

# Lecture 2 Introduction to Linux Notes

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1. What is an Operating System? **An operating system provides all the fundamental software features of a computer. An OS enables you to use the computer's hardware providing you the basic tools that make the computer useful. All of those features relay on the OS's kernel. Other OS features are owed to additional programs that run atop the kernel.**
2. What is a kernel? **An OS Kernel is a software component that's responsible for managing low-level features of the computer, including the following managing system hardware, memory allocation, CPU time, and program to program interaction.**
3. Which other parts aside from the kernel identify an OS?
  1. **Command-Line Shells**
  2. **Graphical User Interfaces**
  3. **Utility and Productivity Programs**
  4. **Libraries**
4. What is linux? **Linux is a Unix-like Operating System popular in academic and business environments. Linux consists of a kernel, libraries, and utilities that make up the entire operating system.**
5. What is a linux distribution? **A Linux distribution is essentially any operating system that runs the Linux kernel. For example:**

- **Arch**
- **CentOS**
- **Debian**
- **Fedora**
- **openSUSE**
- **Red Hat**
- **Slackware**
- **Ubuntu and many more!**

1. List at least 4 linux characteristics:
  1. **Linux is a open source software**
  2. **Linux is available free of charge**
  3. **Linux is highly scalable and customizable**
  4. **The vast majority of server applications on the internet run on some version of Linux**
2. What is Ubuntu? **Ubuntu is a Linux distribution based on Debian and composed mostly of free and open-source software.**
3. What is Debian? **Debian, also known as Debian GNU/Linux, is a Linux distribution composed of free and open-source software and proprietary software developed by the community-supported Debian Project.**
4. List and define the different types of licensing agreements.
  1. **GNU General Public License (GPL) Definition: One of the most widely used free software licenses, created by the Free Software Foundation (FSF).**
5. What is Free Software? Define the 4 freedoms. **Free Software refers to software that grants users the freedom to run, study, modify, and share the software without restrictions and its 4 freedoms are...**

- **The freedom to run the program as you wish, for any purpose**
- **The freedom to study how the program works, and change it to make it do what you wish**
- **The freedom to redistribute copies so you can help others**
- **The freedom to distribute copies of your modified versions to others**

6. What is virtualization? **Virtualization is defined as creating virtual versions of something.**

7. List 3 benefits of virtualization

1. **Cost savings**
2. **Scalability**
3. **Enhanced Security**

8. What is a hypervisor? Include definitions of the 2 types. **A hypervisor is a software or hardware in charge of creating, managing, and running virtual machines. There are two types of hypervisors:**

- Type 1 Hypervisor: **This type of hypervisor runs directly on the hardware**
- Type 2 Hypervisor: **This type of hypervisor runs on top of a operating system as it's own application. Most commonly used in client side virtualization.**

1. What is the difference between Guest OS and Host OS? **A host OS is the main operating system running on a computer, while a guest OS is an operating system that runs inside a virtual machine on the host OS. The host manages hardware, and the guest operates within the virtualized environment.**

2. What is virtualbox? **VirtualBox is a powerful x86 and AMD64/Intel64 virtualization product for enterprise as well as home use.**