LINUX PART-7

Boot process:

① BIOS - Basic Input/Output System
↓
② Boot loader → GRUB
↓
③ Kernel → initializes memory & devices.
↓
④ init → starts and stops all the essential processes that runs our system.

3 levels of Abstraction of Linux Os:

① Hardware
↳ CPU, memory, ports, harddisks, SSD, etc.
② Kernel
③ User Space

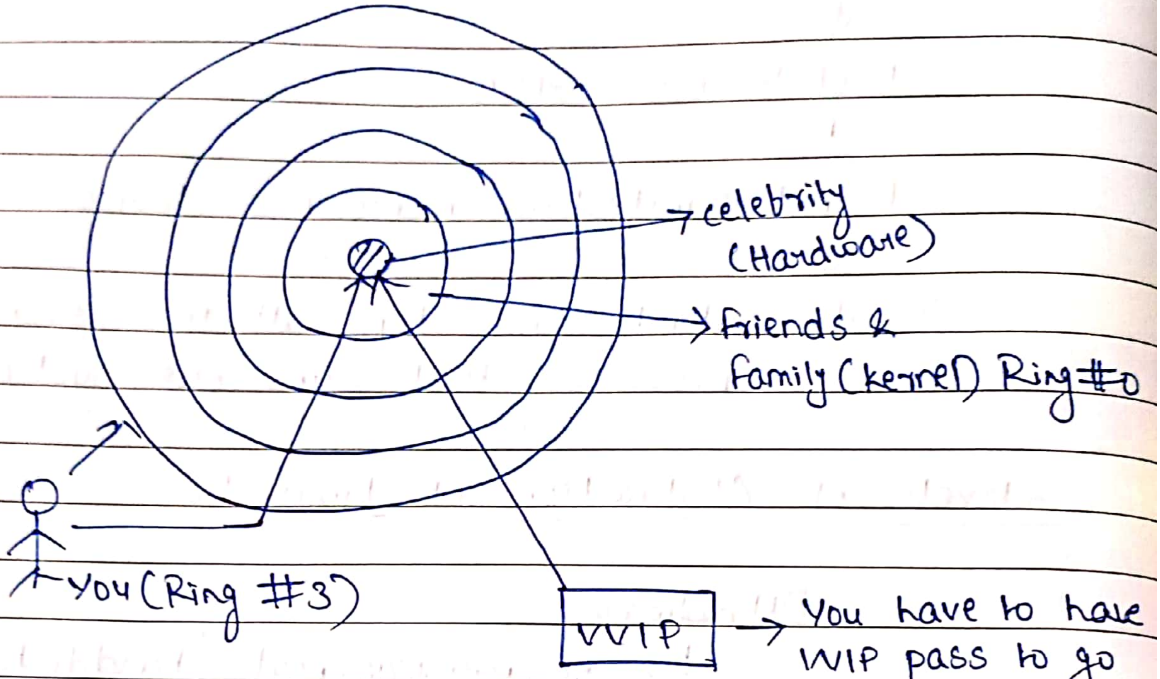
Privilege levels

→ Kernel operates in kernel mode.
→ user operates in user mode.
] → They are also known as protection rings.

→ Kernel has the complete ~~control over~~ access to the the hardware and it controls everything in the system.

→ very small amount of CPU and memory can be accessed by the user.

Example for understanding the process.
Check out in the video



You have to have VIP pass to go and meet celebrity.

(sys calls) System call
↓
Helps us to perform some priviliged instructions in the Kernel mode and switch back to the user mode.

They help us get into the most innermost circle of the hardware

system call Api

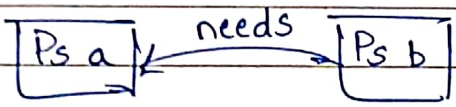
Init process

The init process has three major implementations in linux:

① SystemV – Traditional
② Upstart
③ Systemd – New standard

SystemV:

→ starts and stops processes sequentially



→ Status of the system is defined by Runlevels (0-6)

0 → shutdown
1 → Single user
2 → Multi users without networking
3 → Multi users with networking
4 → unused
5 → Multiple users are using with networking and GUI.
6 → Rebooting

Upstart:

→ uses ~~an~~ events and jobs model

Jobs → Actions performed

Events → messages received from other processes

Systemd

→ uses goals to get your system up and running
↳ Targets

How it works?

① loads up the config files

```
ls/etc/systemd/
ls /lib/systemd/system | less
```

Targets

① poweroff.target → shutdown

② rescue.target → single user

③ multiuser.target → multiuser with networking

④ graphical.target → multiuser with networking & GUI

⑤ reboot.target → Reboot

we can manage different power states of a system using simple command.

Example:

```
sudo shutdown -h now (for shutdown)
sudo reboot (for reboot)
```