

### 1) What is an operating system?

The operating system is a software program that facilitates computer hardware to communicate and operate with the computer software. It is the most important part of a computer system without it computer is just like a box.

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### 2) What is the main purpose of an operating system?

There are two main purposes of an operating system:

- It is designed to make sure that a computer system performs well by managing its computational activities.
  - It provides an environment for the development and execution of programs.
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### 3) What are the different operating systems?

- Batched operating systems
  - Distributed operating systems
  - Timesharing operating systems
  - Multi-programmed operating systems
  - Real-time operating systems
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### 4) What is a socket?

A socket is used to make connection between two applications. Endpoints of the connection are called socket.

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### 5) What is a real-time system?

Real-time system is used in the case when rigid-time requirements have been placed on the operation of a processor. It contains a well defined and fixed time constraints.

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### 6) What is kernel?

Kernel is the core and most important part of a computer operating system which provides basic services for all parts of the OS.

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### 7) What is monolithic kernel?

A monolithic kernel is a kernel which includes all operating system code is in single executable image.

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### 8) What do you mean by a process?

An executing program is known as process. There are two types of processes:

- Operating System Processes
  - User Processes
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### 9) What are the different states of a process?

A list of different states of process:

- New Process
- Running Process
- Waiting Process
- Ready Process
- Terminated Process

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10) What is the difference between micro kernel and macro kernel?

**Micro kernel:** micro kernel is the kernel which runs minimal performance affecting services for operating system. In micro kernel operating system all other operations are performed by processor.

**Macro Kernel:** Macro Kernel is a combination of micro and monolithic kernel.

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11) What is the concept of reentrancy?

It is a very useful memory saving technique that is used for multi-programmed time sharing systems. It provides functionality that multiple users can share a single copy of program during the same period.

It has two key aspects:

- The program code cannot modify itself.
  - The local data for each user process must be stored separately.
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12) What is the difference between process and program?

A program while running or executing is known as a process.

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13) What is the use of paging in operating system?

Paging is used to solve the external fragmentation problem in operating system. This technique ensures that the data you need is available as quickly as possible.

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14) What is the concept of demand paging?

Demand paging specifies that if an area of memory is not currently being used, it is swapped to disk to make room for an application's need.

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**15) What is the advantage of a multiprocessor system?**

As many as processors are increased, you will get the considerable increment in throughput. It is cost effective also because they can share resources. So, the overall reliability increases.

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**16) What is virtual memory?**

Virtual memory is a very useful memory management technique which enables processes to execute outside of memory. This technique is especially used when an executing program cannot fit in the physical memory.

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**17) What is thrashing?**

Thrashing is a phenomenon in virtual memory scheme when the processor spends most of its time in swapping pages, rather than executing instructions.

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**18) What are the four necessary and sufficient conditions behind the deadlock?**

These are the 4 conditions:

- 1) **Mutual Exclusion Condition:** It specifies that the resources involved are non-sharable.
  - 2) **Hold and Wait Condition:** It specifies that there must be a process that is holding a resource already allocated to it while waiting for additional resource that are currently being held by other processes.
  - 3) **No-Preemptive Condition:** Resources cannot be taken away while they are being used by processes.
  - 4) **Circular Wait Condition:** It is an explanation of the second condition. It specifies that the processes in the system form a circular list or a chain where each process in the chain is waiting for a resource held by next process in the chain.
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**19) What is a thread?**

A thread is a basic unit of CPU utilization. It consists of a thread ID, program counter, register set and a stack.

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**20) What is FCFS?**

FCFS stands for First Come, First Served. It is a type of scheduling algorithm. In this scheme, if a process requests the CPU first, it is allocated to the CPU first. Its implementation is managed by a FIFO queue.

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**21) What is SMP?**

SMP stands for Symmetric MultiProcessing. It is the most common type of multiple processor system. In SMP, each processor runs an identical copy of the operating system, and these copies communicate with one another when required.