OPERATING SYSTEM

First Come First Serve (FCFS) Scheduling Algorithm

FCFS ALGORITHM

First Come First Served (FCFS) is an Operating System process scheduling algorithm. It is non-preemptive in scheduling algorithm. Jobs are executed on first come, first serve basis. It is easy to understand and implement but poor in performance, as average wait time is high.

First- Come, First-Served (FCFS) Scheduling

Process	Burst Time
P1	24
P2	3
P3	3

- Suppose that the processes arrive in the order: P1 , P2 , P3
  The Gantt Chart for the schedule is:

P_1	P_2	P_3

0　　　　　　　　　　　　　　24　　27　　30

Waiting time for P1 = 0; P2 = 24; P3 = 27

- Average waiting time: (0 + 24 + 27)/3 = 17

FCFS Scheduling (Cont.)

Suppose that the processes arrive in the order:

$$P_2 , P_3 , P_1$$

- The Gantt chart for the schedule is:

P$_2$	P$_3$	P$_1$
0 3	6	30

- Waiting time for P_1 = 6; P_2 = 0, P_3 = 3
- Average waiting time: (6 + 0 + 3)/3 = 3
- Much better than previous case
- Short process behind long process

1st Case : FCFS (First Come First Served)

Suppose that the processes arrive at time 0, in the order: P1 , P3 , P2 , P4

Draw Gantt Chart and calculate the average waiting time using the given table ??

Process	Burst Time
P1	3
P2	9
P3	5
P4	7

Waiting time :

P1 = 0

P2 = 8

P3 = 3

P4 = 17

P1	P3	P2	P4

0   3   8   17   24

Average waiting time = (0 + 8 + 3 + 17) / 4 = 7

2nd Case : FCFS (First Come First Served)

Draw Gantt Chart and calculate the average waiting time using the given table ??
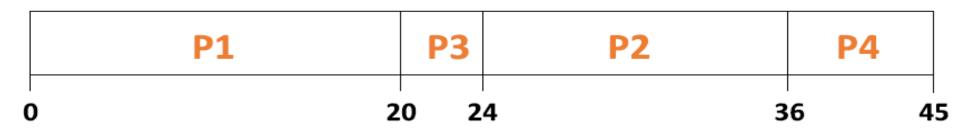
Process	Burst Time	Arrival Time
P1	20	0
P2	12	3
P3	4	2
P4	9	5

Waiting time : start time – arrival time

P1 = 0 – 0 = 0
P2 = 24 – 3 = 21
P3 = 20 – 2 = 18
P4 = 36 – 5 = 31

P1	P3	P2	P4

0   20   24   36   45

Average waiting time = (0 + 21 + 18 + 31) / 4 = 70 / 4

ALGORITHM

1- Input the number of processes (n).

2- Create three lists for bt, wt, tat.

3- Input the burst time (bt) for each process.

4- Find waiting time (wt) for all processes.

   - As first process that comes need not to wait so waiting time for process 1 will be 0.

     $wt[0] = 0$

5- Find waiting time (wt) for all other processes.

     $wt[i] = bt[i-1] + wt[i-1]$

6- Find turnaround time (tat) for all processes.

     $tat[i] = bt[i] + wt[i]$

7- Find average waiting time = total_waiting_time / no_of_processes.

8- Find average turnaround time = total_turnaround_time / no_of_processes.