Lecture 2 Introduction to Linux Notes

Important concepts:

- **Operating System:** An operating system provides all the fundamental software features of a computer.

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- **Kernel:** A kernel is a software component that's responsible for managing low-level features of the computer such as memory allocation, CPU time, and program to program interaction.

- **Components of an operating system:** The components of an operating system are Command-Line Shells, Graphical User Interfaces, Utility and Productivity Programs, and Libraries.

- **Linux :** Linux is a Unix-like Operating system mainly used in academic and business environments.

- **Linux Characteristics:** Some characteristics of Linux are that it is open source,it is free, and it is highly scalable and very customizable.

- **GNU Toolchain:** The GNU toolchain is a collection of compilers,libraries,debuggers, and core utilities modeled on Unix.

- **Linux Distribution:** A Linux distribution is a complete Linux system package which includes a Linux kernel, core unix tools, supplemental software, startup scripts, and an installer. The two main Linux distributions are Debian and Redhat.

- **What is Ubuntu:** Ubuntu is a free Linux distribution.

- **Ubuntu Release cycles:** Ubuntu is shipped in stable and regular release cycles. The regular release cycle is shipped every six months and supported for nine months. The long-term support is shippedevery two even years and is supported for five years.

- **What is Debian:** Debian is an all-volunteer organization dedicated to developing free software and promotinf the ideals of the free software community. It is known to be the grandfather of all Linux distributions.

- **Different software licensing models (open source vs closed source):** Open source is a form of software that is distributed for a fee or for free. The source code is distributed with the software. Closed source is a form of software that is not distributed with the source code and the user is restricted from modifying the code.

- **The 4 Freedoms of Free Software:**

1. Use the software for any purpose
2. Examine the source code and modify it as you see fit
3. Redistribute the software
4. redistribute your modified software

- **Virtualization:** Virtualization is creating virtual versions of something. It is often used to let multiple OSs run on one physical machine.

- **Hypervisor and types:** Hypervisor is a software or hardware in charge of creating, managing, and running virtual machines. There are two types of Hypervisors:

- Type 1(bare-metal hypervisor) is a type of hypervisor that runs directly on hardware. Type 1 has better performance then Type 2, because there is no host OS involved and the system is dedicated to supporting virtualization.

- Type 2 is an application that runs on top of an operating system. This is commonly used in client-side virtualization.

- **VirtualBox:** VirtualBox is a powerful x86 and AMD64/Intel64 virtualization product enterprise and home use. It is the only professional solution that is freely available as open source software.

List of the main Linux distributions

- Debian
- Ubuntu
- Pop OS
- Redhat
- Fedora
- Alma Linux
- Slackware
- Absolute Linux
- Arch Linux
- Manjaro

List of some of the Debian Based Linux distributions

- Kali Linux
- Parrot OS
- Linux Deepin
- MX Linux
- Steam OS

List of some of the Red Hat-based Linux distributions

- Rocky Linux
- AlmaLinux
- CentOS
- Fedora
- Oracle Linux
- ClearOS

List of some of the Ubuntu Based Linux Distributions

- Linux Lite

- Linux Mint
- Elementary OS
- Pop OS
- Zorin OS
- Peppermint