OPERATING SYSTEMS

LAB ASSIGNMENT 1

1. INTRODUCTION

- **LINUX**

Linux is a free and open-source family of operating systems that is resilient and flexible. In 1991, an individual by the name as Linus Torvalds constructed it. The system's source code is accessible to everyone for anyone to look at and change, making it cool that anyone can see how the system works. People from all across the world are urged to work together and keep developing Linux due to its openness.
Since the beginning, Linux has grown into a dependable and safe OS that is used in an array of gadgets, including PCs, cell phones, and huge supercomputers. It is well-known for being cost-effective, which implies that employing it doesn't cost a lot, and efficient, which indicates it can complete a lot of jobs quickly.

HISTORY

Linus Torvalds designed the free and open-source Linux operating system kernel in 1991. Torvalds set out to develop a free and flexible system for personal computers, drawing ideas from the UNIX operating system and the MINIX operating system. Teamwork in development was encouraged with the initial release of the Linux kernel, which attracted developers and enthusiasts globally quickly. Various open-source software packages integrated with the Linux kernel created fully operational operating systems, occasionally referred to as Linux distributions.
Over the years, Linux has become known as a key component of modern computing, powering everything from servers and personal computers to supercomputers and smartphones. Due to its flexibility, durability, and strong community support, developers, businesses, and educational institutions frequently opt for it.

VERSIONS OF LINUX

Linux has various distributions (distros), which are customized operating systems built using the Linux kernel. Here are some popular ones:

1. **Ubuntu** : User-friendly and popular for desktops and servers.
2. **Fedora** :Cutting-edge software with frequent updates.
3. **Red Hat Enterprise Linux (RHEL)** : Enterprise-grade, offering commercial support.
4. **Kali Linux** : Specialized for cybersecurity and penetration testing.
5. **Linux Mint** : User-friendly, based on Ubuntu, great for beginners.

- **UBUNTU**

Ubuntu is a consumer-pleasant, loose Linux-primarily based running machine. it's miles free of cost, unlike Windows and macOS, and everybody can make contributions to its improvement because it is open-supply. Ubuntu, which is geared at novices, has a recognizable graphical user interface and pre-installed programs. With multiple versions that suit varied purposes, ranging from desktops to servers, it has a sizable community for software access and support. For individuals looking for a free and configurable operating system, Ubuntu is a strong substitute. It is frequently updated with new features and offers long-term support choices for stability.

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VERSIONS OF UBUNTU

Ubuntu releases new versions twice a year — one in April and one in October. They are categorized into:

1. LTS (Long-Term Support) Versions: Released every 2 years with 5 years of support.
2. Regular Releases: Supported for 9 months and used for the latest updates and features.

VERSIONS :

1. **Ubuntu 4.10 (Warty Warthog)** - First official release in **October 2004**.
2. **Ubuntu 6.06 LTS (Dapper Drake)** - First **LTS** version, launched in **2006**.
3. **Ubuntu 12.04 LTS (Precise Pangolin)** - Popular and widely adopted in enterprises.
4. **Ubuntu 16.04 LTS (Xenial Xerus)** - Improved stability and performance.
5. **Ubuntu 18.04 LTS (Bionic Beaver)** - Featured enhanced security and cloud support.
6. **Ubuntu 20.04 LTS (Focal Fossa)** - Introduced better hardware support and optimized performance.
7. **Ubuntu 22.04 LTS (Jammy Jellyfish)** - Latest stable **LTS** version with GNOME 42.
8. **Ubuntu 23.10 (Mantic Minotaur)** - A non-LTS release with new kernel updates and UI enhancements.
9. **Ubuntu 24.04 LTS (Noble Numbat)** - Upcoming release with extended support and performance improvements.

2.FEATURES OF UBUNTU

- **Free and Open-Source**: Ubuntu is freely available and its source code can be modified and redistributed.
- **User-Friendly Interface**: Comes with a simple and intuitive GNOME desktop environment, suitable for beginners.
- **Long-Term Support (LTS)**: LTS versions offer 5 years of updates for stability and security, ideal for businesses and servers.
- **Software Management**: Supports Ubuntu Software Center, APT package manager, and Snap for easy software installation and management.

- **Security**: Offers built-in security features like firewalls, encryption support, and regular updates to protect against threats.
- **Performance and Efficiency**: Optimized for smooth performance on both old and modern hardware.
- **Cloud and Server Support**: Popular for cloud computing and servers, compatible with platforms like AWS and Azure.

3. DIFFERENCE BETWEEN UBUNTU AND WINDOWS OS

WINDOWS	UBUNTU
Windows operating system is developed by Microsoft.	Ubuntu operating system is developed by Canonical Ltd.
Windows is developed in November 1985 and Windows 10 released on July 2015.	Ubuntu is developed in October 2004.
Windows operating system belongs to Windows NT family.	Ubuntu operating system belongs to Linux family.
It is a closed source software.	It is an open source software.
Users need to have a valid and authenticated license to use it.	Users need not to have a license to use it.
Users can go through Ubuntu's source code to learn and modify it.	Users can't go through window's source code to learn and modify it.

WINDOWS	UBUNTU
Kernel type of Windows is Hybrid.	Kernel type of Ubuntu is Monolithic.
Windows uses more resources than Ubuntu.	Ubuntu uses less resources than Windows.

4. INSTALLATION STEPS :

1. **Install VMware or VirtualBox:** Download and install from the official website.
2. **Download Ubuntu ISO:** Get the latest version from Ubuntu's website.
3. **Create a Virtual Machine:**
   - Open VMware/VirtualBox.
   - Select "Linux" as the OS type.
   - Allocate at least 2GB RAM and 20GB storage in different hard disk.
4. **Install Ubuntu:**
   - Load the ISO file.
   - Follow on-screen instructions: language, keyboard, disk allocation, user setup.
   - Wait for installation to finish and restart.
5. **Explore Ubuntu:**
   - Log in and explore the interface.