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* How Operating System Boots up ?

Ans They are of 5 steps :-

(1) **Power ON** :- Electricity goes to the Power Supply and it distributes to motherboard and hard disk & storage.

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(2) CPU loads BIOS or UEFI

- CPU initializes itself and looks for an firmware program (BIOS) stored in BIOS chip (Basic Input-output system chip is a non-volatile chip (ROM) found on mother board that allows to setup computer system at the basic level.
- In modern PC, use UEFI (Unified Extensible Firmware Interface).

(3) CPU runs the BIOS

CPU runs the BIOS which tests and initializes system hardware. BIOS do the system testing and loads the configuration settings. If some-thing error is shown then boot process is stopped. This is called "POST" (Power on Self-test) process.

- UEFI, In modern CPU's do more than just initialize hardware, it's an tiny operating system. Eg. => Intel CPU have the Intel Management Engine.

(4) BIOS or UEFI handoff to boot device.

- BIOS looked for an small program called MBR (Master Boot Recorder), a special program present at the beginning of a disk. The MBR contains the code that loads the rest of the operating system, known as "boot-loader." Then bootloader executes and do the

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actual OS starting up.

- UEF ~~f~~ looked for EFI System which stores in a specific part of the disk.

(5) Boot-loader load full OS

- Now the boot-loader loads the full OS. Windows uses "Bootmgr.exe" (Windows Boot Manager), Linux use "GRUB" and Mac use "boot.efi".