Name: Shrey Pendurkar
Class: D10C
Batch: C
Roll No: 59

CVT - Experiment 1

Aim:

Creating and running Virtual Machine on a hosted Hypervisor and studying the differences in the settings of Windows OS and Linux.

The Linux OS

Ubuntu is one of the most popular distributions (distros) of Linux, an open-source operating system that has its roots in Unix. Linux itself was created by Linus Torvalds in 1991, and since then, it has evolved into a highly flexible and powerful OS used across desktops, servers, and embedded systems worldwide.

Ubuntu, which was first released in 2004 by Mark Shuttleworth and his company Canonical, is a user-friendly, stable, and robust Linux distribution designed to provide a complete and straightforward operating system for users, especially those new to Linux. Some of the features that Ubuntu offers are:

- **Open-Source Nature:** Ubuntu is built on the open-source Linux kernel, allowing full transparency, customization, and collaborative development. It's free to modify, share, and redistribute.
- **User-Friendly:** Designed for ease of use with a clean GUI (GNOME) and pre-installed software for productivity, multimedia, and internet use. Ubuntu is ideal for newcomers to Linux.
- **Security:** Strong security model with user privilege separation (sudo), regular updates, and tools like AppArmor for enhanced protection.
- **Package Management:** Uses APT for easy software installation and updates, along with Snap packages for containerized applications.
- **Performance:** Lightweight and efficient, Ubuntu performs well on both modern and older hardware, offering fast boot times and low memory usage.

The Windows OS

Windows 11, released in October 2021, is the latest version of Microsoft's flagship operating system. Building on the foundation of Windows 10, it introduces numerous new features, aesthetic improvements, and performance enhancements, aiming to create a more modern, efficient, and user-friendly computing experience. Windows 11 emphasizes productivity, visual appeal, security, and integration with modern hardware and software trends. Some of the features that Windows 11 offers are:

- **Modern User Interface:** Windows 11 features a centered Taskbar, rounded corners, and Fluent Design for a sleek, minimalistic look. Snap Layouts and Snap Groups improve multitasking and window management.
- **Performance Enhancements:** Faster boot times, optimized for modern hardware like SSDs, DirectStorage for faster game loading, and better battery efficiency.
- **Gaming Focus:** DirectStorage, Auto HDR, and Xbox Game Pass integration enhance the gaming experience, offering faster load times and improved visuals. ● **Improved Security:** TPM 2.0, Secure Boot, Virtualization-Based Security (VBS), and Windows Hello enhance system protection and data security.

The settings between **Windows OS** and **Linux** vary significantly, as they are designed around different principles and user experiences. Here are some key differences:

1. User Interface (UI) & Desktop Environment

- **Windows**: Offers a consistent graphical user interface (GUI) with elements like the taskbar, Start menu, and File Explorer. It's designed for ease of use for all types of users, with minimal technical expertise required.

- **Linux**: Provides various desktop environments (DE) like GNOME, KDE Plasma, XFCE, and others. Users can customize their environment significantly, which can range from a minimal setup to highly feature-rich and resource-heavy environments.

2. System Settings & Control Panel

- **Windows**: The main system configuration tool is the **Control Panel**, with newer Windows versions having **Settings** (introduced with Windows 10). These are mainly GUI-based, with options for hardware, network, user accounts, security, and privacy settings.

- **Linux**: Linux also has GUI-based configuration tools, but the settings depend on the desktop environment being used. For example, GNOME has its own settings application, and KDE has **System Settings**. In addition to GUI tools, advanced settings often require command-line interaction.

