# First-Come, First-Served Scheduling (FCFS)

- Simplest scheduling Algorithm
- The process which arrives in the ready queue first is allocated the CPU first. → P1 P2 P3 (FIFO)
- This can be implemented using a FIFO Queue.
- FCFS scheduling algorithm is nonpreemptive.

## Advantages :

1) very simple to understand and implement.
2) Doesn't suffer from starvation. → P1 P2 P3 P4 - Pn (n - 1)

## Disadvantages : –

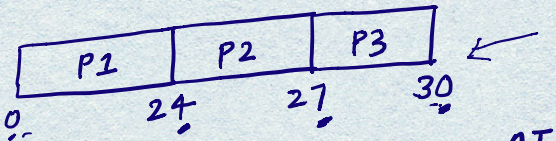
→ P1 (300 ms) P2

1) FCFS is nonpreemptive. In time-sharing operating system, this leads to poor response time.
2) The average waiting time is not minimal in FCFS. It can vary greatly with burst times.

3) Convoy Effect – All smaller processes wait for one big process to get off the CPU. This leads to higher average waiting time and poor cpu and I/O utilization.

| | AT | BT | ST | CT | TAT | WT | RT |
|---|---|---|---|---|---|---|---|
| P1 | 0 | 24 | 0 | 24 | 24 | 0 | 0 |
| P2 | 0 | 3 | 24 | 27 | 27 | 24 | 24 |
| P3 | 0 | 3 | 27 | 30 | 30 | 27 | 27 |

P1 → P2 → P3 ✓ I/O → 0




1st Cost

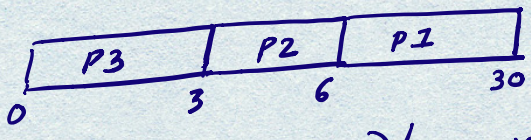
TAT = CT − AT
WT = TAT − BT
RT = ST − AT

Avg TAT = (24+27+30)/3 = 27 ms
Avg WT = (0+24+27)/3 = 17 ms
Avg RT = 17 ms

CPU util = 100 %.
Throughput = 1/10 pr/ms

| | AT | BT | ST | CT | TAT | WT | RT |
|---|---|---|---|---|---|---|---|
| P3 | 0 | 3 | 0 | 3 | 3 | 0 | 0 |
| P2 | 0 | 3 | 3 | 6 | 6 | 3 | 3 |
| P1 | 0 | 24 | 6 | 30 | 30 | 6 | 6 |

P3 → P2 → P1 ✓ I/O → 0




Avg TAT = (3+6+30)/3 = 13 ms
Avg WT = (0+3+6)/3 = 3 ms
Avg RT = 3 ms
CPU utilization = 30/30 × 100 = 100%
Throughput = 3/30 = 1/10 pr/ms