Lecture 2 Introduction to Linux Notes

Important concepts:

- **Operating System:**
  - An operating system provides all the fundamental software features of a computer.
- **Kernel:**
  - An OS Kernel is a software component that's 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:**
  - There are 8 components of an Operating System which are the Process Management, I/O Device Management, File Management, Network Management, Main Memory Management, Secondary Storage Management, Security Management, and Command Interpreter System.
- **Linux :**
  - Linux is a Unix-like Operating System popular in academic and business environments that consists of a kernel, libraries, and utilities.
- **Linux Characteristics:**
  - The characteristics of Linux are that it is open source, free of charge, includes many Unix tools, is highly scalable, many businesses/organizations rely on linux, many server applications run on some version of linux, and almost any system can have Linux installed.
- **GNU Toolchain:**
  - The GNU Toolchain is a collection of compliers, libraries, debuggers, and core utilities modeled on Unix.
- **Linux Distribution:**
  - Linux Distribution is are made up of a Linux kernel, core linux tools, supplemental software, startup scripts, and an installer.
- **What is Ubuntu:**
  - Ubuntu is a Linux distribution that is freely available with both community and professional support.
- **Ubuntu Release cycles:**
  - Ubuntu is shipped in stable and regular release cycles. These cycles are regular or Non-TLS which are shipped every 6 months and supported for 9 months. They can also be LTS which are shipped every 2 years and are supported for 5 years. The current Ubuntu release supports Intel x86, AMD64, ARMv7, ARMv8, IBM POWER8/POWER9, IBM Z zEC12/zEC13/z14, and IBM LinuxONE Rockhopper l+ll/Emperor l+ll(s390x).
- **What is Debian:**
  - Debian 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):**
  - There are open source licensing models which are distributed for free or are free and are distributed with the source code. There are also closed source licensing models which are not distributed with source code and user is restricted from changing and code. The two types of closed source licensing models, freeware on which the software is free but the source code isn't available and there's shareware in which the software is free on a trial basis.

- **The 4 Freedoms of Free Software:**
  - The 4 freedoms of free software are that you can use the software for any purpose, examine the source code and modify it as you see fit, redistribute the software, and redistribute your modified software.
- **Virtualization:**
  - Virtualization is when you create virtual version of something.
- **Hypervisor and types:**
  - Hypervisor is software or hardware in charge of creating, managing, and running virtual machines. Type 1 hypervisor, usually referred to as bare-metal hypervisor, runs directly on the hardware and is a operating system for the physical hardware. Type 2 hypervisor is an application that runs on top of an operating system, most likely used in client-side virtualization.
- **VirtualBox:**
  - VirtualBox is a powerful x86 and AMD64/Intel64 virtualization product for enterprise as well as home use.

List of the main Linux distributions

- Debian
- Redhat
- Slackware
- Arch Linux

List of some of the Debian Based Linux distributions

- Linux Life
- Linux Mint
- Elementary OS
- Pop OS

List of some of the Red Hat-based Linux distributions

- Debian
- Rocky Linux
- EuroLinux
- Fedora

List of some of the Ubuntu Based Linux Distributions

- KDE neon
- Xubuntu
- Lubuntu
- Ubuntu Budgie