Operating system

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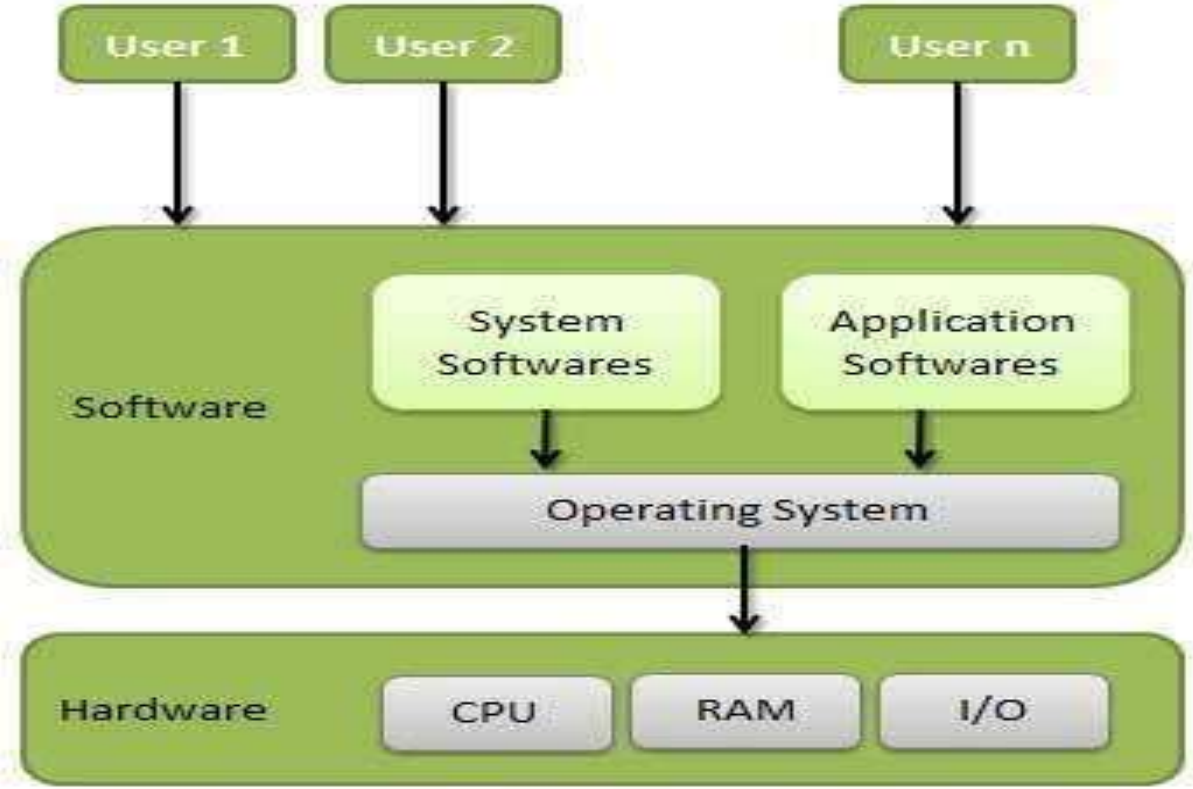
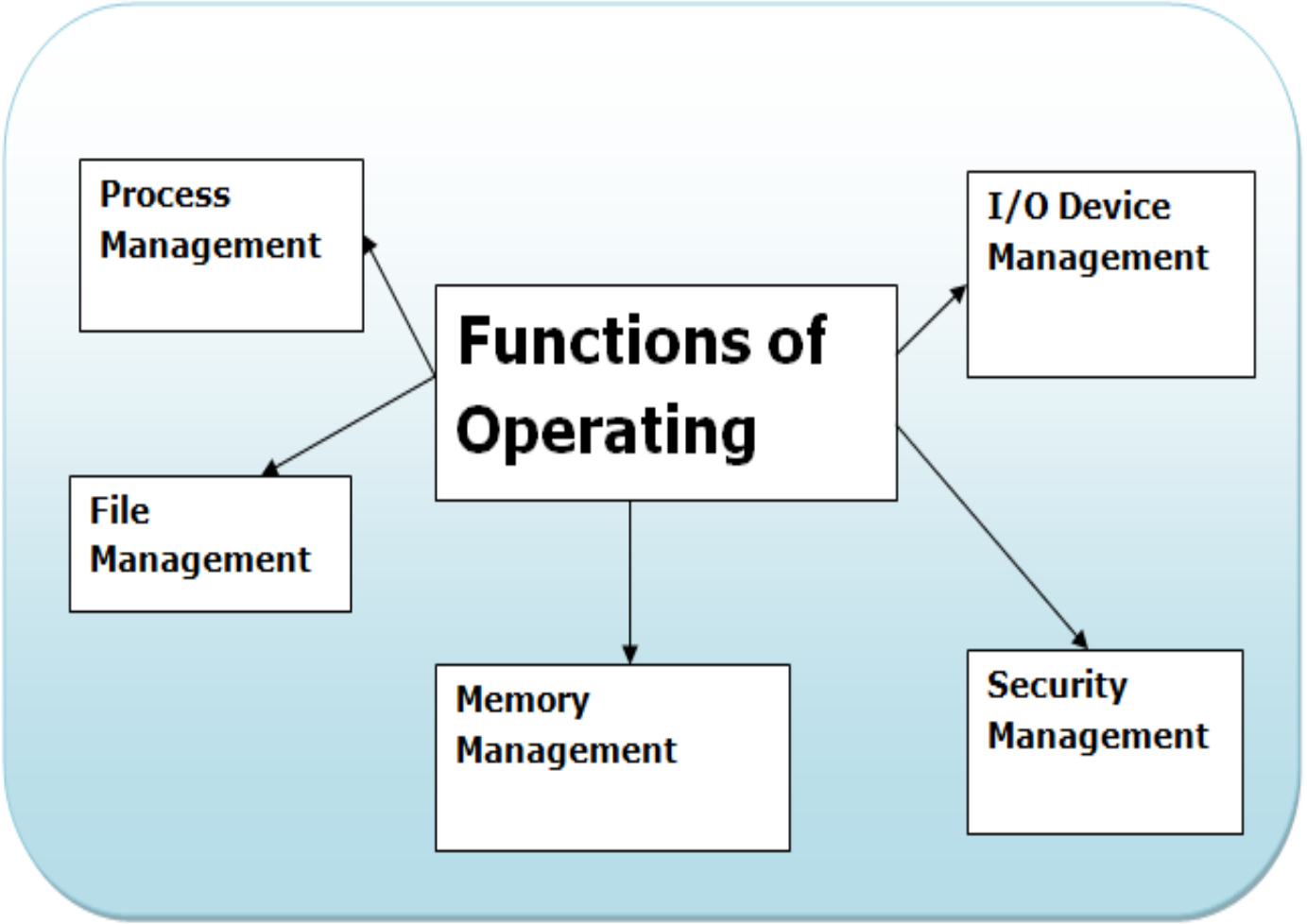
Operating system

