Lecture 2 Introduction to Linux Notes

1. What is an Operating System?

An operating system is software that runs on a computer and helps its work.

- acts like a middle man between the hardware and the programs I use.
- OS manages the CPU, memory,storages, and devices so everything run smoothly.
- Lets me run programs, organizes files, and interact with the computer through a screen or command. (windows,macOS, Linux, Android, IOS)

2. What is a kernel?

A kernel is a core part of a operating system. It's the part that actually talks to the computer hardware like the CPU,memory, and devices.

- makes sure programs can use hardware safely and efficiently
- like a engine of a car, does important work behind the scene so everything else can run smoothly.

3. Which other parts aside from the kernel identify an OS?

- **Shell/User Interface**-This is how user talks to the OS. It can be graphical interface(GUI) like windows or macOS, or a command line like in Linux.
- **File system** -Organizes data into files and folders so users and programs can store and retrieve information.
- **System Libraries**- Pre-written code that program use so they don't have to talk to hardware directly.
- **System Utilities/Tools**-Extra programs built into the OS(Task manager,disk cleanup, or settings) that help maintain and control the computer.

4. What is linux and linux distribution?

Linux is a Unix-like operating system made up of a kernel, libraries, and utilities. It’s widely used in business, academic, and server environments because it’s stable, secure, and customizable **Linux distribution** is a package version of linux that includes the linux kernl plus extra software,tools, and sometimes a graphical interface.Different distributions are made for different needs.

- *Ubuntu* is popular for beginners
- *Kali Linux* is used for security testing
- *Red hat*is often used in businesses.

6. List at least 4 linux characteristics:

- Linux is available free of charge
- Linux is open source software
- Linux includes many on Unix tools including many important internet server programs and programming languages out of the box
- Many businesses and non profit organizations rely on linux for their day to day operations

7. What is Debian?

Debian is a free and open source linux distribution. It's known for being very stable and secure, which is why it's often used for server as well as desktops.

- Debian is also the base for many other popular linux distributions, like Ubuntu and Kali Linux.

9. List and define the different types of licensing agreements

- 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 usser is restricted form modifying the code.
    - Freeware-the software is free bu the source code is not available
    - shareware- the software is free on a trial basis
- Free software- the software is distributed with the source code. The software can be free or obtained by a fee.

10. What is Free Software? Define the 4 freedoms.

Free software is software comes with a source code and give users freedom to run,modify, and share it. It may be free of cost for sold for a fee.

- Freedom 0: use the software for any purpose
- Freedom 1: examine the source code and modify it as you see fir
- Freedom 2: redistribute the software
- Freedom 3: redistribute your modified software

11. What is virtualization?

Virtualization is the process of creating a virtual version of something, like a computer,system,server,storage, or network. Instead of running directly on physical hardware, virtualization uses software called hypervisor to divide one physical machine into multiple virtual machines. Each machine can run it's own operating system and applications as if it were a separate computer.