Topic two: How does the computer work?

Introduction:

When you turn on a computer, a series of steps are initiated to return the system to a functional state.

This process, known as booting, involves converting power from the source, performing self-tests, loading the operating system, and enabling user interaction.

This report aims to provide us with sufficient information, and we will learn about new terms such as POST, BIOS, and others.

Step 1: getting power to the computer components

Connect the computer to a power source and press the power button,

The device converts the alternating current received from the power source into a constant current through which the various parts

of the computer are supplied with the appropriate amount of voltage and electricity. When this happens without the power supply reporting any errors,

it sends signals to the motherboard and processor to erase any remaining data. In the device's memory registers, the CPU becomes ready to execute and process input commands.

Step 2: POST power-on self-test

The power-on self-test (POST) is conducted after ensuring that all computer equipment has the appropriate power to operate it.

This is done independently and sequentially from the computer to ensure that the main components of the device are working properly, and then the (64 byte) memory that contains a time and date is turned on. The system in addition to all the information about the devices installed on it, as the computer begins to download that information, then verifies it and compares it with the settings of the system in which the device operates.

If this information is correct and matches the operating system, the basic operating programs are downloaded through which the computer equipment is connected to each other. Some and the CPU.

Step 3: Basic Input/output System (BIOS):

It begins by determining the nature of the operation process that takes place through the device,

and ensuring that it is a normal boot process or just a reboot process,

and after verifying that the operation process is a boot process to operate the device normally.

Step 4: The self-operation test (Post) comes back to work:

The device's RAM is tested, then signals are sent to the optical drive and hard disk to inform them, and finally the operating system that the device is running begins to load.

Step 5: bootloader (Bootstrap):

After the process of testing the hard disk to operate correctly on the computer,

start loading the operating system through the device through what is known as the bootloader (Bootstrap), which is a small program through which the operating system is loaded into memory and allows it to start, and through it the Small programs whose mission is to organize the work and interaction between the computer's subsystems and the applications on it, The boot loader also works to prepare the memory sections that contain the operating system, applications, and user information, After the boot loader completes its work, the operating system begins working through the computer to become the controller of the device.

Some Tasks of the operating system in the computer:

- Managing the processor located on the computer and the devices associated with it.

- Controlling the operation of memory and storage units.

- Showing the different application interfaces that run on the device, in addition to the basic- interface through which the user interacts with the device.