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Operating System (lab)

Assignment: 03

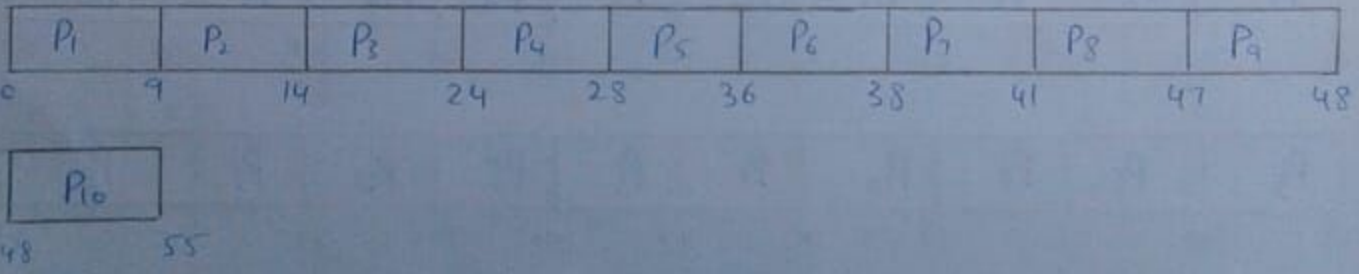
Take 10 processes of different values of Burst time e.tc. Apply all scheduling Algorithm method.

Process	Burst Time	Arrival Time
P_1	9	0
P_2	5	0
P_3	10	0
P_4	4	0
P_5	8	0
P_6	2	0
P_7	3	0
P_8	6	0
P_9	1	0
P_{10}	7	0

Answer:

- **First Come First Serve (FCFS):**

Gantt Chart:



Turn Around time = Completion time — Arrival time

Waiting time = Turn Around Time — Burst Time

Process	Burst Time	Arrival Time	Completion Time	Turn Around Time	waiting Time
P_1	9	0	9	9	0
P_2	5	0	14	14	9
P_3	10	0	24	24	14
P_4	4	0	28	28	24
P_5	8	0	36	36	28
P_6	2	0	38	38	36
P_7	3	0	41	41	38
P_8	6	0	47	47	41
P_9	1	0	48	48	47
P_{10}	7	0	55	55	48

Average Turn Around Time = $\frac{9+14+24+28+36+38+41+47+48+55}{10}$

$= \frac{340}{10} = 34$

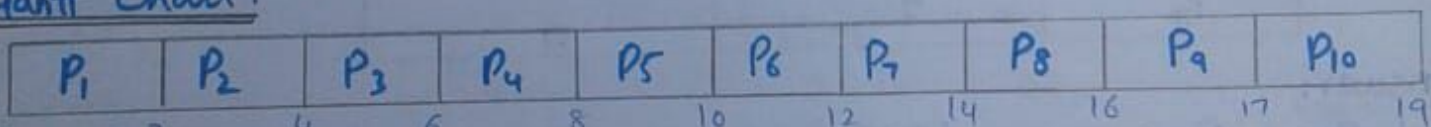
Average waiting Time = $\frac{0+9+14+24+28+36+38+41+47+48}{10}$

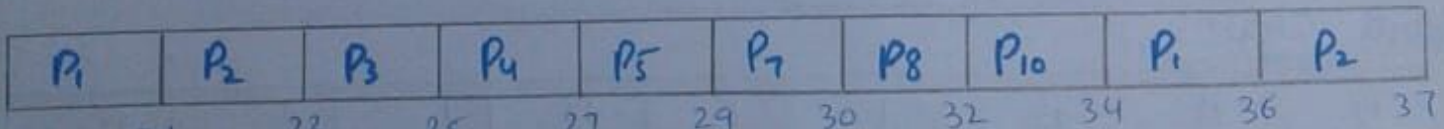
$= \frac{285}{10} = 28.5$

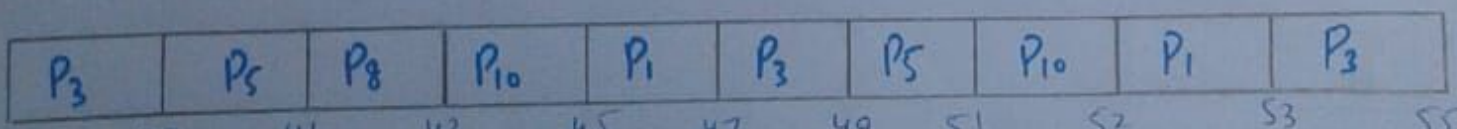
- **Round Robin:**

Quantum = 2

Gantt chart:







