

Operating System - Introduction (Interview Questions & Answers)

1. What is an Operating System?

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

2. What are the main functions of an Operating System?

Process Management, Memory Management, File System Management, I/O System Management, Security and Protection, Networking, Command interpretation (Shell).

3. What are different types of Operating Systems?

Batch OS, Time-Sharing OS, Distributed OS, Real-Time OS, Network OS, Mobile OS.

4. What is the difference between a Kernel and an Operating System?

Kernel is the core part of the OS. It manages hardware, memory, and CPU. Operating System = Kernel + System Programs + Utilities.

5. What are the types of Kernels?

Monolithic Kernel, Microkernel, Hybrid Kernel, Exokernel.

6. What are the goals of an Operating System?

Convenience, Efficiency, Ability to Evolve.

7. What is the role of an Operating System in a computer system?

Acts as an intermediary between users and hardware. Manages resources like CPU, memory, files, and I/O devices. Provides environment for program execution.

8. What is a system call? Give examples.

A system call is the programmatic way for a program to request a service from the OS. Examples: read(), write(), open(), close(), fork().

Operating System - Introduction (Interview Questions & Answers)

9. What are the types of System Calls?

Process Control, File Management, Device Management, Information Maintenance, Communication.

10. What is the difference between a Process and a Program?

Program = Passive entity (stored on disk). Process = Active entity (program in execution with resources like CPU and memory).

11. What is multitasking, multiprogramming, multiprocessing, and multithreading?

Multitasking: Multiple tasks for one user at the same time. Multiprogramming: Multiple programs in memory; CPU switches among them. Multiprocessing: System with multiple CPUs executing processes. Multithreading: Multiple threads within a single process.

12. Explain the concept of a Booting process.

Booting is the process of starting a computer from the power-off state. Steps: Power On, BIOS/UEFI runs POST, Bootloader loads OS into memory, OS starts running.

13. What is the difference between User Mode and Kernel Mode?

User Mode: Normal programs run here. Limited access to hardware. Kernel Mode: OS code runs here. Full access to hardware.

14. What are the services provided by an Operating System?

Program Execution, I/O Operations, File System Manipulation, Communication, Error Detection, Resource Allocation, Security and Protection.

15. What is a CLI and GUI in Operating Systems?

CLI (Command Line Interface): User interacts by typing commands. GUI (Graphical User Interface): User interacts through graphical elements like windows, icons.

Operating System - Introduction (Interview Questions & Answers)

16. Differentiate between Distributed OS and Network OS.

Distributed OS appears as a single system, automatic resource sharing. Network OS involves multiple independent systems, manual configuration for resource sharing.

17. What is Virtualization in Operating Systems?

Virtualization is creating a virtual version of hardware/software resources. Example: Virtual Machines.

18. What are Embedded Operating Systems?

Embedded OS are designed for special-purpose devices. They are small, efficient, and real-time. Examples: RTOS, Embedded Linux.

19. What is the difference between Hard Real-Time Systems and Soft Real-Time Systems?

Hard Real-Time: Deadline must be met. Soft Real-Time: Deadline is important but not critical.

20. Name some popular Operating Systems.

Windows, Linux, macOS, Unix, Android, iOS.