Operating System Lab

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Study of Ubuntu OS

Introduction:-

Ubuntu is one of the most popular operating systems based on Linux. It is widely used because of its user-friendly interface, security, and regular updates.

Linux:

Linux is an open-source operating system kernel created by Linus Torvalds in 1991. Unlike Windows or macOS, Linux is free to use and modify. Many different operating systems, called **Linux distributions (distros)**, are built on Linux.

- **Key Features of Linux:**

    o **Free and Open-Source:** Anyone can use and modify it.

    o **Highly Secure:** Less prone to viruses and malware.

    o **Flexible:** Used in servers, mobile devices, supercomputers, and personal computers.

- **Example:** Android, which runs on most smartphones, is based on Linux.

Ubuntu:

Ubuntu is a Linux distribution made by Canonical Ltd. It was first released in 2004 and is known for being easy to use. Ubuntu aims to bring the power of Linux to everyday users with a friendly design.

- **Key Features:**

    o Regular updates every six months.

    o Special Long-Term Support (LTS) versions that receive updates for several years.

- **Example:** Ubuntu LTS versions are popular in businesses that need a stable system for a long time.

Ubuntu Versions:-

Ubuntu offers different versions for different users:

1. **Regular Releases:** Updated every six months with the latest features.

2. **LTS (Long-Term Support) Versions:** Supported for **five years**, making them ideal for businesses and professionals.

Example: Ubuntu **22.04 LTS** is a widely used long-term support version.

Features of Ubuntu:-

Ubuntu offers several key features that make it a preferred operating system:

1. Free and Open-Source

- Ubuntu is completely free to download, use, and share.
- Open-source means anyone can modify and improve it.

2. User-Friendly Interface

- Comes with **GNOME Desktop Environment**, which is simple and intuitive.
- Supports multiple desktop environments like **KDE (Kubuntu)** and **XFCE (Xubuntu)**.

3. Regular Updates

- New versions are released **every six months**.
- **LTS (Long-Term Support)** versions get updates for **five years**.

4. Pre-Installed Software

- Comes with essential apps like **Firefox, LibreOffice, Thunderbird, and VLC**.
- Ubuntu Software Center makes it easy to install additional apps.

5. Strong Security

- **Built-in firewall** and security updates.
- Less vulnerable to viruses and malware than Windows.
- Supports **disk encryption** for better data protection.

6. Lightweight and Fast

- Uses fewer system resources, making it ideal for old and new computers.
- Faster boot times compared to Windows.

7. Supports Multiple Devices

- Works on **PCs, servers, IoT devices, cloud platforms, and Raspberry Pi**.
- Also available for mobile devices through **Ubuntu Touch**.

8. High Customizability

- Users can change themes, icons, and layouts easily.
- Supports multiple desktop environments like **GNOME, KDE, XFCE, and MATE**.

9. Software Availability

- Has a huge repository of free software.
- Supports **Snap, Flatpak, and APT package managers** for installing apps.

10. Developer-Friendly

- Comes with **pre-installed development tools** like Python, GCC, and Git.
- Supports **virtualization, Docker, and cloud computing**.

11. Great Community Support

- Large and active community for troubleshooting.
- Plenty of online resources, forums, and documentation.

12. Excellent Compatibility

- Supports both **32-bit and 64-bit architectures** (older versions support 32-bit).
- Compatible with Windows through **Wine and VirtualBox**.

13. Cloud and Server Support

- Used by companies like **Google, Amazon, and Netflix** for cloud services.
- Ubuntu Server is optimized for hosting websites and applications.

14. Gaming Support

- Supports **Steam and Proton** for gaming.
- Compatible with many Windows games using **Wine and Lutris**.

15. Multiple Workspaces

- Users can create **virtual desktops (workspaces)** for better multitasking.

Difference Between Ubuntu and Windows OS:-

Feature	Ubuntu OS	Windows OS
Developer	Canonical Ltd.	Microsoft Corporation
Cost	Free and open-source	Paid (Requires a license)
Source Code	Open-source	Closed-source (Proprietary)
User Interface	GNOME (default), customizable	Graphical UI (Start Menu, Taskbar, etc.)
Security	More secure, less prone to viruses	More vulnerable to malware and viruses
System Requirements	Lightweight, runs on older hardware	Requires more system resources
Customization	Highly customizable (themes, UI, etc.)	Limited customization options
Software Installation	Uses APT, Snap, Flatpak	Uses .exe, .msi, Microsoft Store
Pre-installed Software	Includes LibreOffice, Firefox, Thunderbird	Includes Edge, Microsoft Store, basic tools
Gaming Support	Limited but improving (Steam, Wine, Proton)	Best gaming support with DirectX
Compatibility	Compatible with Linux-based apps	Compatible with most software and games
File System	Ext4, ZFS, XFS, Btrfs	NTFS, FAT32, exFAT
Performance	Faster, consumes fewer resources	Can slow down over time due to bloatware
Updates	Regular, user-controlled updates	Frequent updates, sometimes forced
Support & Community	Strong open-source community support	Official Microsoft support, forums
Ideal For	Developers, programmers.	Businesses, gamers, general users.