

Open Source Computing

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Aim:

To dual boot the local system and add another Operating System on the device. The two operating systems on my device are Windows and Linux.

Theory:

What is Open Source ?

Open source is a collaborative development model that encourages transparency, sharing, and community driven improvement of software. Unlike proprietary software, open source projects make their source code available to anyone, allowing developers to study, modify, and distribute their versions of the software. This model fosters innovation and rapid iteration, as a global community of contributors can identify and fix bugs, add new features, and optimize performance. Open source not only democratizes technology but also empowers individuals and organizations to tailor solutions to their specific needs, driving collective progress and reducing dependence on single vendors.

Difference between Open Source and Commercial Software -

An operating system is an important software that manages computer hardware and software resources, providing essential services for applications. It acts as a bridge between the hardware and user applications, ensuring efficient operation and resource allocation. Examples include Windows, macOS, and Linux. In contrast, commercial software refers to proprietary applications developed and sold for profit, designed to perform specific tasks like word processing, graphic design, or data analysis. These applications, such as Microsoft Office and Adobe Photoshop, are typically licensed to users with restrictions on copying and modification. Thus, while an OS is fundamental for running a computer, commercial software offers specialized functionalities for end-users.

What is Linux ?

Linux is an open-source operating system based on the Unix architecture, known for its robustness, security, and flexibility. It was created by Linus Torvalds in 1991 and has since grown into a major force in the computing world, powering everything from servers and supercomputers to smartphones and embedded devices. Unlike proprietary operating systems, Linux's source code is freely available, allowing developers to modify and distribute it. This has led to a diverse ecosystem of distributions, such as Ubuntu, Fedora, and CentOS, each tailored to different user needs. Its open nature and strong community support make Linux a popular choice for developers, system administrators, and tech enthusiasts.

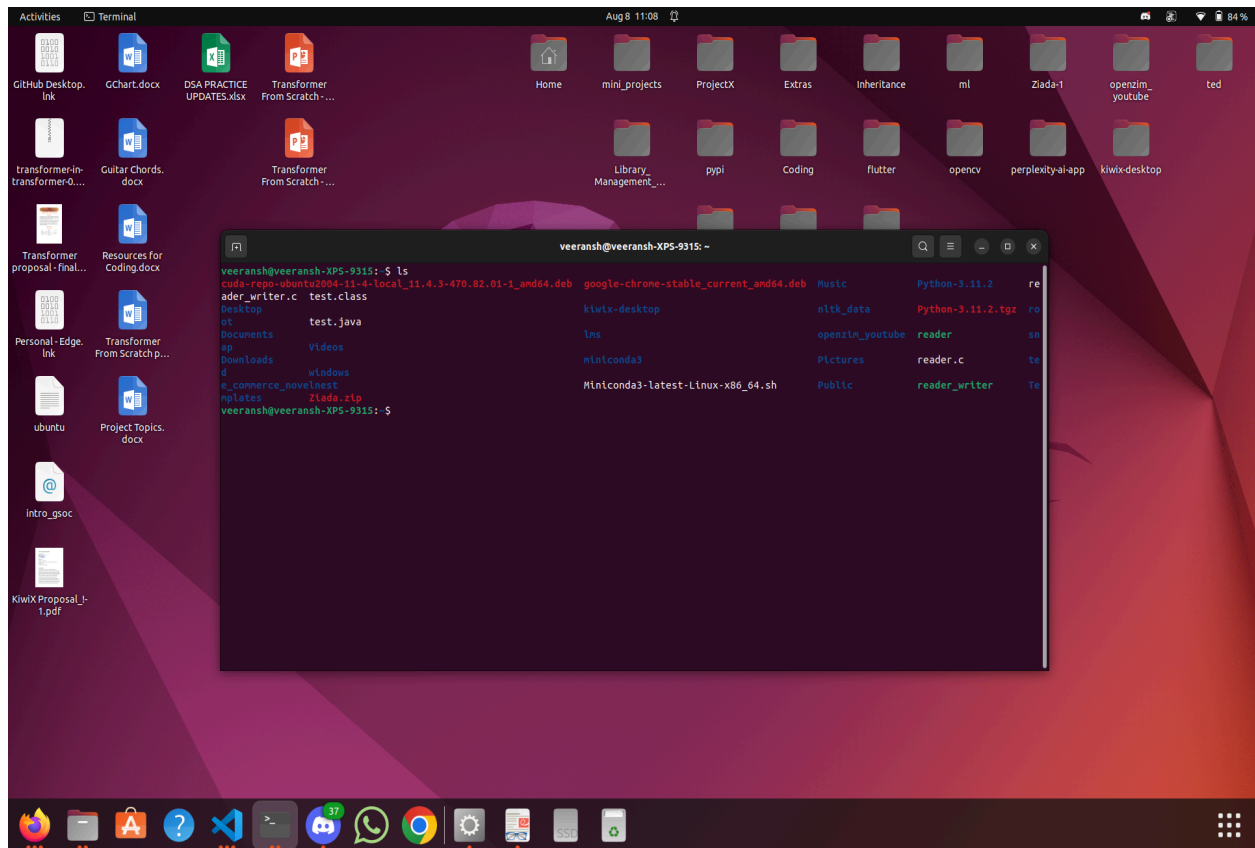
Where can I use Linux ?

Linux can be used in a wide range of environments due to its versatility and reliability. It's commonly employed in server environments for web hosting, database management, and network operations because of its stability and security features. Linux is also popular on desktops and laptops for personal and professional use, offering a variety of distributions like Ubuntu and Fedora that cater to different user preferences. In the development world, Linux serves as a preferred platform for programming and software development due to its powerful command-line tools and compatibility with various programming languages. Additionally, Linux powers many embedded systems, including routers, smart TVs, and IoT devices, and is the foundation for Android, making it prevalent in mobile technology. Its adaptability makes Linux suitable for virtually any computing task.

How to dual boot a pc/laptop, having linux alongside ?

1. Backup Data: Ensure all important data is backed up.
2. Download Linux ISO: Obtain the Linux distribution ISO file from the official website.
3. Create Bootable USB: Use software like Rufus to create a bootable USB drive with the Linux ISO.
4. Disable Secure Boot: Access BIOS/UEFI settings and disable Secure Boot.
5. Partition Hard Drive: In Windows, use Disk Management to shrink the main partition and create space for Linux.

6. Boot from USB: Restart the computer and boot from the USB drive.
7. Start Linux Installer: Select "Install Linux" from the boot menu.
8. Choose Installation Type: Select "Install alongside Windows" or "Something else" for manual partitioning.
9. Create Partitions: Allocate space for root (/), swap, and home (/home) partitions.
10. Install Linux: Proceed with the installation process.
11. Set Bootloader: Install the GRUB bootloader to manage dual boot.
12. Complete Installation: Finish the installation and restart the computer.
13. Boot Selection: Choose between Windows and Linux from the GRUB boot menu at startup.



Conclusion:

Nowadays, almost each and every company primarily use the operating system of windows, Linux is not yet majorly used, but there are various reasons why Linux is better and should be used. Linux is an open source, meaning it's source code is freely available, which is a big boost for the developers throughout the world. Linux is also used for its robust security features, with a strong focus on taking user permissions. Linux offers high stability and performance, making it ideal for servers and long-term use without the need for frequent reboots. Linux can run efficiently on older or less powerful hardware, extending the life of older computers. Linux offers a powerful command-line interface and supports a wide range of programming languages and development tools, making it a preferred choice for developers, for these given reasons Linux is a go-to OS for aspiring developers, and hence Linux OS is successfully dual booted in my Laptop.