Lecture 2 Introduction to Linux Notes

Important concepts:

- **Operating System:**
  - An operating system provides all the fundamental software features of a computer.
- **Kernel:**
  - a kernel ia software component thats responsible for managing low-level features of the computer, including the following managing hardware, memory allocation, CPU time, and program to program interaction.
- **Components of an operating system:**
  - Kernel that includes memory allocation, CPU time, and program interaction
- **Linux :**
  - Linux is a Unix-like Operating System popular in academic and business environments.
- **Linux Characteristics:**
  - open source software
  - Free of charge
  - Unix tool including many internet sever programs and programming languages out of the box
  - Highly scalable and customizable
  - Linux can be install on almost ay system
- **GNU Toolchain:**
  - Is a collection of compilers, libraries, debuggers, and core utilities modeled on Unix. It's been ported to many Unix-like operating system, and is used by default on GNU/Linux systems.
- **Linux Distribution:**
  - A complete Linux system package is called a Linux Distribution. Linux Kernel, Core Unix tools, supplemental Software, startup scripts, An Installer
- **What is Ubuntu:**
  - Is a Linux Distribution, freely available with both community and professional support.
- **Ubuntu Release cycles:**
  - Regular is shipped every six months and supported for 9 months. Long Term Support is shipped every two even years and supported for 5 years.
- **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):**
  - 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:**
  - 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) the hypervisor runs directly on the hardware. Is a operating system for the physical machine. Type 2: it's an application that runs on top of an operating system. The host OS consumes resources and a host OS failure means that the virtual machines will fail as well.
- **VirtualBox:**
    - Virtualbox is a powerful x86 and AMD64/Intel64 virtualization product for enterprise as well as home use. NOt only is VirtualBox and extremely feature rich, high performance product for enterprise customers, it is also only professional solution that is freely available as Open Source Software under the term of the GNU General Public License (GPL) version 3.

List of the main Linux distributions

- Debian
- Red Hat
- Slackware

List of some of the Debian Based Linux distributions

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

List of some of the Red Hat-based Linux distributions

- Oracle Linux
- AlmaL Linux
- CentOS
- Rocky Linux
- Fedora

List of some of the Ubuntu Based Linux Distributions

- Linux Mint
- Linux Lite
- Elementary OS
- Pop OS
- Zorin OS