

DOS Interrupts

AH = 0Dh - DISK RESET

Notes: This function writes all modified disk buffers to disk, but does not update the directory information

SeeAlso: AX=5D01h

AH = 0Eh - SELECT DEFAULT DRIVE

Entry: DL = new default drive (0=A:, 1=B:, etc)

Return: AL = number of potentially valid drive letters

Notes: the return value is the highest drive present

SeeAlso: AH=19h,AH=3Bh,AH=DBh

AH = 19h - GET CURRENT DEFAULT DRIVE

Return: AL = drive (0=A:, 1=B:, etc)

SeeAlso: AH=0Eh,AH=47h,AH=BBh

AH = 25h - SET INTERRUPT VECTOR

Entry:

- AL = interrupt number
- DS:DX -> new interrupt handler

Notes: this function is preferred over direct modification of the interrupt vector table

SeeAlso: AX=2501h,AH=35h

AH = 2Ah - GET SYSTEM DATE

Return: CX = year (1980-2099) DH = month DL = day AL = day of week (00h=Sunday)

SeeAlso: AH=2Bh"DOS",AH=2Ch,AH=E7h

AH = 2Bh - SET SYSTEM DATE

Entry: CX = year (1980-2099) DH = month DL = day

Return:

- AL = 00 successful
- FFh invalid date, system date unchanged

Note: DOS 3.3+ also sets CMOS clock

SeeAlso: AH=2Ah,AH=2Dh

AH = 2Ch - GET SYSTEM TIME

Return: CH = hour CL = minute DH = second DL = 1/100 seconds

Note: on most systems, the resolution of the system clock is about 5/100sec, so returned times generally do not increment by 1 on some systems, DL may always return 00h

SeeAlso: AH=2Ah,AH=2Dh,AH=E7h

AH = 2Dh - SET SYSTEM TIME

Entry: CH = hour CL = minute DH = second DL = 1/100 seconds

Return:

- AL = 00h successful
- FFh if invalid time, system time unchanged

Note: DOS 3.3+ also sets CMOS clock

SeeAlso: AH=2Bh"DOS",AH=2Ch

AH = 2Eh - SET VERIFY FLAG

Entry: AL = new state of verify flag (00 off, 01h on)

Notes:

- default state at system boot is OFF
- when ON, all disk writes are verified provided the device driver supports read-after-write verification

SeeAlso: AH=54h

AH=30h - GET DOS VERSION

Entry: AL = what to return in BH (00h OEM number, 01h version flag)

Return:

- AL = major version number (00h if DOS 1.x)
- AH = minor version number
- BL:CH = 24-bit user serial number (most versions do not use this) if DOS <5 or AL=00h
- BH = MS-DOS OEM number if DOS 5+ and AL=01h
- BH = version flag bit 3: DOS is in ROM other: reserved (0)

Notes:

- DOS 4.01 and 4.02 identify themselves as version 4.00
- MS-DOS 6.21 reports its version as 6.20; version 6.22 returns the correct value
- Windows95 returns version 7.00 (the underlying MS-DOS)

SeeAlso: AX=3000h/BX=3000h,AX=3306h,AX=4452h

AH=35h - GET INTERRUPT VECTOR

Entry: AL = interrupt number

Return: ES:BX -> current interrupt handler

SeeAlso: AH=25h,AX=2503h

AH = 36h - GET FREE DISK SPACE

Entry: DL = drive number (0=default, 1=A:, etc)

Return:

- AX = FFFFh if invalid drive
- AX = sectors per cluster BX = number of free clusters CX = bytes per sector
DX = total clusters on drive

Notes:

- free space on drive in bytes is AX * BX * CX
- total space on drive in bytes is AX * CX * DX
- "lost clusters" are considered to be in use
- this function does not return proper results on CD-ROMs; use AX=4402h"CD-ROM" instead

SeeAlso: AH=1Bh,AH=1Ch,AX=4402h"CD-ROM"

AH = 39h - "MKDIR" - CREATE SUBDIRECTORY

Entry: DS:DX -> ASCIZ pathname

Return:

- CF clear if successful AX destroyed
- CF set on error AX = error code (03h,05h)

Notes:

- all directories in the given path except the last must exist
- fails if the parent directory is the root and is full
- DOS 2.x-3.3 allow the creation of a directory sufficiently deep that it is not possible to make that directory the current directory because the path would exceed 64 characters