Operating System is system software. The communication between a user and a system takes place with the help of an operating system. **Windows, Linux, and Android** are examples of operating systems that enable the user to use programs like MS Office, Notepad, and games on the compute



Functions of operating system



(1)Memory (Storage) Management

(a)lt keeps tracks of primary memory i.e. what part of it are in use by whom ,what part are not in use etc.

(b)In multiprogramming it decides which process will get memory when and how much

(c) Allocates the memory when the process of program request it to do so.

(d) Decaims (deallocate) the memory when the process no longer needs itor has been terminated.

(2)Processor Management

(a) Keep tracks of processor and status of process. Program that does this is called traffic controller

(b)in mutprogramming it decides which process gets the processor when & how much time. This function is called Process Scheduling

(c) Allcate the processor (CPU) to a process.

(d) Deallocate processor when processor is no longer required.

(3) Device Management

(a) Keeps tracks of all devices (peripherals). This is also typically called the I/O controller

4.File Management

(a)It keeps track of information, its location, uses, status etc. The collective facilities are often known as file system.

(b) Decides who gets the resources.

(c) Allocates the resources.

(d) Deallocates the resources.

5. Security management

By means of passwords & similar other techniques, preventing unathorized access to program & data.

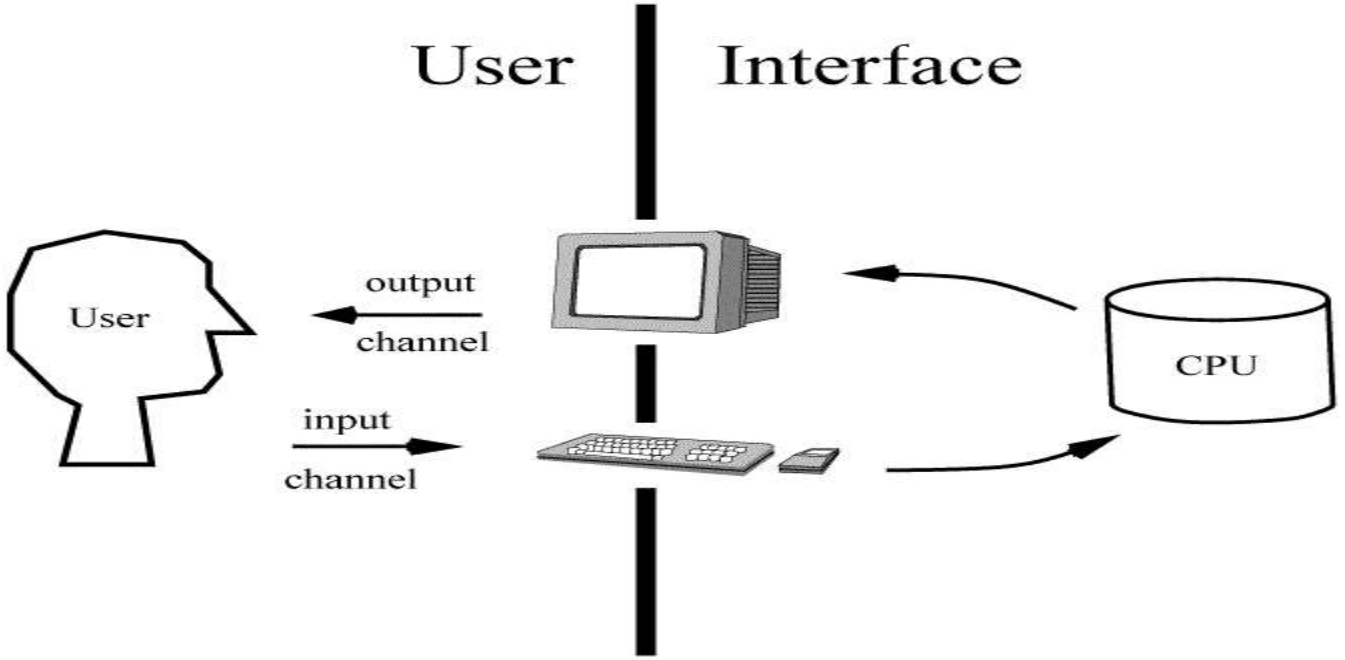
Protection involves ensuring that all access to system resources is controlled.

Types of operating system

(i)Single-User/Single-Tasking OS

An operating system that allows a single user to perform only one task at a time is called a Single-User Single-Tasking Operating System. Functions like printing a document, downloading images, etc., can be performed only one at a time.

