## Definition of Operating System

An **Operating System (OS)** is a software that acts as an interface between computer hardware components and the user. Every computer system must have at least one operating system to run other programs. Applications like Browsers, MS Office, Notepad Games, etc., need some environment to run and perform its tasks.

The OS helps you to communicate with the computer without knowing how to speak the computer's language. It is not possible for the user to use any computer or mobile device without having an operating system.

## Types of Operating System (OS)

Following are the popular types of OS (Operating System):

- Batch Operating System
- Multitasking/Time Sharing OS
- Multiprocessing OS
- Real Time OS
- Distributed OS
- Network OS
- Mobile OS

**Batch Operating System**
Some computer processes are very lengthy and time-consuming. To speed the same process, a job with a similar type of needs are batched together and run as a group.The user of a batch operating system never directly interacts with the computer. In this type of OS, every user prepares his or her job on an offline device like a punch card and submit it to the computer operator.

**Multi-Tasking/Time-sharing Operating system**
Time-sharing operating system enables people located at a different terminal(shell) to use a single computer system at the same time. The processor time (CPU) which is shared among multiple users is termed as time sharing.

**Real time OS**
A real time operating system time interval to process and respond to inputs is very small. Examples: Military Software Systems, Space Software Systems are the Real time OS example.

**Distributed Operating System**

Distributed systems use many processors located in different machines to provide very fast computation to its users.

**Network Operating System**

Network Operating System runs on a server. It provides the capability to serve to manage data, user, groups, security, application, and other networking functions.

**Mobile OS**

Mobile operating systems are those OS which is especially that are designed to power smartphones, tablets, and wearables devices. Some most famous mobile operating systems are Android and iOS, but others include BlackBerry, Web.

## Different parts (components) of Operating System

The components of an operating system play a key role to make a variety of computer system parts work together. The operating components are discussed below:

### Kernel

The kernel in the OS provides the basic level of control on all the computer peripherals. In the operating system, the kernel is an essential component that loads firstly and remains within the main memory. So that memory accessibility can be managed for the programs within the RAM, it creates the programs to get access from the hardware resources. It resets the operating states of the CPU for the best operation at all times.

### Process Execution

The OS gives an interface between the hardware as well as an application program so that the program can connect through the hardware device by simply following procedures & principles configured into the OS. The program execution mainly includes a process created through an OS kernel that uses memory space as well as different types of other resources.

### Interrupt

In the operating system, interrupts are essential because they give a reliable technique for the OS to communicate & react to their surroundings. An interrupt is nothing but one kind of signal between a device as well as a computer system otherwise from a program in the computer that requires the OS to leave and decide accurately what to do subsequently.

### Memory Management

The functionality of an OS is nothing but memory management which manages main memory & moves processes backward and forward between disk & main memory during implementation. This tracks each & every memory position; until it is assigned to some process otherwise it is open. It verifies how much memory can be allocated to processes and also makes a decision to know which process will obtain memory at what time.

## Multitasking

It describes the working of several independent computer programs on a similar computer system. Multitasking in an OS allows an operator to execute one or more computer tasks at a time. Since many computers can perform one or two tasks at a time, usually this can be done with the help of time-sharing, where each program uses the time of a computer to execute.

## Networking

Networking can be defined as when the processor interacts with each other through communication lines. The design of communication-network must consider routing, connection methods, safety, the problems of opinion & security. Most of the operating systems maintain different networking techniques, hardware, & applications.

## Security

If a computer has numerous individuals to allow the immediate process of various processes, then the many processes have to be protected from other activities. This system security mainly depends upon a variety of technologies that work effectively. Additionally, to permit or prohibit a security version, a computer system with a high level of protection also provides auditing options. So this will allow monitoring the requests from accessibility to resources.

## User Interface

A GUI or user interface (UI) is the part of an OS that permits an operator to get the information. A user interface based on text displays the text as well as its commands which are typed over a command line with the help of a keyboard.