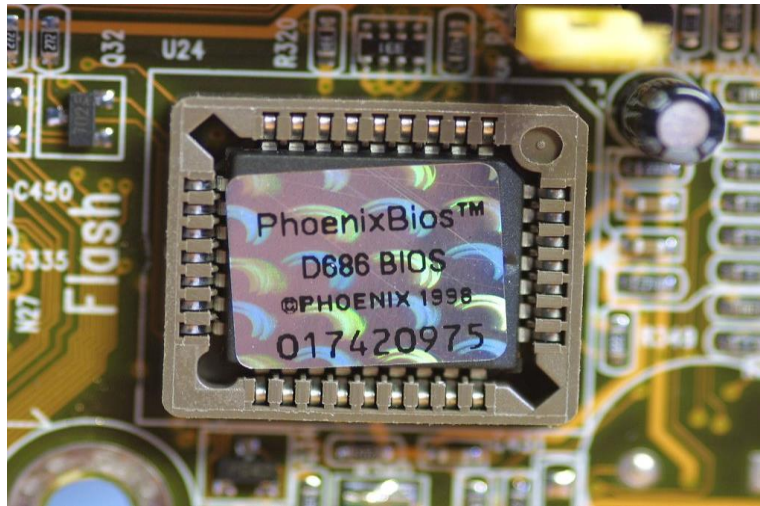


# What Is BIOS (Basic Input/Output System) and How To Access and Use?

Basic Input and Output System simply know, as BIOS is the first thing that is loaded by the computer. BIOS is design to initialize a computer properly and load the real full features operation system like Windows, Linux, etc. BIOS is a low-level software where it provides very little but crucial features for its users.



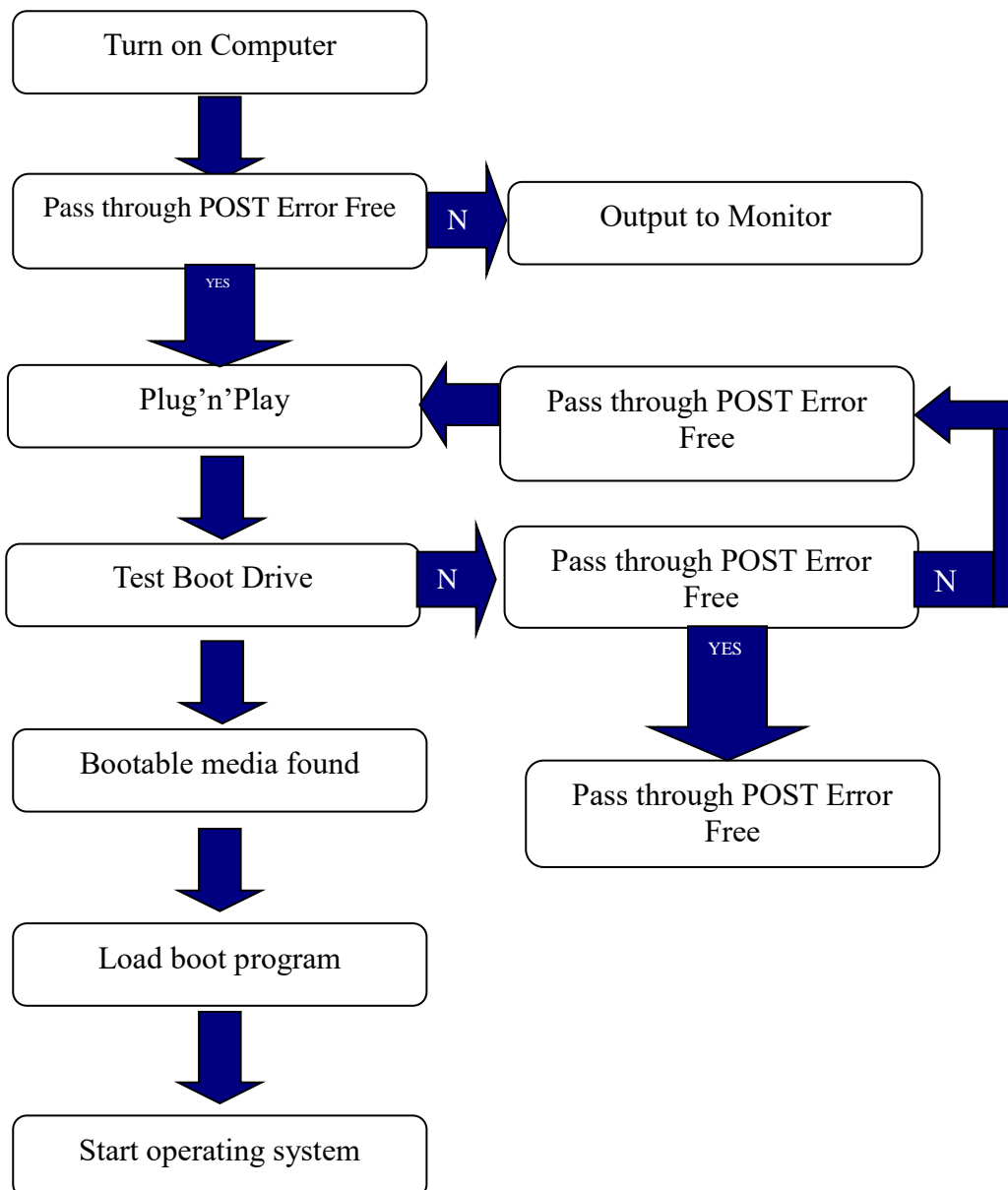
- Bios is stored on **ROM**, which is a permanent chip on the motherboard
- Bios is software, ROM is hardware
- A basic software program containing all BIOS functions is permanently stored in the ROM (PROM, EPROM, EEPROM)
- This software functions as a basic operating system.
- Is responsible for starting the PC.
- **Complementary metal–oxide–semiconductor (CMOS)**

