**Operating System**

**(4ITRC2)**

**IT IV Semester**

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**Study Of Ubuntu OS**

**Introduction:**

**Linux:**

The Linux Operating System is a type of operating system that is similar to Unix, and it is built upon the Linux Kernel. The Linux Kernel is like the brain of the operating system because it manages how the computer interacts with its hardware and resources. It makes sure everything works smoothly and efficiently. But the Linux Kernel alone is not enough to make a complete operating system.

Developed by Linus Torvalds in 1991, the Linux operating system is a powerful and flexible open-source software platform. It acts as the basis for a variety of devices, such embedded systems, cell phones, servers, and personal computers. Linux, that’s well-known for its reliability, safety, and flexibility, allows users to customize and improve their environment to suit specific needs.

**Ubuntu:**

Ubuntu is a popular open-source operating system based on Linux, developed and maintained by Canonical Ltd. It is known for its user-friendly interface, security, and stability. Ubuntu is widely used for personal computing, server management, and cloud computing due to its efficiency and flexibility.

First released in 2004, Ubuntu is built on the Debian Linux distribution and follows a six-month release cycle. It comes with a variety of pre-installed software, including the LibreOffice suite, Firefox browser, and essential utilities for development and multimedia. Ubuntu supports multiple desktop environments, with GNOME being the default.

**Versions of Ubuntu:**

 **Long-Term Support (LTS) Versions** – Released every **two years** (April of even-numbered years) and supported for **five years** (e.g., Ubuntu **22.04 LTS**, Ubuntu **24.04 LTS**).

 **Interim Releases** – Released every **six months** (April & October) with **nine months of support** (e.g., Ubuntu **23.10**).

**History of Linux:**

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.

**Features of Ubuntu:**

Ubuntu is a popular **open-source operating system** based on **Linux**, known for its stability, security, and ease of use. It is widely used for **personal computers, servers, and cloud computing**. Some key features of Ubuntu include:

**1. Free and Open Source**

* Ubuntu is completely **free to use** and its source code is open for modification, making it accessible to everyone.

**2. User-Friendly Interface**

* The **GNOME desktop environment** provides a modern, intuitive, and customizable interface.

**3. Regular Updates & Security**

* Ubuntu receives **frequent security patches** and **software updates**, ensuring a stable and secure system.
* **Built-in firewall and antivirus protection** enhance security.

**4. Software Availability**

* Comes pre-installed with essential software like **LibreOffice, Firefox, and Thunderbird**.
* Access to thousands of applications through the **Ubuntu Software Center** and **Snap Store**.

**5. Lightweight & Performance-Oriented**

* Ubuntu is optimized for **fast performance**, even on older hardware.
* Various versions like **Ubuntu Server and Ubuntu Core** are available for different needs.

**Difference Between Ubuntu and Windows OS**

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| | **Feature** | **Ubuntu** | **Windows OS** | | --- | --- | --- | | Cost | Free and Open Source | Paid, with different versions (Home, Pro, Enterprise) | | Security | More secure due to limited malware threats and open-source transparency | More vulnerable to malware and viruses | | User Interface | GNOME (default), but customizable | Windows Explorer, with limited UI customization | | Software Availability | Uses open-source software, supports Debian-based packages | Supports a vast range of proprietary and commercial software | | Updates | Regular and free updates | Updates can be costly and sometimes forced | | Performance | More efficient, less resource-heavy | Can be resource-intensive, especially on older hardware | | Gaming | Limited game support but improving with Steam and Proton | Extensive support for gaming with DirectX | | Hardware Support | Supports a wide range of hardware but may require additional drivers | Better plug-and-play hardware compatibility | | Customization | Highly customizable | Limited customization options | |