Lecture 2 Introduction to Linux Notes

Important concepts:

- **Operating System:**
  - An operating system provides all the fundamental software, features of a computer.
- **Kernel:**
  - A software component that manages low-level features of the computer, like managing system hardware, memory, CPU time, and program interactions.

- **Components of an operating system:**
- **Linux :**
  - A Unix-Like Operating system, consists of a kernel, libraries, and utilities
- **Linux Characteristics:**
  - Open Source
  - Available for free
  - Has many Unix tools
  - Highly scalable and customizable
  - Many businesses and non-profits rely on Linux
  - Majority of server-applications on the internet utilize a version of Linux
  - Linux can be installed on almost any system and supports almost any processor architecture
- **GNU Toolchain:**
  - A collection of compilers, libraries, debuggers, and core utilities modled on Unix
- **Linux Distribution:**
  - Most Linux distributions are open source
  - Most distribute the software in packages, which are collections of many files
  - Either have a short release cycle or a long release cycle to provide stable environments
- **What is Ubuntu:**
  - A linux based distribution with both community and professional support
- **Ubuntu Release cycles:**
  - Regular, or Non-LTS: Shipped every six months and supported for 9 months at a time.
  - LTS (Long Term Support): Shipped every two years and is supported for 5 years.
- **What is Debian:**
  - An all-volunteer organization dedicated to developing free software, also known as the grandfather of all linux distributions
- **Different software licensing models (open source vs closed source):**
  - Open Source - may be distributed for free or for a fee, source code is given with the software.
  - Closed Source - the software is not distributed with the source code, and the user is restricted from modifying the code.
  - Freeware - software is free but it doesn't come with the source code.
  - Shareware - software is free on a trial basis.
- **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:**
    - Creating virtual versions of something.
    - Can be used to create multiple OSs and have them run on a single machine
- **Hypervisor and types:**
    - Software or hardware in charge of creating, managing, and running virtual machines. All fall under two types, either client side or server side.
        - Type 1 = Bare-Metal Hypervisor - runs directly on the hardware, and is basically the OS for the physical machine.
        - Type 2 - an application version of a hypervisor that runs on top of an OS. Most commonly used in client-side virtualization.
- **VirtualBox:**
    - A powerful x86 and AMD64/Intel virtulization product for home and enterprise use. Has many features and is the only professional solution that is Open Source.

List of the main Linux distributions

List of some of the Debian Based Linux distributions

- Arch
- CentOS
- Debian
- Fedora
- openSUSE
- Red Hat
- Slackware
- Ubuntu

List of some of the Red Hat-based Linux distributions

- Happy
- ELX
- BU
- ClarkConnect
- Fusion
- OJbua

List of some of the Ubuntu Based Linux Distributions

- Ubuntu Budgie
- Gobuntu
- Ubuntu GNOME
- Ubuntu jeOS