Week -5

7. Design, develop and implement a C/C++/Java program to simulate the working of Shortest remaining time and Round Robin (RR) scheduling algorithms. Experiment with different quantum sizes for RR algorithm.

```c
#include<stdio.h>
#include<stdlib.h>
int bt[10], rbt[10], at[10] = { 0 }, ct[10], wt[10], tat[10];
int choice, tq, n;
void roundRobin();
void srtf();
void readBT() {
printf("Enter Burst Time : ");
for (int i = 0; i < n; i++) {
scanf("%d", &bt[i]);
rbt[i] = bt[i];
}
}
void readAT() {
printf("Enter Arrival Time : ");
for (int i = 0; i < n; i++)
scanf("%d", &at[i]);
}
void display() {
int swt = 0, stat = 0;
for (int i = 0; i < n; i++) {
tat[i] = ct[i] - at[i];
wt[i] = tat[i] - bt[i];
swt += wt[i];
stat += tat[i];
}
printf("PNO\tAT\tBT\tCT\tTAT\tWT\n");
```

```c
for (int i = 0; i < n; i++)
printf("%d\t%d\t%d\t%d\t%d\t%d\n", i, at[i], bt[i], ct[i], tat[i],
wt[i]);
printf("Average TAT : %f\n", (float) stat / n);
printf("Average WT : %f\n", (float) swt / n);
}
int main() {
setbuf(stdout,NULL);
for (;;) {
printf("1)RR\n2)SRTF\n3)EXIT\n");
printf("Enter Choice : ");
scanf("%d", &choice);
switch (choice) {
case 1:
printf("ROUND ROBIN\n");
printf("Enter The Number Of Processes : ");
scanf("%d", &n);
readBT();
printf("Enter Time Quantum : ");
scanf("%d", &tq);
roundRobin();
break;
case 2:
printf("SRTF\n");
printf("Enter The Number Of Processes : ");
scanf("%d", &n);
readBT();
readAT();
srtf();
break;
```

```c
case 3:
exit(0);
}
}
return 0;
}
void roundRobin() {
int count = 0, i, time = 0;
while (1) {
for (i = 0; i < n; i++) {
if (rbt[i] > tq) {
rbt[i] -= tq;
time += tq;
} else if (rbt[i] != 0) {
time += rbt[i];
count++;
rbt[i] = 0;
ct[i] = time;
}
}
if (count == n)
break;
}
display();
}
void srtf() {
int count = 0, i, time;
rbt[9] = 999;
for (time = 0; count != n; time++) {
int smallest = 9;
```

```
for (i = 0; i < n; i++) {

if (at[i] <= time && rbt[i] < rbt[smallest] && rbt[i] > 0)

smallest = i;

}

rbt[smallest]--;

if (rbt[smallest] == 0) {

count++;

ct[smallest] = time + 1;

}

}

display();

}
```

/*OUTPUT

1)RR

2)SRTF

3)EXIT

Enter Choice : 1

ROUND ROBIN

Enter The Number Of Processes : 4

Enter Burst Time : 4 2 5 2

Enter Time Quantum : 15

PNO AT BT CT TAT WT

0 0 4 4 4 0

1 0 2 6 6 4

2 0 5 11 11 6

3 0 2 13 13 11

Average TAT : 8.500000

Average WT : 5.250000

1)RR

2)SRTF

3)EXIT

Enter Choice : 2

SRTF

Enter The Number Of Processes : 5

Enter Burst Time : 5 4 4 2 4

Enter Arrival Time : 3 0 5 7 5

PNO AT BT CT TAT WT

0 3 5 9 6 1

1 0 4 4 4 0

2 5 4 15 10 6

3 7 2 11 4 2

4 5 4 19 14 10

Average TAT : 7.600000

Average WT : 3.800000

1)RR

2)SRTF

3)EXIT

Enter Choice : 3

*/