## BIOS Functions

BIOS has some basic functions in order to start the computer and load the real operating system properly.

- **POST “Power On Self Test”** is a function that is very important because BIOS will check the hardware and connected peripherals and loads them properly for the operating systems. POST is the first thing a BIOS does when the computer is started. When the POST start we can hear a beep sound, which says the POST, is started.

- **Bootstrap Loader** will locate and load a real operating system. Actually, BIOS is also an operating system with very restricted features. BIOS will start the load chain for different operating systems like Linux, Windows, BSD, etc.
- **Load Drivers** will load basic drivers for the hardware. These drivers mainly designed to manage given hardware and pass this hardware into the real operating system.
- **System and Hardware Configuration** will set some basic configuration about the system like **System Time, Boot Preferences, Security, Hardware Features**, etc.



# Popular BIOS Manufacturers

BIOS is manufactured by different vendors like,

- Phoenix Technologies
- IBM
- Dell
- Gateway
- BYOSOFT
- American Megatrends (AMI)
- Insyde Software
- Award Software
- General Software
- Microid Research

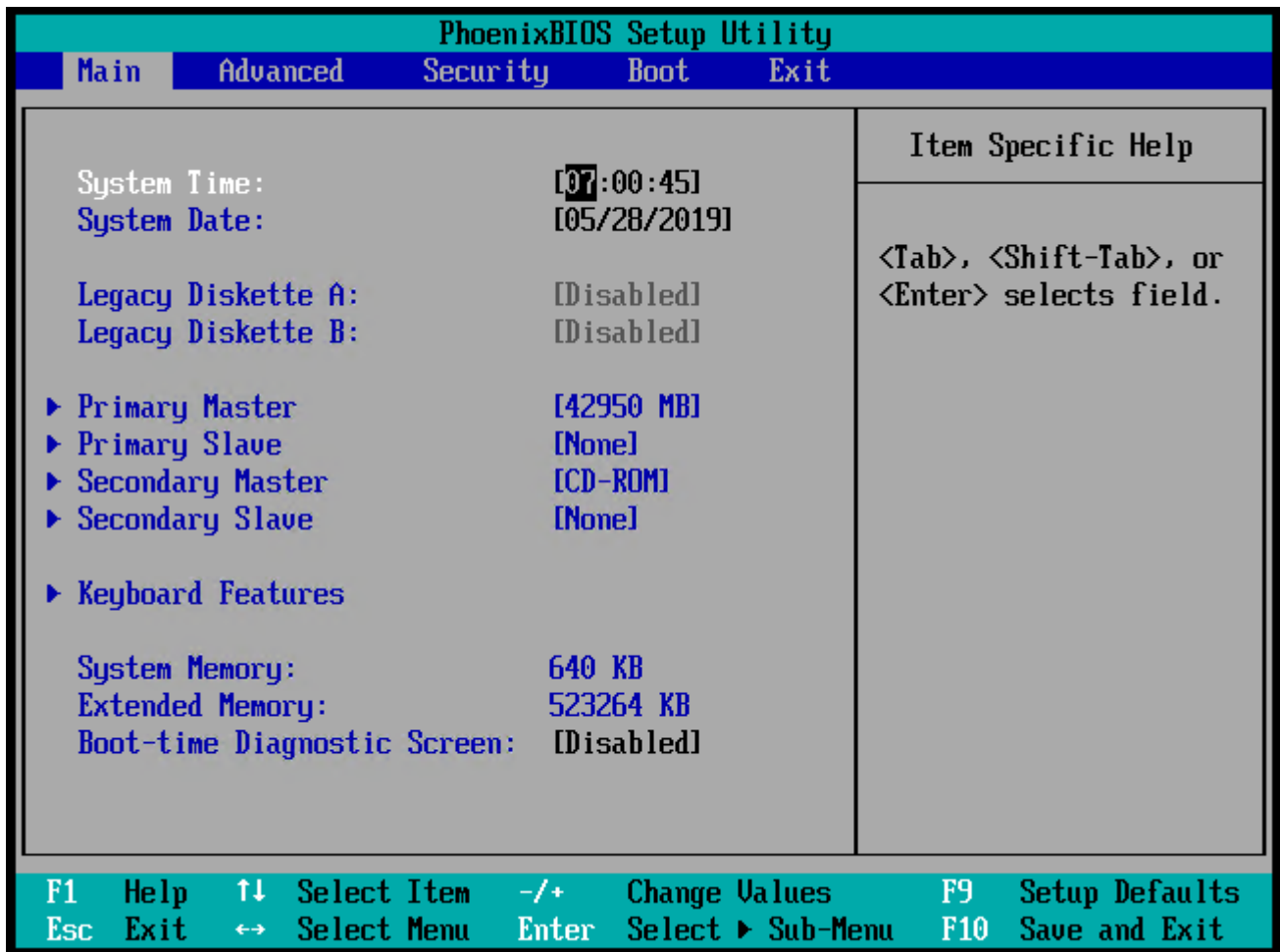
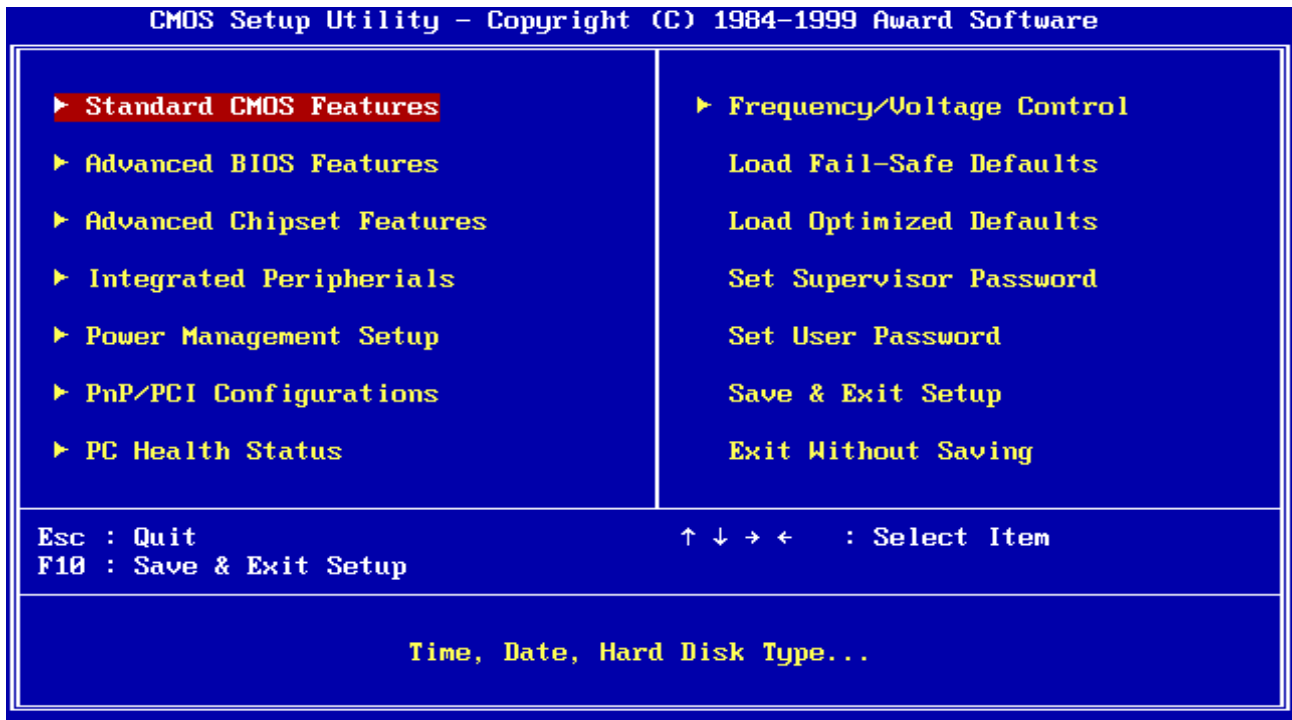
## How to Open BIOS