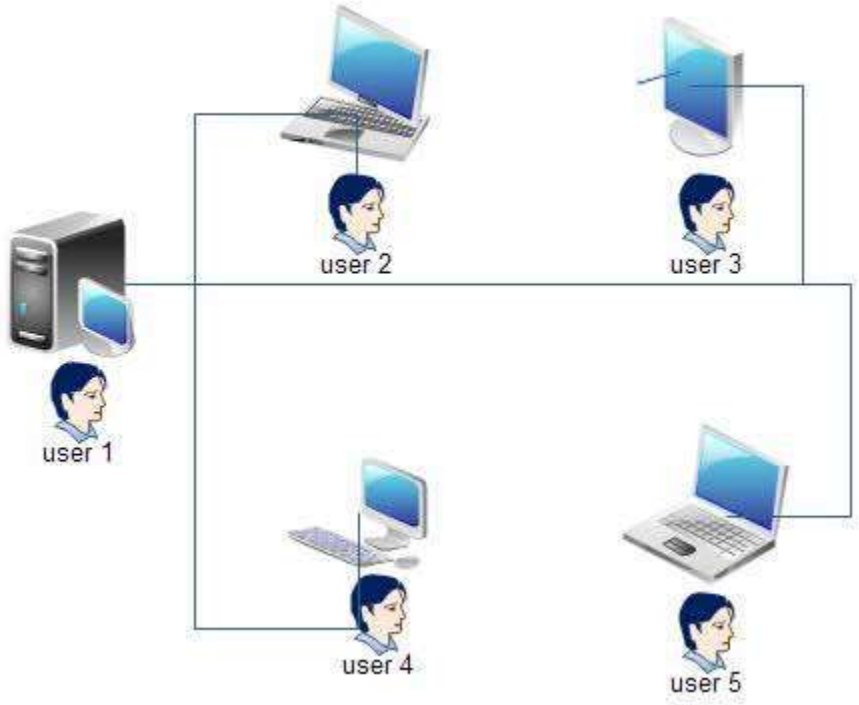
Examples include **MS-DOS**. Palm OS. etc.



(ii) Multi user operating system:-

A multi-user operating system is **an operating system that permits several users to access a single system running to a single operating system**. These systems are frequently quite complex, and they must manage the tasks that the various users connected to them require.

Some examples of a multi-user OS are Unix, Ubuntu, MacOS, **Windows and**



SINGLE USER OPERATING SYSTEM

VERSUS

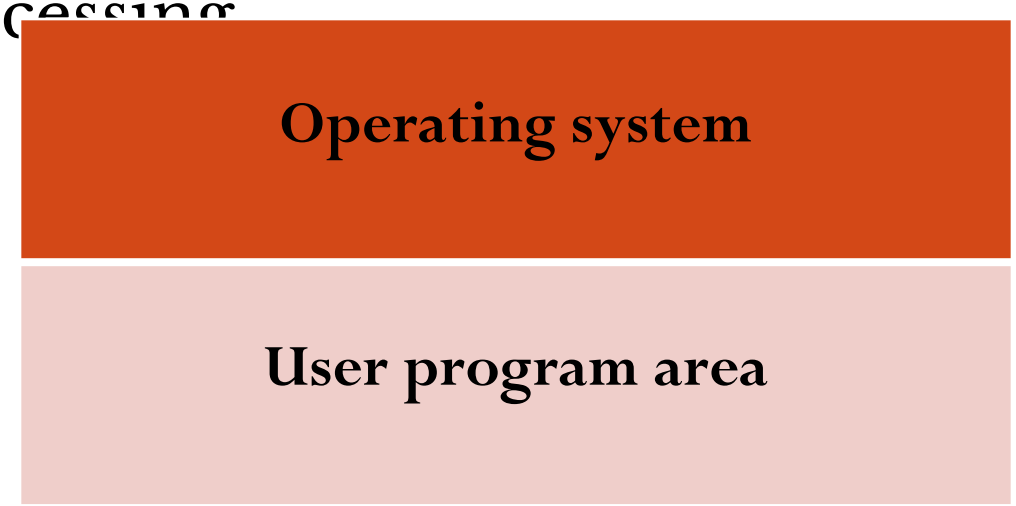
MULTIUSER OPERATING SYSTEM

SINGLE USER OPERATING SYSTEM	MULTIUSER OPERATING SYSTEM
A type of operating system that provides facilities to only one user at a time	A type of operating system that provides resources and services to multiple users at a time
Single user single task OS and single user multi-task OS are two types	Timesharing OS and Distributed OS are some types
Simple	Complex
Ex: Windows, Apple Mac OS	Ex: UNIX and Linux

