Lecture-8
BDU
06/02/2018

Q1.

Process	Arrival time	CPU burst
A	0.000	3
B	1.001	6
C	4.001	4
D	6.001	2

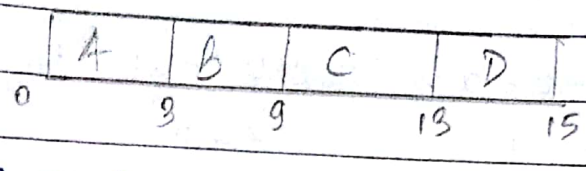
For the process listed above, draw Gantt chart for the following scheduling algorithms and also calculate average turnaround time and average waiting time for each scheduling technique :-

i) FCFS
ii) SJF
iii) SRT
iv) Round-Robin (Quantum = 2)
v) Round-Robin (Quantum = 1)

Q2. Draw the Gantt chart using RR scheduling with time slice 3 ms. Calculate average waiting time and average turnaround time.

Process	Processing time (ms)
P1	15
P2	5
P3	7
P4	10

(i) FCFS



$T_{TRND}(A) = 3-0 = 3$ $\quad T_W(A) = 3-3 = 0$

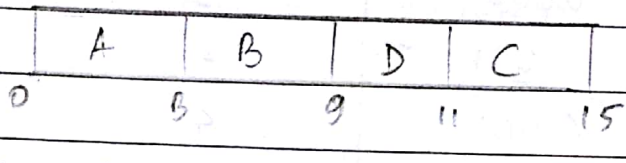
$T_{TRND}(B) = 9-1 = 8$ $\quad T_W(B) = 8-6 = 2$

$T_{TRND}(C) = 13-4 = 9$ $\quad T_W(C) = 9-4 = 5$

$T_{TRND}(D) = 15-6 = 9$ $\quad T_W(D) = 9-2 = 7$

Avg. $T_{TRND} = \frac{3+8+9+9}{4} = 7.25$ $\quad$ Avg. $T_W = \frac{0+2+5+7}{4} = 3.5$

(ii) SJF



$T_{TRND}(A) = 3-0 = 3$ $\quad T_W(A) = 3-3 = 0$

$T_{TRND}(B) = 9-1 = 8$ $\quad T_W(B) = 8-6 = 2$

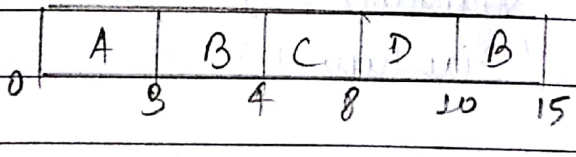
$T_{TRND}(C) = 15-4 = 11$ $\quad T_W(C) = 11-4 = 7$

$T_{TRND}(D) = 11-6 = 5$ $\quad T_W(D) = 5-2 = 3$

Avg. $T_{TRND} = \frac{3+8+11+5}{4} = 6.75$ $\quad$ Avg $T_W = \frac{0+2+7+3}{4}$

$= 3$

(iii) Preemptive SJF (SRT)



$T_{TRND}(A) = 3-0 = 3$ $\quad T_W(A) = 3-3 = 0$

$T_{TRND}(B) = 15-1 = 14$ $\quad T_W(B) = 14-6 = 8$

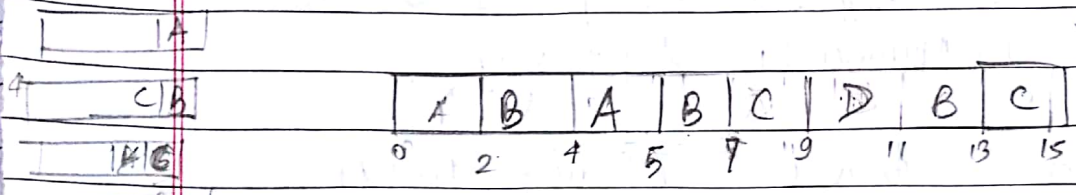
$T_{TRND}(C) = 8-4 = 4$ $\quad T_W(C) = 4-4 = 0$

$T_{TRND}(D) = 10-6 = 4$ $\quad T_W(D) = 4-2 = 2$

Avg. $T_{TRND} = (3+14+4+4)/4$ $\quad$ Avg. $T_W = \frac{0+8+0+2}{4}$

$= 6.25$ $\quad = 2.5$

iii) Round Robin (~~Non~~ Quantum = 2) Preemptive FCFS



$T_{TRND}(A) = 5 - 0 = 5$
$T_{TRND}(B) = 13 - 1 = 12$
$T_{TRND}(C) = 15 - 4 = 11$
$T_{TRND}(D) = 11 - 6 = 5$

$T_w(A) = 5 - 3 = 2$ (12 - 6 = 6)
$T_w(B) = (2-0) + (9-4) + (13-11) = 8$
$T_w(C) = 11 - 4 = 7$
$T_w(D) = 5 - 2 = 3$

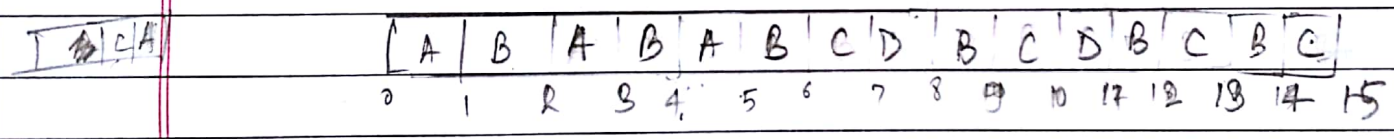
Avg. $T_{TRND} = \frac{5 + 12 + 11 + 5}{4}$

$= 8.25$

Avg. $T_w = \frac{2 + 6 + 7 + 3}{4}$

$= 4.5$

(v) Round - Robin (Quantum 1)



$T_{TRND}(A) = 5 - 0 = 6$
$T_{TRND}(B) = 14 - 1 = 13$
$T_{TRND}(C) = 15 - 4 = 11$
$T_{TRND}(D) = 11 - 6 = 5$

$T_w(A) = 6 - 0 = 6$
$T_w(B) = 13 - 6 = 7$
$T_w(C) = 11 - 4 = 7$
$T_w(D) = 5 - 2 = 3$

Avg. $T_{TRND} = \frac{6 + 13 + 11 + 5}{4}$

$= 8.75$

Avg $T_w = \frac{6 + 7 + 7 + 3}{4}$

$= 5.75$