3. <u>Command Line / Terminal</u>

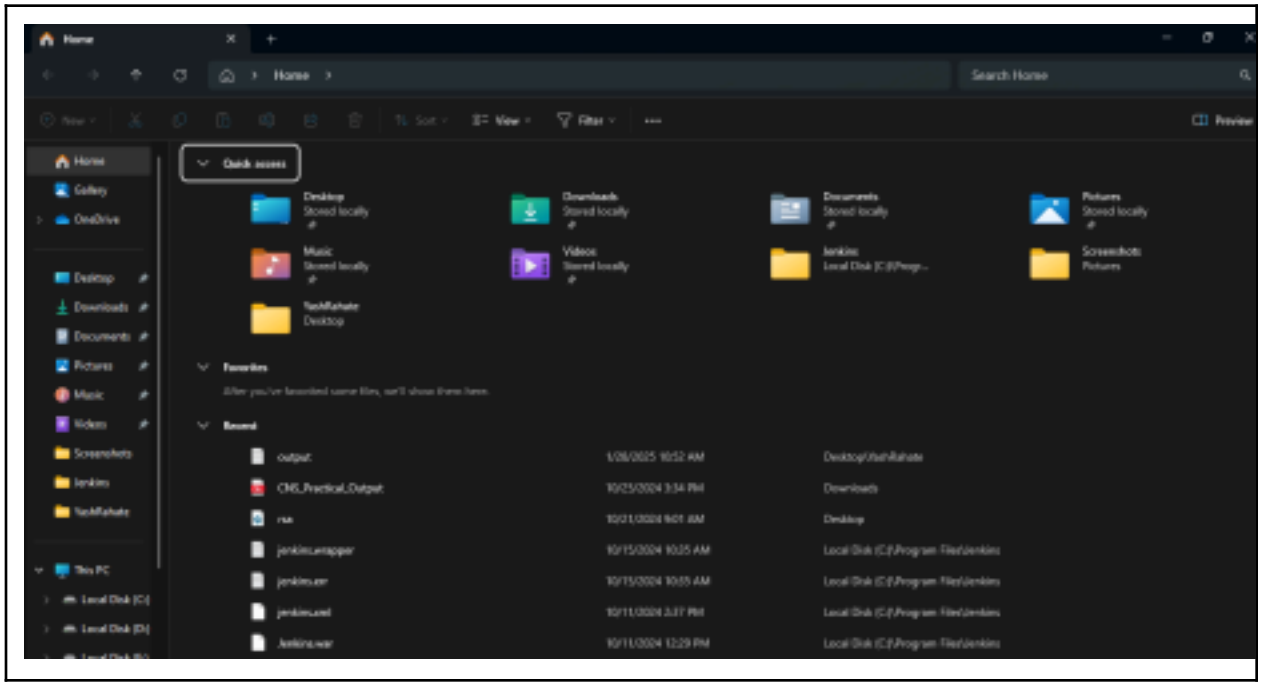
- **Windows**: The traditional command-line interface (CLI) is **Command Prompt** (cmd), but more advanced users often use **PowerShell** or the newer **Windows Terminal** that supports Linux-like commands via Windows Subsystem for Linux (WSL).

- **Linux**: The command-line interface (CLI) is often the main method for performing administrative tasks. Tools like `bash` (Bourne Again Shell) or other shells (e.g., zsh) are commonly used for interacting with the system. Linux's terminal is a powerful tool for system management, network configurations, and file manipulations.

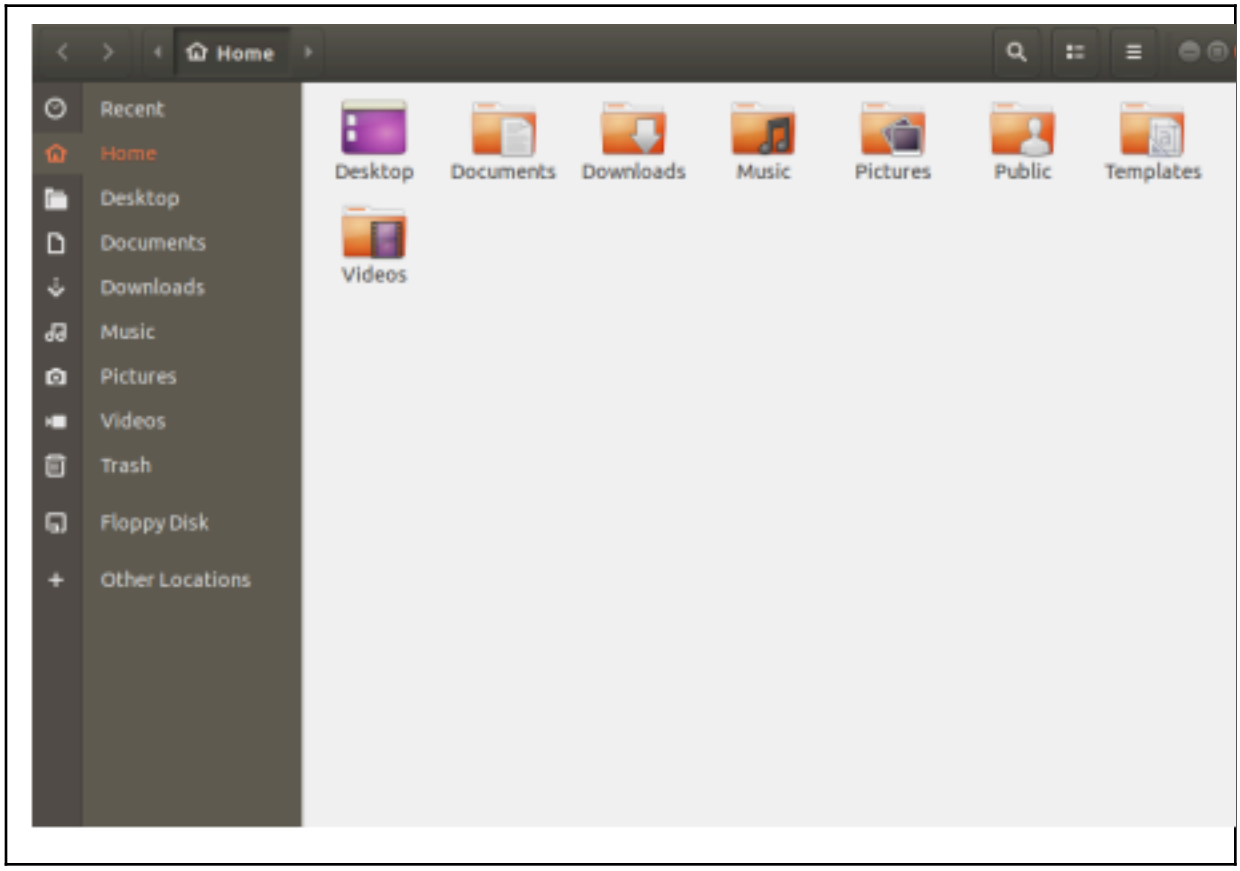
```
To run a command as administrator (user "root"), use "sudo <command>"
See "man sudo_root" for details.

shrey@ubuntu:~$ echo "Hello"
Hello
shrey@ubuntu:~$
```

