- **What is Unix** ✓
- **Linux History** ✓
- **Linux Philosophy** ✓

- **Linux Community**

- **Linux Terminology**

What is UNIX ?

→ **UNIX** ~ UNiPlexed information & Computer System.

→ It was first developed in 1960s in Bell Lab aimed at creating multi user, multi talking OS.

→ In 1969 Bell Lab withdrew the Project but **Dennis Ritchie** & **Ken Thompson** Continued development .

→ UNIX $\sqrt{6}$ became Popular around 1975, leading many Companies like IBM, Sun Systems, . Apple (Mac OS), HP (HP-UX) to create their own Comercial " flavours of UNIx ". ,

→ **Linus TORVALD** a student, started Linux from Scratch in 1991 because existing UNIx Version was

too expensive. ($ 5000)

Linux History

→ **Linus Torvalds** was a student in Helsinki in 1991 wrote his own OS **Kernel** which became known as the ⟨ **Linux Kernel** ⟩.

→ In 1992, Linux was re-licensed using **General Public License (GPL)** by GNU.

→ By combining the Kernel with other System Components from the GNU project, other devs created complete systems called **Linux Distributions** which first appeared in mid 90s

→ In 1998 major companies like IBM & ORACLE announced their support for Linux Platform.

→ Today Linux powers the internet & majority of Smartphones. Majority of Public

Cloud workload & World's most Powerful Super Computers.

Linux Philosophy

→ It was written to be free & Open Source.

→ files are Stored in hierarchical file system with the top node of the system being the Root or Simply "/".

→ All Components are available via files.

→ Linux is fully Multi Tasking, multi user Operating System.

Linux Was Inspired by UNIX, but it is not UNIX.
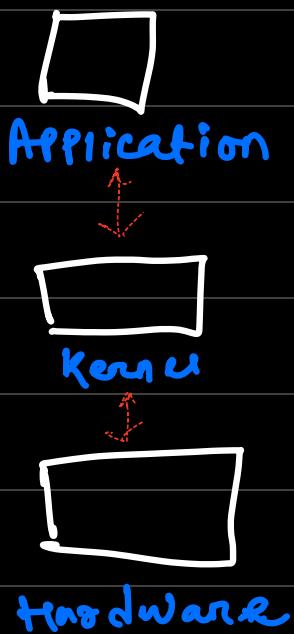
Linux Community

→ There are Multiple ways to engage with Linux Community even if you are not a developer.

    → Post queries on discussion forums.

    → Subscribe to discussion Threads.

    → Join local Linux Groups in your area.

