THE BOOT PROCESS

Boot Process

1. Boot-Process is a step-by-step process which
2. Checks the complete hardware associated in a computer
3. Load the BIOS from the ROM
4. Load OS from secondary memory to primary memory
5. The boot process is starts when we power on the computer or supply the electricity
6. Performed every time computer starts or restarts
7. In Linux the boot loader is called Grub or LILO (Linux Loader)

Booting is of two types:

1. **Cold booting:** When the computer is started as a fresh start after a sufficient long time like after being shut down last time.

2. **Warm booting:** When the computer become restarted in between any processing. This restart maybe done by user itself or on the system demand like new installation of hardware or software, system crash etc.

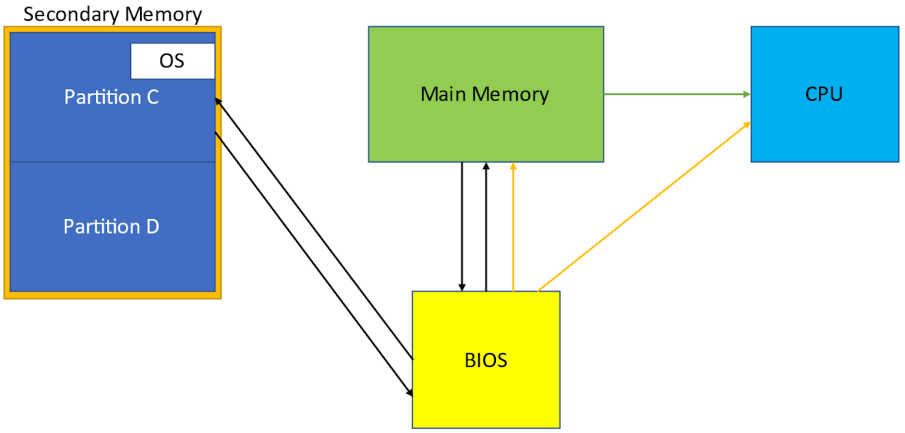
Important terms to understand:

1. BIOS: Basic Input Output System, run the boot process.
2. CMOS: complementary metal-oxide semiconductor, control and track record of BIOS.
3. Bootstrap: Booting process
4. Boot Monitor: Control the booting process.
5. POST (Power On Self-Test): Check the all hardware and their functionality.
6. Boot Loader: Load the address of Operating System in CPU and RAM.
7. Boot Device: The device where OS rests.
8. Master Boot Record: The point in boot device where the OS rests.
9. Init: control and manages the initializing of the system itself in the user's required way.

What is BIOS:

1. Basic Input Output System, is a chip located inside ROM, which holds some programs.
2. These programs are used to start the computer even without any OS.
3. This BIOS is responsible for successfully completion of the Boot or Boot-strap process.

How the BIOS load the Operating System in CPU and Main Memory.



BIOS: Basic Input Output System

Functions of BIOS

1. POST (Power On Self-Test)
2. Master Boot Record
3. Init

1. POST (Power On Self-Test)

The Power On Self-Test functioned each time we turn our computer on.

It starts and check the all-hardware devices associated.

It ensures that all the devices should functions perfectly without any conflicts.

If any errors are discovered then an error message is displayed on the screen or a number of beeps are heard.

These beeps are known as POST beep codes.

2. Master Boot Record

The Master Boot Record or MBR is a program.

It starts during booting, in order to find the operating system.

The Bios searches for the MBR on the Hard Drive, which is generally located in the first sector, first head, first cylinder (cylinder 0, head 0, sector 1).

3. Init

Init is the last step of the boot sequence.

It is used to determine the initial run level of the system.

A run-level is used to decide the initial state of the operating system.

Some of the run levels are:

4. Level 0: System Halt.
5. Level 1: Single user mode.
6. Level 3: Full multiuser mode with network.
7. Level 5: Full multiuser mode with network and X display manager.
8. Level 6: Reboot.