OPERATING SYSTEM

NAME – SUNDAR LAL BISWAS

REGISTRATION NO - 201300100110043

ROLL NO - 13000120082

DOB - 15/10/2002

PHONE NUMBER - 9609822823

PROBLEM 1:-

Consider a uniprocessor system, where three processes (Process ID 1, 2, 3 respectively) are there. Arrival time of the three processes are last 3 digits of your registration number (i.e. if your registration number is 201300100110019, arrival time of P1=0, P2=1, P3=9). Burst time of process 1 is the addition of date (dd, i.e. if 21/07/2003is Date of Birth, then it is 2+1 = 3), process 2 is addition of month (mm, if July then 0+7, i.e. 7), and process 3 is addition of last two digit of the year (yy, if 2003 then 0+3, i.e. 3, if it is 2000 then take first 2 digit). Assume that CPU is using Shortest remaining time first algorithm.

i. Calculate Waiting time of each of the process.
ii. Calculate turnaround time of each of the process.
iii. Calculate the percentage of time CPU remains idle.

PROBLEM STATEMENT :-

Process (ID)	Arrival Time (AT)	Burst Time (BT)
P1	0	6
P2	4	1
P3	3	2

GANTT CHART :-

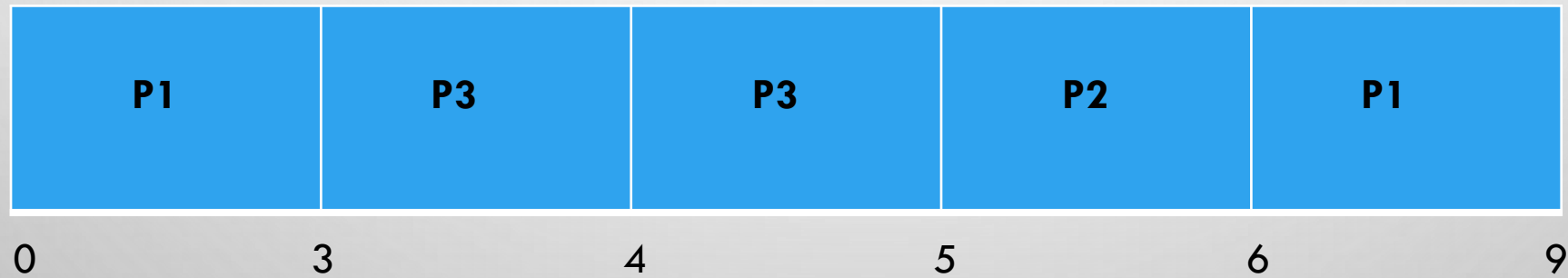| P1	P3	P3	P2	P1

0   3   4   5   6   9

TABLE OF SRTF PROBLEM :-

Process (ID)	Arrival Time (AT)	Burst Time (BT)	Completion Time (CT)	Turn Around Time(TAT) = (CT-AT)	Waiting Time (WT)= (TAT - BT)	Remaining Time (RT)
P1	0	6	9	9	3	0
P2	4	1	6	2	1	1
P3	3	2	5	2	0	0

i. Waiting Time of Each Process (WT)

P1 WT= 3
P2 WT= 1
P3 WT= 0

ii. Turn Around Time of Each Process (TAT)

P1 TAT= 9
P2 TAT= 2
P3 TAT= 2

iii. Percentage of time CPU remains idle.

=> CPU Remains Time 0% because 0 to 9 CPU is Working .

PROBLEM 2:-

Consider a uniprocessor system, where there exist three processes (Process ID 1, 2, 3 respectively). CPU assigns priority of the processes based on highest waiting time of the processes present at that time after every 2-unit time. In any process terminates before the interval time then the default situation will be FCFS scheduling. Each of the process will arrive based on the last 3 digits of your university roll number. (If Roll No. is 13000118137, arrival time of P0=1, P1=3, P2=7). CPU Burst time will be first three digits of your mobile number (i.e. if your mobile number is 8756540439, CPU burst time of P1=8, P2=7, P3=5, if any number is 0, then take next non zero value from your mobile number like 7000312867, CPU burst time of P1=7, P2=3, P3=1).

i. Calculate Average Waiting Time.

ii. Calculate Average Turnaround Time.

iii. Calculate the percentage of time CPU remains idle.

