

Lecture 2 Introduction to Linux Notes

Important concepts:

- **Operating System:** An operating system provides all the fundamental software features of a computer
- **Kernel:** It is a software component that is responsible for managing low level features of the computer, including the following managing system hardware, memory allocation, CPU time, and program to program interaction
- **Components of an operating system:**
 - Kernel
 - Shell
 - Applications
- **Linux:** is a Unix-like Operating System popular in academic and business environments
- **Linux Characteristics:**
 - Open source software
 - Free of charge
 - Includes Unix tools
 - Highly scalable and customizable
 - Can be installed on almost any system
- **GNU Toolchain:** is a broad collection of programming tools produced by the GNU Project
- **Linux Distribution:** A complete Linux system package
- **What is Ubuntu:** it is a Linux distribution, freely available with both community and professional support
- **Ubuntu Release cycles:**
 - Regular or Non-LTS: shipped every 6 months and supported for 9 months
 - LTS(Long-Term Support):shipped every two even years and is supported for 5 years
- **What is Debian:** it is an all-volunteer organization dedicated to developing free software and promoting the ideals of the Free Software community
- **Different software licensing models (open source vs closed source):**
 - Open Source: the software may be distributed for a fee or free. The source code is distributed with the software.
 - Closed Source: the software is not distributed with the source code. The user is restricted from modifying the code.
- **The 4 Freedoms of Free Software:**
 - Freedom 0: use the software for any purpose
 - Freedom 1: examine the source code and modify it as you see fit
 - Freedom 2: redistribute the software
 - Freedom 3: redistribute your modified software
- **Virtualization:** is defined as creating virtual versions of something
- **Hypervisor and types:** Software or hardware in charge of creating, managing, and running virtual machines
 - Type 1 (bare-metal hypervisor): this type runs directly on the hardware. Basically the OS for the physical machine
 - Type 2: an application that runs on top of an OS. The most commonly used in client-side.

- **VirtualBox:** is a powerful product for virtualization for enterprise as well as home use. Not only is it feature rich, high performance, it is also the only professional solution that is freely available on open source software under the terms of GNU General Public License version 3.

List of the main Linux distributions

- Debian
- Red Hat
- Slackware
- Arch Linux

List of some of the Debian Based Linux distributions

- Ubuntu
- Parrot OS
- Linux Deepin
- MX Linux

List of some of the Red Hat-based Linux distributions

- Fedora
- CentOS
- AlmaLinux
- Scientific Linux

List of some of the Ubuntu Based Linux Distributions

- Pop OS
- LinuxLite
- LinuxMint
- Zorin OS