

An OS is a program that manages the computer hardware. It acts as an intermediate b/w user & computer hardware. The purpose of an OS is to provide an environment in which the user can execute any program in a convenient & efficient manner.

OS services:

i) Program execution

It must be able to load the program and run it.

ii) I/O operation

The OS must provide a means of controlling I/O devices.

iii) File system interface

It must provide permits for creation or deletion of files

iv) Communication

b/w processes or b/w different computers.

## v) Error detection

It should be aware of errors occurring in CPU, I/O devices, etc and should take appropriate actions to ensure correct & consistent computation.

## vi) Resource allocation

Resource must be allocated b/w multiple users / jobs / etc.

- 2) • It increases the CPU utilization by organizing the jobs.
- Jobs entering the system are kept in memory and are picked by OS and executed.
- Increased throughput
- Shorter turn around time
- Improved memory utilization
- Multiple users
- ~~It~~ Improved resource utilization

## 27 i) Batches

- OS defines a job which has predefined sequence of commands, programs and data as a single unit.
- The OS keeps a number of jobs in memory and executes them without any manual info.
- Jobs are processed in the order of submission.
- When job is finished, memory is released and output gets copied into an output spool for later printing / processing.

## ii) Time sharing

- Provides the advantage of quick response.
- Avoids duplicate software.
- Reduces CPU idle time.

## iii) RTOS

- The OS must guarantee response to events within fixed periods of time to ensure correct performance.
- Usually dedicated embedded systems.

#### iv) Distributed.

- OS distributes computation logic among several physical processors.
- The processors do not share memory or a clock. Instead, each processor has its own local memory.
- The OS manages the comm. b/w the processors.

#### v) Clustered

- They are a combination of HW and SW clusters.
- The HW clustering help in sharing of high performance disks and SW clustering helps in making all the systems work together.
- They are of two types
  - Asymmetric
  - Symmetric
- Fault tolerance is high, reliable and high performance.