OS Project P01

Date 10/oct/2022

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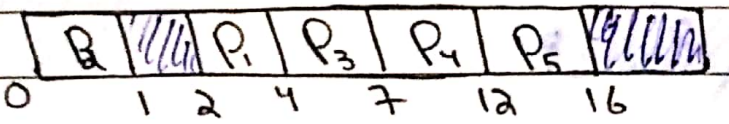
CM

1) First Come First Serve (FCFS) Scheduling:

Process	Arrival Time	Burst Time	CT	TAT	WT	RT
P_1	2	2	4	2	0	0
P_2	0	1	1	1	0	0
P_3	2	3	7	5	2	2
P_4	3	5	12	9	4	4
P_5	4	4	16	12	8	8

Gantt chart:



Formulas:

Completion Time = Time by which process terminated.

Turn around Time = Completion Time − Arrival Time
⇒ wait time + Burst time

Waiting Time = Turnaround Time − Burst time

Response Time = when process arrives 1st time − Arrival time.

Date

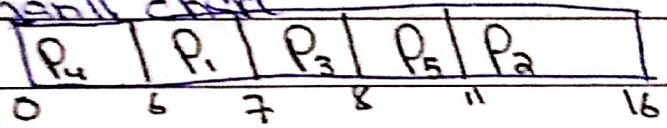
SHORTEST JOB FIRST:

Selects the process with Smallest burst time

Non Preemptive:

Process	Arrival Time	Burst Time	CT	TAT	WT	RT
P_1	2	1	7	5	4	4
P_2	1	5	16	15	10	10
P_3	4	1	8	4	3	3
P_4	0	6	6	6	0	0
P_5	2	3	11	9	6	6

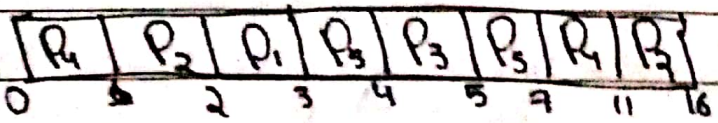
Gantt chart



Premptive:

Process	AT	BT	CT	TAT	WT	RT
P_1	2	1	3	1	0	0
P_2	1	5	16	15	10	10
P_3	4	1	5	1	0	0
P_4	0	~~6~~ 5	~~11~~	11	5	0
P_5	2	~~3~~ 2	7	5	2	1

Gantt chart:



Date

Round Robin Algorithm:

- Used in multi tasking and time sharing OS
- Similar to FCFS with time Quantum

Pre-emptive:

RQ = AT + TQ

TQ = 3

P	AT	BT	CT	TAT	WT	RT
P_1	0	~~8~~ 7 2	22	22	14	0
P_2	5	2	11	6	4	4
P_3	1	7 ~~4~~ 1	23	22	15	~~15~~
P_4	6	3	14	8	5	5
P_5	8	~~5~~ 2	25	17	~~12~~	~~9~~ 12
				75/5	50/5	20/5 = 4

ready Queue

~~P_1~~ ~~P_2~~ ~~P_3~~ ~~P_4~~ ~~P_3~~ ~~P_5~~ ~~P_1~~ ~~P_3~~ ~~P_5~~

Gant chart:

P_1	P_3	P_1	P_2	P_4	P_3	P_3	P_1	P_3	P_5
0	3	6	9	11	14	17	20	22	23	25

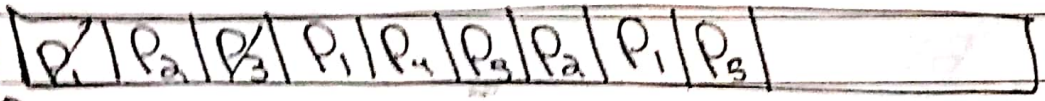
Drawback:

If Time Quantum is too large, this algorithm will work same as FCFS.

Robin Round Algorithm

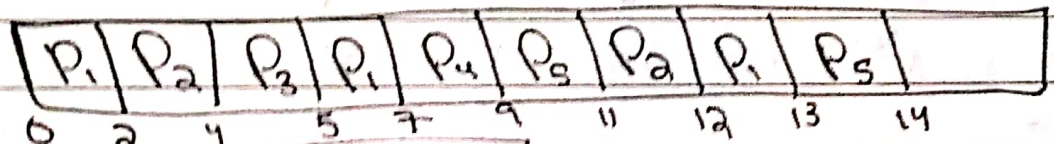
PID	AT	BT	CT	TAT	WT	RT
P_1	0	5	13	13	8	0
P_2	1	3	12	11	8	1
P_3	2	1	5	3	2	2
P_4	3	2	9	6	4	4
P_5	4	3	14	10	7	5

RQ 8



GC

RQ 8



CTI = 2

TAT = CT - AT

WT = TAT - BT

Active

avg WT = $\frac{8+8+2+4+7}{5}$ = 5.8 unit

avg TAT = $\frac{13+11+3+6+10}{5}$ = 8.6 unit

*if AT is not given it will be assume 0 for all processes.

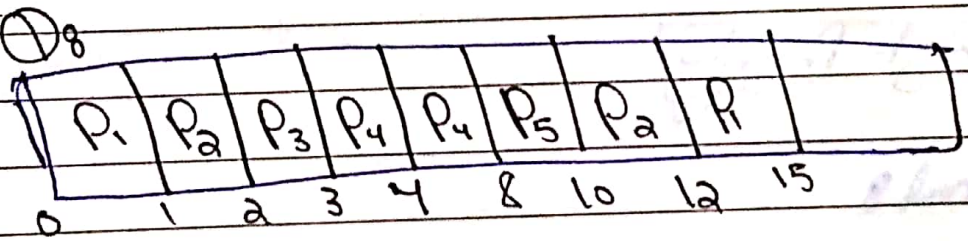
Date

Priority Scheduling

Preemptive:

Pid	Prior	AT	BT	CT	TAT	WT	RT
P_1	2(L)	0	4	15	15	11	0
P_2	3	1	8	12	11	8	0
P_3	4	2	1	3	1	0	0
P_4	5(H)	3	5	8	5	0	0
P_5	5	4	2	10	6	4	4

GT:



Avg. TAT = 38/5 = 7.6 unit

Avg. WT = 22/5 = 4.6 unit

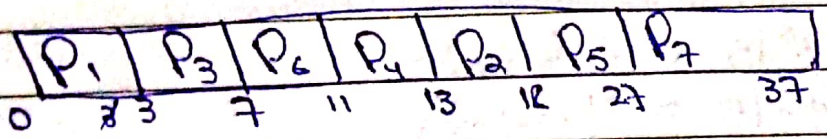
Date

Non Pre-emptive Priority Scheduling:

Pid	Pr	AT	BT	CT	TAT	WT	RT
P_1	2	0	3	0	3	0	0
P_2	6	2	5	18	16	11	11
P_3	3	1	4	7	6	2	2
P_4	5	4	2	13	9	7	7
P_5	7	6	9	27	21	12	12
P_6	4	5	4	11	6	2	2
P_7	10	7	10	37	30	20	20

less no = high Priority

Gantt chart:



Avg wt = 54/7 = 7.7 units

~~Avg TAT~~

Date

P	PR	AT	BT	CT	TT	WT	RT
P_1	3	0	8	8	8	0	0
P_2	4	1	2	17	16	14	14
P_3	4	3	4	21	18	14	14
P_4	5	4	1	22	18	17	17
P_5	2	5	6	14	9	3	3
P_6	6	6	5	27	21	16	16
P_7	1	10	1	15	5	4	4

Gantt chart:-