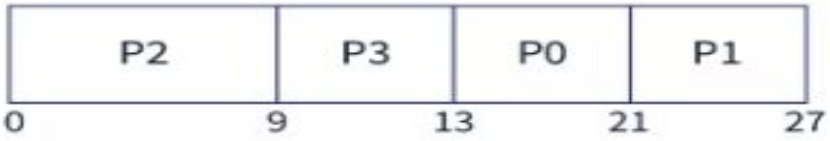
CPU Scheduling

- CPU scheduling is the task performed by the CPU that decides the way and order in which processes should be executed.
- A CPU scheduling algorithm is used to determine which process will use CPU for execution and which processes to hold or remove from execution
- There are two types of CPU scheduling:
  1 Non-pre-emptive
  2 Pre-emptive.

Non-Pre-emptive Scheduling

new processes are executed only after the current process has completed its execution.

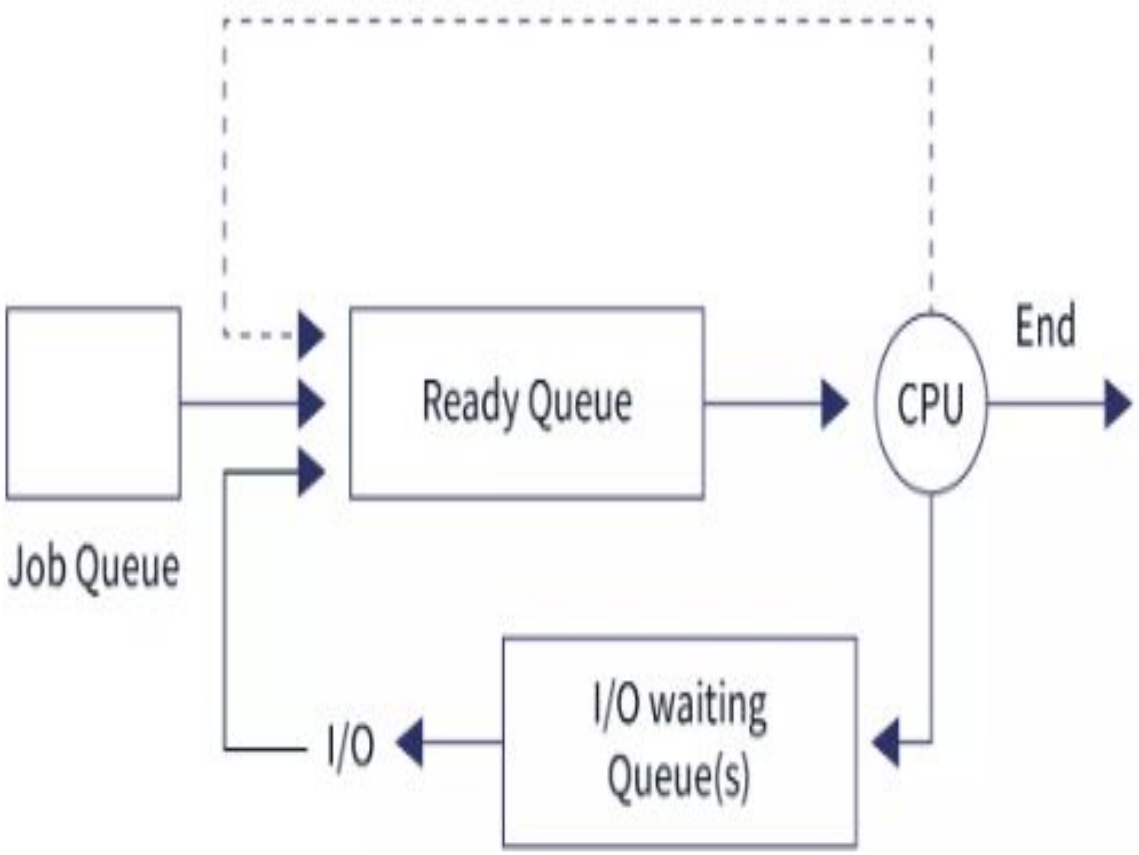
Process	Arrival Time	CPU Burst Time (in millisecond)
P0	2	8
P1	3	6
P2	0	9
P3	1	4



