

Operating Systems  
Course Code: **71203002004**  
*Scheduling 2 (Non Preemptive Scheduling)*

*by -  
Minal Rajwar*



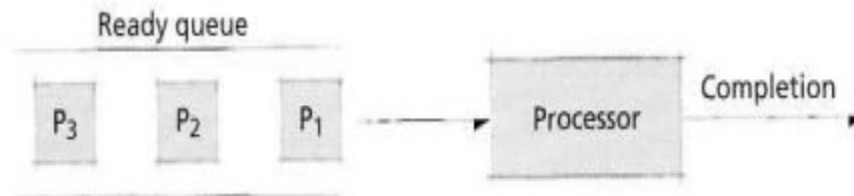
# Scheduling Algorithms

## 1. First In First Out (FIFO) Scheduling

- a. also called "*First Come First Serve*".
- b. processes are dispatched according to their arrival time at the ready queue.
- c. It is a non-preemptive: - process cannot be interrupted and runs till completion.

Is a Fair Process -  
Lets process run according to their  
arrival time.

Is also and Unfair Process -  
Longer process make shorter and  
important process wait for longer.

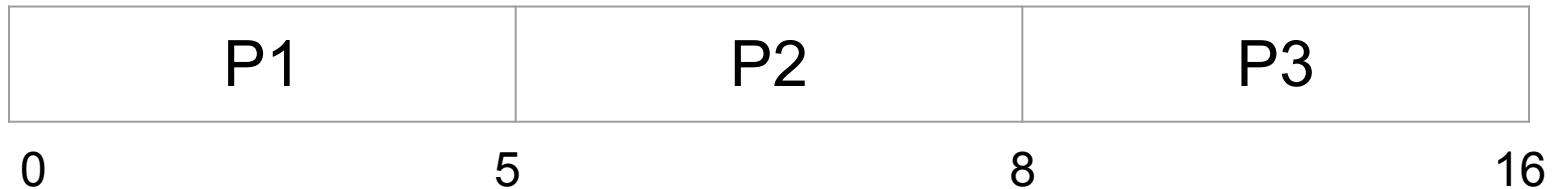


## Example 1: Process With Same Arrival time.

Consider the following table of arrival time and burst time for three processes P1, P2 and P3.

Process	Arrival Time	Burst Time
P1	0	5
P2	0	3
P3	0	8

## Gantt Chart



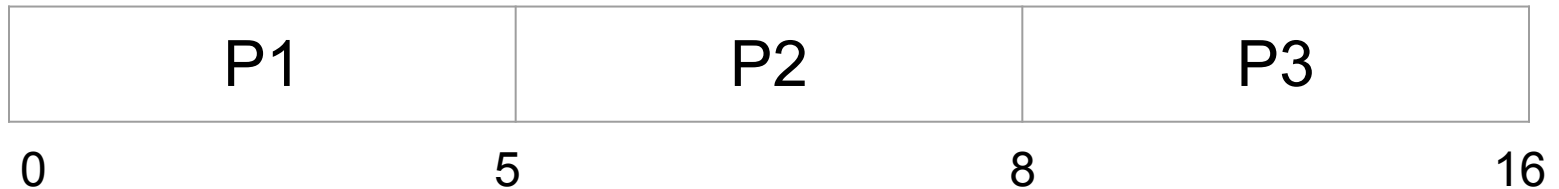
Process	Arrival Time	Burst Time	Start Time	Completion time(CT))	Turnaround Time TAT =(CT-AT)	Waiting Time WT=(TAT-BT)
P1	0	5	0	5	5	0
P2	0	3	5	8	8	5
P3	0	8	8	16	16	8

## Example 2: Process With Different Arrival time.

Consider the following table of arrival time and burst time for three processes P1, P2 and P3.

Process	Arrival Time	Burst Time
P1	0	5
P2	2	3
P3	4	8

## Gantt Chart



Process	Arrival Time	Burst Time	Start Time	Completion time(CT))	Turnaround Time TAT =(CT-AT)	Waiting Time WT=(TAT-BT)
P1	0	5	0	5	5	0
P2	2	3	5	8	6	3
P3	4	8	8	16	12	4

## **2. Shortest Job First (SJF) Scheduling**

- a. selects the waiting process with the smallest estimated run-time-to-completion.
- b. shorter than processor-bound processes.
- c. can minimize average waiting time.
- d. problem is it requires precise knowledge of how long a process will run, which is not always available.

