4ITRC2 Operating System Lab

Lab Assignment 1

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

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

1. **Introduction** : Linux is a powerful open-source operating system that serves as the backbone for servers, developers, and tech enthusiasts. Among its many distributions, Ubuntu stands out as one of the most popular and user-friendly options, developed by Canonical Ltd. Ubuntu was first released in 2004, built upon Debian Linux, and has since evolved into a reliable OS for both personal and professional use. It follows a structured release cycle, offering Long-Term Support (LTS) versions that receive updates for five years, ensuring stability, while regular releases bring the latest features with shorter support durations. As of 2024, the latest version is Ubuntu 24.04 LTS (Noble Numbat).

2. **Key Features of Ubuntu :**

• Free and Open Source – Ubuntu is completely free, with an active community supporting its development.

• User-Friendly Interface – Comes with the GNOME desktop environment, making navigation simple.

• Enhanced Security – Unlike Windows, Ubuntu is much less prone to viruses and malware.

• Frequent Updates – Regular security patches and feature improvements keep it stable and modern.

• Built-in Applications – Pre-installed with useful tools like LibreOffice, Firefox, Thunderbird, and Terminal.

• Easy Software Installation – Uses apt (Advanced Package Tool) and the Snap Store for managing applications.

• Highly Customizable – Users can personalize everything, from themes to core functionality.

• Efficient Performance – Runs smoothly even on older hardware.

• Multilingual Support – Offers multiple language options for accessibility.

• Great for Cloud & Servers – Widely used in cloud computing and enterprise environments.

3. **Ubuntu vs. Windows: Key Differences**

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| Feature | Ubuntu OS | Windows OS |
| License | Open-source & free | Proprietary & paid |
| Customization | Highly customizable with different desktop environments | Limited customization |
| Security | More secure, less prone to malware | More vulnerable to security threats and viruses |
| Software | Supports open-source applications | Supports commercial and proprietary applications |
| Performance | Lightweight, runs efficiently on older hardware | Resource-intensive, requires higher system specs |
| User Interface | Uses GNOME, KDE, XFCE, etc. | Uses Windows Explorer UI |
| Updates | Frequent and fast updates with rolling releases | Less frequent updates, often causing system slowdowns |
| File System | Uses EXT4, XFS, Btrfs | Uses NTFS, FAT32 |
| Gaming Support | Growing support through Steam Proton and Wine | Native support for most games |
| Cost | Completely free | Requires a paid license for full features |