

## • Convoy effect | FCFS CPU Scheduling Algorithm

### • Process Scheduling

- Ⓐ Basic of multi-programming OS.
- Ⓑ By switching the CPU among processes, the OS can make the computer more productive.
- Ⓒ Many processes are kept in memory at a time, when a process must wait or its time quantum expires, the OS takes the CPU away from the process and gives the CPU to another process and this pattern continues.

### • CPU Scheduler

- Ⓐ Whenever the CPU become ~~idle~~ idle, OS must select one process from the ready queue to be executed. Done by STS, (Short Term Scheduler).

### • Types of Scheduler:-

- Ⓐ Preemptive      Ⓑ Non-preemptive.

### Ⓐ Non Preemptive Scheduler:-

- ① Once CPU has been allocated to a process, the process keeps the CPU until it releases CPU either by termination or by switching to wait-state.
- ② High starvation and low CPU utilization.

### Ⓑ Preemptive Scheduler

- Ⓐ Everything is same as preemptive one except that it also add the time quantum thing, that every process is allotted some time to CPU.



② Less starvation and high CPU utilization.

### • Terminologies

- ① Throughput:- No. of processes completed per unit time.
- ② Arrival time:- Time When process is arrived at the ready queue.
- ③ Completion time:- (CT) Time taken till process gets terminated or executed.
- ④ Burst time:- (BT) Time required by the process for its execution (Ideal time, When there is only one process in the ready queue, no waiting time).
- ⑤ Turnaround Time:- (TAT), time taken from first time process enters ready state till ~~the~~ termination (Actual time taken including the wait time).  $(CT - AT)$
- ⑥ Wait time:- The time to wait for the CPU by the process.  $(TAT - BT)$
- ⑦ Response time:- Time duration When the process goes to ready queue and gets CPU for the first time.



## • FCFS (First Come First Serve)

- Whichever process comes first in the ready queue will be given CPU first.

### • Convoy effect :-

- If one process of having higher Burst Time, then it will effect the average waiting time of different processes.
- Convoy effect, an situation where many processes, who need to use a resource for a short time, are blocked by one process holding that resource for a long time.
- This cause poor resource management.

E.g.:-

Process	AT	BT	CT	TAT	WT
1	0	20	20	20	0
2	1	2	22	21	19
3	2	2	24	22	20

$$\text{Avg. WT} = (0 + 19 + 20) / 3 = 13 \text{ unit}$$

P.No.	AT	BT	CT	TAT	WT
1	0	2	2	2	0
2	1	2	4	3	1
3	2	20	24	22	2

$$\text{Avg. WT} = 1 \text{ unit}$$

Both 2 examples shows the convoy effect.