

# Introduction to Operating System

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

Without an operating system, a computer cannot function properly. The operating system controls and coordinates all the activities of the computer system.

Common operating systems include **Microsoft Windows**, **Linux**, and **macOS**.

## Functions of an Operating System

### Process Management

The operating system manages different processes running on the computer. It ensures that programs run smoothly without interfering with each other.

### Memory Management

Memory management involves allocating and managing the computer's memory so that multiple programs can run efficiently.

### File Management

The operating system organizes files and folders on storage devices and allows users to access and manage their data.

### Device Management

The operating system controls hardware devices such as keyboards, printers, and storage drives.

### Security Management

The operating system provides security features to protect data and prevent unauthorized access.

## Types of Operating Systems

### Batch Operating System

In a batch operating system, tasks are collected and processed in groups without direct interaction with the user.

## Time-Sharing Operating System

Multiple users can use the computer system simultaneously, sharing the system resources.

## Distributed Operating System

A distributed operating system manages multiple computers connected through a network.

## Mobile Operating System

Mobile operating systems are designed for smartphones and tablets.

Examples include **Android** and **iOS**.

## Advantages of Operating Systems

1. Makes computers easy to use
2. Manages system resources efficiently
3. Provides security and data protection
4. Allows multiple applications to run simultaneously
5. Improves system performance

## Disadvantages of Operating Systems

1. Some operating systems can be expensive
2. Security vulnerabilities may exist
3. Requires regular updates and maintenance

## Importance of Operating Systems

Operating systems are essential because they control how computer hardware and software interact. They make it possible for users to run applications, store files, and perform various tasks efficiently.

Without an operating system, users would not be able to interact easily with computer hardware.