Lecture 2 Introduction to Linux Notes

What is an Operating System (OS)?

1. An Operating System (OS) is system software that manages hardware and software resources on a computer. It provides services for application programs and acts as an intermediary between the user and the computer hardware.

What is a kernel?

1. The kernel is the core part of an OS that manages system resources such as CPU, memory, and devices. It is responsible for managing low-level operations like process scheduling, hardware communication, and memory management.

Which other parts aside from the kernel identify an OS? Besides the kernel, an OS also includes:**

1. User interface (UI): Can be graphical (GUI) or command-line (CLI).
2. System libraries: Provide standard interfaces for programs to interact with the OS.
3. System utilities: Programs that perform system maintenance tasks (e.g., file management tools, system monitors).

What is Linux and a Linux distribution?

1. Linux is an open-source, Unix-like operating system kernel. A Linux distribution (or "distro") is an operating system built around the Linux kernel that includes system libraries, utilities, and various software packages to provide a complete, functional OS. Examples of distributions include Ubuntu, Debian, Fedora, and CentOS.

List at least 4 Linux characteristics:**

1. Open Source: Linux is free to use, modify, and distribute.
2. Multi-user: Multiple users can work on the system simultaneously without interfering with each other.
3. Multi-tasking: Linux supports the execution of multiple tasks or processes at the same time.
4. Security: Linux is known for its strong security features, including access controls and robust permission management.

What is Ubuntu?

1. Ubuntu is a popular Linux distribution based on Debian. It is known for its user-friendly interface, regular release cycle, and strong community support. Ubuntu is widely used for desktop and server applications.

What is Debian?

1. Debian is a free, open-source Linux distribution that serves as the basis for many other distributions, including Ubuntu. Debian emphasizes stability, security, and a large software repository. It is known

for its rigorous testing process.

List and define the different types of licensing agreements:**

1. Proprietary License: The software is owned by a company or individual, and users are granted limited rights to use it under specific conditions.
2. Open Source License: The software s source code is available for users to view, modify, and distribute. Examples include the GPL (General Public License) and MIT License.
3. Freeware License: Software that is free to use but not open for modification or redistribution.
4. Shareware License: A software that is distributed for free initially, but requires payment for continued use or access to advanced features.

What is Free Software?** Define the 4 freedoms. Free software refers to software that grants users the freedom to run, modify, and share it. The 4 freedoms of free software are:

1. Freedom to run the program: The user can use the software for any purpose without restrictions.
2. Freedom to study the source code: Users can access the source code and modify it to suit their needs.
3. Freedom to redistribute: Users can share copies of the software with others.
4. Freedom to improve the software: Users can modify the software and distribute their improvements.

What is virtualization?

1. Virtualization is the creation of virtual versions of physical hardware or software resources, such as servers, storage devices, or networks. It allows multiple virtual machines (VMs) to run on a single physical machine, each acting as an independent system. Virtualization helps improve resource utilization, increase flexibility, and simplify management in IT environments.