LAB ASSIGNMENT 1

Study of Ubuntu OS

1. Introduction

What is Linux?

Linux is an open-source, Unix-like operating system based on the Linux kernel, which was developed by **Linus Torvalds** in **1991**. Unlike proprietary operating systems, Linux is freely available for modification and distribution. It is known for its security, stability, and flexibility, making it widely used in **servers, embedded systems, cloud computing, and desktops**. Various Linux distributions (distros) exist, such as Ubuntu, Fedora, Debian, and CentOS, each catering to different user needs.

What is Ubuntu?

Ubuntu is a Linux-based operating system developed and maintained by **Canonical Ltd.** It is based on the **Debian** Linux distribution and was first released in **October 2004**. Ubuntu is designed for ease of use, making it one of the most popular Linux distributions for **personal computing, enterprises, and cloud environments**.

Ubuntu Versions and History

Ubuntu follows a structured release cycle, with new versions every six months and **Long-Term Support (LTS)** versions every two years. LTS versions receive updates and security patches for **five years**, making them ideal for enterprises.

Notable Ubuntu versions include:

- **Ubuntu 16.04 LTS** (Xenial Xerus)
- **Ubuntu 18.04 LTS** (Bionic Beaver)
- **Ubuntu 20.04 LTS** (Focal Fossa)
- **Ubuntu 22.04 LTS** (Jammy Jellyfish)

Ubuntu is widely used due to its **user-friendly interface, security, and vast software support**. It is available in different editions, including **Ubuntu Desktop, Ubuntu Server, and Ubuntu Core (for IoT applications).**

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2. Features of Ubuntu

Ubuntu offers several unique features that make it one of the most preferred Linux distributions:

- **Open-Source & Free:** Ubuntu is available for free and allows users to modify and distribute it without restrictions.
- **User-Friendly Interface:** It provides an intuitive GUI, mainly using the GNOME desktop environment, making it easy for beginners.
- **Enhanced Security:** Ubuntu has built-in security features, including a firewall and minimal vulnerability to malware and viruses.

- **Software Management:** The Ubuntu Software Center simplifies the installation of applications. It also supports package management tools like APT and Snap.
- **Performance & Efficiency:** Ubuntu is lightweight and runs smoothly on older hardware, unlike resource-heavy operating systems.
- **Regular Updates & LTS Support:** Frequent updates ensure the OS remains secure and stable, with LTS versions offering long-term stability.
- **Development-Friendly:** Ubuntu is widely used for software development, supporting various programming languages, Docker, Kubernetes, and cloud-based applications.
- **Customization:** Users can modify the interface, themes, and system settings as per their needs.

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3. Difference Between Ubuntu and Windows OS

Ubuntu and Windows are two different operating systems, each with its advantages and limitations. Below is a comparison:

Feature	Ubuntu OS	Windows OS
Cost	Free and open-source	Paid and proprietary
Security	More secure, fewer malware threats	Prone to malware and viruses
Customization	Highly customizable	Limited customization options
Performance	Lightweight and fast	Can be resource-intensive
Software Support	Supports Linux-based applications	Supports Windows-specific apps
User Interface	Uses GNOME, KDE, XFCE, etc.	Uses Windows GUI with Start Menu
Updates	User-controlled updates	Automatic updates, sometimes forced
File System	Uses EXT4, XFS, etc.	Uses NTFS, FAT32
Usage	Preferred for developers, servers	Common for general users, gaming

Ubuntu is widely used by developers, system administrators, and cloud-based services due to its security and flexibility, while Windows is preferred for general users, gaming, and business applications because of its extensive software support.