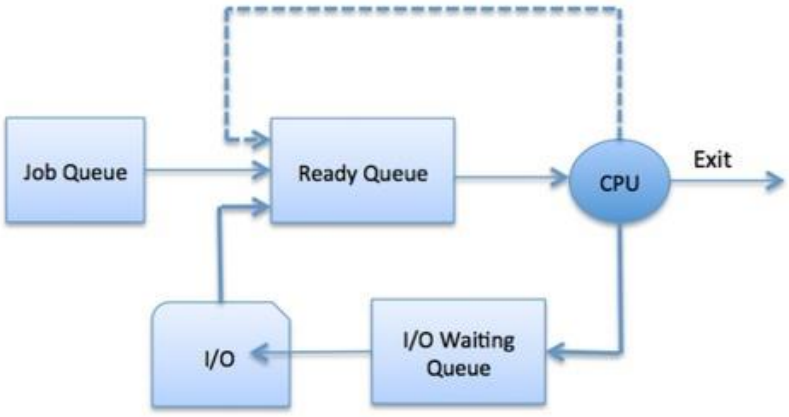
TITTLE : A SURVEY ON THE MULTI TASKING IN A COMPUTER SYSTEMS AND THEIR OPERATING SYSTEM

INTRODUCTION:

Multi-tasking in computer systems refers to the ability of the operating system (OS) to handle multiple tasks or processes concurrently. This means that the OS can switch between different tasks rapidly, giving the illusion that multiple programs are running simultaneously. Here's how multi-tasking works in computer systems:

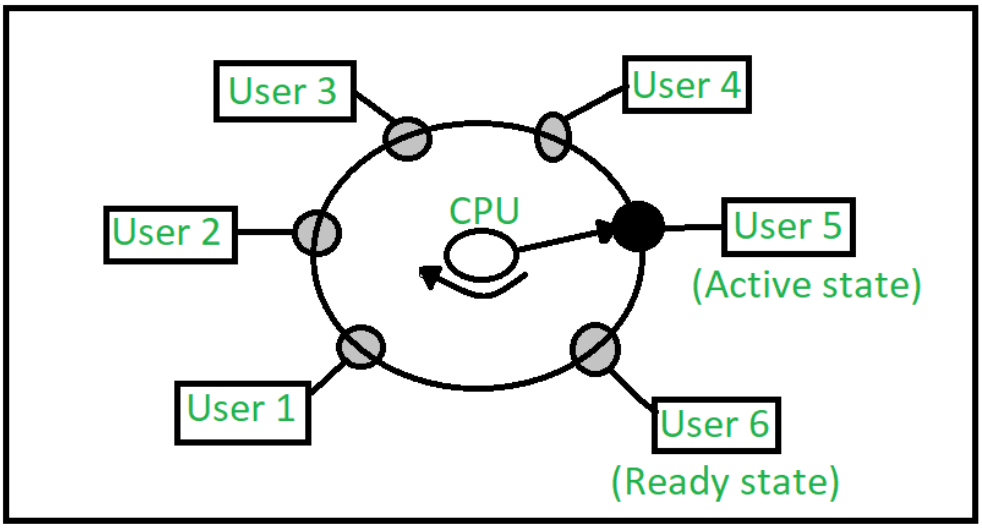
PROCESS SCHEDULING:

The operating system is responsible for scheduling tasks or processes to run on the CPU. It allocates CPU time to each task based on priority, fairness, and other scheduling algorithms. The scheduler ensures that each process gets a fair share of CPU time and that no process monopolizes the CPU.