Classification of operating system

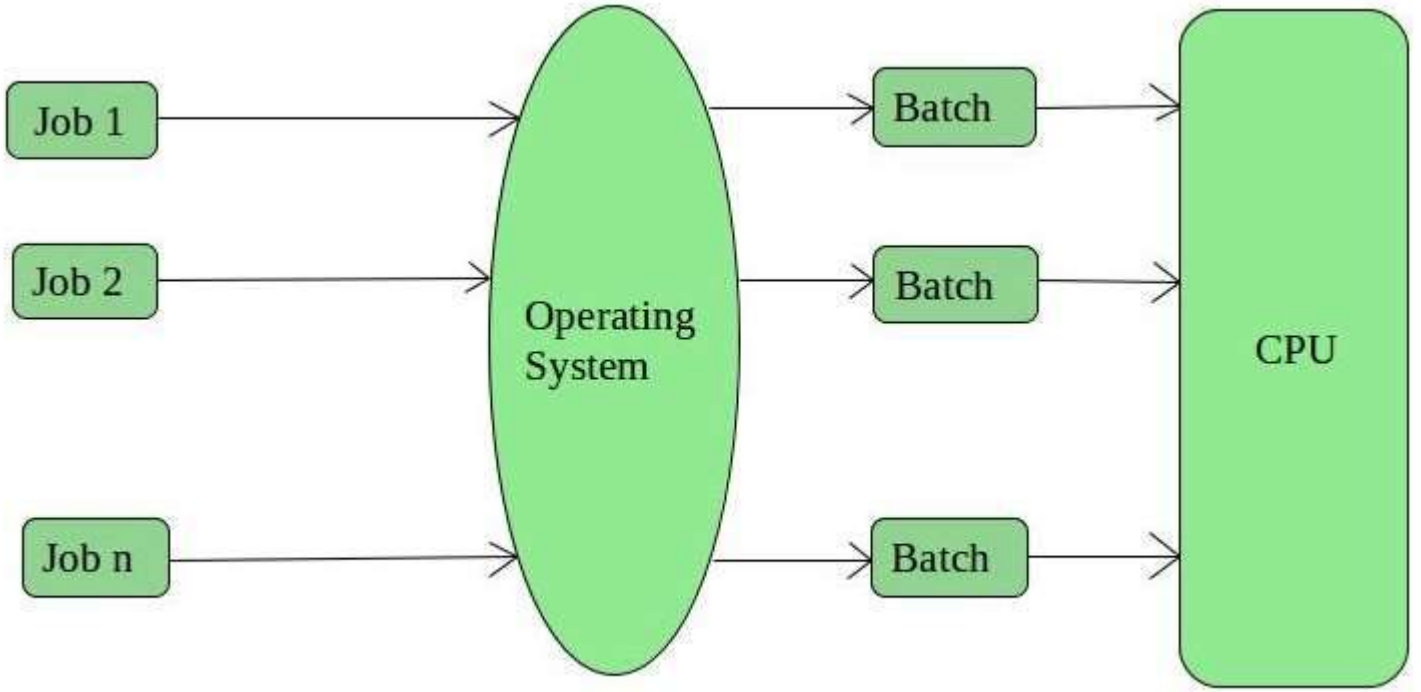
(i) Serial processing OS

A serial processor is a **processor type used by systems where the central processing unit** (CPU) carries out just one machine-level operation at a time. The term is often used in contrast to a parallel processor, which features more than one CPU to perform parallel processing.



(ii)Batch operating system

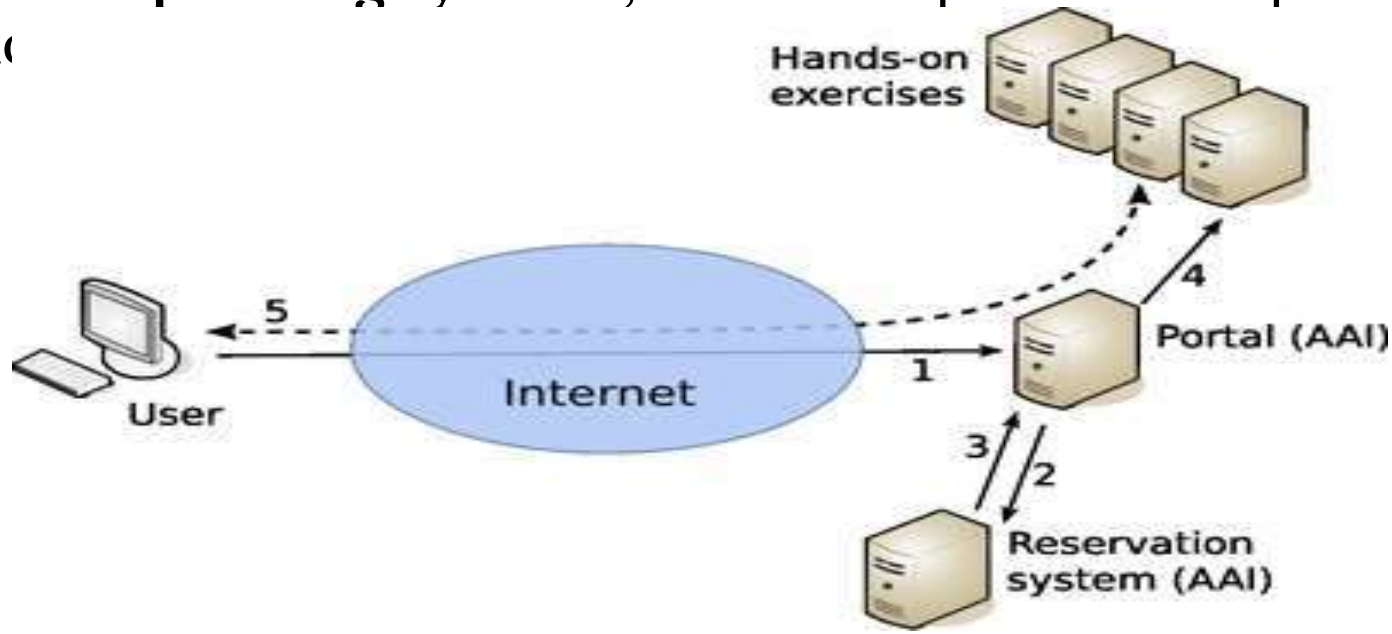
Batch Operating system is one **of the important type of operating system**. The users who using a batch operating system do not interact with the computer directly. Each user prepares its job on an off-line device like punch cards and submits it to the computer operator.



(iii)Interactive (on-line) operating system

An interactive operating system is **one that allows the user to directly interact with the operating system whilst one or more programs are running**. There will be an user interface in place to allow this to happen. It could be a command line style of interface or it could be a graphical interface.

