CSE321
CPU Scheduling
Deadline: 14/04/2021

Given the list of processes, their CPU burst times, arrival times and priorities implement SJF, Priority and Round Robin scheduling algorithms on the processes with preemption. For each of the scheduling policies, compute and print the completion Time(CT), Turnaround Time(TAT), and Waiting Time(WT) for each process.

Waiting time: Processes need to wait in the process queue before execution starts and in execution while they get preempted.

Turnaround time: Time elapsed by each process to get completely served. (Difference between submission time and completion time).

Task 1: SJF Scheduling

You can use the following input as sample:

Process	Arrival Time	Burst Time
P_1	0	8
P_2	1	4
P_3	2	9
P_4	3	5

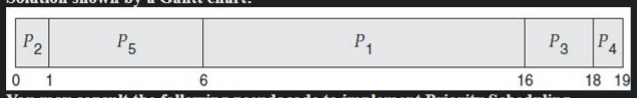
Solution in a Gantt chart:

Task 2: Priority Scheduling

Sample input:

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	4
P_4	1	5
P_5	5	2

Solution shown by a Gantt chart:



You may consult the following pseudocode to implement Priority Scheduling.

```
completed = 0
current_time = 0
while(completed != n) {
   find process with maximum priority time among process that are in ready queue at current_time
   if(process found) {
      if(process is getting CPU for the first time) {
         start_time = current_time
      }
      burst_time = burst_time - 1
      current_time = current_time + 1
      if(burst_time == 0) {
         completion_time  = current_time
         turnaround_time = completion_time - arrival_time
         waiting_time = turnaround_time - burst_time
         response_time = start_time - arrival_time
         mark process as completed
         completed++
      }
   }
   else {
      current_time++
   }
```

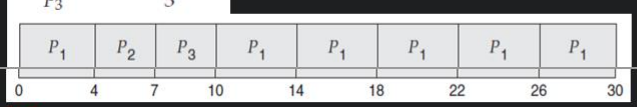
Task 3: Round Robin

Time Quantum = 4 ms

Check for incoming processes after every time quantum (4 ms).

Sample input:

Process	Burst Time
P_1	24
P_2	3
P_3	3



N.B.

Input for each task will be :

Number of processes

Arrival time of each process. If all processes arrive at the same time, this can be set to 0 for all processes.

Burst time of each process

Priority of each process (If required)

Output will be:

Completion Time(CT), Turnaround Time(TAT), Waiting Time(WT)

Average turnaround Time, average waiting time