Linux Terminology
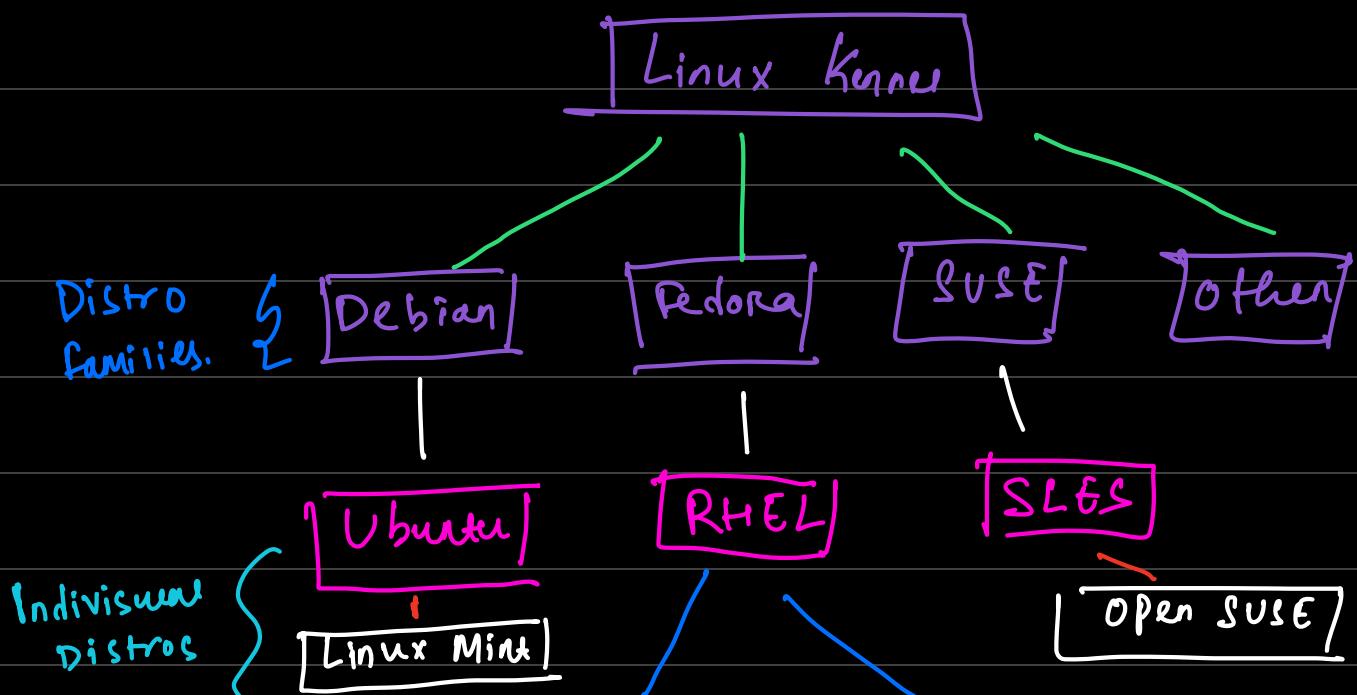
- Kernel
- Distribution
- boot loader
- Service
- file system
- x Window System
- desktop Environment
  Command Line
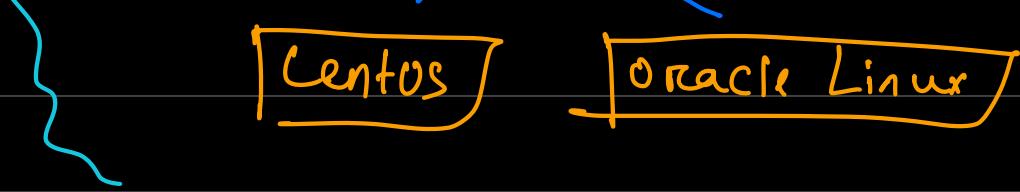
* **Kernel :** Glue betwen Hardware & applications.

```
┌──────┐
│      │
└──────┘
 Application
    ↕
 ┌──────┐
 │      │
 └──────┘
  Kernel
    ↕
 ┌──────┐
 │      │
 └──────┘
 Hardware
```

🐛 Distribution :- Collection of Sowtware making up a Linux based os.

      eg: RHEL , Fedora , Ubuntu & gentoo

```
        ┌─────────────────┐
        │  Linux  Kernel  │
        └─────────────────┘
      ╱      │        │        ╲
┌────────┐ ┌────────┐ ┌──────┐ ┌──────┐
│ Debian │ │ Fedora │ │ SUSE │ │ Other│
└────────┘ └────────┘ └──────┘ └──────┘
    │          │         │
┌────────┐  ┌──────┐  ┌──────┐
│ Ubuntu │  │ RHEL │  │ SLES │
└────────┘  └──────┘  └──────┘
    │                      ┌──────────┐
┌──────────┐               │ Open SUSE│
│ Linux Mint│              └──────────┘
└──────────┘
```

