**Linux Booting Process:** The Linux booting process involves a series of steps that initialise the system hardware, load the kernel into memory, and start up the operating system. Here's a simplified breakdown of the Linux boot process:

* **POST:** Power on Self Test is the first and important process in which user first click on power button and with this the motherboard send signal to all components to check weather they are working or not.
* **BIOS/UEFI:** When the computer is powered on, the Basic Input/Output System (BIOS) or the Unified Extensible Firmware Interface (UEFI) is activated. This firmware conducts a Power-On Self-Test (POST) to check hardware integrity and locates the boot device (usually a hard drive, SSD, or USB drive) where the bootloader resides.
* **Bootloader:** The bootloader (commonly GRUB or LILO) is loaded into memory by the BIOS/UEFI. Its primary function is to locate the kernel, load it into memory, and initiate the boot process. It presents a menu (if configured) allowing users to choose which operating system or kernel to boot if multiple options are available.
* **Kernel Initialization:** Once the bootloader hands over control to the kernel, the kernel initialises hardware components, sets up memory management, mounts the root file system, and prepares to transition the system to user mode.
* **Init Process:** The kernel then starts the init process (usually systemd or SysVinit), which becomes the parent or root process for all other processes. It initialises the system in user space, launches system daemons, services, and user applications specified in its configuration.
* **User Space Initialization:** After the init process is running, it starts initialising system services, network settings, mounts additional file systems, and sets up the user environment.
* **Login Prompt or Graphical Interface:** Depending on the configuration, the system presents a login prompt in the terminal or a graphical login screen, allowing users to log in and start using the system.

These steps vary slightly among different Linux distributions, especially regarding the init system used (such as systemd, SysVinit, Upstart) and any specific configurations or additional steps introduced by the distribution. However, the fundamental sequence remains relatively consistent across Linux systems during the boot process.