Why Convoy effects with FCFS?

- Definition : Smaller process have to wait for long time for bigger process to release CPU.

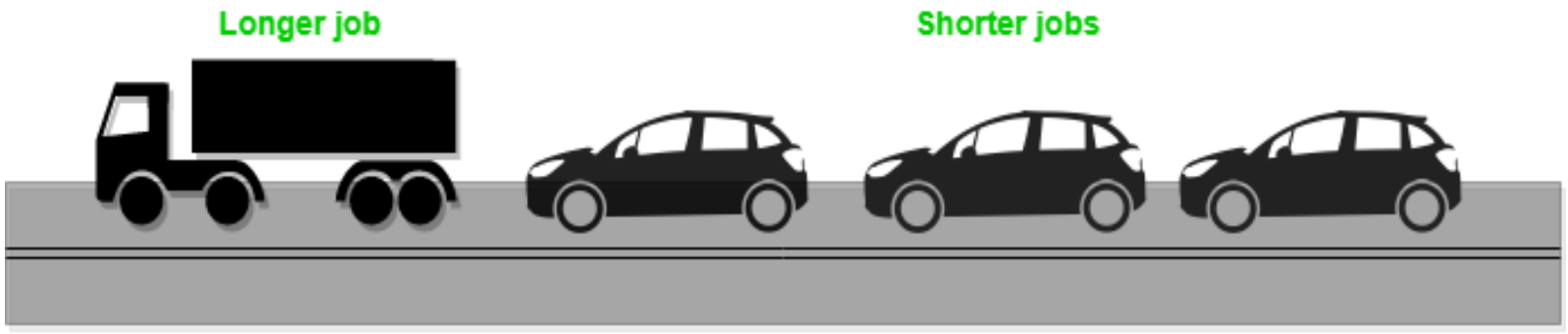


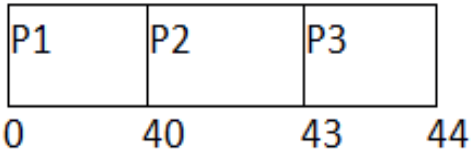
Figure - The Convey Effect, Visualized

- FCFS may suffer from the **convoy effect** if the burst time of the first job is the highest among all. As in the real life, if a convoy is passing through the road then the other persons may get blocked until it passes completely. This can be simulated in the Operating System also.
- If the CPU gets the processes of the higher burst time at the front end of the ready queue then the processes of lower burst time may get blocked which means they may never get the CPU if the job in the execution has a very high burst time. This is called **convoy effect** .

Example - Case-1 (When convoy effect arrived in FCFS)

Process ID	Arrival Time	Burst Time	Completion Time	Turn Around Time	Waiting Time
1	0	40	40	40	0
2	1	3	43	42	39
3	1	1	44	43	42

Gantt Chart

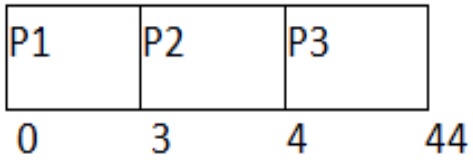


Avg waiting Time = 81/3= 27ms

Example - Case-2

Process ID	Arrival Time	Burst Time	Completion Time	Turn Around Time	Waiting Time
1	1	40	44	43	3
2	0	3	3	3	0
3	0	1	4	4	3

Gantt Chart

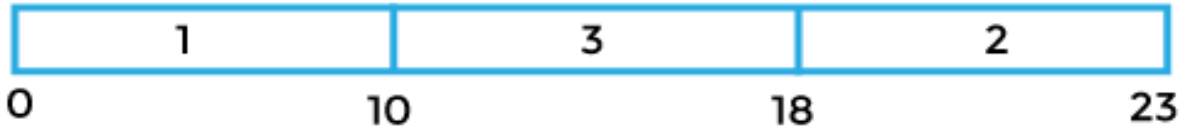


Avg waiting Time = 6/3= 2ms

Starvation

- **Starvation** or indefinite blocking is a phenomenon associated with the Priority scheduling algorithms. A process that is present in the ready state and has low priority keeps waiting for the CPU allocation because some other process with higher priority comes with due respect time. Higher-priority processes can prevent a low-priority process from getting the CPU.

Process	Burst time	Priority
1	10	2
2	5	0
3	8	1



- For example, the above image process has higher priority than other processes getting CPU earlier. We can think of a scenario in which only one process has very low priority and we are giving other processes high priority. This can lead to indefinitely waiting for the process for CPU, which is having low-priority, which leads to **Starvation**.

Advantages of FCFS :

- Simple
- Easy to Understand

Disadvantages of FCFS:

- Suffer from convoy effect
- Normally have higher average waiting time
- Lower CPU and device utilization
- FCFS algorithm is particularly troublesome for time-sharing systems

Thank You…