Task No :- 2.

* Linux Architecture processes and systemd.
Todays goal is to understand how linux work under the hood.

Q The core component of Linux (kernel, user space, init / systemd)

→ 1) kernel :-

⇒ kernel is the heart of linux
⇒ kernel manages CPU and process
⇒ They controls hardware devices using driver e.g disk, keyboard, network
⇒ Handle file system.
⇒ user do not directly interact with kernel. program communicate with the kernel using system calls.

2) User space :-

⇒ It is part where user and application run.
⇒ User space program request services from the kernel, and the kernel talks to the hardware.

Teacher's Signature:.....

Shell :- bash, zsh

Basic Commands :- ls, cd, cp, mv, cat, grep.

3) Init / systemd :-

=> When linux boots, the first process that start is called init.
=> systemd is usually PID 1 (the first process)

Boot flow :-

Hardware → Bootloader → kernel → systemd → Services → Login → User programs.

Q How processes and created and managed ?
→ Linux creates a process using fork(), loads a new program using exec() and the parent waits using wait(). The kernel manages process using the scheduler, priorities and process states.

Q What systemd does and why it matters.
→ systemd is the main service manager and init system in Linux. systemd run the system after boot and manages all services.

Why it matters :-

1) without systemd linux won't boot into usable state
2) Ensure services start correctly.
3) Helps in troubleshooting with logs.