**4ITRC2 Operating System Lab**

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**Lab Assignment 1**

**Aim:** To install and study Ubuntu OS

**To perform:** Install VMware or Virtual Box and Ubuntu over Windows OS

**To Submit:** Study of Ubuntu OS

Your submission should include writeup in following headings

1. Introduction (in brief about linux and ubuntu, its versions + some history)

2. Features of Ubuntu

3. Difference between ubuntu and windows OS.

**Study of Ubuntu OS**

**1. Introduction** Linux is an open-source, Unix-like operating system kernel that serves as the foundation for numerous distributions (distros). One of the most popular and user-friendly Linux distributions is Ubuntu. Ubuntu was first released in 2004 by Canonical Ltd. and is based on Debian. It is widely used for personal computers, servers, and cloud computing.

Ubuntu has several versions, including:

* **LTS (Long Term Support)**: These versions receive updates and security patches for five years.
* **Interim releases**: These versions are released every six months and have a support period of nine months.

Some notable versions of Ubuntu include Ubuntu 16.04 (Xenial Xerus), Ubuntu 18.04 (Bionic Beaver), Ubuntu 20.04 (Focal Fossa), and the latest releases such as Ubuntu 22.04 (Jammy Jellyfish).

**2. Features of Ubuntu**

* **Open Source**: Ubuntu is free to use, modify, and distribute.
* **User-Friendly Interface**: Ubuntu provides a simple and intuitive interface through GNOME desktop.
* **Security**: Ubuntu is more secure than Windows due to its strong user permissions and lack of common malware.
* **Regular Updates**: It receives frequent security updates and improvements.
* **Software Support**: Supports a vast range of software through the APT package manager and Snap store.
* **Customization**: Ubuntu allows users to customize the interface and functionalities.
* **Lightweight**: It performs efficiently even on older hardware.
* **Compatibility**: It supports multiple programming languages and frameworks, making it ideal for developers.

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* **Cloud Integration**: Ubuntu is widely used in cloud computing and servers, including AWS, Google Cloud, and Azure.

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

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| **Feature** | **Ubuntu OS** | **Windows OS** |
| **Cost** | Free and open-source | Paid with different license types |
| **Security** | Highly secure, fewer malware attacks | More prone to viruses and malware |
| **Customization** | Highly customizable | Limited customization options |
| **User Interface** | Uses GNOME (default), customizable | Uses Windows Explorer, fixed UI |
| **Software Management** | Uses APT and Snap packages | Uses Microsoft Store and EXE files |
| **Performance** | Lightweight, runs on older hardware | Requires more system resources |
| **Gaming Support** | Limited native support but improving | Strong gaming support with DirectX |
| **File System** | Uses Ext4, Btrfs, ZFS | Uses NTFS and FAT32 |
| **Target Users** | Developers, System Admins, General Users | General Consumers, Businesses |