

## 1. What is an Operating System?

- An OS provides all fundamental software features of a computer, using the hardware.

## 2. What is a kernel?

- The core part of an OS, managing communication between hardware and software.

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

- Command-Line Shells, Graphical User interface(GUI), System libraries, Utilities programs.

## 4. What is Linux?

- A free, open-source Unix-like operating system kernel.

## 5. What is a Linux distribution?

- A complete operating system based on the Linux kernel, bundled with software, package management, and tools.

## 6. List at least 4 Linux characteristics:

- Open-source
- Multitasking
- Multi-user
- Portable

## 7. What is Ubuntu?

- A popular Linux distribution based on Debian, designed for ease of use and support.

## 8. What is Debian?

- A Linux distribution known for its stability and community-driven development.

## 9. List and define the different types of licensing agreements:

- **Proprietary:** Software that restricts modification and redistribution.
- **Open Source:** Source code is open for modification and redistribution.
- **Freeware:** Free to use but typically proprietary.
- **Shareware:** Free to use with restrictions, usually for a trial period.

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

- Software that gives users the freedom to run, modify, share, and distribute.
- **4 freedoms:**
  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 versions.

## 11. What is virtualization?

- The process of creating a virtual version of something, like hardware or OS.

**12. List 3 benefits of virtualization:**

- Efficient resource use
- Easier backup and recovery
- Isolation of environments

**13. What is a hypervisor? Include definitions of the 2 types:**

- Software that creates, manages and runs virtual machines.
- **Type 1 (Bare-metal):** Runs directly on hardware.
- **Type 2 (Hosted):** Runs on a host OS.

**14. What is the difference between Guest OS and Host OS?**

- **Host OS:** The primary OS on the physical machine.
- **Guest OS:** The OS running inside a virtual machine.

**15. What is VirtualBox?**

- A free, open-source hypervisor for running virtual machines.