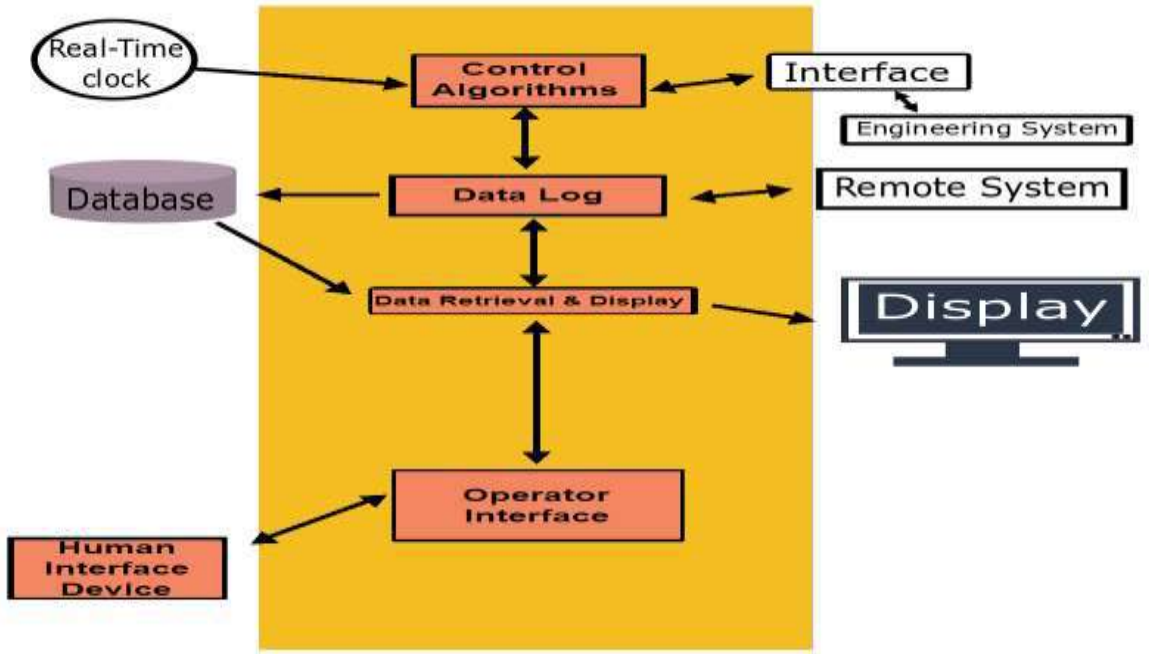
Most users have grown up using **Macintosh or Windows computer operating systems**, which are prime examples of graphi



(iv) Real time OS

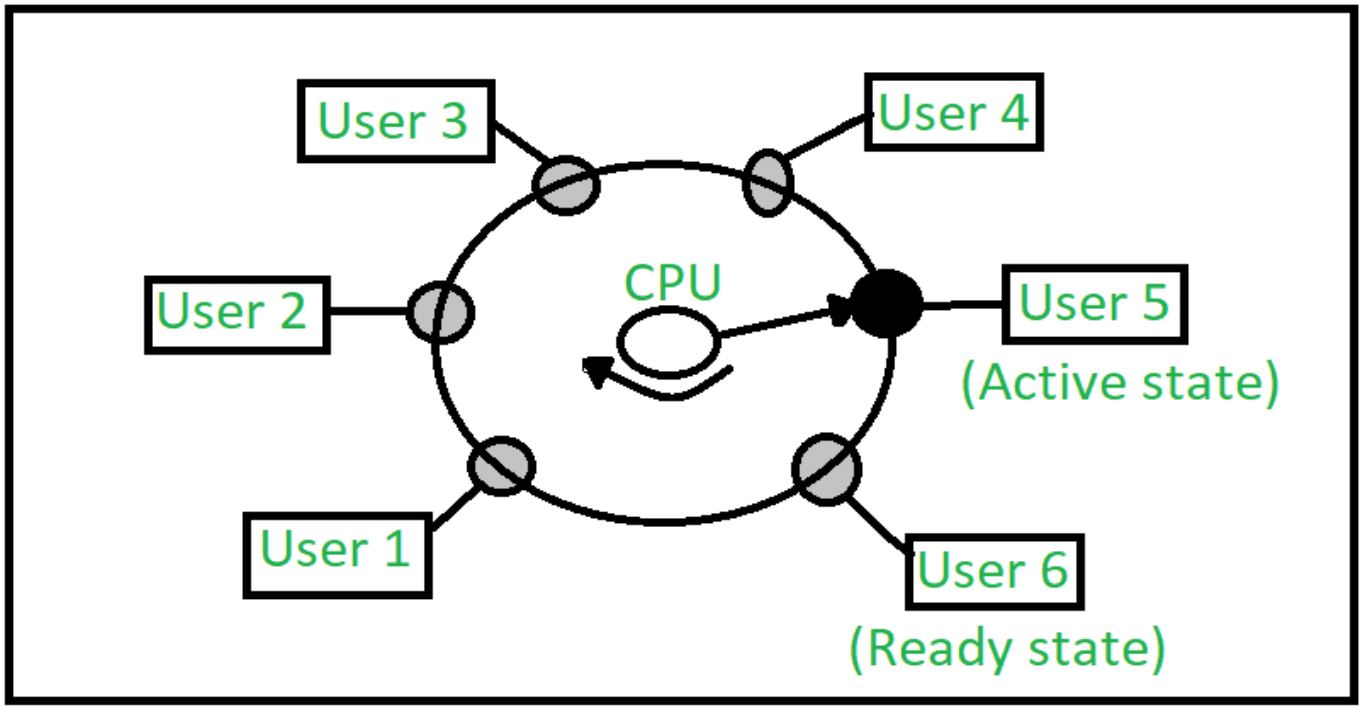
A **Real Time Operating System**, commonly known as an RTOS, is a software component that rapidly switches between tasks, giving the impression that multiple programs are being executed at the same time on a single processing core.

