

Lecture 2 Introduction to Linux Notes

Important concepts:

- **Operating System:** The operating system is a piece of software that manages the computer hardware and software resources. The operating system also contains services which some applications require to run.
- **Kernel:** The kernel is the core component of the operating system that allows it to interact with the hardware.
- **Components of an operating system:** These components include applications, graphical desktop environments, daemons, shells, and the kernel.
- **Linux :** Linux is an operating system based on Unix that is focused on productivity and modularity.
- **Linux Characteristics:** Some of the characteristics of Linux include the fact that it is open-source, it works on almost any system, and it is highly scalable for servers.
- **GNU Toolchain:** A set of programming tools based in Linux.
- **Linux Distribution:** Different "flavors" of Linux that are each suited for different workloads or processes.
- **What is Ubuntu:** Ubuntu is a linux distribution that is very accessible and available as it is open source and has support for many languages.
- **Ubuntu Release cycles:** Regular updates are shipped every 6 months/supported for 9 months and Long-Term Support updates are shipped every 2 years and are supported for 5 years.
- **What is Debian:** Debian is a Linux distribution that is known to be the "grandfather" of all Linux distributions, with Ubuntu being its user-friendly version.
- **Different software licensing models (open source vs closed source):** Open source generally means the software in question is free and the source code is readable and modifiable without a license, while closed source means you cannot view/edit the source code of the software.
- **The 4 Freedoms of Free Software:**
 - Software can be used for any purpose
 - Source code can be viewed
 - Software is able to be redistributed free of charge
 - Modified software is also able to be redistributed
- **Virtualization:** A technology that is used to let multiple operating systems run on one computer.
- **Hypervisor and types:**
 - Hardware Hypervisor (bare-metal): An "operating system" that runs directly on the hardware that allows for much faster virtualization than software hypervisors.
 - Software Hypervisor: An application that runs on top of the operating system.
- **VirtualBox:** Virtualbox is a software hypervisor that allows for virtualization of most operating systems.

List of the main Linux distributions

- Ubuntu
- Debian
- Red Hat

List of some of the Debian Based Linux distributions

- Linux Mint
- Kali Linux
- Parrot OS
- Linux Deepin

List of some of the Red Hat-based Linux distributions

- CentOS
- Oracle Linux
- AlmaLinux

List of some of the Ubuntu Based Linux Distributions

- elementary OS
- Zorin OS
- Ubuntu Budgie
- Kubuntu