Introduction to Linux

Linux is an operating system, just like Windows or macOS.

An operating system is the software that controls the computer and helps us run programs.

Linux is free and open-source, which means:

- Anyone can use it
- Anyone can see its code
- Anyone can modify it

Linux helps the computer to:

- Manage CPU, memory, and storage
- Run applications properly
- Connect with hardware like keyboard, mouse, printer

Linux is mostly used in:

- Servers
- Cloud computing
- Mobile phones (Android)
- Software development
- Cyber security

Because Linux is stable, secure, and fast, many companies and developers prefer it.

History of Linux:

Linux was created in **1991** by **Linus Torvalds**, a computer science student from Finland. He wanted a free operating system that could run on personal computers. Linus developed the **Linux kernel** and shared it on the internet so that other developers could use it and improve it. Over time, programmers from all over the world contributed to Linux, making it more powerful and reliable. When

combined with GNU tools, it became a complete operating system known as **GNU/Linux**.

Philosophy of Linux:

The philosophy of Linux is based on **open-source principles**. It believes in:

- **Freedom** to use, study, modify, and share software

- **Collaboration**, where developers work together globally

- **Transparency**, as the source code is open to everyone

- **Security and stability**, achieved through continuous improvement

Linux follows the idea that software should be **free and community-driven**, not controlled by a single company. This philosophy has helped Linux grow into one of the most trusted and widely used operating systems in the world.

Origin of Linux:

Linux originated in **1991** when **Linus Torvalds**, a student at the University of Helsinki, created the **Linux kernel** as a personal project. His goal was to build a free and efficient operating system kernel for personal computers. He shared his work publicly, allowing developers worldwide to contribute and improve it.

Origin of GNU/Linux:

Before Linux, the **GNU Project** was started in **1983** by **Richard Stallman** with the aim of creating a completely **free Unix-like operating system**. GNU provided essential system tools such as compilers, libraries, and command-line utilities but lacked a kernel. When the Linux kernel was combined with GNU tools, it formed a complete operating system called **GNU/Linux**.

Overview of Ubuntu, Fedora, and CentOS

Ubuntu

Ubuntu is a **beginner-friendly Linux operating system**. It is easy to install and simple to use, which makes it popular for students and new users. Ubuntu is widely used on desktops, laptops, and servers. It has strong community support and regular updates.

Fedora

Fedora is a **modern and cutting-edge Linux distribution**. It introduces the latest features and technologies first. Developers and learners prefer Fedora because it

helps them stay updated with new tools and software. It is stable but more focused on innovation.

CentOS

CentOS is a **server-focused Linux operating system**. It is known for its **high stability and reliability**, making it suitable for enterprise servers. CentOS is commonly used in data centres and production environments where long-term support is important.

In simple words:

- **Ubuntu** → Easy and user-friendly

- **Fedora** → Latest technology and development

- **CentOS** → Stable and reliable for servers