Linux Boot Process

Question:

Explain the Linux boot process

Answer:

When the system is powered on, **BIOS/UEFI** performs hardware checks and locates a bootable device.
It then loads the **bootloader (GRUB)** into memory.

The **bootloader** loads the **Linux kernel** and **initramfs** into memory and hands control to the kernel.

The **kernel** initializes CPU, memory, and device drivers, mounts the root filesystem, and starts **systemd** as **PID 1**.

systemd starts system services and brings the system to a usable state, finally presenting the **login prompt**.

Boot Flow:

```
Power ON
→ BIOS / UEFI
→ Bootloader (GRUB)
→ Kernel
→ systemd (PID 1)
→ Login Prompt
```

Key Points:

- BIOS does **not** load Linux directly

- GRUB loads the **kernel + initramfs**
- Kernel is the core of Linux
- systemd is the **first user-space process**

One-Line Interview Answer:

BIOS loads GRUB, GRUB loads the kernel, the kernel starts systemd, and systemd starts services and presents the login prompt.