SeeAlso: AH=3Ah,AH=3Bh,AH=6Dh

AH = 3Ah - "RMDIR" - REMOVE SUBDIRECTORY

Entry: DS:DX -> ASCIZ pathname of directory to be removed

Return:

- CF clear if successful, AX destroyed

- CF set on error AX = error code (03h,05h,06h,10h)

Notes: directory must be empty (contain only '.' and '..' entries)

SeeAlso: AH=39h,AH=3Bh

AH = 3Bh - "CHDIR" - SET CURRENT DIRECTORY

Entry: DS:DX -> ASCIZ pathname to become current directory (max 64 bytes)

Return:

- CF clear if successful, AX destroyed
- CF set on error AX = error code (03h)

Notes: if new directory name includes a drive letter, the default drive is not changed, only the current directory on that drive

SeeAlso: AH=47h,AH=71h,INT 2F/AX=1105h

AH = 3Ch - "CREAT" - CREATE OR TRUNCATE FILE

Entry:

- CX = [file attributes](#)
- DS:DX -> ASCIZ filename

Return:

- CF clear if successful, AX = file handle
- CF set on error AX = error code (03h,04h,05h)

Notes: if a file with the given name exists, it is truncated to zero length

SeeAlso: AH=16h,AH=3Dh,AH=5Ah,AH=5Bh

AH = 3Dh - "OPEN" - OPEN EXISTING FILE

Entry:

- AL = access and sharing modes
- DS:DX -> ASCIZ filename

Return:

- CF clear if successful, AX = file handle
- CF set on error AX = error code (01h,02h,03h,04h,05h,0Ch,56h)

Notes:

- file pointer is set to start of file
- file handles which are inherited from a parent also inherit sharing and access restrictions
- files may be opened even if given the hidden or system attributes

SeeAlso: AH=0Fh,AH=3Ch,AX=4301h,AX=5D00h

AH = 3Eh - "CLOSE" - CLOSE FILE

Entry: BX = file handle

Return:

- CF clear if successful, AX destroyed
- CF set on error, AX = error code (06h)

Note: if the file was written to, any pending disk writes are performed, the time and date stamps are set to the current time, and the directory entry is updated

SeeAlso: AH=10h,AH=3Ch,AH=3Dh

AH = 3Fh - "READ" - READ FROM FILE OR DEVICE

Entry:

- BX = file handle
- CX = number of bytes to read
- DS:DX -> buffer for data

Return:

- CF clear if successful - AX = number of bytes actually read (0 if at EOF before call)
- CF set on error AX = error code (05h,06h)

Notes:

- data is read beginning at current file position, and the file position is updated after a successful read
- the returned AX may be smaller than the request in CX if a partial read occurred
- if reading from CON, read stops at first CR

SeeAlso: AH=27h,AH=40h,AH=93h

AH=40h - "WRITE" - WRITE TO FILE OR DEVICE

Entry:

- BX = file handle
- CX = number of bytes to write
- DS:DX -> data to write

Return:

- CF clear if successful -AX = number of bytes actually written
- CF set on error - AX = error code (05h,06h)

Notes:

- if CX is zero, no data is written, and the file is truncated or extended to the current position
- data is written beginning at the current file position, and the file position is updated after a successful write
- the usual cause for AX < CX on return is a full disk

SeeAlso: AH=28h,AH=3Fh

AH = 41H - "UNLINK" - DELETE FILE

Entry:

- DS:DX -> ASCIZ filename (no wildcards, but see notes)
- CL = attribute mask for deletion (server call only, see notes)

Return:

- CF clear if successful, AX destroyed (DOS 3.3) AL seems to be drive of deleted file
- CF set on error AX = error code (02h,03h,05h)

Notes:

- (DOS 3.1+) wildcards are allowed if invoked via AX=5D00h, in which case the filespec must be canonical (as returned by AH=60h), and only files matching the attribute mask in CL are deleted
- DOS does not erase the file's data; it merely becomes inaccessible because the FAT chain for the file is cleared
- deleting a file which is currently open may lead to filesystem corruption.

