

Process Scheduling -

The process scheduler selects an available process for program execution on the CPU.

Scheduling Queues -

All process enters the s/y, are put into Job queue, which consists of all processes in the s/y.

The processes residing in main memory and are ready & waiting to execute are kept on a list called Ready queue. This queue is in the form of Linked List.

The list of processes waiting for a particular I/O device is called a device queue.

A common representation of process scheduling is a queuing Diagram.

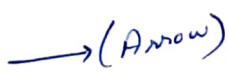
Fig 3.6 Queuing Diagram



⇒ Indicate Ready Queue / Device Queue.



⇒ Indicate Resource serving the queue.



⇒ Indicate Process flow.

A new process initially put in Ready queue - Until execution or Dispatch.

Once process allocated CPU & executing, one of several event could occur as follows,

↳ Process could issue I/O Request & placed in I/O queue.

↳ Process could create new child process & wait for child's - termination.

↳ Process could be removed from CPU, as a result of Interrupt and put back in ready queue.

Process continues in cycle & finally terminated & Resources Deallocated.

Schedulers -

The scheduler select process from the queues.

⇒ Long term Scheduler / Job scheduler - Select process from pool & loads into memory for execution.

⇒ Short term scheduler / CPU scheduler - Select one process from Ready Queue & allocate the CPU.

* I/O Bound Process ⇒ Spend more time doing I/O than Computations.

* CPU Bound Process ⇒ Use more time for computation than generating I/O Request.

Thus the long term scheduler must select process mix of I/O Bound & CPU Bound process for better performance.

⇒ Medium term scheduler ⇒ It can remove a process from memory & reduce degree of multiprogramming & later reintroduce the process into memory called swapping.

Fig. 3.7 Adding Medium term scheduling in Queue Diag.

Context Switch -

It is suspending & Resuming process.

When the interrupt occurs, save the current process running content, so it can be restored when processing is done.

State Save ⇒ To save current state & State Restore ⇒ To resume operation.

Switching CPU to another process require performing state save of current process & state restore of different process. This task is known as Context switch.

