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A6 Batch

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Operating Systems Intro

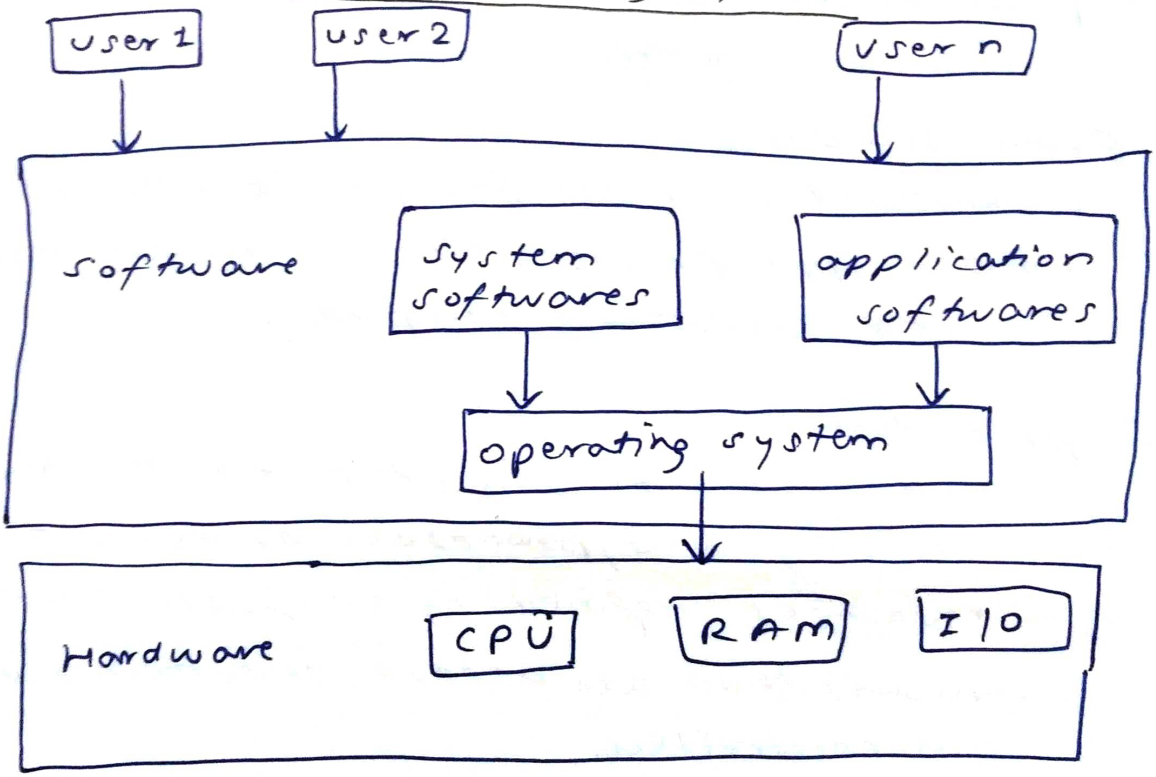
Assignment - I

1) what is operating system? what are the services provided by operating system?

→ definition:

An operating system (OS) is a system software that manages computer hardware, software resources, and acts as the interface between user and the computer hardware and controls the execution of all kinds of programs. It is a software that enables applications to interact with a computer's hardware.

architecture of operating system



some common services provided by an operating system are:

i) program execution
- loads a program into memory
- executes program
- handles program execution
- provides a mechanism for deadlock handling
- provides mechanism for process communication

ii) I/O operation

- I/O means reading and writing operations with any file or any specific I/O device
- provides access to required I/O device wherever required

iii) file system manipulation

- file represents a collection of related information
- program needs to read a file or write a file.
- provides interface to user to create/delete files
- provides interface to create backup of file system

iv) Error handling

- constantly checks for possible errors
- takes appropriate action to ensure correct and consistent computing

v) protection

- mechanisms or ways to control the access of programs, processes or users to the resources defined by computer system
- ensures that all access to system resources is controlled.
- provides authentication features for each user by means of passwords

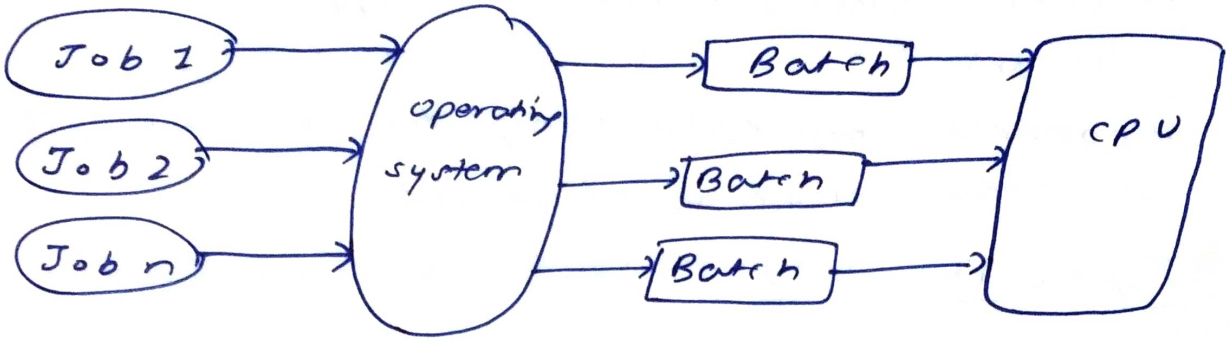
vi) Resource management

- OS manages all kinds of resources using schedulers
- CPU scheduling algorithms are used for better utilization of CPU

