**Study of Ubuntu OS**

**Operating System Lab - Lab Assignment 1**

**1. Introduction**

Linux is an open-source operating system based on the Unix architecture. It was created by Linus Torvalds in 1991 and has since grown into a powerful OS used for servers, desktops, and embedded systems. Unlike proprietary OS like Windows and macOS, Linux is free and customizable.

Ubuntu is a popular Linux distribution (distro) developed by **Canonical Ltd.** It is based on **Debian** and is known for its user-friendliness, security, and regular updates. Ubuntu is widely used for personal computing, development, and cloud-based applications.

**Versions of Ubuntu**

Ubuntu releases a new version every six months, with **LTS (Long-Term Support)** versions available every two years, supported for **five years**. Some recent versions include:

* **Ubuntu 22.04 LTS (Jammy Jellyfish)** - Released in April 2022
* **Ubuntu 20.04 LTS (Focal Fossa)** - Released in April 2020
* **Ubuntu 18.04 LTS (Bionic Beaver)** - Released in April 2018

**2. Features of Ubuntu**

1. **Free and Open Source** – Available for free with an active developer community.
2. **Security** – Built-in firewall, fewer vulnerabilities compared to Windows.
3. **User-Friendly Interface** – Modern UI with **GNOME Desktop** as default.
4. **Software Support** – Supports a vast range of applications, including LibreOffice, Firefox, and VS Code.
5. **Regular Updates** – Frequent security and feature updates.
6. **Customization** – Allows extensive theming and tweaks using GNOME Tweaks and extensions.
7. **Performance** – Efficient resource utilization, making it ideal for older hardware.
8. **Command-Line Power** – Advanced users can utilize the **Terminal** for automation and system control.

**3. Difference Between Ubuntu and Windows OS**

**Installation Process**

1. **Download Ubuntu ISO** from the [official website](https://ubuntu.com/download).
2. **Install VMware or VirtualBox** on Windows.
3. **Create a new virtual machine** and allocate RAM, storage, and CPU cores.
4. **Boot from the Ubuntu ISO**, follow the installation steps, and set up user credentials.
5. **Complete installation** and explore Ubuntu features.

**Ubuntu and Windows are two popular operating systems, but they have several fundamental differences.**

**Ubuntu is an open-source, Linux-based operating system developed by Canonical Ltd. It is free to use and highly customizable, making it popular among developers, system administrators, and privacy-conscious users. Ubuntu is known for its security, as it is less prone to malware and viruses compared to Windows. Software installation on Ubuntu is done through package managers like APT, Snap, and Flatpak, which provide a centralized and secure way to install applications. It also supports various desktop environments like GNOME, KDE, and XFCE, allowing users to modify their user interface extensively. Ubuntu is lightweight and can run efficiently on older hardware. However, it has limited support for commercial software and gaming, though applications like Steam and Wine help bridge this gap.**

**Windows, on the other hand, is a proprietary operating system developed by Microsoft. It requires a paid license for full access. Windows is widely used for personal computing, gaming, and business applications due to its extensive software compatibility. It has a user-friendly graphical interface with the familiar Start Menu and taskbar. Unlike Ubuntu, Windows is more prone to security threats like viruses and malware, requiring frequent antivirus protection. Windows users install software using .exe files or the Microsoft Store, making it more accessible to non-technical users. The operating system also offers strong support for gaming, with official drivers and better compatibility for high-performance applications. However, Windows consumes more system resources and may not run as efficiently on older computers.**

**Ubuntu is ideal for those who prioritize security, customization, and a free open-source experience, while Windows is better suited for users who need extensive software compatibility, gaming support, and ease of use.**

**Conclusion**

Ubuntu is a powerful, secure, and free OS that provides an excellent alternative to Windows. It is widely used by developers, IT professionals, and general users who prefer an open-source ecosystem. Installing Ubuntu on a virtual machine allows users to explore Linux without affecting their primary OS.