Distro families. {
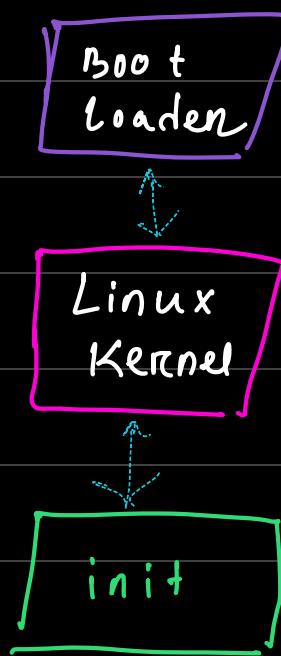
Indivisual Distros {
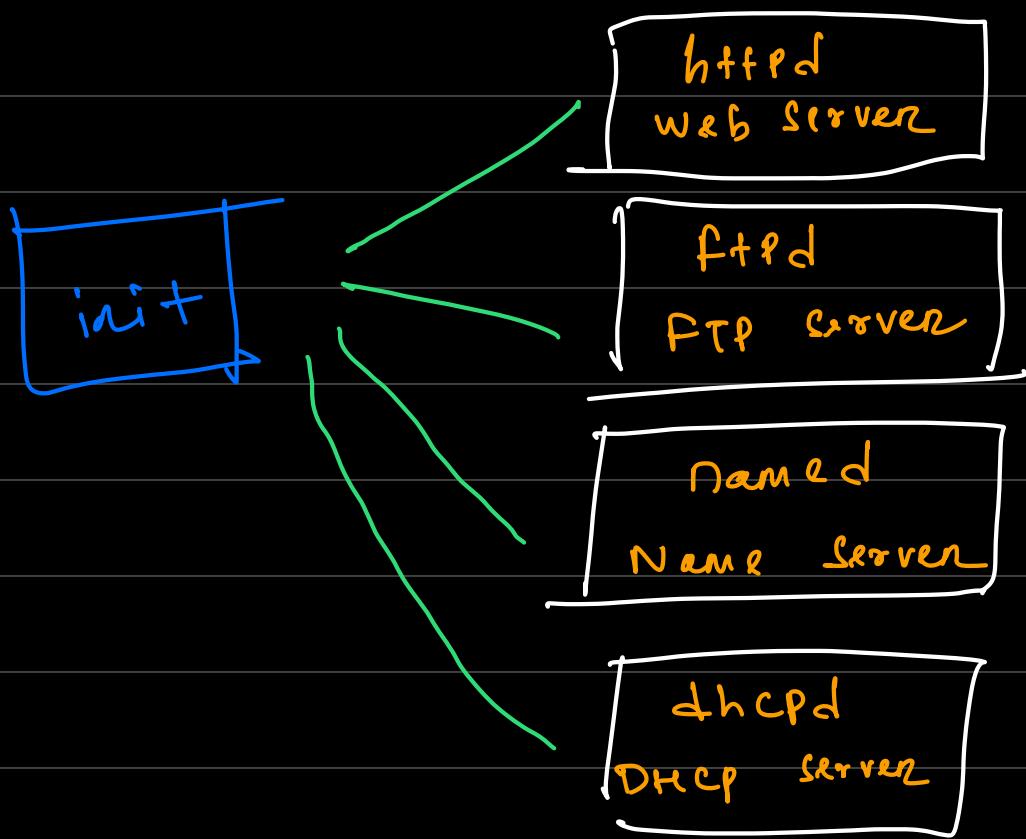
* **Boot loader** : Programme that boots the operating System.