Q 2) Types of operating system

a) Batch operating system:

→ This type of OS doesn't interact with computer directly. There is an operator which takes similiar jobs having same requirements and then groups them into batches.

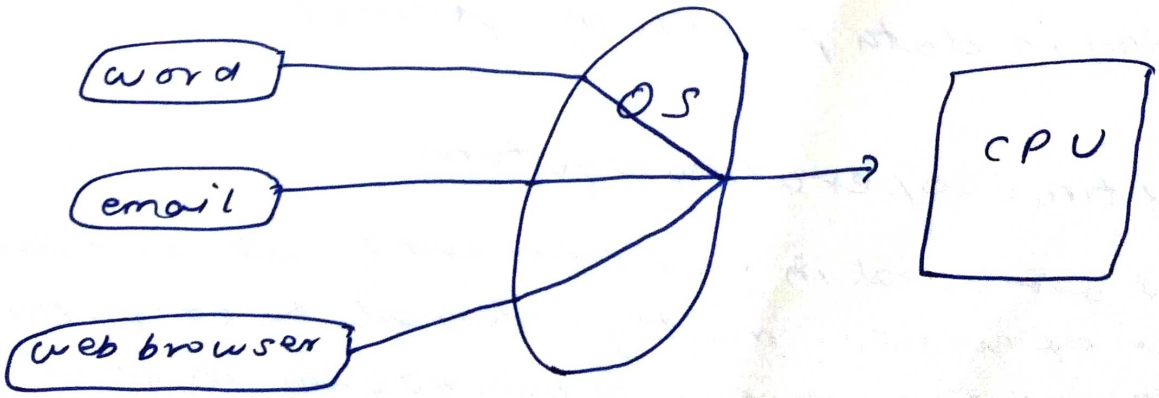


examples: payroll system, bank statements, etc.

- The idle time for batch system is very less and easy to manage large works repeatedly in batch systems.
- But costly and hard to debug

b) Time sharing operating systems

→ Time sharing enables many people, located at various terminals, to use a particular computer system at same time. Processor's time is shared among multiple users simultaneously.



- each task gets equal opportunity
- fewer chances of duplication of software

examples: Unix, multics, etc.

- CPU idle time reduced but data communication problem

c) distributed operating system

→ distributed systems use many central processors to serve multiple real time applications and users

→ it connects multiple computers via a single communication channel.

Types of DOS:

i) Client-server systems
ii) Peer-to-peer systems
iii) middleware
iv) Three tier
v) N-tier

→ failure of one will not affect the other network communication, as well as systems are independent from each other

→ failure of main network will stop the entire communication

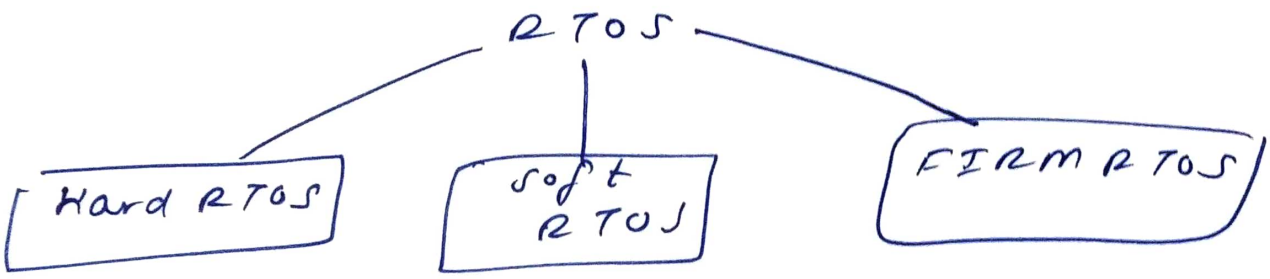
→ delay in data processing reduces

d) Real time operating system

→ RTOS are used in environments where a large number of events mostly external to computer system, must be accepted and processed in short time or within certain deadlines.

→ examples of RTOS are airline traffic control systems, command control, airlines reservation systems, heart pacemaker, Robot, etc.

Types of RTOS



e) network operating system

→ These systems run on a server and provide the capability to manage data, users, groups, security, and other networking functions.

2 types of NOS:

i) peer to peer NOS ii) client/server NOS

examples: Microsoft windows Server 2003, BSD, UNIX, Linux, Mac OS X, Novell Netware, etc.