Examples of the real-time operating systems: **Airline traffic control systems**



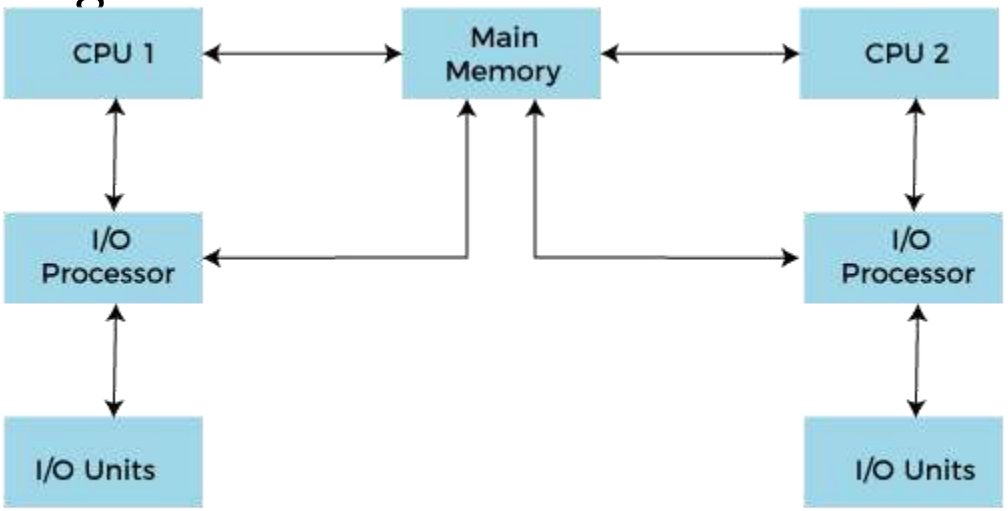
(v) Time sharing OS

A time shared operating system **allows multiple users to share computers simultaneously**. A time shared operating system uses CPU scheduling and multi-programming to provide each with a small portion of a shared computer at once. Each user has at least one separate program in memory.



(vi) Multiprocessing OS:

A multiprocessing OS can support the execution of multiple processes at the same time. It uses multiple number of CPU. It is expensive in cost however, the processing speed will be faster.
It is complex in its execution. Operating system like Unix, 64 bit edition of windows, server edition of windows, etc. are multiprocessing.

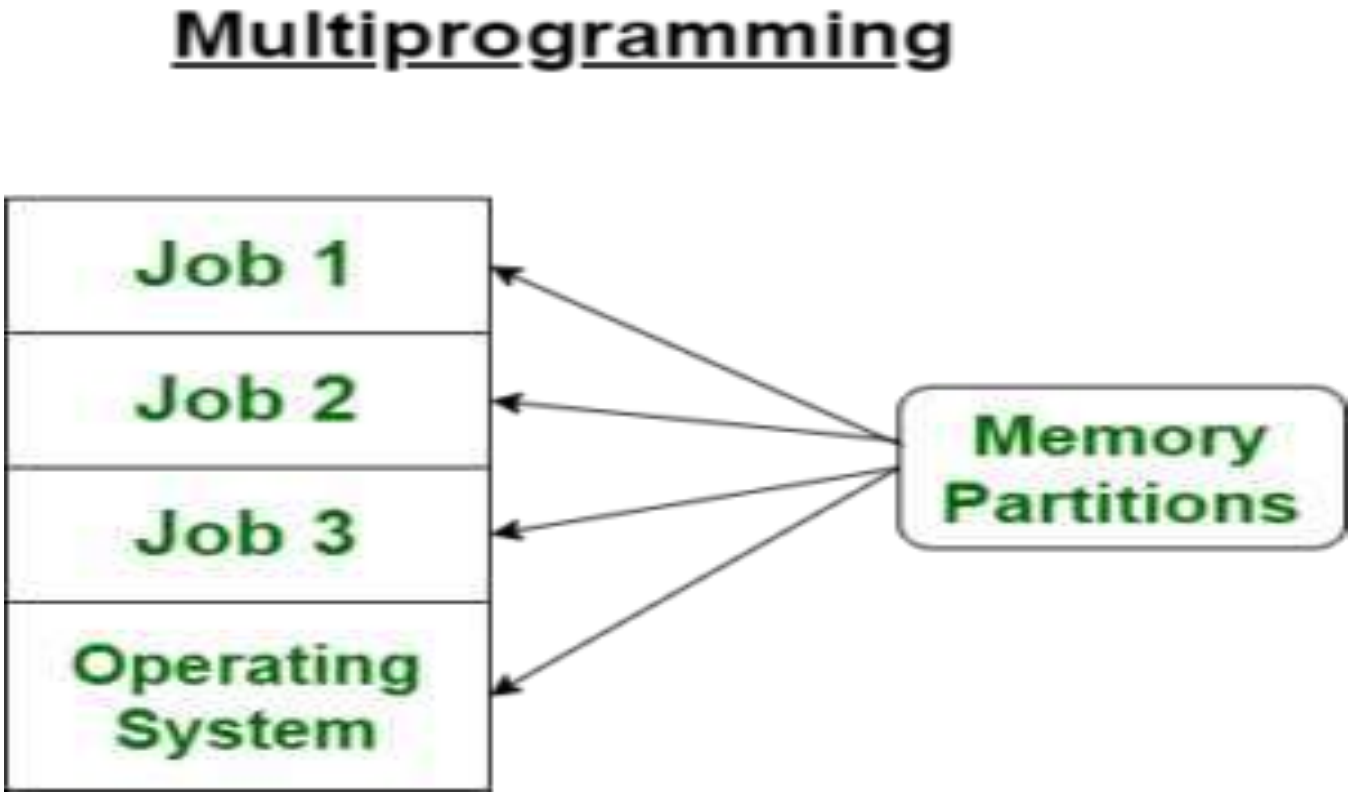


Working of Multiprocessor System

(vii) Multiprogramming OS:

In a multiprogramming OS more than one programs can be used at the same time. It may or may not be multiprocessing. In a single CPU system , multiple program are executed one after another by dividing the CPU into small time slice.

