CPU Scheduling

First-Come, First-Served (FCFS) Scheduling

• Example:

Process	Arrival Time	Burst Time (ns)
P1	0	2
P2	2	4
P3	1	2
P4	3	1

Calculate following:

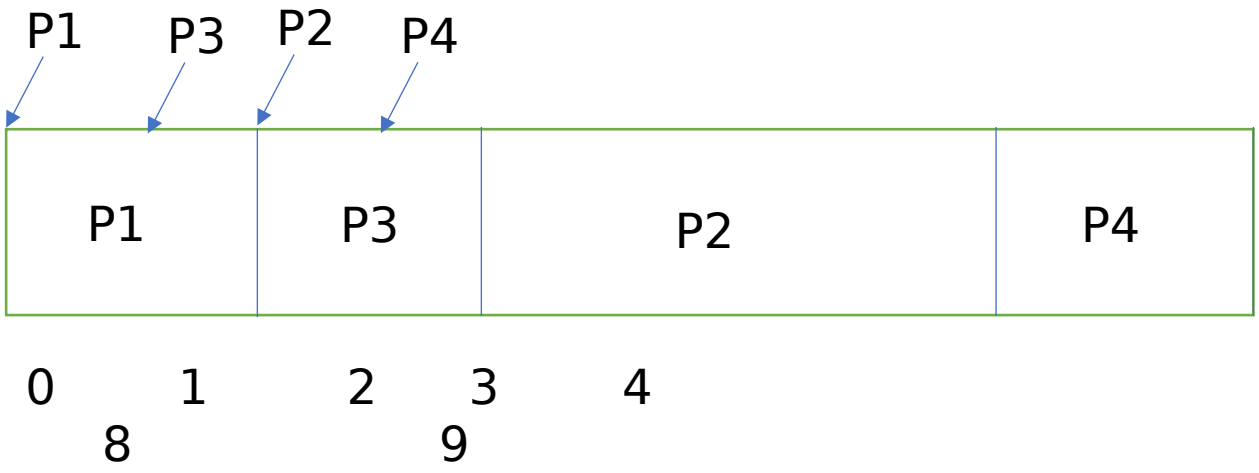
1.Calculate waiting time for all process

2.Average waiting time

3.Calculate turnaround time for all process

4.Average turnaround time

First-Come, First-Served (FCFS) Scheduling



Waiting time of P1 = 0 ns; P2 = 2 ns; P3 = 1 ns; P4 = 5 ns;
Average waiting time: (0 + 2 + 1+5)/4 = 2 ns

Turn Around time of P1 = 2 ns; P2 = 6 ns; P3 = 3 ns; P4 = 6 ns;
Average turn around time: (2 + 6 + 3+6)/4 = 4.25 ns

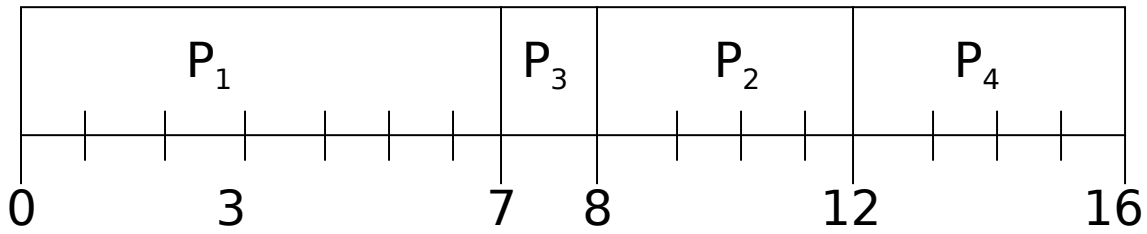
Shortest-Job-First (SJR) Scheduling

- Two schemes:
  - nonpreemptive – once CPU given to the process it cannot be preempted until completes its CPU burst.
  - Preemptive – if a new process arrives with CPU burst length less than remaining time of current executing process, preempt. This scheme is know as the Shortest-Remaining-Time-First (SRTF).
- SJF is optimal – gives minimum average waiting time for a given set of processes.

Example of Non-Preemptive SJF

Process	Arrival Time	Burst Time
P_1	0.0	7
P_2	2.0	4
P_3	4.0	1
P_4	5.0	4

- SJF (non-preemptive)

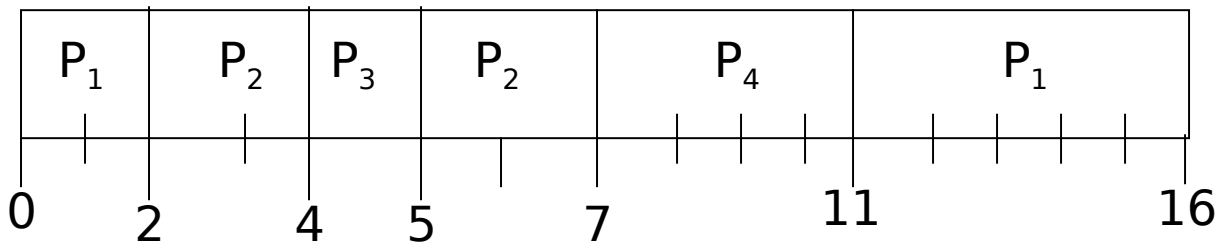


- Average waiting time = (0 + 6 + 3 + 7)/4 = 4

Example of Preemptive SJF

Process	Arrival Time	Burst Time
P_1	0.0	7
P_2	2.0	4
P_3	4.0	1
P_4	5.0	4

- SJF (preemptive)



- Average waiting time = (9 + 1 + 0 +2)/4 = 3