# 10 BIOS and DOS Programming

This Chapter is a just-to-know chapter.

**BIOS** (Basic Input and Output System): BIOS is a layer between OS and hardware.

Both **BIOS** and **DOS** are collections of subroutines to help the programmer to do the task more efficiently. So we can call these subroutines by explicitly embedding BIOS and DOS interrupt instructions in your program.

- BIOS interrupts: `INT 10H`; `INT 10H` subroutines are *burned into the ROM* BIOS (in 80x86-based IBM PCs), and by setting `AH` with different values, you can "call" those functions.

  - `AH = 06H`: Scroll window up;

    ```
    Additional Call Registers
    AL = number of lines to scroll
    BH = display attribute
    CH = y coordinate of top left
    CL = x coordinate of top left
    DH = y coordinate of lower right
    DL = x coordinate of lower right
    ```

    **Note**: If `AL = 0`, the entire window is blank.

  - `AH = 07H`: Scroll window down;

    ```
    Additional Call Registers
    AL = number of lines to scroll
    BH = display attribute
    CH = y coordinate of top left
    CL = x coordinate of top left
    DH = y coordinate of lower right
    DL = x coordinate of lower right
    ```

    **Note**: If `AL = 0`, the entire window is blank.

  - `AH = 02H`: Set cursor position;

    ```
    Additional Call Registers
    BH = page number
    DH = row
    DL = column
    ```

  - `AH = 00H`: Set video mode;
    - In text mode, the screen is viewed as a matrix of rows and columns of characters
    - In graphics mode, the screen is viewed as a matrix of horizontal and vertical pixels
  - `AH = 0CH`: Draw pixel on the screen.

    ```
    Additional Call Registers
    BH = page number
    DH = row
    DL = column
    ```

- DOS interrupts: `INT 21H`.

  - `AH = 09H`: Can be used to send a set of ASCII data to the monitor, `DX` register is set to the offset address of the ASCII string to be displayed (`DS` is assumed to be the data segment). *A dollar sign `$` is used to tell the DOS the end of the string.*
  - `AH = 4CH`, `AL = 00H`: Exit to DOS.