Task 1

Objective:
Writing codes in Java or in C/C++ to simulate various Process Scheduling Algorithms

IDE:
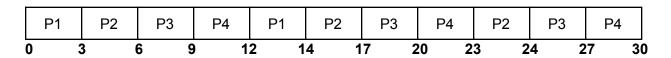C/C++ , Java

Round Robin Scheduling Algorithm:
A queue of processes are maintained for all the available processes in the system according to their arrival time. A process P in the system is selected as per the FCFS rule and given an opportunity in the CPU for a predefined time quantum Q. If the remaining CPU time r of the process is less than the time quantum Q, a context switch takes place after r amount of time and the process P leaves the queue. Otherwise, the process P runs for Q time quantum and a context switch takes place after Q amount of time. The process P goes to the end of the queue for more time until it finishes its required amount of time.

Process	CPU Time
P1	5
P2	7
P3	9
P4	9

Time Quantum Q = 3

P1	P2	P3	P4	P1	P2	P3	P4	P2	P3	P4
0	3	6	9	12	14	17	20	23	24	27	30

Process	Turnaround Time	Waiting Time
P1	14	14 - 5 = 9
P2	24	24 - 7 = 17
P3	27	27 - 9 = 18
P4	30	30 - 9 = 21
Average	**23.75**	**16.25**

Sample input:
Enter the number of process: 4 Enter the CPU times: 5 7 9 9
Sample output:
Process 1 : Waiting Time : 9   Turnaround Time : 14 Process 2 : Waiting Time : 17 Turnaround Time : 26 Process 3 : Waiting Time : 18 Turnaround Time : 27 Process 4 : Waiting Time : 21 Turnaround Time : 30 Average Waiting time : **16.25** Average Turnaround time : **23.75**

Task 2

Objective:
Writing codes in Java or in C/C++ to simulate various Process Scheduling Algorithms

IDE:
C/C++ , Java

Priority Scheduling Algorithm:
Priority scheduling is one of the most common scheduling algorithms in batch systems. Each of the processes is assigned a priority. Process with the highest priority is to be executed first and so on. Processes with the same priority are executed on a first come first served basis. If used as a pre-emptive version, a running process having lower priority will be sent back to the ready queue if a process with higher priority arrives in the queue.

Process	CPU Time	Priority
P1	5	3
P2	7	1
P3	9	0
P4	9	2

P3	P2	P4	P1

0   9   16   25   30

Process	Turnaround Time	Waiting Time
P1	30	30 - 5 = 25
P2	16	16 - 7 = 9
P3	9	9 - 9 = 0
P4	25	25 - 9 = 16
Average	**20**	**12.50**

Sample input:

Enter the number of process:
4

Enter the CPU times:
5 7 9 9

Enter the priority:
3 1 0 2

Sample output:

Process 1 : Waiting Time : 25   Turnaround Time : 30
Process 2 : Waiting Time : 9 Turnaround Time : 16
Process 3 : Waiting Time : 0 Turnaround Time : 9
Process 4 : Waiting Time : 19 Turnaround Time : 25
Average Waiting time : **12.50**
Average Turnaround time : **20**