

DOS and BIOS Interrupts

- Useful subroutines within BIOS and DOS that are available through the INT (interrupt) instruction.
- The INT instruction is like a FAR call. It saves CS:IP and flags on the stack and executes the subroutine with it
- It has the format: INT xx ; xx can be any value from 00 to FF (256 interrupts)
- BIOS interrupts are burned into the BIOS ROM of the 80x86-based systems

INT 10H – Video Screen

- The option is chosen by putting a specific value in register AH
- The video screen in text mode is divided into 80 columns and 25 rows
- A row and column number are associated with each location on the screen with the top left corner as 00,00 and the bottom right corner as 24,79. The center of the screen is at 12,39 or (0C,27 in hex)
- Specific registers have to be set to specific values before invoking INT 10H

Function 06 – clear the screen

AH = 06 ; function number
AL = 00 ; page number
BH = 07 ; normal attribute
CH = 00 ; row value of start point
CL = 00 ; column value of start point
DH = 24 ; row value of ending point
DL = 79 ; column value of ending point

Function 02 – setting the cursor to a specific location

AH = 06 ; function number
DH = row ; cursor
DL = column ; position

Function 03 – get the current cursor position

AH = 03 ; function number
BH = 00 ; currently viewed page
The position is returned in DH = row and DL = column

Function 0E – output a character to the screen

AH = 0E ; function number
AL = Character to be displayed
BH = 00 ; currently viewed page
BL = 00 ; default foreground color

DOS INT 21H

Useful DOS interrupt to input information from the keyboard and display it on the screen

Function 09 – outputting a string of data to the monitor

AH = 09 ; function number

DX = offset address of the ASCII data to be displayed, data segment is assumed

The ASCII string must end with the dollar sign \$

Function 02 – outputting a single character to the monitor

AH = 02 ; function number

DL = ASCII code of the character to be displayed

Function 01 – inputting a single character, with an echo

AH = 01 ; function number

After the interrupt AL = ASCII code of the input and is echoed to the monitor

Function 0A – inputting a string of data from the keyboard

AH = 0A ; function number

DX = offset address at which the string of data is stored (buffer area), data segment is assumed and the string must end with <RETURN>

After execution:

DS:DX = buffer in bytes (n characters + 2)

DS:DX+1 = number of entered characters excluding the return key

DS:DX+2 = first character input

. . .

DS:DX+n = last character input

To set a buffer, use the following in the data segment:

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Buffer DB 10, ?, 10 DUP(FF)
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Function 07 – inputting a single character from the keyboard without an echo

AH = 07 ; function number

Waits for a single character to be entered and provides it in AL

INT16 – Keyboard Programming

Function 01 – check for a key press without waiting for the user

AH = 01

Upon execution ZF = 0 if there is a key pressed

Function 00 – keyboard read

AH = 00

Upon execution AL = ASCII character of the pressed key

Note this function must follow function 01