

LINUX COMMANDS FOR EVERY DEVOPS ENGINEER



Introduction to Linux

Linux is a free and open-source operating system known for its high security, stability, and reliability.

It is a multi-user operating system, which means multiple users can access and work on the same system simultaneously without affecting each other's work.

Linux is widely used in:

- Servers
- Cloud platforms
- DevOps environments
- Cybersecurity
- Embedded systems
- Enterprise infrastructure

Operating System (OS):

An Operating System (OS) is system software that acts as an interface between computer hardware and the user.

Functions of an OS:

- Provides a platform for applications to run
- Manages CPU, memory, storage, and devices
- Controls processes and system resources
- Enables user interaction with hardware

Applications such as browsers, MS Office, Notepad, games, and software tools require an operating system environment to execute.

Without an operating system, a user cannot communicate with the computer hardware.

Kernel:

The **Kernel** is the core (heart) of the operating system.

Responsibilities:

- CPU management
- Memory management
- Device management
- Storage management
- Process management

It is the **lowest level** of the operating system and directly interacts with the hardware.

Daemons:

Daemons are background services that run automatically in the system.

Examples:

- Printing services
- Sound services
- Scheduling services
- Network services

They start during system boot or after user login and continuously run in the background.

Shell:

A **Shell** is an interface that allows users to interact with the operating system.

Functions:

- Accepts user input
- Executes commands
- Runs programs and scripts
- Displays output

Types of Shells:

- **CLI (Command Line Interface)** – Text-based commands
- **GUI (Graphical User Interface)** – Windows, icons, buttons

The shell acts as a bridge between the **user and the operating system**.

Command:

A **command** is an instruction given to the operating system to perform a specific task.

Example:

ls, cd, pwd, mkdir, rm

Terminal

A **Terminal** (CLI / Console) is a text-based interface that allows users to:

- Enter commands
- Execute operations
- Receive output
- Interact with Linux systems

It exists in Linux, macOS, and Windows (Command Prompt / PowerShell).

Linux Distributions

Linux distributions are modified versions of Linux created for different use cases.

Popular Distributions:

- RedHat
- Ubuntu
- Debian
- CentOS
- Fedora
- OpenSUSE
- Kali Linux
- Amazon Linux
- Rocky Linux

Linux History

- **1991** – Linus Torvalds (University of Helsinki, Finland) started developing Linux
- Initially named **Freax**, later renamed to **Linux**
- Written in **C language**
- Released under **GNU General Public License (GPL)** in 1992

Today Linux is used in:

- Supercomputers
- Smartphones
- Servers
- Cloud platforms
- Laptops
- Tablets
- Smart TVs
- Cars
- Routers
- Home appliances

Open Source Concept

Linux follows the **Open Source philosophy**:

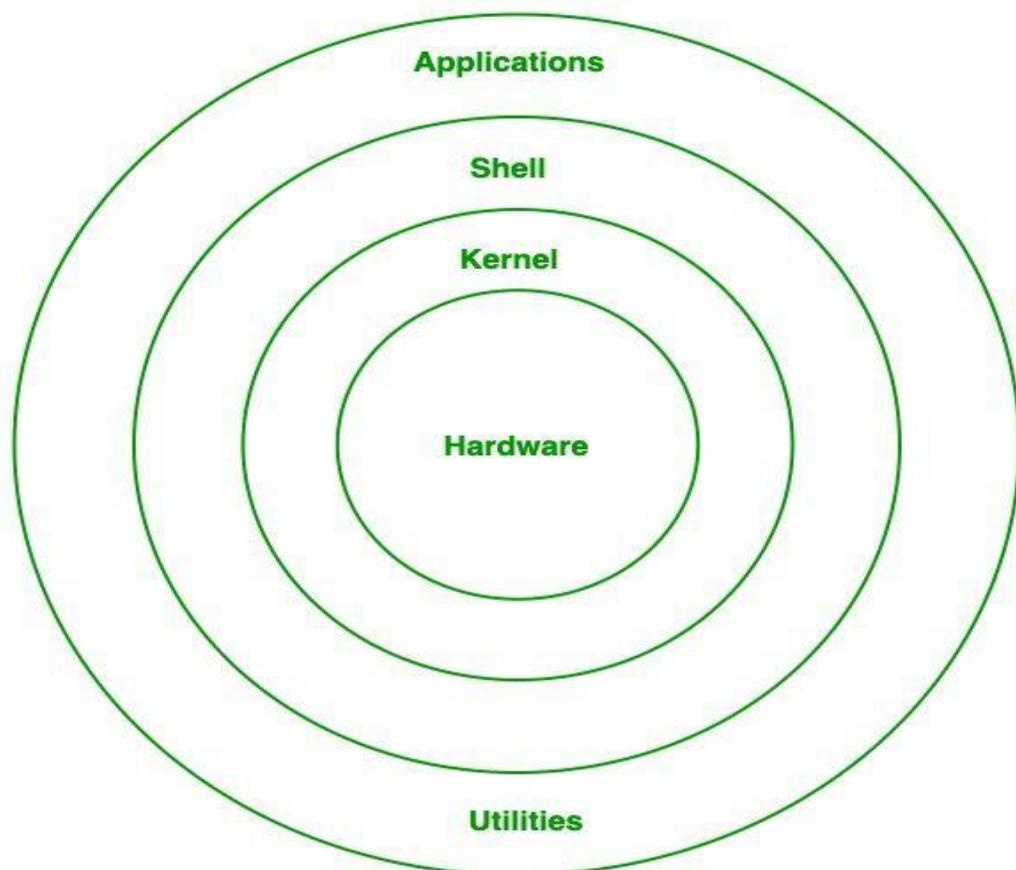
Freedoms:

- Freedom to use
- Freedom to study
- Freedom to modify
- Freedom to distribute
- Freedom to share modified versions

Linux Architecture

Linux consists of:

1. Hardware
2. Kernel
3. Utilities
4. Shell
5. Applications



Conclusion

Linux represents the foundation of modern computing systems and digital infrastructure. Its open-source nature, strong security model, and flexible architecture make it one of the most reliable and widely adopted operating systems in the world.

Understanding Linux fundamentals—its architecture, components, and working principles—provides a strong base for careers in IT, Cloud Computing, DevOps, Cybersecurity, and Software Engineering.

Linux is not just an operating system; it is a **core technological platform** that powers innovation, scalability, and reliability in the modern digital world.