Good for interactive tasks, but since it's nonpreemptive, it may delay newly arrived short processes.

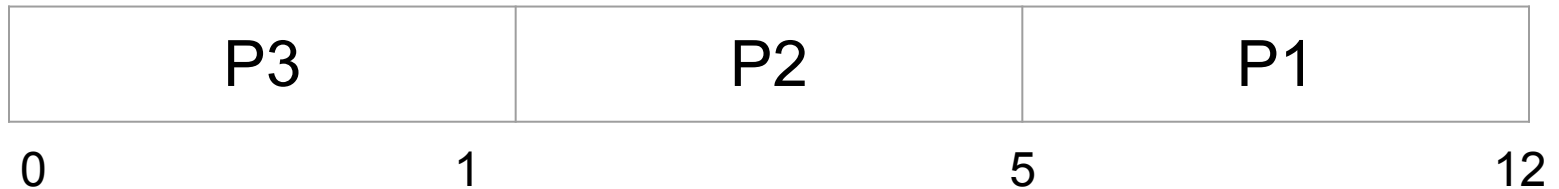
Suitable for batch jobs but not ideal for interactive OS environments due to lack of preemption.

## Example 1: Process With Same Arrival time.

Consider the following table of arrival time and burst time for three processes P1, P2 and P3.

Process	Arrival Time	Burst Time
P1	0	7
P2	0	4
P3	0	1

## Gantt Chart



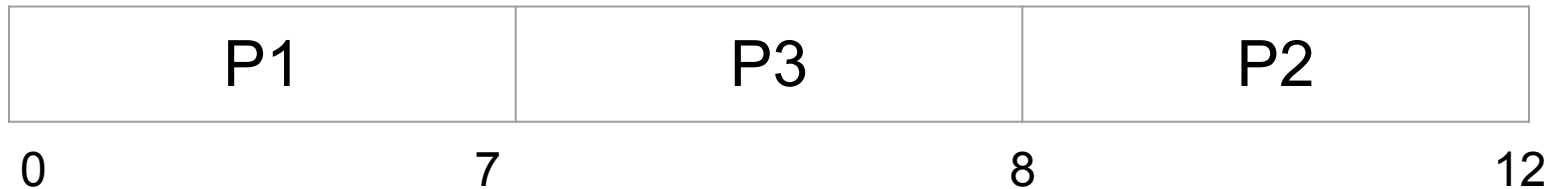
Process	Arrival Time	Burst Time	Start Time	Completion time(CT))	Turnaround Time TAT =(CT-AT)	Waiting Time WT=(TAT-BT)
P3	0	1	0	1	1	0
P2	0	4	1	5	5	1
P1	0	7	5	12	12	5

## Example 2: Process With Different Arrival time.(non preemptive)

Consider the following table of arrival time and burst time for three processes P1, P2 and P3.

Process	Arrival Time	Burst Time
P1	0	7
P2	2	4
P3	4	1

## Gantt Chart



Process	Arrival Time	Burst Time	Completion time(CT))	Turnaround Time TAT =(CT-AT)	Waiting Time WT=(TAT-BT)
P1	0	7	7	7	0
P2	2	4	12	10	6
P3	4	1	8	4	3

## DISCUSSION & REVISION

1. What does FCFS stand for in CPU scheduling?
2. In SJF, which process is chosen first?
3. Is FCFS scheduling preemptive or non-preemptive?
4. Which scheduling method gives better average waiting time — FCFS or SJF?
5. Can a short process wait long in FCFS? Yes or No?

# References

[https://www.tutorialspoint.com/operating\\_system/os\\_priority\\_scheduling\\_algorithm.htm](https://www.tutorialspoint.com/operating_system/os_priority_scheduling_algorithm.htm)

<http://geeksforgeeks.org/dsa/first-come-first-serve-cpu-scheduling-non-preemptive/>

<https://www.geeksforgeeks.org/operating-systems/shortest-job-first-or-sjf-cpu-scheduling/>

<https://www.geeksforgeeks.org/operating-systems/shortest-job-first-or-sjf-cpu-scheduling/>