

Assignment - I

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Section: C

Branch: Information Technology

Subject: Operating Systems.

- 1.) Consider a set of process with arrival time, CPU burst time and priority shown below. None of the process have I/O burst.

process	Arrival time	Burst Time	priority
P1	0	11	2
P2	5	28	0
P3	12	2	3
P4	2	10	1
P5	9	16	4

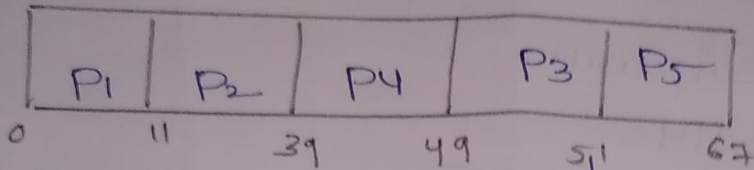
Calculate the average waiting time in processes using (i) preemptive priority scheduling algorithm.
(ii) Non-preemptive priority scheduling alg.

Sol. (i)

P1	P4	P2	P4	P1	P3	P5
0	2	5	33	40	49	57
						67

process	Arrival time	Burst time	waiting time	Average time	TAT	Avg. TAT
P1	0	11	38		49	
P2	5	28	0	145/5	28	212/5
P3	12	2	37	= 29	38	= 42.4
P4	2	10	28		38	
P5	9	16	42		38	

(ii) Non-preemptive Priority :-



process	Arrival Time	Burst Time	waiting Time	Avg w.T	TAT	Avg TAT
P1	0	11	0		11	
P2	5	28	6	$122/5$	34	$189/5$
P3	12	2	37	$=24.4$	39	$=37.8$
P4	2	10	37		47	
P5	9	16	42		58	

2. Consider the following set of process with CPU Burst time in milliseconds, arrival time in milliseconds and priorities.

process	Burst Time	Arrival Time	priority
P1	8	1	2
P2	5	0	1
P3	14	2	4
P4	13	4	3

Draw the Gantt chart, Calculate avg turn around time and average waiting time for scheduling algorithm.

(i) Round Robin

(ii) priority scheduling

Sol.

(i) Round-Robin (Time Quantum = 4s)

<div><div>P₂</div><div>P₁</div><div>P₃</div><div>P₄</div><div>P₂</div><div>P₁</div><div>P₃</div></div>						
0 4 8 12 15 16 20 30						
Process	A.T	B.T	W.T	Avg W.T	TAT	Avg TAT
P ₁	1	8	11	$\frac{44}{4}$ $= 11$	19	$\frac{74}{4}$ $= 18.5$
P ₂	0	5	11		16	
P ₃	2	14	14		28	
P ₄	4	3	8		11	

(ii) priority scheduling

<div><div>P₂</div><div>P₁</div><div>P₄</div><div>P₃</div></div>						
0 5 13 16 20						
Process	A.T	B.T	W.T	Avg. W.T	TAT	Avg TAT
P ₁	1	8	4	$\frac{27}{4}$ $= 6.75$	12	$\frac{57}{4}$ $= 14.25$
P ₂	0	5	0		5	
P ₃	2	14	14		18	
P ₄	4	3	9		12	