Lecture 2 Introduction to Linux Notes

Important concepts:

- **Operating System:** ** an operanting system provides all fundamnetal software features of a computer.
- **Kernel:**An OS kernel is a software component that't responsible for managing low-level of the computer,including the following managing system hardware,memory allocation,CPU time,and program interaction.
- **Components of an operating system:**
- Memory management
- Network manegement
- kelnel
- File management
- **Linux :**
- Linux is the best-known and most-used open source operating system. As an operating system, Linux is software that sits underneath all of the other software on a computer, receiving requests from those programs and relaying these requests to the computer’s hardware.
- **Linux Characteristics:**
- Portable Environment. ... Free and Open-Source. ... Shell/ Command-line Interface. ... End-to-end encryption. ... Graphical User Interface (GUI) ...
- **GNU Toolchain:**
- The GNU Toolchain is a set of programming tools in Linux systems that programmers can use to make and compile their code to produce a program or library.
- **Linux Distribution:**
- A Linux distribution, often shortened to Linux distro, is an operating system compiled from components developed by various open source projects and programmers.
- **What is Ubuntu:**
- Ubuntu was introduced in 2004 by a British company Canonical. It was based on Debian – a popular distro back then – which was difficult to install. As a result, Ubuntu was proposed as a more user-friendly alternative.
- **Ubuntu Release cycles:**

- Every six months between LTS versions, Canonical publishes an interim release of Ubuntu, with 23.10 being the latest example. These are production-quality releases and are supported for 9 months, with sufficient time provided for users to update, but these releases do not receive the long-term commitment of LTS releases.
- **What is Debian:**
- Debian, also known as Debian GNU/Linux, is a Linux distribution composed of free and open-source software and optionally non-free firmware or software developed by the community-supported Debian Project, which was established by Ian Murdock on August 16, 1993
- **Different software licensing models (open source vs closed source):**
- Open source software is released under licenses that grant users freedom to access, modify, and distribute the source code. Commercial software is often distributed under licenses that restrict access to the source code and require users to buy a license
- **The 4 Freedoms of Free Software:**
- The freedom to run the program as you wish, for any purpose.
- The freedom to study how the program works, and change it so it does your computing as you wish.
- The freedom to redistribute copies so you can help your neighbor.
- The freedom to distribute copies of your modified versions to others.
- **Virtualization:**
- Virtualization enables the hardware resources of a single computer—processors, memory, storage and more—to be divided into multiple virtual computers, called virtual machines (VMs).

*__Hypervisor and types__:

- The type 1 hypervisor sits on top of the bare metal server and has direct access to the hardware resources. Because of this, the type 1 hypervisor is also known as a bare metal hypervisor. In contrast, the type 2 hypervisor is an application installed on the host operating system.
- **VirtualBox:**
- Oracle VM VirtualBox is cross-platform virtualization software. It allows users to extend their existing computer to run multiple operating systems including Microsoft Windows, Mac OS X, Linux, and Oracle Solaris, at the same time.

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

List of some of the Red Hat-based Linux distributions

- CentOS
- ClearOS
- Fedora

List of some of the Ubuntu Based Linux Distributions

- Linux Mint
- Kubuntu
- Lubuntu
- elementary OS