PROBLEM STATEMENT

Process (ID)	Arrival Time (AT)	Burst Time (BT)
P1	0	9
P2	8	6
P3	2	9

GANTT CHART :-

P1	P1	P3	P1	P3	P1	P3	P1	P3	P2	P3	P2	P2

0   2   4   6   8   10   12   14   15   17   19   20   22   24
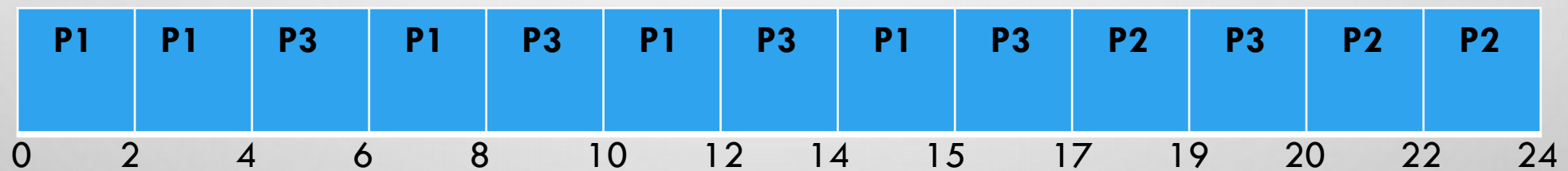
PROCESS OF FCFS

At Time	T0	P1(AT)=0	P1
At Time	T2	P1(WT)=0, P3(WT)=0, {Follow FCFS}	P1,P1
At Time	T4	P1(WT)=0, P3(WT)=2, {Follow Waiting time}	P1,P1,P3
At Time	T6	P1(WT)=2, P3(WT)=2, {Follow FCFS}	P1,P1,P3,P1
At Time	T8	P1(WT)=2, P3(WT)=4, P2(WT)=0 {Follow Waiting time}	P1,P1,P3,P1,P3
At Time	T10	P1(WT)=4, P2(WT)=2, P3(WT)=4 {Follow FCFS}	P1,P1,P3,P1,P3,P1
At Time	T12	P1(WT)=4, P2(WT)=4, P3(WT)=6 {Follow Waiting time}	P1,P1,P3,P1,P3,P1,P3
At Time	T14	P1(WT)=6, P2(WT)=6, P3(WT)=6 {Follow FCFS}	P1,P1,P3,P1,P3,P1,P3,P1
At Time	T15	P2(WT)=7, P3(WT)=7 {Follow FCFS}	P1,P1,P3,P1,P3,P1,P3,P1,P3
At Time	T17	P2(WT)=9, P3(WT)=7 {Follow Waiting time}	P1,P1,P3,P1,P3,P1,P3,P1,P3,P2
At Time	T19	P3(WT)=9, P2(WT)=9 {Follow FCFS}	P1,P1,P3,P1,P3,P1,P3,P1,P3,P2,P3
At Time	T20	P2(WT)=10 {Follow Waiting time}	P1,P1,P3,P1,P3,P1,P3,P1,P3,P2,P3,P2
At Time	T24	P2 Execute	P1,P1,P3,P1,P3,P1,P3,P1,P3,P2,P3,P2,P2

TABLE OF FCFS PROBLEM :-

Process (ID)	Arrival Time (AT)	Burst Time (BT)	Completion Time (CT)	Turn Around Time (TAT) = (CT-AT)	Waiting Time (WT) = (TAT – BT)	Remaining Time (RT)
P1	0	9	15	15	6	0
P2	8	6	24	16	10	9
P3	2	9	20	18	9	2

i.   Average Waiting Time

P1=6
P2=10
P3=9

(P1+P2+P3)/3
=8.33

ii.   Average Turn Around Time

P1=15
P2=16
P3=18

(P1+P2+P3)/3
=16.33

iii.   **Percentage of time CPU remains idle.**
Percentage of time CPU Remains idle is 0% Because 0 to 24 CPU is Working