Function of OS

1. Memory Management:

The OS manages the primary memory or the main memory of the computer. We all know that when we run any programs it should be loaded into main memory at first. The CPU can directly access the main memory. So, the OS manages the allocation and deallocation of the main memory to various processes and ensures that the other processes doesnot consume the memory allocated to one process.

- The OS keep tracks of the primary memory. i.e. which bytes of memory is allocated to which process and which bytes of memory are free.
- It allocates the memory for the program which needs it and also deallocates when those application does not need.
- In multiprogramming, the OS decides the order in which processes are granted memory and for how long.

2. Processor Management:

This function mainly deals with the CPU usage of a process or a program. The OS ensures that all the tasks or programs running on your computer get their turn to use the CPU effectively. Imagine a chef in a restaurant.

- **Task Scheduling:** The OS decides the order in which the tasks will be handled like the kitchen manager decides which orders the chef should prepare first.
- **Multitasking:** Like the chef can work on multiple dishes at the same time, CPU also switches between tasks quickly. This is called time-sharing where the CPU divides its attention between tasks.
- The OS make sures that each process or tasks gets the resources it needs like the chef getting the right pots, pans, and ingredients.
- **Prioritization:** Some orders might be VIP or urgent, so the chef finishes them first. The OS does this too, giving more CPU time to high-priority tasks (like emergency updates) while delaying less critical ones.

3. Device Management:

An external device can only talk to the computer through the OS.

- OS keeps tracks of all devices connected to the system.
- Decides which process has access to the certain device and for how long.
- Allocates and deallocates devices effectively and efficiently.
- It receives requests from these devices, performs a specific task, and communicates back to the requesting process.

4. File Management

A file system is organized into directories for efficient or easy navigation and usage. These directories may contain other directories and other files. An Operating System carries out the following file management activities. It keeps track of where information is stored, user access settings, the status of every file, and more. These facilities are collectively known as the file system. An OS keeps track of information regarding the creation, deletion, transfer, copy, and storage of files in an organized way. It also maintains the integrity of the data stored in these files, including the file directory structure, by protecting against unauthorized access.

5. I/O Management

I/O management is the important function of operating system refers to how the OS handles input and output operations between the computer and external devices, such as keyboards, mice, printers, hard drives, and monitors.

6. Booting the Computer

The process of starting or restarting the computer is known as booting. If the computer is switched off completely and if turned on then it is called cold booting. Warm booting is a process of using the operating system to restart the computer.

Frequently Asked Questions on Functions of Operating System – FAQs

What does an operating system do?

An operating system manages computer hardware and software, coordinates tasks, and provides a user interface for interacting with the computer.

How does an operating system manage memory?

It allocates memory to programs, ensures efficient use of available memory, and handles virtual memory to extend available space when needed.

What is the role of an operating system in file management?

It organizes files on storage devices, handles file access and storage, and ensures data integrity and security.