4. File System & Mounting Drives

- **Windows**: Uses NTFS, FAT32, and exFAT file systems. Drives are automatically mounted and appear in File Explorer (e.g., C: drive, D: drive).

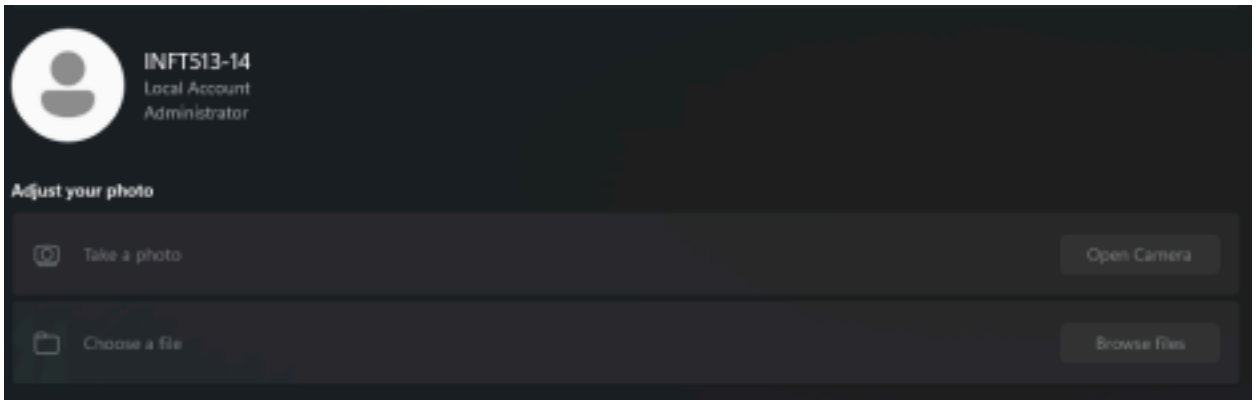


- **Linux**: Uses a variety of file systems, with **ext4** being the most common. Devices and partitions are mounted in a unified directory structure (e.g., `/mnt` or `/media`), and drives may require manual mounting or can be automatically mounted with configuration.

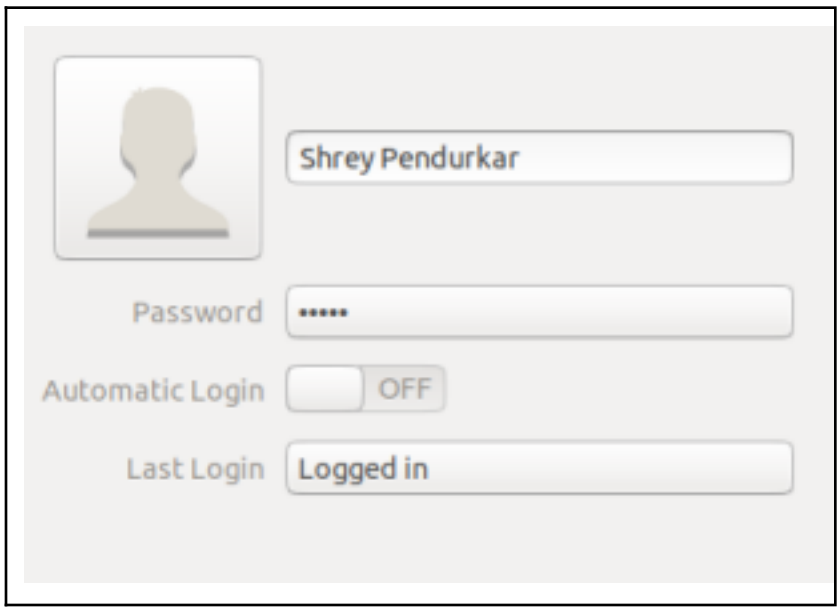


5. User Management

- **Windows:** Windows supports Microsoft accounts for synchronization across devices, or local user accounts for offline use.



- **Linux:** Ubuntu supports local user accounts and online accounts (e.g., Google, Microsoft) for syncing email and data across services.



System info vs task manager
Gedit vs notepad

Conclusion

While **Windows OS** is designed for ease of use with a focus on user-friendly graphical tools and automatic configurations, **Linux** offers more flexibility, but often requires more technical knowledge, particularly with configuration and customization. Linux's open-source nature makes it more adaptable to different user needs, especially for developers, system administrators, and tech enthusiasts.