Turn Around time = Completion time − Arrival time

waiting time = Turn Around time − Burst time

Process	Burst Time	Arrival Time	Completion Time	Turn Around Time	waiting Time
P_1	9	0	53	53	44
P_2	5	0	37	37	32
P_3	10	0	55	55	45
P_4	4	0	27	27	23
P_5	8	0	51	51	43
P_6	2	0	12	12	10
P_7	3	0	30	30	27
P_8	6	0	43	43	37
P_9	1	0	17	17	16
P_{10}	7	0	52	52	45

Average Turn Around Time = $\frac{53+37+55+27+51+12+30+43+17+52}{10}$

Average waiting Time = $\frac{44+32+45+23+43+10+27+37+16+45}{10}$

Average Turn Around Time = 37.7

Average waiting Time = 32.2

- **Shortest Job First Algorithm:**

Non - Preemptive :

Gantt chart:

P_9	P_6	P_7	P_4	P_2	P_8	P_{10}	P_5	P_1	P_3

0 1 3 6 10 15 21 28 36 45 55

Process	Burst Time	Arrival Time	completion time	Turn Around time	waiting time
P_1	9	0	45	45	36
P_2	5	0	15	15	10
P_3	10	0	55	55	45
P_4	4	0	10	10	6
P_5	8	0	36	36	28
P_6	2	0	3	3	1
P_7	3	0	6	6	3
P_8	6	0	21	21	15
P_9	1	0	1	1	0
P_{10}	7	0	28	28	21

Average Turn Around Time = $\frac{45+15+55+10+36+3+6+21+1+28}{10}$

$= \frac{220}{10}$

$= 22$

Average waiting Time = $\frac{36+10+45+6+28+1+3+15+0+21}{10}$

$= \frac{165}{10}$

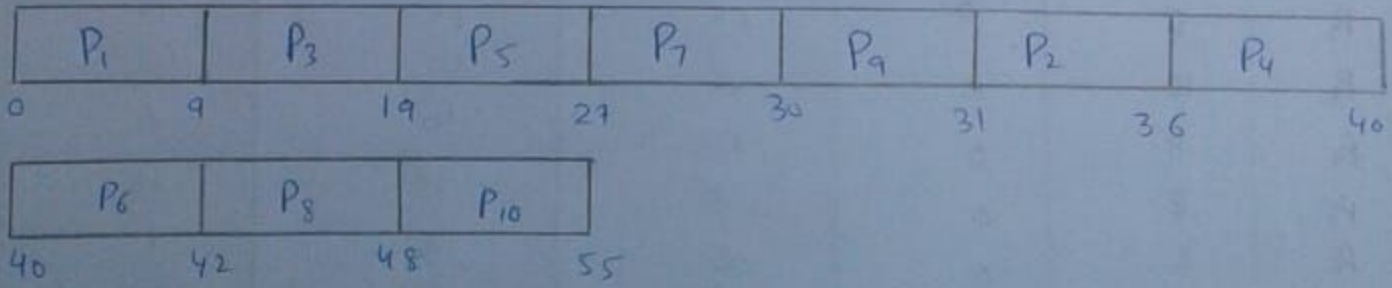
$= 16.5$

- **Priority Scheduling:**

Preemptive:

Process	Burst Time	Arrival Time	Priority
P_1	9	0	1
P_2	5	0	6
P_3	10	0	2
P_4	4	0	7
P_5	8	0	3
P_6	2	0	8
P_7	3	0	4
P_8	6	0	9
P_9	1	0	5
P_{10}	7	0	10

Gantt chart:



Turn Around Time = Completion Time − Arrival Time

waiting Time = Turn Around Time − Burst Time

Process	Burs Time	Arrival Time	Priority	Completion Time	Turn Around Time	waiting Time
P_1	9	0	1	9	9	0
P_2	5	0	6	36	36	31
P_3	10	0	2	19	19	9
P_4	4	0	7	40	40	36
P_5	8	0	3	27	27	19
P_6	2	0	8	42	42	40
P_7	3	0	4	30	30	27
P_8	6	0	9	48	48	42
P_9	1	0	5	31	31	30
P_{10}	7	0	10	55	55	48

Average Turn Around Time = $\frac{9+36+19+40+27+42+30+48+31+55}{10}$

$= 337/10$

$= 33.7$

Average waiting Time = $\frac{0+31+9+36+19+40+27+42+30+48}{10}$

$= 282/10$

$= 28.2$