What is BIOS? Why do we use it?

➢ what is BIOS

BIOS is a program, stands for basic input/output system, which is stored in nonvolatile memory like ROM (Read Only Memory) or flash memory that allows you to set up and access your computer system at the greatest basic level.

It is found on motherboards that are a pre-installed program on Windows-based computers that executes when a computer is powered up. Before an OS is loaded, the CPU accesses the basic input/output system (BIOS). Then, the next function of BIOS is to examine all the hardware connections and detects all your devices.

The main function of BIOS is to set up hardware and start an OS, and it contains generic code that is needed to control display screens, the keyboard, and other functions. The BIOS is built-in software that manages the hard drives and cannot live on one. It cannot reside in the RAM (Random Access Memory) as it is accessible before the computer system boots up. Actually, it lives on the ROM of the computer system, and mainly it is located on EPROM (erasable programmable read-only memory) chip. Therefore, the CPU accesses the EPROM when you turn on the computer and provides control to the BIOS.

➢ Why do we use BIOS

Hardware Initialization: When a computer is powered on, the BIOS is the first software that runs. It performs a Power-On Self-Test (POST) to check the hardware components (such as CPU, memory, storage devices, etc.) to ensure they are working correctly. It initializes and configures these components, making them ready for the operating system to use.

Booting Process: After the hardware initialization, the BIOS locates and loads the operating system. It searches for the boot loader, which is typically stored in the boot sector of a storage device (such as a hard drive or SSD). The BIOS transfers control to the boot loader, which then loads the operating system into memory and starts its execution.

System Configuration: The BIOS provides a user interface, often accessed through a setup utility or BIOS settings, where users can configure various system parameters. These settings include date and time, boot order (to specify which devices should be checked for the operating system), hardware settings, security options, and more. Users can customize the behavior of their computer through these settings.

Firmware Updates: The BIOS can be updated with new firmware versions provided by the motherboard manufacturer. These updates can include bug fixes, improved hardware compatibility, security updates, and additional features. Updating the BIOS ensures that the system remains up to date and performs optimally.

Compatibility and Interoperability: The BIOS acts as an interface between the hardware and the operating system, providing a standardized method for them to communicate. It abstracts the hardware details, allowing the operating system and applications to be hardware-independent. This abstraction layer enables software to run on a wide range of hardware configurations without needing to be specifically designed for each one.