned off only with due consideration.

**FILES**

**SEE ALSO** sys intr turns off interrupts

**DIAGNOSTICS**

**BUGS**

**OWNER** ken, dmr

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SYS READ (II)

NAME read -- read from file

SYNOPSIS (file descriptor in r0)  
sys read; buffer; nchars / read = 3.  
(nread in r0)

DESCRIPTION A file descriptor is a word returned from a successful open call.  
  
Buffer is the location of nchars contiguous bytes into which the input will be placed. It is not guaranteed that all nchars bytes will be read, however; for example if the file refers to a typewriter at most one line will be returned. In any event the number of characters read is returned in r0.  
  
If r0 returns with value 0, then end-of-file has been reached.

FILES

SEE ALSO open

DIAGNOSTICS As , r0 is 0 on return when the end of the file has been reached. If the read was otherwise unsuccessful the error bit (c-bit) is set. Many conditions, all rare, can generate an error: physical I/O errors, bad buffer address, preposterous nchars, file descriptor not that of an input file.

BUGS

OWNER ken, dmr

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SYS RELE (II)

**NAME** rele -- release processor

**SYNOPSIS** sys rele / rele = 0; not in assembler

**DESCRIPTION** This call causes the process to be swapped out immediately if another process wants to run. Its main reason for being is internal to the system, namely to implement timer-runout swaps. However, it can be used beneficially by programs which wish to loop for some reason without consuming more processor time than necessary.

**FILES**

**SEE ALSO**

**DIAGNOSTICS**

**BUGS**

**OWNER** ken, dmr

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SYS SEEK (II)

**NAME** seek -- move read/write pointer

**SYNOPSIS** (file descriptor in r0)  
sys seek; offset; ptrname / seek = 19.

**DESCRIPTION** The file descriptor refers to a file open for reading or writing. The read (or write) pointer for the file is set as follows:

if ptrname is 0, the pointer is set to offset.

if ptrname is 1, the pointer is set to its current location plus offset.

if ptrname is 2, the pointer is set to the size of the file plus offset.

**FILES**

**SEE ALSO** tell

**DIAGNOSTICS** The error bit (c-bit) is set for an undefined file descriptor.

**BUGS** A file can conceptually be as large as 2\*\*20 bytes. Clearly only 2\*\*16 bytes can be addressed by seek. The problem is most acute on the tape files and RK and RF. Something is going to be done about this.

**OWNER** ken, dmr

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SYS SETUID (II)

**NAME** setuid -- set process ID

**SYNOPSIS** (process ID in r0)  
sys setuid / setuid = 23.

**DESCRIPTION** The user ID of the current process is set to the argument in r0. Both the effective and the real user ID are set. This call is only permitted to the super-user.

**FILES**

**SEE ALSO** getuid

**DIAGNOSTICS** Error bit (c-bit) is set if the current user ID is not that of the super-user.

**BUGS**

**OWNER** ken, dmr

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SYS SMDATE (II)

NAME                   smdate -- set modified date on file

SYNOPSIS               (time to AC-MQ)  
                      sys smdate; file / smdate = 30.; not in assembler

DESCRIPTION           File is the address of a null-terminated string giving the name of a  
                      file. The modified time of the file is set to the time given in the  
                      AC-MQ registers.

                      This call is allowed only to the super-user.

FILES

SEE ALSO

DIAGNOSTICS           Error bit is set if the user is not the super- user or if the file  
                      cannot be found.

BUGS

OWNER                 ken, dmr



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SYS STAT (II)

**NAME** stat -- get file status

**SYNOPSIS** sys stat; name; buf / stat = 18.

**DESCRIPTION** name points to a null-terminated string naming a file; buf is the address of a 34(10) byte buffer into which information is placed concerning the file. It is unnecessary to have any permissions at all with respect to the file, but all directories leading to the file must be readable.

After stat, buf has the following format:

|                  |   |
|------------------|---|
| buf, +1          | i-number                                |
| +2, +3           | flags (see below)                       |
| +4               | number of links                         |
| +5               | user ID of owner size in bytes          |
| +6,+7            | size in bytes                           |
| +8,+9            | first indirect block or contents block  |
| ...              |   |
| +22,+23          | eighth indirect block or contents block |
| +24,+25,+26,+27  | creation time                           |
| +28,+29, +30,+31 | modification time                       |
| +32,+33          | unused                                  |

The flags are as follows:

|        |                                    |
|--------|------------------------------------|
| 100000 | used (always on)                   |
| 040000 | directory                          |
| 020000 | file has been modified (always on) |
| 010000 | large file                         |
| 000040 | set user ID                        |
| 000020 | executable                         |
| 000010 | read, owner                        |
| 000004 | write, owner                       |
| 000002 | read, non-owner                    |
| 000001 | write, non-owner                   |

**FILES**

**SEE ALSO** fstat

**DIAGNOSTICS** Error bit (c-bit) is set if the file cannot be found.

**BUGS** The format is going to change someday.

**OWNER** ken, dmr

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SYS STIME (II)

NAME stime -- set time

SYNOPSIS (time in AC-MQ)  
sys stime / stime = 25.; not in assembler

DESCRIPTION stime sets the system's idea of the time and date. Only the super-user may use this call.

FILES

SEE ALSO sys time

DIAGNOSTICS Error bit (c-bit) set if user is not the super-user.

BUGS

OWNER ken, dmr

**NAME** stty -- set mode of typewriter

**SYNOPSIS** (file descriptor in r0)  
 sys stty; arg / stty = 31.; not in assembler  
 arg: dcrsr; dcpsr; mode

**DESCRIPTION** stty sets mode bits for a typewriter whose file descriptor is passed in r0. First, the system delays until the typewriter is quiescent. Then, the argument dcrsr is placed into the typewriter's reader control and status register, and dcpsr is placed in the printer control and status register. The DC-11 manual must be consulted for the format of these words. For the purpose of this call, the most important role of these arguments is to adjust to the speed of the typewriter.