Example: Windows, Mac, Linux,etc.



(viii) Multitasking OS:

In a multitasking system more than one task can be performed at the same time but they are executed one after another through a single CPU by time sharing. For example: Windows, Linux, Mac, Unix,etc. Multitasking OS are of two types:

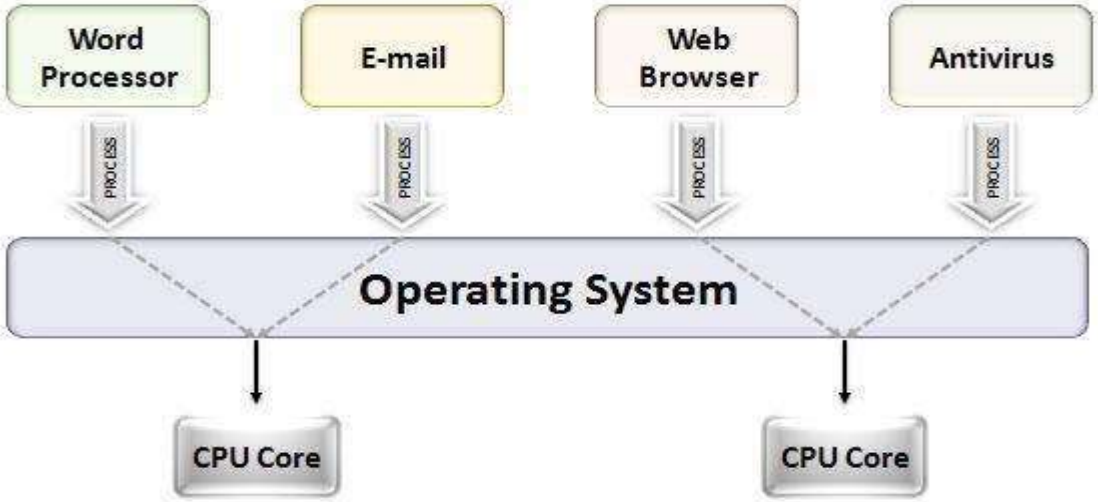
a) Pre-empetive multitasking

In the pre-empetive multitasking, the OS allows CPU times slice to each program. After each time slice, CPU executes another task. Example: Windows XP

b**) Co-operative multitasking**

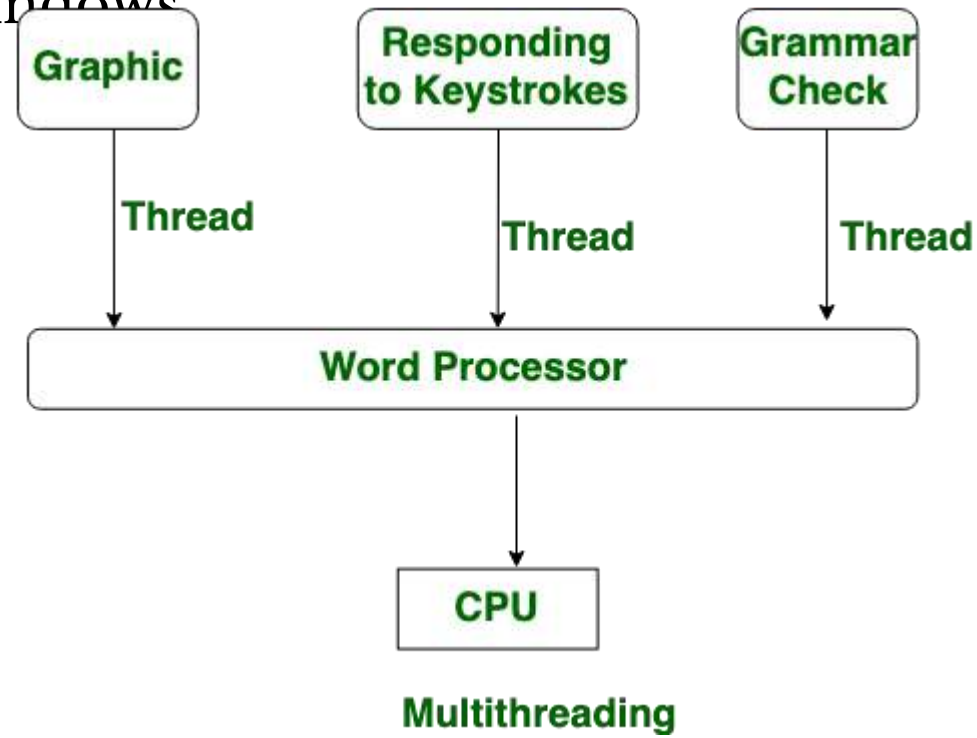
In co-operative multitasking a task can control CPU as long as it requires . However, it will free CPU to execute another program if it

Exaample: w



(ix) Multithreading:

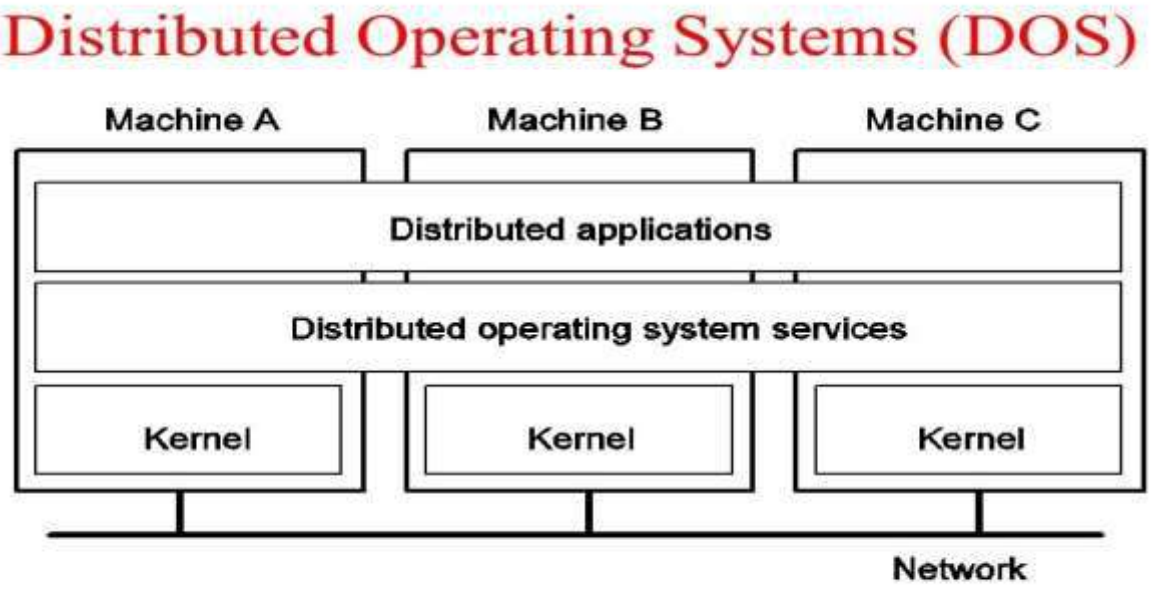
A program in execution is known as process. A process can be further divided into multiple sub-processers. These sub-processers are known as threads. A multi-threading OS can divide process into threads and execute those threads. This increases operating speed but also increases the complexity. For example: Unix, Server edition of Linux and windows



Multithreading

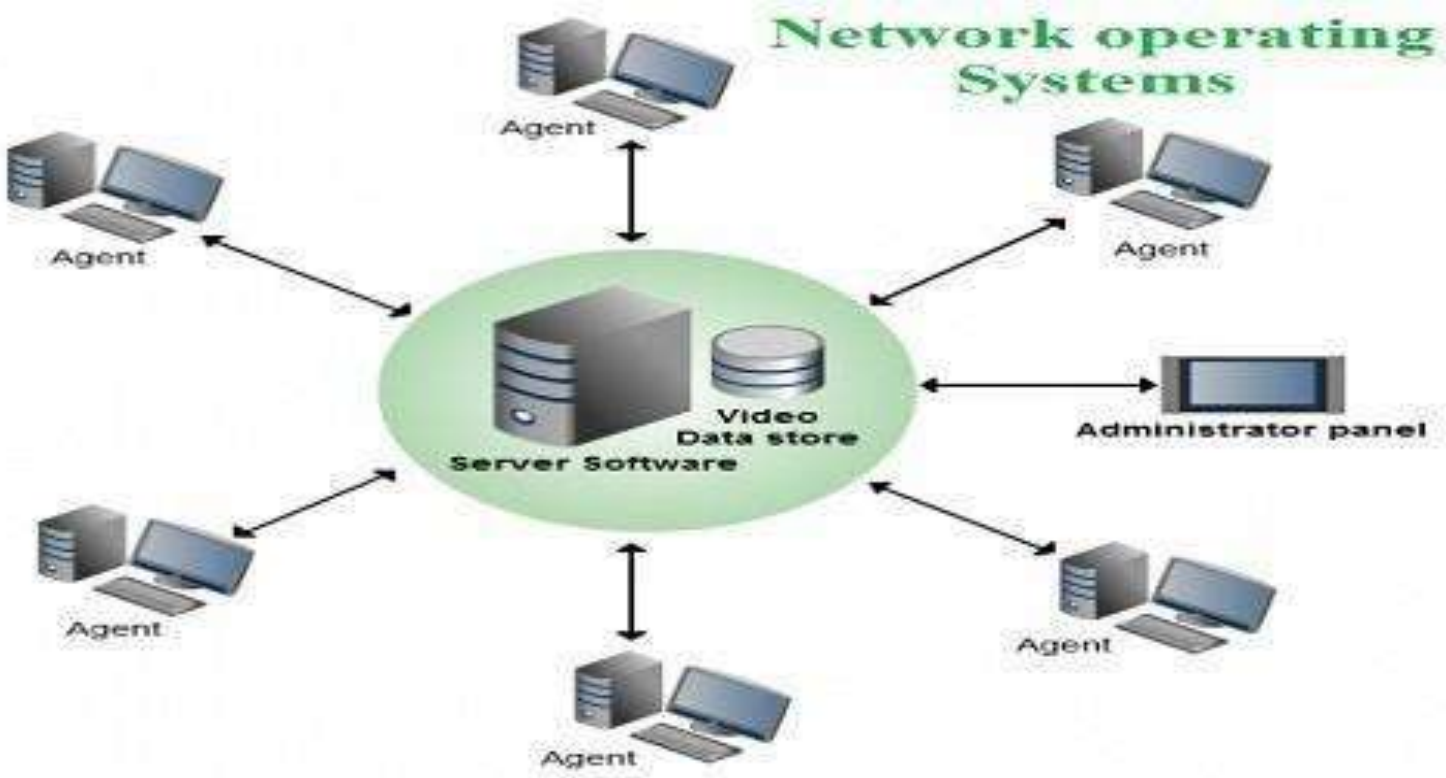
(x) Distributed operating system

A distributed operating system **(DOS)** is an essential type of operating system. Distributed systems use many central processors to serve multiple real-time applications and users. As a result, data processing jobs are distributed between the processors.



(xi) Network operatin system

A network operating system (NOS) is an **operating system that manages network resources**: essentially, an operating system that includes special functions for connecting computers and devices into a local area network (LAN).



THANK YOU…!!!