

Write a program in C++ to simulate the following CPU scheduling algorithms.

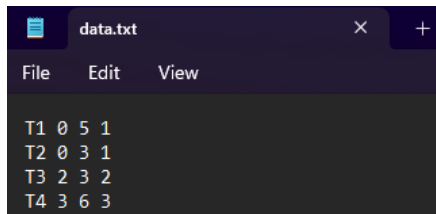
- a. FCFS
- b. SJF
- c. Non-preemptive priority
- d. Round-Robin
- e. Priority with Round-Robin

Schedules tasks in order of priority and uses round-robin for scheduling tasks with equal priority.

Assumptions:

- 1. Priorities range from 1 to 10, where a higher numeric value indicates a higher relative priority.
- 2. For round-robin scheduling, the length of a time quantum is 2.
- 3. For Priority with Round-robin scheduling, no running process shall be preempted until its time quantum is expired even if a high propriety process enters the system during this time.

The scheduler will be assigned a predefined set of tasks written in a text file as follows:



```
data.txt
File Edit View
T1 0 5 1
T2 0 3 1
T3 2 3 2
T4 3 6 3
```

The schedule of tasks has the form [Task name] [Arrival time] [Burst time] [Priority]

```
Choose scheduling algorithm
[FCFS], [SJF], [RR], [PRIORITY_RR], [EXIT]
FCFS
The input processes ...
Process  ArvlTime  burstTime  Priority
1        0         5         0
2        0         3         0
3        2         3         1
4        3         2         2
```

Prints the input processes read
read from the data.txt file

The execution order:

From	To	PID
0	5	P1
5	8	P2
8	11	P3
11	13	P4

Output

Average waiting time = 4.75
Utilization = 100%

PID	ArvlTime	EndTime	TrnArndTime	WaitingTime
1	0	5	5	0
2	0	8	8	5
3	2	11	9	6
4	3	13	10	8

Your code should be properly commented.