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Operating System

Lab: 12

Round-Robin Scheduling:

In the Round Robin Scheduling, processes are dispatched in a FCFS manner but are given a limited amount of CPU time called a quantum. Round Robin Scheduling is preemptive (at the end of time-slice).

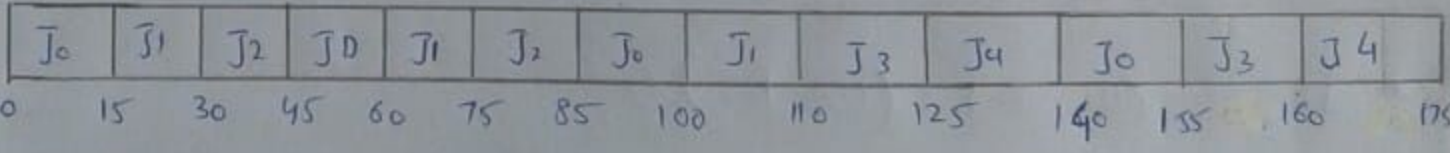
Examples:

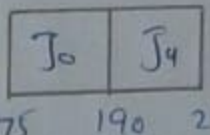
Example:1

Quantum = 15;

Jobs	Execution time	Arrival time
0	75	0
1	40	10
2	25	10
3	20	80
4	45	85

Answer:





Gantt chart.

Turn Around time:

Job J0 = 190 − 0 = 190

Job J1 = 110 − 10 = 100

Job J_2 = 85 - 10 = 75

Job J_3 = 160 - 80 = 80

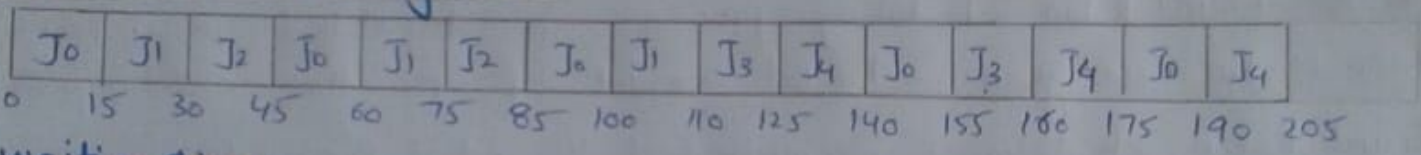
Job J_4 = 205 - 85 = 120

Average turn around time = $\frac{\text{All jobs turn around time}}{\text{no of jobs}}$

$= \frac{190 + 100 + 75 + 80 + 120}{5}$

$= \frac{565}{5} = 113$

Calculate waiting time:



waiting time:

Job J_0 = 0 + (45 - 15) + (85 - 60) + (140 - 100) + (175 - 155)

= 0 + 30 + 25 + 40 + 20

= 115

Job J_1 = (15 - 10) + (60 - 30) + (100 - 75)

= 5 + 30 + 25

= 60

Job J_2 = (30 - 10) + (75 - 45)

= 20 + 30

= 50

Job J_3 = (110 - 80) + (155 - 125)

= 30 + 30

= 60

Job J_4 = (125 - 85) + (160 - 140) + (190 - 175)

= 40 + 20 + 15

= 75

Average waiting time = $\frac{\text{All jobs waiting time}}{\text{no of jobs}}$

$= \frac{115 + 60 + 50 + 60 + 75}{5}$

$= \frac{360}{5} = 72$

Example : 2

$q = 20$

Process	Burst Time	Arrival	Start	wait	Finish	TA
1	53	0	0	?	134	134
2	17	0	20	?	37	37
3	68	0	37	?	162	162
4	24	0	57	?	121	121

Answer:

P1	P2	P3	P4	P1	P3	P4	P1	P3	P3

0 20 37 57 77 97 117 121 134 154 162

waiting Times:

P1: (77 - 20) + (121 - 97) = 81

P2: (20 - 0) = 20

P3: (37 - 0) + (97 - 57) + (134 - 117) = 94

P4: (57 - 0) + (117 - 77) = 97

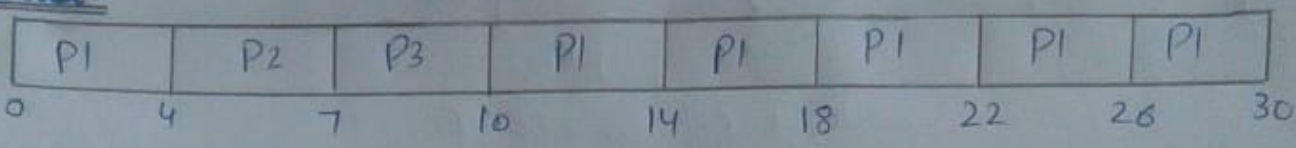
Average waiting time = 81 + 20 + 94 + 97/4 = 73.

Example: 3

$q = 4$

Process	Burst Time	Arrival	Start	wait	Finish	TA
1	24	0	0	6	30	30
2	3	0	4	4	7	7
3	3	0	7	7	10	10

Answer:



Average waiting time: $(6+4+7)/3 = 5.67$

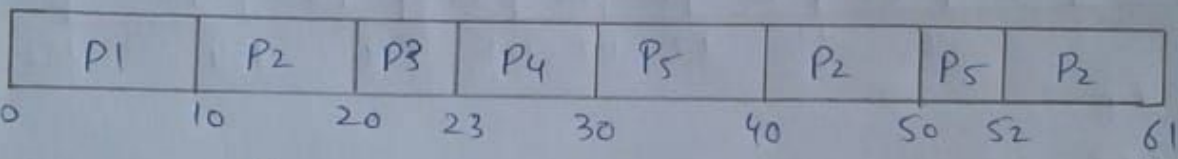
Average turn around time: $(30+7+10)/3 = 15.67$

Example: 4

$q = 10$

Process	Burst Time	Arrival	Start	wait	Finish	TA
1	10	0	0	0	10	10
2	29	0	10	32	61	61
3	3	0	20	20	23	23
4	7	0	23	23	30	30
5	12	0	30	40	52	52

Answer:



Average waiting time = $(0+32+20+23+40)/5$

$= 23$

Average turn around time = $10+39+42+49+61/5$

$= 35.2$