eg: GRUB   &   ISOLINUX

```
┌──────────┐
│  Boot    │
│  Loader  │
└──────────┘
     ↕
┌──────────┐
│  Linux   │
│  Kernel  │
└──────────┘
     ↕
┌──────────┐
│   init   │
└──────────┘
```
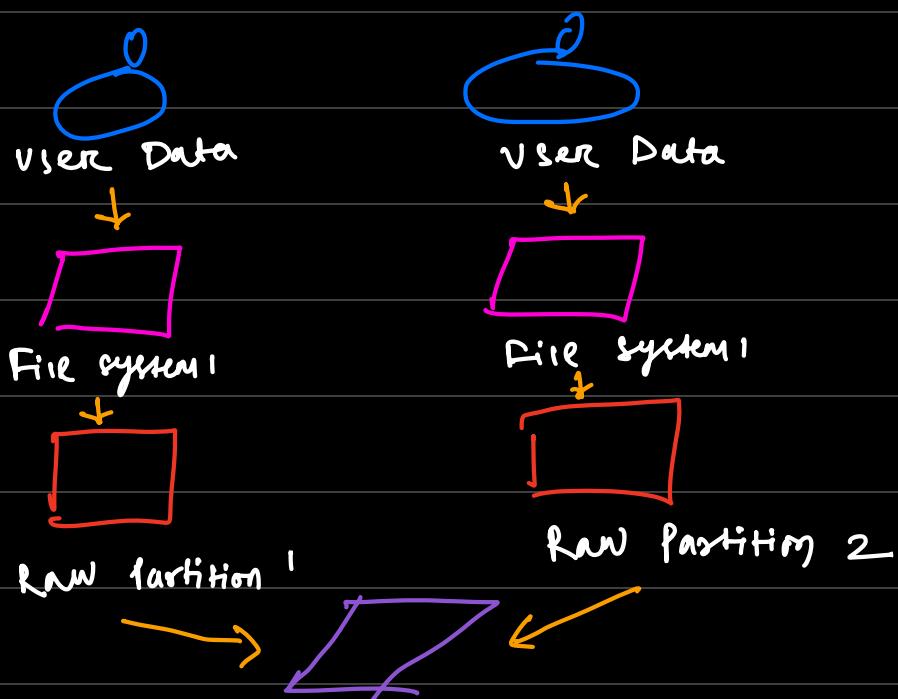
* **Service** : Program that runs as a background Process.

eg:- hftpd, nfpd, ntpd, ftpd & named

```
              ┌──────────────┐
              │   httpd      │
              │  Web Server  │
              └──────────────┘
              ┌──────────────┐
┌────────┐    │   ftpd       │
│        │    │  FTP Server  │
│  init  │    └──────────────┘
│        │    ┌──────────────┐
└────────┘    │   named      │
              │  Name Server │
              └──────────────┘
              ┌──────────────┐
              │   dhcpd      │
              │  DHCP Server │
              └──────────────┘
```
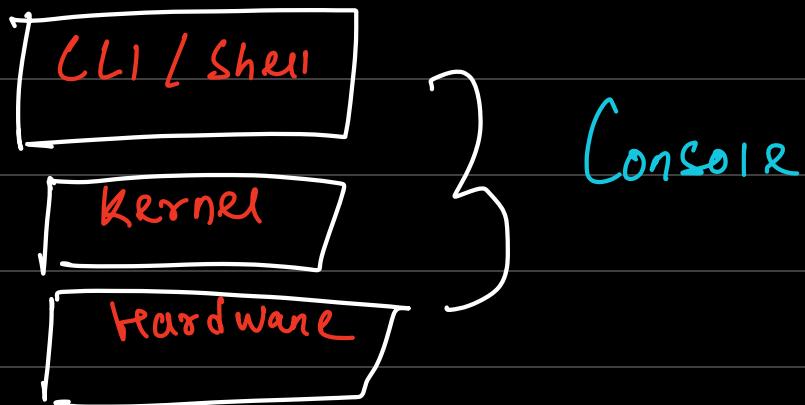
* **Filesystem** :- Method for storing & organizing files.

eg:- ext3, ext4, FAT, XFS, NTFS & Btrfs

User Data

File System

Raw Partition 1

User Data

File System

Raw Partition 2

* **X Window System :** Graphical Subsystem on nearly all Linux systems.

| Desktop |
| KDE, Gnome, XFCE |

| Window Manager |

| X Window System (X11) |

GUI

| CLI / Shell |

| Kernel |

| Hardware |

Console

* **Desktop Environment:** Graphical user interface on top of the operating system.

eg:- GNOME, KDE, Xfce & fluxbox.

* **Command Line:** Interface for typing commands on top of the operating system.

* **Shell:** Command Line interpreter that interprets the command line input & instructs the OS to perform any necessary tasks & commands.
eg: bash, tcsh and Zsh.