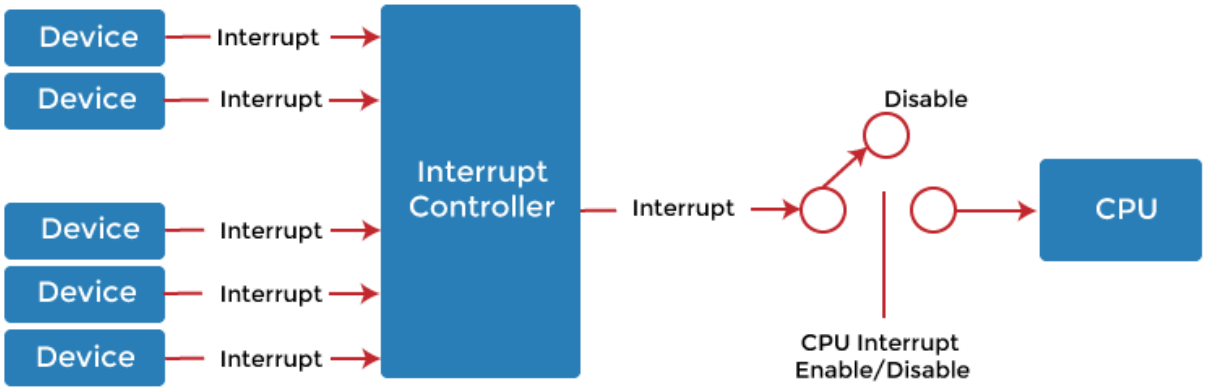
TIME SHARING:

Multi-tasking operating systems use time-sharing to give the impression of concurrent execution to users. It divides CPU time among multiple tasks by rapidly switching between them. Each task gets a small time slice to execute, and the OS switches between tasks so quickly that it appears as if they are running simultaneously.



INTERRUPT HANDLING:

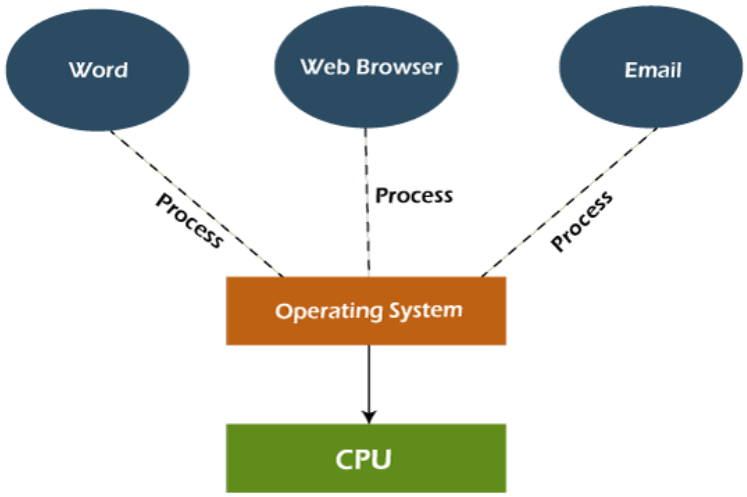
Hardware interrupts and software interrupts play a crucial role in multi-tasking. Hardware interrupts, such as timer interrupts, signal the CPU to switch tasks at regular intervals. Software interrupts, such as I/O requests or system calls, trigger context switches between tasks when necessary.



MEMORY MANAGEMENT:

Multi-tasking OSes employ memory management techniques to isolate processes from one another and ensure they do not interfere with each other's memory space. This includes techniques like virtual memory, which allows processes to use more

memory than physically available by swapping data between RAM and disk storage.



CONCURRENCY CONTROL:

Multi-tasking systems also manage resources such as input/output devices, ensuring that multiple tasks can access them simultaneously without conflicts. This involves mechanisms like locking, semaphores, and other synchronization techniques to prevent data corruption or race conditions.

USER INTERFACE:

Graphical user interfaces (GUIs) in modern operating systems enable users to interact with multiple programs simultaneously. The OS manages windows, input devices, and other user interface elements to facilitate multi-tasking. Users can switch between applications, resize windows, and perform other tasks concurrently.

Overall, multi-tasking in computer systems is a fundamental capability provided by modern operating systems, allowing users to run multiple programs simultaneously and make efficient use of computing resources.

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COUSE CODE : **20CS4402**

TOPIC : **LITEATURE SURVEY ON OS**

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