

## What is an Operating System?

An Operating System is system software that acts as an interface between computer hardware and the user. It manages hardware resources and provides common services for computer programs.

## What is a kernel?

A kernel is the core part of an operating system. It directly interacts with the hardware and manages system resources such as CPU, memory, and device I/O. It operates in a privileged mode called kernel mode.

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

Aside from the kernel, an OS includes: Shell: Interface for user commands (CLI or GUI). System libraries: Provide standard functions for programs. system utilities: Tools for managing files, processes, and settings. Device drivers: Facilitate communication between hardware and software.

## What is linux and linux distribution?

Linux is an open-source, Unix-like operating system kernel created by Linus Torvalds in 1991.

A Linux Distribution (distro) is a complete OS package that includes the Linux kernel, software tools, package managers, and other components. Examples: Ubuntu, Fedora, Debian.

## List at least 4 linux characteristics:

List at least 4 Linux characteristics: open Source – Source code is freely available to modify and distribute. Multiuser – Supports multiple users simultaneously. multitasking – Can run several programs at once. Security – Strong file permissions and user access control.

## What is Debian?

Debian is a popular and influential Linux distribution known for its stability and strong community support. It forms the basis for many other distributions, including Ubuntu.

## List and define the different types of licensing agreements

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Proprietary License: Software is closed-source; users can use it under strict conditions but can't modify or redistribute it. Free Software License: Grants users the freedom to use, modify, and share software. Example: GNU General Public License (GPL). Open Source License: Source code is available; users can modify and redistribute it. Not all open-source licenses are free software (e.g., some limit commercial use). Permissive License: Minimal restrictions; allows proprietary derivative works. Example: MIT, BSD licenses.

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

Free Software (as defined by the Free Software Foundation) means freedom, not price.

The 4 Freedoms:

Freedom 0: Run the program for any purpose. freedom 1: Study how the program works and modify it.

Freedom 2: Redistribute copies. Freedom 3: Distribute copies of your modified versions.

## What is virtualization?

irtualization is the process of creating virtual versions of computing resources such as operating systems, servers, storage devices, or networks. It allows multiple virtual machines (VMs) to run on a single physical machine.

Types include: Hardware virtualization (e.g., VMs using VirtualBox or VMware) operating system-level virtualization (e.g., containers like Docker)