

Course Name : O Level(B3-1st sem.)
Topic : Operating System

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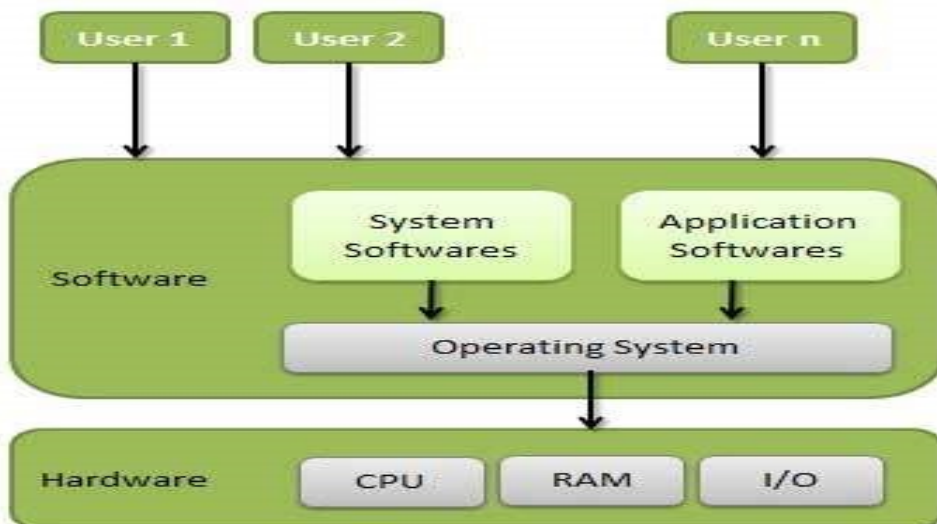
Operating System

An Operating System (OS) is an interface between computer user and computer hardware. An operating system is software which performs all the basic tasks like file management, memory management, process management, handling input and output, and controlling peripheral devices such as disk drives and printers.

Examples of Operating System are –

- Windows (GUI based, PC)
- GNU/Linux (Personal, Workstations)
- macOS (Macintosh), used for Apple's personal computers and work stations
- Android (Google's Operating System for smartphones/tablets/smartwatches)
- iOS (Apple's OS for iPhone, iPad and iPod Touch)

The purpose of an operating system is to provide an environment in which a user can execute programs in a convenient and efficient manner.



Following are some of important functions of an operating System.

- Memory Management
- Processor Management
- Device Management
- File Management
- Security
- Control over system performance
- Job accounting

- Error detecting aids
- Coordination between other software and users

Memory Management

An Operating System does the following activities for memory management –

- Keeps tracks of primary memory, i.e., what part of it are in use by whom, what part are not in use.
- In multiprogramming, the OS decides which process will get memory when and how much.
- Allocates the memory when a process requests it to do so.
- De-allocates the memory when a process no longer needs it or has been terminated.

Processor Management

In multiprogramming environment, the OS decides which process gets the processor when and for how much time. This function is called **process scheduling**.

An Operating System does the following activities for processor management –

- Keeps tracks of processor and status of process. The program responsible for this task is known as **traffic controller**.
- Allocates the processor (CPU) to a process.
- De-allocates processor when a process is no longer required.

Device Management

An Operating System does the following activities for device management –

- Keeps tracks of all devices. Program responsible for this task is known as the **I/O controller**.
- Decides which process gets the device when and for how much time.
- Allocates the device in the efficient way.
- De-allocates devices.

File Management

An Operating System does the following activities for file management –

- Keeps track of information, location, uses, status etc. The collective facilities are often known as **file system**.
- Decides who gets the resources.
- Allocates the resources.
- De-allocates the resources.

Types of Operating System –

- **Batch Operating System-** Sequence of jobs in a program on a computer without manual interventions.
- **Time sharing operating System-** allows many users to share the computer resources.(Max utilization of the resources).
- **Distributed operating System-** Manages a group of different computers and make appear to be a single computer.
- **Network operating system-** computers running in different operating system can participate in common network (It is used for security purpose).
- **Real time operating system** – meant applications to fix the deadlines.

Exercise:

1. What is operating system? Write some functions of operating system.