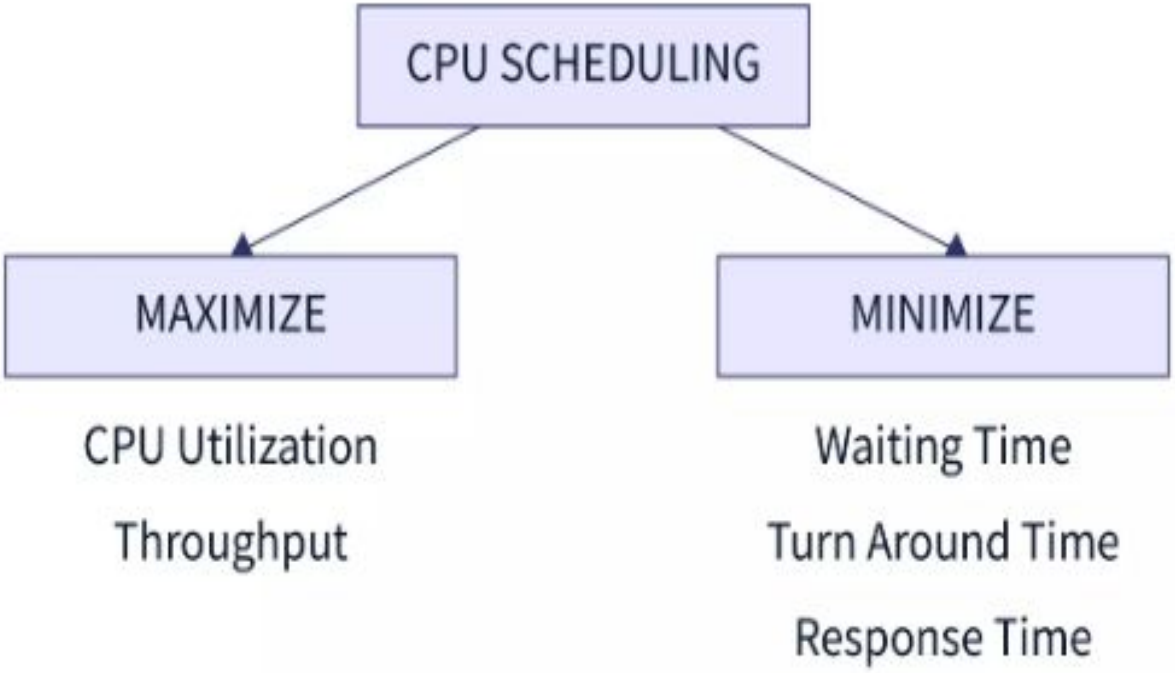
Important CPU Scheduling Terminologies

- Arrival Time
- Burst Time
- Submission Time
- Completion Time
- Turn Around Time
- Waiting Time

- **Arrival time:** Arrival time (AT) is the time at which a process arrives at the ready queue.
- **Burst Time:** It is the time required by the CPU to complete the execution of a process, or the amount of **time required** for the execution of a process. ALSO called the execution time or running time.
- **Completion Time:** As the name suggests, completion time is the time at which a process completes its execution.
- **Turn-Around Time(TAT):** Turn around time is simply the difference between completion time and arrival time (Completion time - arrival time).
- **Waiting Time:** Waiting time (WT) of a process is the difference between turn around time and burst time (TAT - BT), i.e. the amount of time a process waits for getting CPU resources in the ready queue.


Ready Queue
CPU
End
Job Queue
I/O
I/O waiting
Queue(s)

CPU Scheduling Criteria



Types of CPU Scheduling ALGORITHM

- FCFS
- SJF
- Round Robin

First Come First Serve (FCFS)

- In this type of scheduling algorithm, the CPU is first allocated to the process which requests the CPU first.
- This scheduling algorithm is implemented with a FIFO(First In First Out) queue.
- As the process is ready to be executed, its Process Control Block (PCB) is linked with the tail of this FIFO queue

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Consider the set of 5 processes whose arrival time and burst time are given below-

Process Id	Arrival time	Burst time
P1	3	4
P2	5	3
P3	0	2
P4	5	1
P5	4	3

If the CPU scheduling policy is FCFS, calculate the average waiting time and average turn around time.

Answers : Avg. WT = 3.2 unit, Avg. TAT=5.8