Operating System (PCC CS 502)
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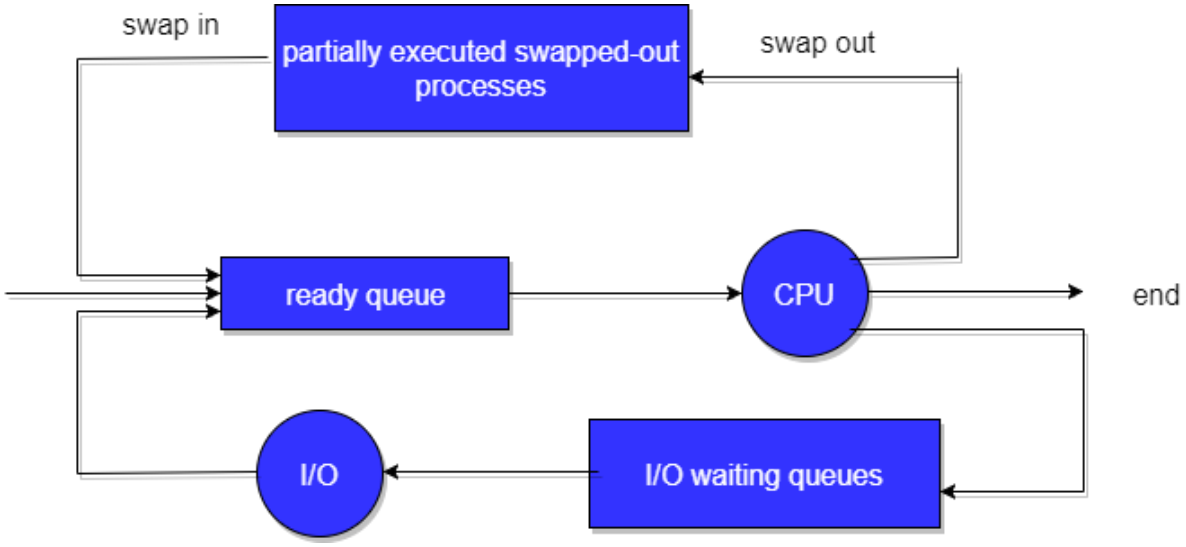
Process Scheduling

The procedure of selecting a process from a queue of waiting processes (called ready queue) based on certain predetermined criteria or policy and despatching it to the running state (i.e. allocating CPU time for execution) is known as process scheduling.

Schedulers

Schedulers are special system software which handle process scheduling in various ways. Their main task is to select the jobs to be submitted into the system and to decide which process to run.



- **Short Term Scheduler**

I. It is also called as CPU scheduler.

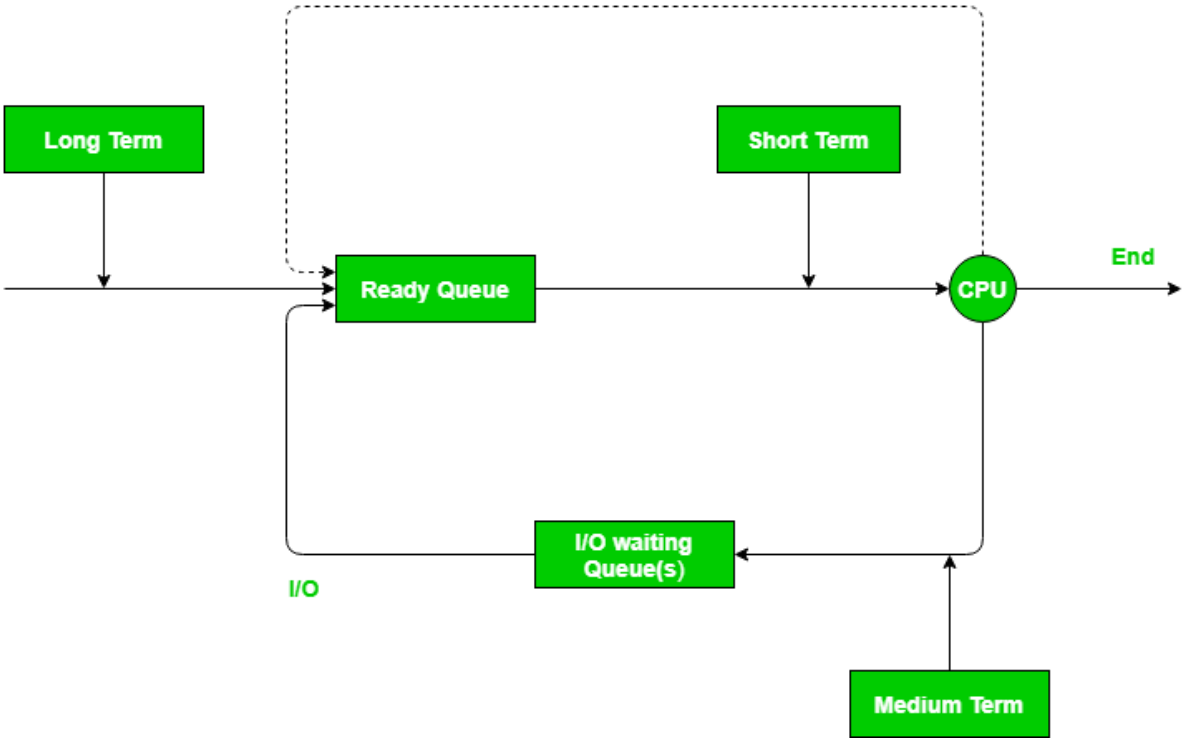
II. Selects a process from the ready queue and despatches it to running state

III. Very frequently invoked or called for execution

IV. Needs to execute very fast and consume minimum CPU time as possible

- **Long Term Scheduler**

I. It is also called a job scheduler.
II. Selects one of the many jobs currently in the job queue and despatches it to the system
III. Picks the process from new state and puts it in ready state
IV. Needs to be invoked less frequently
V. Controls the degree of multiprogramming



Degree of multiprogramming –
The number of processes that can reside in the ready state at maximum decides the degree of multiprogramming, e.g., if the degree of programming = 100, this means 100 processes can reside in the ready state at maximum.

An I/O-bound process is one that spends more of its time doing I/O than it spends doing computations. A CPU-bound process, in contrast, generates I/0 requests infrequently, using more of its time doing computations.

- **Medium term scheduler**

I. Selects one of the waiting processes to be temporarily swapped out to secondary storage device to make room for free memory space.
II. Medium-term scheduling is a part of swapping. It removes the processes from the memory. It reduces the degree of multiprogramming. The medium-term scheduler is in-charge of handling the swapped out-processes.
III. A running process may become suspended if it makes an I/O request. A suspended processes cannot make any progress towards completion. In this condition, to remove

the process from memory and make space for other processes, the suspended process is moved to the secondary storage. This process is called swapping, and the process is said to be swapped out or rolled out.