SeeAlso: AH=13h,AX=4301h,AX=4380h,AX=5D00h,AH=60h,AH=71h

AH=42h - "LSEEK" - SET CURRENT FILE POSITION

Entry:

- AL = origin of move 00h start of file 01h current file position 02h end of file
- BX = file handle
- CX:DX = offset from origin of new file position

Return:

- CF clear if successful, DX:AX = new file position in bytes from start of file
- CF set on error, AX = error code (01h,06h)

Notes:

- for origins 01h and 02h, the pointer may be positioned before the start of the file; no error is returned in that case, but subsequent attempts at I/O will produce errors
- if the new position is beyond the current end of file, the file will be extended by the next write (see AH=40h)

SeeAlso: AH=24h

AH=43 - GET FILE ATTRIBUTES

Entry:

- AL = 00h
- DS:DX -> ASCIZ filename

Return:

- CF clear if successful CX = [file attributes](#)
- CF set on error, AX = error code (01h,02h,03h,05h)

BUG: Windows for Workgroups returns error code 05h (access denied) instead of error code 02h (file not found) when attempting to get the attributes of a nonexistent file.

SeeAlso: AX=4301h,AX=4310h,AX=7143h,AH=B6h

AH=43 - "CHMOD" - SET FILE ATTRIBUTES

Entry:

- AL = 01h
- CX = new [file attributes](#)
- DS:DX -> ASCIZ filename

Return:

- CF clear if successful, AX destroyed
- CF set on error, AX = error code (01h,02h,03h,05h)

Notes:

- will not change volume label or directory attribute bits, but will change the other attribute bits of a directory
- MS-DOS 4.01 reportedly closes the file if it is currently open

SeeAlso: AX=4300h,AX=4311h,AX=7143h,INT 2F/AX=110Eh

Bitfields for file attributes:

Bits	7	6	5	4	3	2	1	0
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Description shareable - archive directory vol. label system hidden read-only

AH = 47h - "CWD" - GET CURRENT DIRECTORY

Entry:

- DL = drive number (00h = default, 01h = A:, etc)
- DS:SI -> 64-byte buffer for ASCII pathname

Return:

- CF clear if successful
- CF set on error, AX = error code (0Fh)

Notes:

- the returned path does not include a drive or the initial backslash
- many Microsoft products for Windows rely on AX being 0100h on success

SeeAlso: AH=19h,AH=3Bh,AH=71h

AH = 4Ch - "EXIT" - TERMINATE WITH RETURN CODE

Entry: AL = return code

Return: never returns

Notes: unless the process is its own parent, all open files are closed and all memory belonging to the process is freed

SeeAlso: AH=00h,AH=26h,AH=4Bh,AH=4Dh

AH = 4Dh - GET RETURN CODE (ERRORLEVEL)

Return:

- AH = termination type (00=normal, 01h control-C abort, 02h=critical error abort, 03h terminate and stay resident)
- AL = return code

Notes:

- the word in which DOS stores the return code is cleared after being read by this function, so the return code can only be retrieved once
- COMMAND.COM stores the return code of the last external command it executed as ERRORLEVEL

SeeAlso: AH=4Bh,AH=4Ch,AH=8Ah

AH = 54h - GET VERIFY FLAG

Return: AL = verify flag (00h=off, 01h=on, i.e. all disk writes verified after writing)

SeeAlso: AH=2Eh

AH = 56h - "RENAME" - RENAME FILE

Entry:

- DS:DX -> ASCIZ filename of existing file (no wildcards, but see below)
- ES:DI -> ASCIZ new filename (no wildcards)
- CL = attribute mask (server call only, see below)

Return:

- CF clear if successful
- CF set on error, AX= error code (02h,03h,05h,11h)

Notes:

- allows move between directories on same logical volume
- this function does not set the archive attribute
- open files should not be renamed
- (DOS 3.0+) allows renaming of directories

AH = 57h - GET FILE'S LAST-WRITTEN DATE AND TIME

Entry:

- AL = 00h (Get attribute)
- BX = file handle

Return:

- CF clear if successful, CX = file's time DX = file's date
- CF set on error, AX = error code (01h,06h)

SeeAlso: AX=5701h

Bitfields for file time:

Bits	15-11	10-5	4-0
Description	hours	minutes	seconds

Bitfields for file date:

Bits	15-9	8-5	4-0
Description	year (1980-)	month	day

AH = 57h - SET FILE'S LAST-WRITTEN DATE AND TIME

Entry:

- AL = 01h (Set attributes)
- BX = file handle
- CX = [new time](#)
- DX = [new date](#)

Return:

- CF clear if successful
- CF set on error AX = error code (01h,06h)

SeeAlso: AX=5700h
