

+ Features of an OS:

1. "multi-programming": system in which more than one programs i.e. multiple programs can be submitted at a time, and no. of programs that can be submitted into the system at a time is referred as "degree of multi-programming".

2. "multi-tasking": system in which it seems that the CPU can execute multiple programs simultaneously or concurrently.

- "The CPU can execute only one process at a time"
- "The CPU can execute only one thread of any one process at a time".
- multi-tasking is also referred as "time-sharing"

"time-sharing": system in which the CPU time gets shared among all running programs.

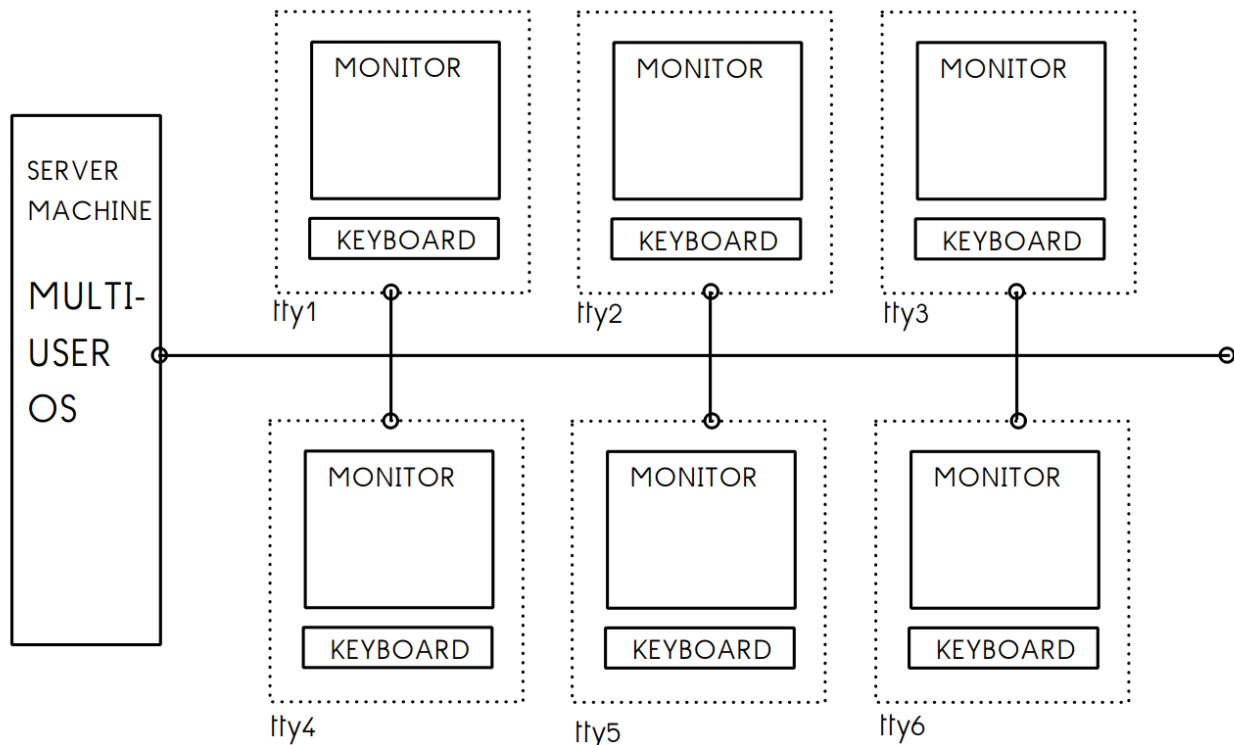
- thread is a smallest indivisible part of a process
- thread is smallest execution unit of process

3. "multi-threading": system in which it seems that the CPU can execute multiple threads of either are of same process or are of different processes simultaneously or concurrently.

"uni-processor": system which can run on a machine in which only one CPU/processor is there.

4. "multi-processor": system which can run on such a machine in which more than one CPU's/Processor's are connected in a closed circuit.

5. "multi-user": system in which more than one users can login at a time
OR system in which the CPU can execute multiple programs of multiple users simultaneously.



MULTI-USER FEATURE OF AN OPERATING SYSTEM

"swap area": it is a portion/part of hard disk drive which is used by an OS as an extension of main memory in which inactive running programs can be kept temporarily.

PCB is in a Kernel Space + Process is in Main Memory --> active running program

PCB is in a Kernel Space + Process is in a Swap Area --> inactive running program

PCB is Not there in Kernel Space --> process has been terminated/exited

+ **File:**

Q. What is file?

- file is a named collection of logically related information/data.
- file is container which contains logically related data/information.
- file is a stream of bits/bytes
- **file = data + metadata**

1. data: data is there inside the file

2. metadata: information about a file

- When a new file gets created one structure gets created, into which all information about the file can be kept to control file operations, such a structure is referred as **FCB: File Control Block**.

- In UNIX, FCB is called as **"inode"**, inode/FCB contains information about a file, mainly it contains:

- inode Number - unique id of a file for filesystem
- name of the file
- type of the file

- size of the file
 - access perms
 - time stamps
- etc...

SunBeam