

## **LAB 02**

### **QUESTION 03 ANSWER:**

#### **Round Robin scheduling algorithm**

##### **CODE:**

```
#include <stdio.h>

int main()
{
    int i, j, n, t, max;
    int at[10], bt[10], bu[10], wt[10], tat[10], ct[10];
    float awt = 0, att = 0, temp = 0;

    printf("Enter the number of processes: ");
    scanf("%d", &n);

    printf("Enter Arrival Time and Burst Time for each process:\n");
    for (i = 0; i < n; i++) {
        printf("Process %d:\n", i + 1);
        printf("Arrival Time: ");
        scanf("%d", &at[i]);
        printf("Burst Time: ");
        scanf("%d", &bt[i]);
        bu[i] = bt[i];
    }

    printf("\nEnter time quantum: ");
    scanf("%d", &t);

    temp = at[0];

    int completed = 0;
    while (completed < n) {
        for (i = 0; i < n; i++) {
            if (bu[i] > 0 && at[i] <= temp) {
                if (bu[i] <= t) {
                    temp += bu[i];
                    bu[i] = 0;
                    ct[i] = temp;
                    tat[i] = ct[i] - at[i];
                    wt[i] = tat[i] - bt[i];
                    completed++;
                } else {
                    temp += t;
                    bu[i] -= t;
                }
            }
        }
    }
```

```

    }
}

for (i = 0; i < n; i++) {
    att += tat[i];
    awt += wt[i];
}

printf("\nProcess\tArrival Time\tBurst Time\tWaiting Time\tTurnaround Time\n");
for (i = 0; i < n; i++) {
    printf("P%d\t%d\t%d\t%d\t%d\n", i + 1, at[i], bt[i], wt[i], tat[i]);
}

printf("\nThe Average Turnaround Time is: %.2f", att / n);
printf("\nThe Average Waiting Time is: %.2f", awt / n);

return 0;
}

```

**OUTPUT:**

```

Enter the number of processes: 4
Enter Arrival Time and Burst Time for each process:
Process 1:
Arrival Time: 3
Burst Time: 2
Process 2:
Arrival Time: 2
Burst Time: 4
Process 3:
Arrival Time: 0
Burst Time: 4
Process 4:
Arrival Time: 1
Burst Time: 6

Enter time quantum: 4

Process Arrival Time    Burst Time    Waiting Time    Turnaround Time
P1         3             2             0              2
P2         2             4             3              7
P3         0             4             9             13
P4         1             6            12             18

The Average Turnaround Time is: 10.00
The Average Waiting Time is: 6.00

```

## QUESTION 04 ANSWER:

### Priority Scheduling

#### CODE:

```
#include <stdio.h>

int main()
{
    int p[20], at[20], bt[20], pri[20], wt[20], tat[20], i, j, n, temp;
    float wtavg = 0, tatavg = 0;

    printf("Enter the number of processes: ");
    scanf("%d", &n);

    for (i = 0; i < n; i++) {
        p[i] = i + 1;
        printf("Enter Arrival Time, Burst Time, and Priority of Process %d:\n", i + 1);
        printf("Arrival Time: ");
        scanf("%d", &at[i]);
        printf("Burst Time: ");
        scanf("%d", &bt[i]);
        printf("Priority: ");
        scanf("%d", &pri[i]);
    }

    for (i = 0; i < n; i++) {
        for (j = i + 1; j < n; j++) {
            if (at[i] > at[j] || (at[i] == at[j] && pri[i] > pri[j])) {

                temp = p[i];
                p[i] = p[j];
                p[j] = temp;

                temp = at[i];
                at[i] = at[j];
                at[j] = temp;

                temp = bt[i];
                bt[i] = bt[j];
                bt[j] = temp;

                temp = pri[i];
                pri[i] = pri[j];
                pri[j] = temp;
            }
        }
    }
}
```

```

wt[0] = 0;
tat[0] = bt[0] - at[0];
tatavg = tat[0];
int current_time = at[0] + bt[0];

for (i = 1; i < n; i++) {
    if (current_time < at[i]) {
        current_time = at[i];
    }

    wt[i] = current_time - at[i];
    tat[i] = wt[i] + bt[i];
    current_time += bt[i];

    wtavg += wt[i];
    tatavg += tat[i];
}

printf("\nPROCESS\tARRIVAL TIME\tPRIORITY\tBURST TIME\tWAITING\n");
printf("\nTURNAROUND TIME\n");

for (i = 0; i < n; i++) {
    printf("P%d\tt%d\tt%d\tt%d\tt%d\tt%d\n", p[i], at[i], pri[i], bt[i], wt[i], tat[i]);
}

printf("\nAverage Waiting Time is: %.2f", wtavg / n);
printf("\nAverage Turnaround Time is: %.2f\n", tatavg / n);

return 0;
}

```

**OUTPUT:**

```
Enter the number of processes: 4
Enter Arrival Time, Burst Time, and Priority of Process 1:
Arrival Time: 3
Burst Time: 2
Priority: 1
Enter Arrival Time, Burst Time, and Priority of Process 2:
Arrival Time: 2
Burst Time: 4
Priority: 3
Enter Arrival Time, Burst Time, and Priority of Process 3:
Arrival Time: 0
Burst Time: 4
Priority: 1
Enter Arrival Time, Burst Time, and Priority of Process 4:
Arrival Time: 1
Burst Time: 6
Priority: 4
```

PROCESS	ARRIVAL TIME	PRIORITY	BURST TIME	WAITING TIME	TURNAROUND TIME
P3	0	1	4	0	4
P4	1	4	6	3	9
P2	2	3	4	8	12
P1	3	1	2	11	13

Average Waiting Time is: 5.50  
Average Turnaround Time is: 9.50