**OPERATING SYSTEM**

**ASSIGNMENT-1**

**1.LINUX**: Linux is an open-source Unix-like operating system kernel. It was initially created by Linus Torvalds in 1991. The "kernel" is the core of an operating system, responsible for managing hardware and software resources. Its open-source nature has fostered a vast community of developers, leading to its widespread adoption and versatility**.**

**History:**

* 1991**:** Linus Torvalds releases the initial Linux kernel.
* Early 1990s: The GNU General Public License (GPL) plays a crucial role in its development.
* Over time, it has evolved into a robust and powerful operating system.

**UBUNTU:** Ubuntu is a popular Linux distribution based on the Debian architecture. It's designed to be user-friendly and accessible, making Linux more approachable for everyday users. It is developed by Canonical Ltd.

**History:**

* 2004: The first Ubuntu release (4.10 "Warty Warthog") is launched.
* Mark Shuttleworth and Canonical aimed to create a user-friendly Linux desktop.
* Ubuntu has become one of the most widely used Linux distributions, particularly for desktop and cloud computing.
* Ubuntu has a regular release cycle, with LTS versions released every two years.
* The latest LTS release as of early 2025 is Ubuntu 24.04 "Noble Numbat".

**2.Features of Ubuntu:**

**User-Friendliness:**

* Ubuntu is designed to be accessible, even for those new to Linux. Its graphical user interface (GUI) is intuitive.
* This ease of use has made it a gateway for many people to explore the world of Linux.

**Open Source and Free:**

* Ubuntu is completely free to download, use, and distribute.
* Its open-source nature fosters a strong community and allows for continuous improvement.
* Security:
* Linux-based systems, including Ubuntu, are generally considered very secure.
* Ubuntu provides regular security updates and has a built-in firewall.

**Large Community and Support:**

* Ubuntu boasts a vast and active community, meaning users can easily find help and support online.
* This strong community ensures that problems are often quickly resolved.

**Software Availability:**

* Ubuntu has access to a wide range of software through its repositories.
* It supports a variety of applications for productivity, entertainment, and development.
* Snap packages, allow for easy cross distribution application instillation.

**Customization:**

* Ubuntu is highly customizable, allowing users to tailor the desktop environment and system settings to their preferences.

**Long-Term Support (LTS):**

* Ubuntu releases LTS versions every two years, which receive extended support and security updates. This is very important for stability.

**Hardware Compatibility:**

* Ubuntu generally has very broad hardware compatibility, and often auto detects drivers.

**Desktop Computing:**

* Ubuntu is a popular choice for everyday desktop use, offering a stable and reliable operating system.

**Server Environments:**

* Ubuntu Server is widely used for web servers, cloud computing, and other server applications.

**Development:**

Ubuntu provides a strong platform for software development, with support for various programming languages and tools.

**Cloud computing:**

* Ubuntu is a very popular operating system used in cloud computing environments.

**3. Difference between ubuntu and windows OS.**

**1. Open Source vs. Closed Source:**

Ubuntu:

It's based on the Linux kernel, which is open-source. This means its source code is freely available, allowing users to view, modify, and distribute it.

This fosters a collaborative development environment and a strong community.

Windows:

It's a closed-source, proprietary operating system developed by Microsoft.

Its source code is not publicly available, and users are bound by licensing agreements.

**2. Cost and Licensing:**

Ubuntu:

It's generally free to download, use, and distribute.

This makes it an attractive option for budget-conscious users and organizations.

Windows:

It requires a paid license for most versions.

Licensing costs can vary depending on the edition.

**3. Security:**

Ubuntu:

* Linux-based systems, including Ubuntu, are often considered more secure due to their open-source nature and user privilege model.
* The active community quickly addresses security vulnerabilities.

Generally, less of a target for viruses.

Windows:

* Due to its widespread use, Windows is a more frequent target for malware and viruses.
* While Microsoft provides regular security updates, it can still be more vulnerable.

**4. Customization and Flexibility:**

Ubuntu:

* It offers a high degree of customization, allowing users to modify the desktop environment, system settings, and software.
* Users have more control over their system.

Windows:

* It provides less customization compared to Ubuntu.
* While users can personalize some aspects, the core system remains relatively fixed.

**5. Software Availability:**

Ubuntu:

* Primarily relies on open-source software and its own repositories.
* While the software library is extensive, some proprietary applications may not be available.

Windows:

* Has a larger software ecosystem, with support for a wider range of commercial and proprietary applications.
* It's the dominant platform for many software developers.

**6. Performance:**

Ubuntu:

* Generally considered more lightweight and efficient, especially on older hardware.
* It can often run faster and smoother than Windows on comparable systems.

Windows:

* Can be resource-intensive, particularly with newer versions.
* Performance can degrade over time with accumulated software and updates.