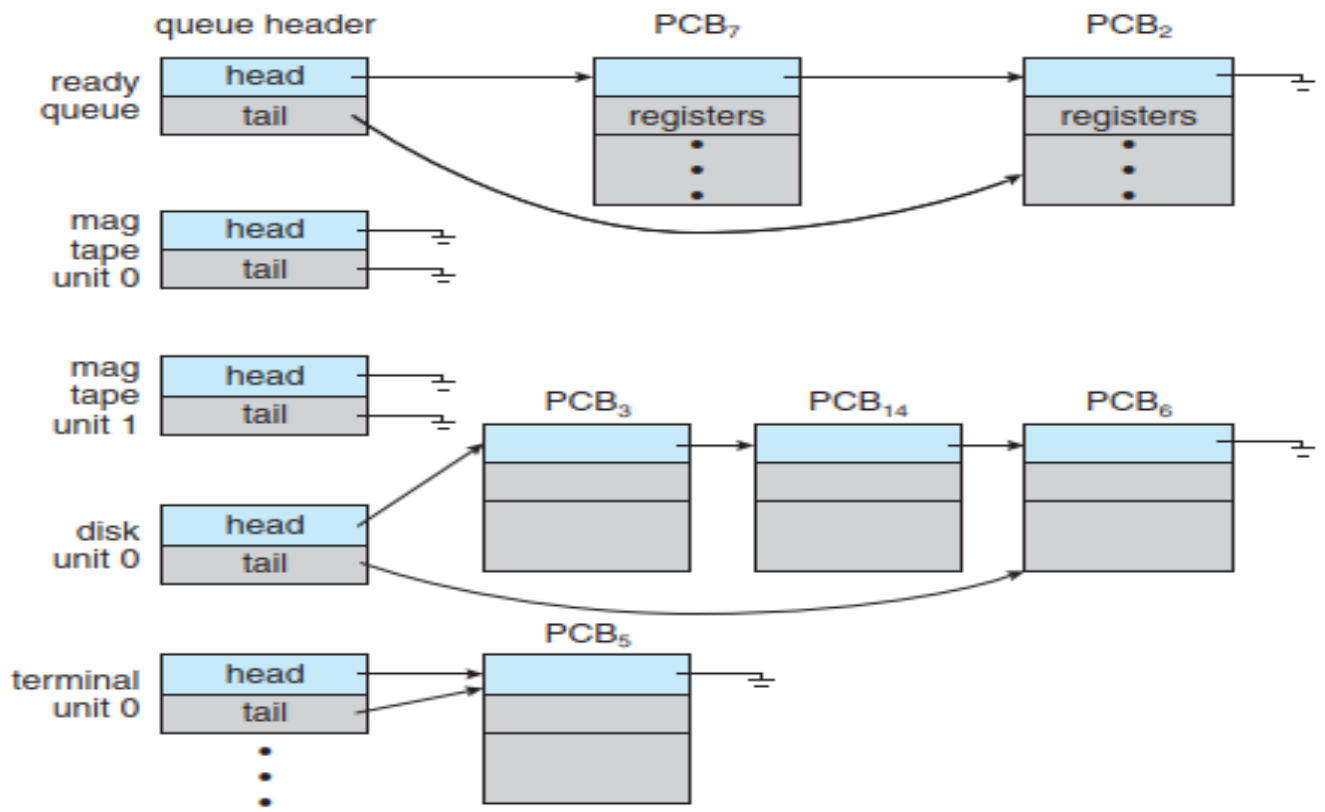


Figure 3.5 The ready queue and various I/O device queues.

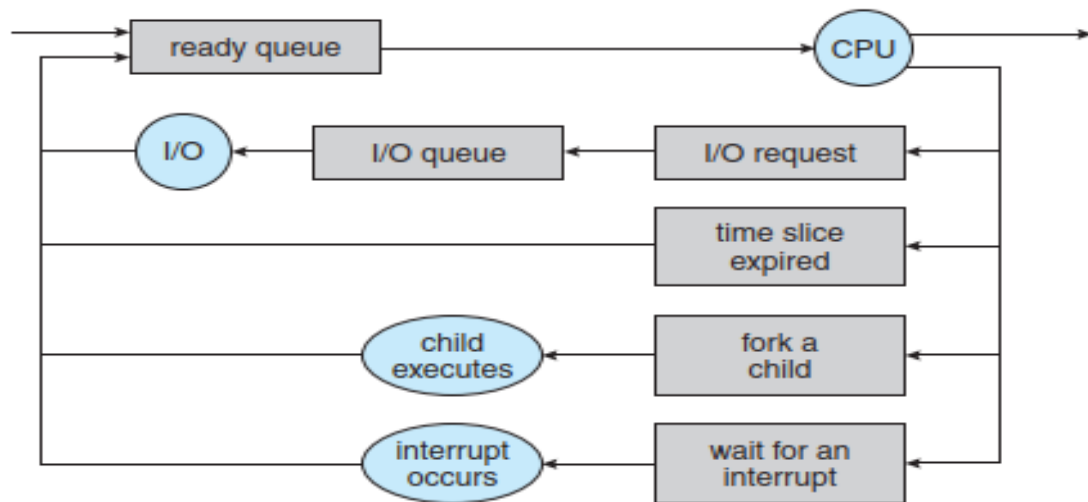


Figure 3.6 Queueing-diagram representation of process scheduling.

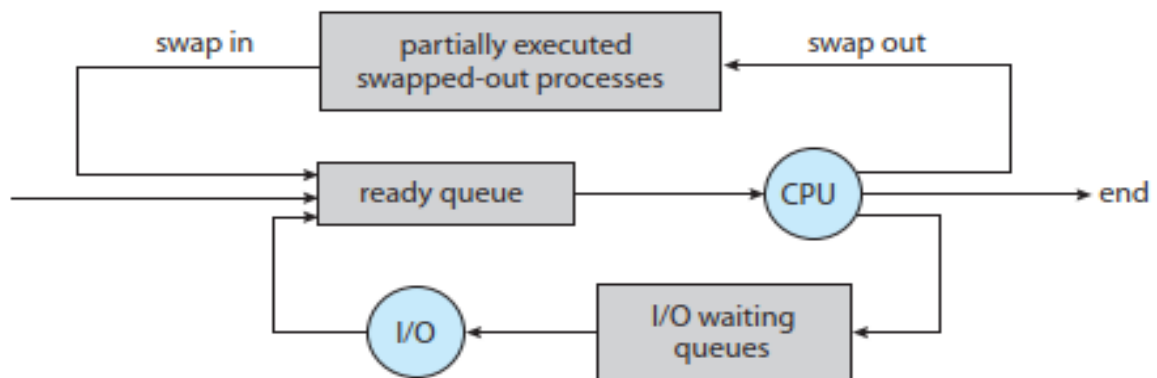


Figure 3.7 Addition of medium-term scheduling to the queueing diagram.