As BIOS, is the first software or operating system loaded into a computer at the start of the boot we have to be fast in order to open the BIOS main screen. We can make some configuration about BIOS, System Hardware, etc. BIOS manufacturers generally use function keys like F1, F2, etc. to open the BIOS Configuration screen here are some of them. In addition, information about the shortcut key is provided during boot.

- F2
- F4
- F10
- F12

## Main BIOS Screen

Most of the BIOS software provides similar functions and screens. When we opened the BIOS screen with the **F4** we will see the following screen. **The main** tab provides general information about the system.



Main BIOS Screen

- **System Time** provides BIOS or CMOS clock of the system
- **System Date** provides the current date of the BIOS of the system
- **Legacy Diskette A and B** is used to configure Disket Drives which is abandoned
- **Primary Master** is the first primary disk and its size which around 42 GB.
- **Primary Slave** is the second disk, which does not exist.
- **Secondary Master** is connected to the **CD-ROM**.
- **Secondary Slave** is currently empty
- **System memory** is BIOS memory
- **Extended Memory** is RAM size which is 512 MB in this case

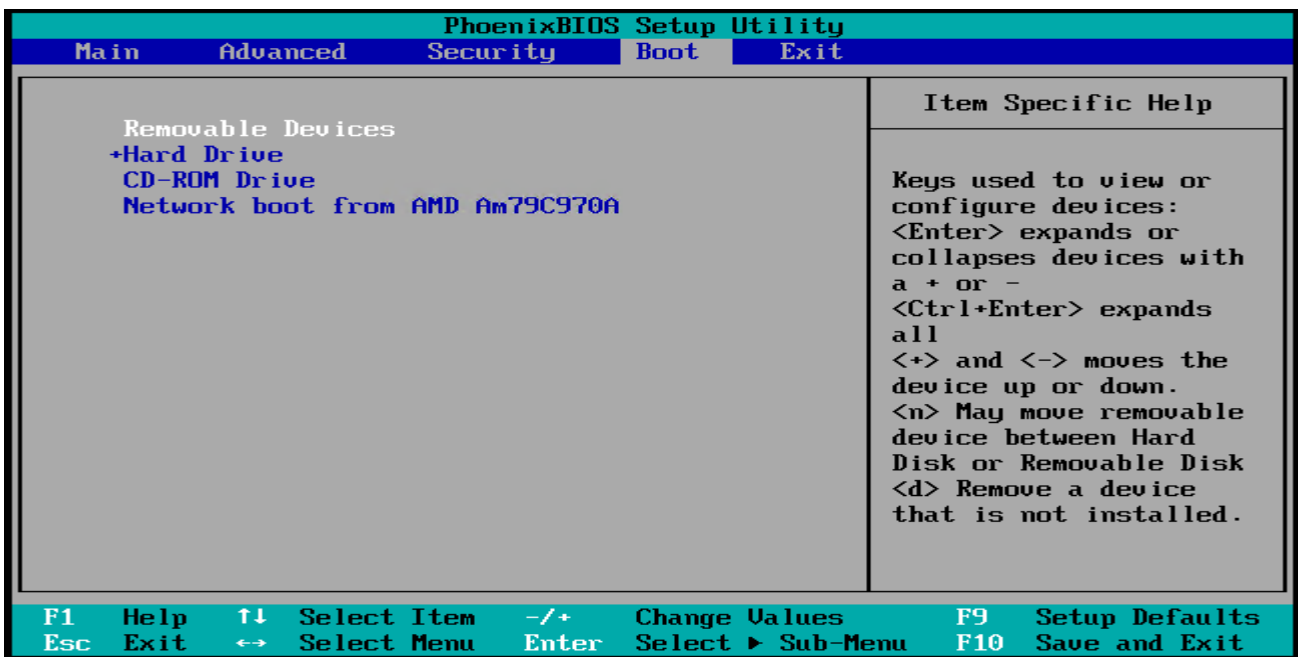
## BIOS Operation Keyboard Shortcuts

After opening the BIOS, we can make configuration changes and we have to save, reload or reset these changes by rebooting the system. BIOS uses function keys like below.

- **F1** provides helpful information about the BIOS
- **Esc** is used to exit
- **Enter** will select or open submenu
- **F9** recover to the default settings
- **F10** is used to save and exit from BIOS setup

## Change Boot Order Configuration

One of the most used functions of the BIOS is changing the Boot Order Configuration. Generally, HDD is used to load the main operating system but in some cases like the installation of the operating system, we want to install OS from a DVD or USB. Therefore, we have to change the boot order configuration from the **Boot** page.

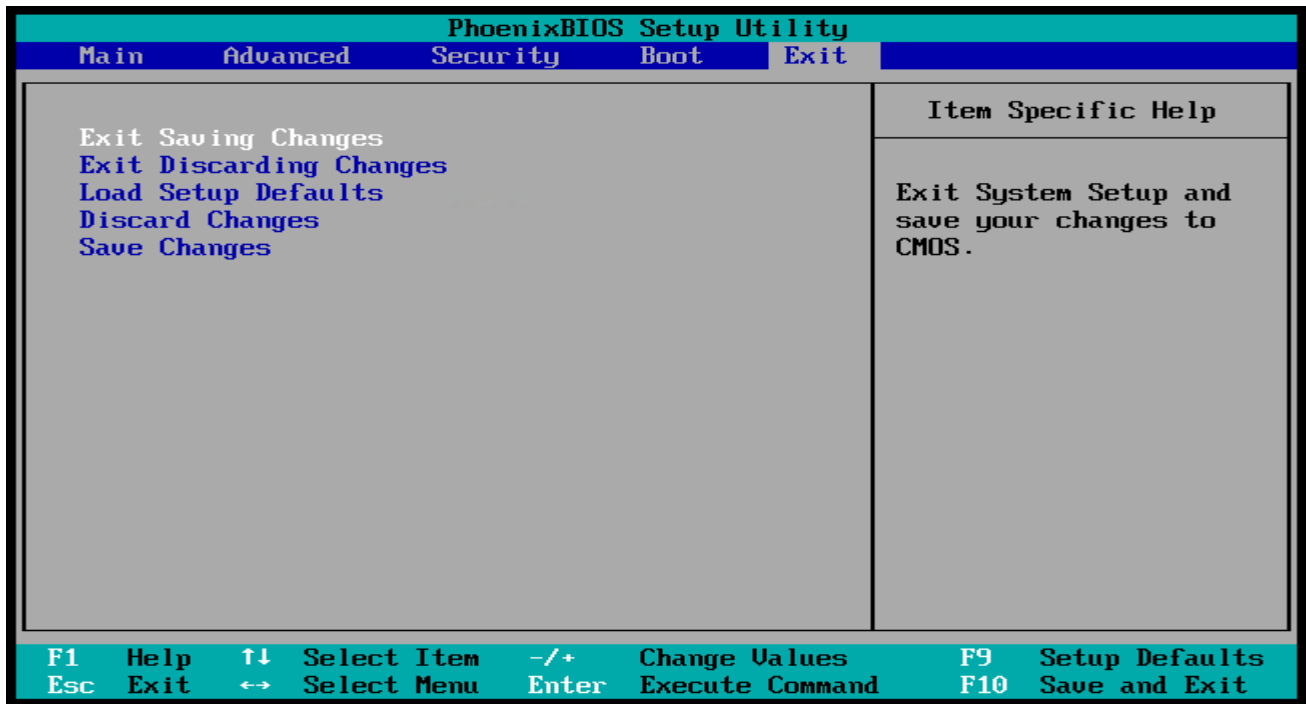


Change Boot Order Configuration

We can use + and - to change the order by selecting it. When we completed the boot order configuration, we can press **F10** in order to save and exit with a reboot.

