Assignment - 1

M T W T F S S
Page No.:
Date:
YOUVA

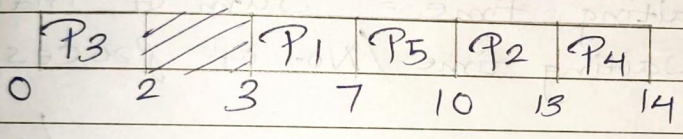
Q1-

Process Id	Arrival time	Burst time
P_1	3	4
P_2	5	3
P_3	0	2
P_4	5	1
P_5	4	3

P_3	P_4	P_5	P_1	P_2

← Queue formation

Gantt Chart:



Turnaround time = Completion Time (CT) - Arrival Time (AT)

$TAT(P1) = t_1 = CT(P_1) - AT(P_1) = 7 - 3 = 4$
$TAT(P_2) = t_2 = CT(P_2) - AT(P_2) = 13 - 5 = 8$
$TAT(P_3) = t_3 = CT(P_3) - AT(P_3) = 2 - 0 = 2$
$TAT(P_4) = t_4 = CT(P_4) - AT(P_4) = 14 - 5 = 9$
$TAT(P_5) = t_5 = CT(P_5) - AT(P_5) = 10 - 4 = 6$

Average turnaround time = Sum of individual process turnaround time / No. of Processes

Average turnaround time = $4 + 8 + 2 + 9 + 6 / 5$
$= 29/5$
$= 5.8$ ns

Waiting time = Turnaround time − Burst time

Waiting time (P_1) = ω_1 = TAT(P_1) − BT(P_1)
= 4 − 4 = 0

ω_2 = TAT(P_2) − BT(P_2) = 8 − 3 = 5
ω_3 = TAT(P_3) − BT(P_3) = 2 − 2 = 0
ω_4 = TAT(P_4) − BT(P_4) = 9 − 1 = 8
ω_5 = TAT(P_5) − BT(P_5) = 6 − 3 = 3

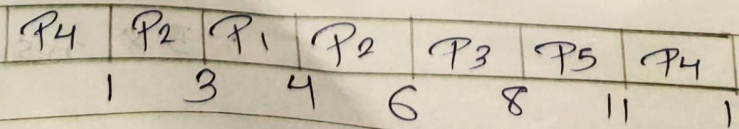
Average waiting time = Sum of individual Process waiting time / No. of process

Avg waiting time = 0 + 5 + 0 + 8 + 3 / 5
= 16/5
= 3.2 ms

Q2.

Process Id	Arrival time	Burst time
P_1	3	1
P_2	1	4
P_3	4	2
P_4	0	6
P_5	2	3

Gantt chart :



Turnaround time:

$TAT(P_1) = t_1 = CT(P_1) - AT(P_1) = 4 - 3 = 1$

$t_2 = 6 - 1 = 5$

$t_3 = 8 - 6 = 4$

$t_4 = 16 - 0 = 16$

$t_5 = 11 - 2 = 9$

Avg TAT = Completion time - Arrival time

$= \frac{1+5+4+16+9}{5} = \frac{35}{5} = 7$ ms

Waiting time:

$P_1 = w_1 = TAT(P_1) - BT(P_1) = 1 - 1 = 0$

$w_2 = 5 - 4 = 1$

$w_3 = 4 - 2 = 2$

$w_4 = 16 - 6 = 10$

$w_5 = 9 - 3 = 6$

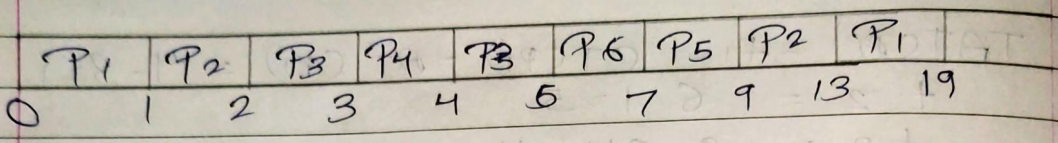
Average waiting time $= \frac{0+1+2+10+6}{5} = \frac{19}{5}$

$= 3.8$ ms

Q3-

Process Id	Arrival time	Burst time
P_1	0	7 6
P_2	1	5 4
P_3	2	3 2 0
P_4	3	1 0
P_5	4	2
P_6	5	1 0

Gantt Chart:



Turnaround time:

$t1 = 19 - 0 = 19$
$t2 = 13 - 1 = 12$
$t3 = 6 - 2 = 4$
$t4 = 4 - 3 = 1$
$t5 = 9 - 4 = 5$
$t6 = 7 - 5 = 2$

Avg turnaround time $= \frac{19+12+4+1+5+2}{6}$

$= \frac{43}{6} = 7.17$ ms

Waiting time:

$w1 = 19 - 7 = 12$
$w2 = 12 - 5 = 7$
$w3 = 4 - 3 = 1$
$w4 = 1 - 1 = 0$
$w5 = 5 - 2 = 3$
$w6 = 2 - 1 = 1$

Avg waiting time $= \frac{12+7+1+0+3+1}{6}$

$= \frac{24}{6} = 4$ ms

Q4-

Process Id	Arrival time	Burst time
P_1	0	5
P_2	1	3
P_3	2	1
P_4	3	2
P_5	4	3

Gantt Chart:

P_1	P_2	P_3	P_1	P_4	P_5	P_2	P_5	P_5
0	2	4	5	7	9	11	12	13	14

Turnaround time:

$t_1 = 13 - 0 = 13$

$t_2 = 12 - 1 = 11$

$t_3 = 5 - 2 = 3$

$t_4 = 9 - 3 = 6$

$t_5 = 14 - 4 = 10$

Avg turnaround time $= \frac{13+11+3+6+10}{5} = \frac{43}{5}$

$= 8.6$ ms

Waiting time:

$w_1 = 13 - 5 = 8$

$w_2 = 11 - 3 = 8$

$w_3 = 3 - 1 = 2$

$w_4 = 6 - 2 = 4$

$w_5 = 10 - 3 = 7$

Average waiting $= \frac{8+8+2+4+7}{5} = \frac{29}{5} = 5.8$ ms