

Operating System

An operating system is an integrated set of programs that control the resources like CPU, memory, input, output devices etc, of a computer system provides its users with an interface, that is, more convenient to use than the waste machine.

DOS - Disk Operating System

It is a single user, single tasking computer operating system that uses the command line interface. It is developed by Microsoft.

The Objectives of Operating System

- ① Making a computer system convenient to use
- ② An operating system is a layer of software on the top of hardware of a computer system which manages all parts of computer system.
- ③ It's provide the convenient interface for using the computer system.
- ④ Managing the resources of a

computer system.

- ① OS manage the various resources of the computer system. These involves the task such as "keeping track of who is using" which resources gaining resources request, accounting form resources user and resource. the connects different program and ~~that~~ tools user.

Function of Operating System:-

- ① Process management - Operating system takes care of the creation and deletion of processes, scheduling of various system resources to the different process requesting them and providing mechanism for synchronization and communication among the processes.
- ② Memory management = Operating system takes care of deallocation and allocation of memory space to the various program in need of this resources.
- ③ File management → Operating system take care of file related activities such as organisation, storing,

retrieval, naming, sharing and protection of files.

- ④ Security - The security module of an operating protects the resources and information of a computer system against unauthorised access.

Types of Operating System:

- ① Batch OS - (Early system) :
- ① In this system programmers would prepare their programs on punch cards and submit them to the computer operator.
- ② The operator would collect all the submitted programs and would batch them together and then load them into the input devices of the system at one time.
- ③ The operator would then give a command to the system to start executing the job.
- ④ The CPU execute the job one by one and forward them to output device. CPU executes one job at a particular time when it finished the execution of one job.

⑤ Then it will proceed to next job.
The method of job execution was known as the manual loading mechanism because the job had to be manually loaded one after another by the computer operator in the computer system.

② # Multiprogramming System:

- ① In this system two or more different and independent program execute by the same computer.
- ② In multiprogramming, multiple program insert into the main memory and execute concurrently (simultaneously) by CPU.
- ③ CPU execute one program when that particular go for output device then it starts the execution of next program. This things avoid the CPU idleness and increase the system performance.
eg: OS

③ # Multitasking System-
① Multitasking is same as multiprogramming. multitasking is the system capability to concurrently work on more than one task.

- ② The main motive of multitasking is to reduce the response of the system.

The response time be such that a user unable to recognize the existence of other user.

- ⑧ The multitasking is performed in multi user environments where multiple user interact with the system.

⑨ Time Sharing

⑨ # Time Sharing System

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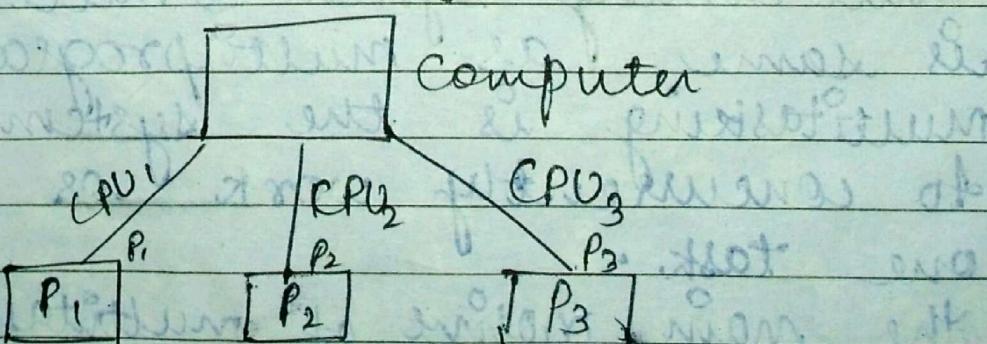
Time sharing for execution

- ① Time sharing system are similar multiprogramming or multitasking system. They also execute multiple process concurrently but CPU spend equal amount of time to execute each and every program.

CPU

- ② Scheduling is required for the execution of multiple process in multiprogramming, multitasking or time sharing system.

⑤ Multiprocessing System



- ① In multiprogramming, multiple CPUs are attached to one system for the execution of a program.
- ② In this system different CPUs handle different programs. CPU perform the execution of the program currently CPU full execute the program.
- ③ Each CPU share the main memory and input output devices of a same system.

difference b/w multiprogramming and multiprocessing system.

multiprogramming
System

multiprocessing
System.

- | | |
|------------------------------------|------------------------------------|
| ① Single processing. | ② multiple processing |
| ② Partial execution | ② fully execution of a program. |
| ③ more time require for execution. | ③ less time require for execution. |

④ Real time OS \Rightarrow Soft hard.

- ① The primary objective of real time OS. is to provide quick response to the user and thus to meet a scheduling deadline.
- ② The theory of resources utilization is the secondary objective of these

system.

- ③ This system are of two types
- ① soft real time system
 - ② hard real time system.

① Soft Real time System \Rightarrow If certain deadline are missed then system continues working with no failure, but its performance degrades, that is, this system are useful for Industrial control, multimedia, scientific project etc.

② Hard Real time System \Rightarrow Any deadline are missed then system fails to work or does not work properly.

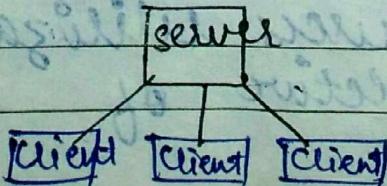
* These system guarantees that critical task will complete on time.

* These system are useful for rocket launching, flight control, at artificial intelligence.

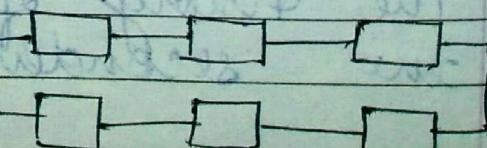
Network Operating System:-

①

Client
network



Peer to Peer
network.



- ① An OS which include software to communicate with other computers through network is called network OS.
- ② This allows resources such as files, application program and printers to be shared among the computer.
- ③ The network OS serves as a peer to peer OS and client server Operating system.

Client Server Operating system:-

- ① This architecture include multiple computers. Some computers act as a client and one or more computers act as a server. Client machines have limited softwares. but server machine many softwares and data for the execution of programs.
- ② Client send the program to server for execution and serve for execute the programs. and return the result to Client.

Peer to Peer Operating System.

In this architecture, computer can work as a both server. that is it requires as both server and client software.

8 - Distributed Operating System -

- ① These systems are the operating system for a network of autonomous computer connected by a ^{single / independent} comm' network.
- ② These systems control unmanaged hardware and software resources of the distributed system. User is not aware of where the program is executing and the location of resources which are executing these ~~sys~~ programs.
- ③ These systems include the absence of the share resources like memory, CPU, Database, printer, files etc.