## Exit from BIOS

We can exit from BIOS with **F10** by saving the configuration but there are other alternatives provided by the `Exit` menu like,



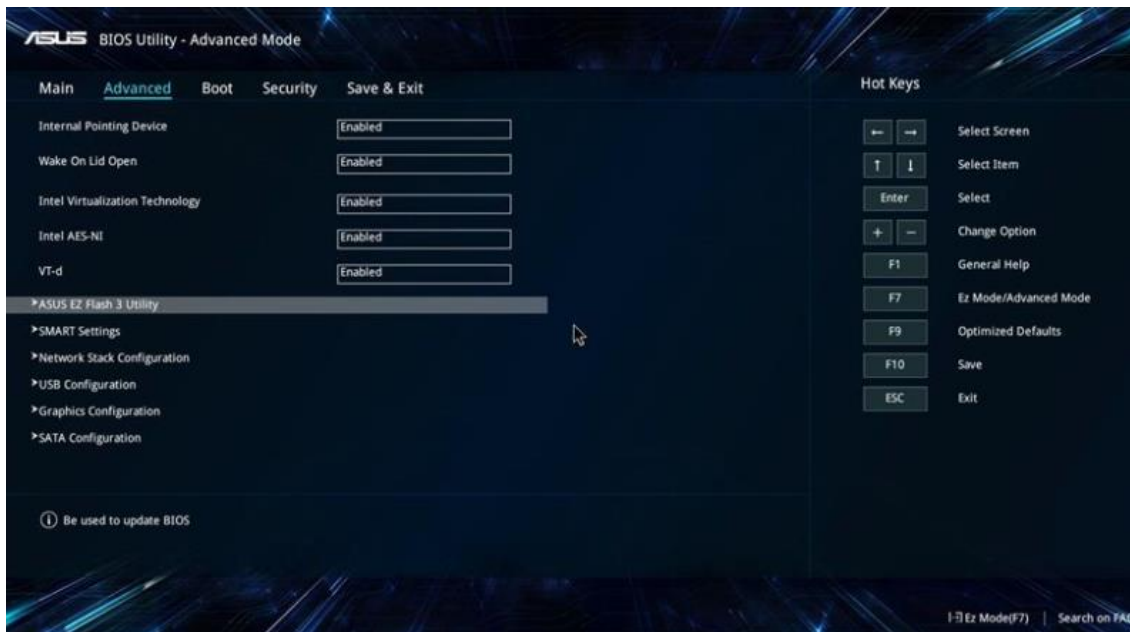
### Exit from BIOS

We can

- **Exit Saving Changes**
- **Exit Discarding Changes**
- **Load Setup Defaults**
- **Discard Changes** which will not exit
- **Save Changes** which will not exit

## How to Update BIOS

BIOS software is stored in an EPROM which is not easy to change the content of the BIOS chip. But there are some tools provided by the mainboard or chip manufacturer in order to update the BIOS. BIOS Update sometimes called Flash BIOS because it will flash the BIOS chip. Here the steps required to update the BIOS. Keep in mind this is a fragile process and do not interrupt which will cause the BIOS corrupt.



## How to Update BIOS

- Download the recent BIOS firmware from the chip or mainboard manufacturer.
- Copy BIOS update software to the USB storage
- Boot to BIOS and Navigate to the **Tool-> EZ Flash**
- Select USB and then select the BIOS update file
- You will be prompt one final time before applying the update. Review and Accept this.
- Reboot upon completion

## BIOS vs Operating System

As stated previously BIOS is an operating system but it is very different from full-fledged real operating systems. In this part, we will compare the BIOS and Real operating systems.

- **BIOS** is the first OS which starts the computer but Real Operating system starts after BIOS
- **BIOS** initialize hardware and peripherals where Real Operating system uses hardware and peripherals
- **BIOS** has very low-level functions where Real Operating system has complete and high-level functions
- **BIOS** cannot be used as OS practically where Real Operating systems can be used
- **BIOS** has a very basic User interface, which is not graphical where Real Operating System has complete and complex Graphical User Interface.
- **BIOS** update and upgrade is harder than Real Operating system update and upgrades.