The mode arguments contains several bits which determine the system's treatment of the typewriter:

- 200 even (M37 tty) parity allowed
- 100 odd (non-M37 tty) allowed
- 040 raw mode: wake up on all characters
- 020 map CR into LF; echo LF or CR as CR-LF
- 010 don't echo (half duplex)
- 004 map upper case to lower case on input (M33 TTY)

Characters with the wrong parity, as determined by bits 200 and 100, are ignored.

In raw mode, every character is passed back immediately to the program. No erase or kill processing is done; the end-of-file character (EOT), the interrupt character (DELETE) and the quit character (FS) are not treated specially.

Mode 020 causes input carriage returns to be turned into new-lines; input of either CR or LF causes CR-LF both to be echoed (used for GE TermiNet 300's).

**FILES**

**SEE ALSO** gtty

**DIAGNOSTICS** The error bit (c-bit) is set if the file descriptor does not refer to a typewriter.

**BUGS** This call should be used with care. It is all too easy to turn off your typewriter.

**OWNER** ken, dmr

11/3/71

SYS TELL (II)

NAME tell -- get file pointer

SYNOPSIS (file descriptor in r0)  
sys tell; offset; ptrname / tell = 20.  
(value returned in r0)

DESCRIPTION The file descriptor refers to an open file. The value returned in r0 is one of:

if ptrname is 0, the value returned is offset;

if ptrname is 1, the value is the current pointer plus offset

if ptrname is 2, the value returned is the number of bytes in the file plus offset.

FILES

SEE ALSO seek

DIAGNOSTICS The error bit (c-bit) is set if the file descriptor is unknown.

BUGS Tell doesn't work. Complain if you need it.

OWNER ken, dmr

11/3/71

SYS TIME (II)

NAME           time -- get time of year  
SYNOPSIS       sys       time       / time = 13.  
              (time AC-MQ)

DESCRIPTION    time returns the time since 00:00:00, Jan. 1, 1971, measured in  
                  sixtieths of a second. The high order word is in the AC register and  
                  the low order is in the MQ.

FILES

SEE ALSO

DIAGNOSTICS

BUGS           The chronological-minded user will note that  $2^{32}$  sixtieths of a  
                  second is only about 2.5 years.

OWNER          ken, dmr

11/3/71

SYS UMount (II)

NAME                   umount -- dismount file system

SYNOPSIS               sys umount; special / umount = 22.; not in assembler

DESCRIPTION           umount announces to the system that special file special is no longer to contain a removable file system. The file associated with the special file reverts to its ordinary interpretation (see mount).

                      The user must take care that all activity on the file system has ceased.

FILES

SEE ALSO               mount

DIAGNOSTICS           Error bit (c-bit) set if no file system was mounted on the special file.

BUGS                   Use of this call should be restricted to the super-user.

OWNER                  ken, dmr

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SYS UNLINK (II)

**NAME** unlink -- remove directory entry

**SYNOPSIS** sys unlink; name / unlink = 10.

**DESCRIPTION** Name points to a null-terminated string. Unlink removes the entry for the file pointed to by name from its directory. If this entry was the last link to the file, the contents of the file are freed and the file is destroyed. If, however, the file was open in any process, the actual destruction is delayed until it is closed, even though the directory entry has disappeared.

**FILES**

**SEE ALSO** link

**DIAGNOSTICS** The error bit (c-bit) is set to indicate that the file does not exist or that its directory cannot be written. Write permission is not required on the file itself. It is also illegal to unlink a directory (except for the super-user).

**BUGS** Probably write permission should be required to remove the last link to a file, but this gets in other problems (namely, one can donate an undeletable file to someone else).

If the system crashes while a file is waiting to be deleted because it is open, the space is lost.

**OWNER** ken, dmr

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SYS WAIT (II)

NAME wait -- wait for process to die

SYNOPSIS sys wait / wait = 7.  
(process ID in r0)

DESCRIPTION wait causes its caller to delay until one of its child processes terminates. If any child has already died, return is immediate; if there are no children, return is immediate with the error bit set. In the case of several children several waits are needed to learn of all the deaths.

FILES

SEE ALSO fork

DIAGNOSTICS error bit (c-bit) on if no children not previously waited for.

BUGS A child which dies but is never waited for is not really gone in that it still consumes disk swap and system table space. This can make it impossible to create new processes. The bug can be noticed when several & separators are given to the shell not followed by an command without an ampersand. Ordinarily things clean themselves up when an ordinary command is typed, but it is possible to get into a situation in which no commands are accepted, so no waits are done; the system is then hung.

The fix, probably, is to have a new kind of fork which creates a process for which no wait is necessary (or possible); also to limit the number of active or inactive descendants allowed to a process.

OWNER ken, dmr



11/3/71

SYS WRITE (II)

**NAME** write — write, on file

**SYNOPSIS** (file descriptor in r0)  
sys write; buffer; nchars / write = 4.  
(number written in r0)

**DESCRIPTION** A file descriptor is a word returned from a successful open or creat call.

buffer is the address of nchars contiguous bytes which are written on the output file. The number of characters actually written is returned in r0. It should be regarded as an error if this is not the same as requested.

For disk and tape files, writes which are multiples of 512 characters long and begin on a 512-byte boundary are more efficient than any others.

**FILES**

**SEE ALSO** sys creat, sys open

**DIAGNOSTICS** The error bit (c-bit) is set on an error: bad descriptor, buffer address, or count. physical I/o errors;

**BUGS**

**OWNER** ken, dmr