

## Assignment 3

```
#include <stdio.h>
```

```
int main() {
```

```
    int n, i, j, qt, choice, temp, sq = 0, bt[10], tat[10], rem_bt[10], wt[10], at[10]; // Added 'at' array for arrival time
```

```
    float awt = 0, atat = 0;
```

```
    printf("Enter number of Processes: ");
```

```
    scanf("%d", &n);
```

```
    printf("Enter the Arrival time and Burst time of processes:\n");
```

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

```
        printf("Process %d: ", i + 1);
```

```
        scanf("%d %d", &at[i], &bt[i]);
```

```
        rem_bt[i] = bt[i];
```

```
    }
```

```
    printf("Choose Scheduling Algorithm:\n");
```

```
    printf("1. Shortest Job First (SJF)\n");
```

```
    printf("2. Round Robin (RR)\n");
```

```
    printf("Enter your choice: ");
```

```
    scanf("%d", &choice);
```

```
    switch (choice) {
```

```
        case 1: // Shortest Job First
```

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

```
                for (j = i + 1; j < n; j++) {
```

```
                    if (bt[i] > bt[j]) {
```

```
                        // Swap burst time
```

```
                        temp = bt[i];
```

```
        bt[i] = bt[j];  
        bt[j] = temp;  
  
        // Swap arrival time  
        temp = at[i];  
        at[i] = at[j];  
        at[j] = temp;  
    }  
}  
}
```

```
i = 0; // index for processes  
j = 0; // index for arrival times  
while (i < n) {  
    if (rem_bt[i] <= 0) {  
        i++;  
        continue;  
    }  
}
```

```
    temp = rem_bt[i];  
    sq += temp;  
    tat[i] = sq - at[i];  
    wt[i] = tat[i] - bt[i];  
    rem_bt[i] = 0;  
    i++;  
}  
break;
```

case 2: // Round Robin

```
printf("Enter the Quantum Time: ");  
scanf("%d", &qt);
```

```

int done = 0;

i = 0;
while (!done) {
    done = 1;
    for (i = 0; i < n; i++) {
        if (rem_bt[i] > 0) {
            done = 0;
            if (rem_bt[i] > qt) {
                sq += qt;
                rem_bt[i] -= qt;
            } else {
                sq += rem_bt[i];
                wt[i] = sq - bt[i];
                tat[i] = sq - at[i];
                rem_bt[i] = 0;
            }
        }
    }
}

break;

```

default:

```

    printf("Invalid choice.\n");
    return 1;
}

```

```

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

```

```

    awt /= n;

    atat /= n;

    printf("Average Waiting Time = %f\n", awt);
    printf("Average Turnaround Time = %f\n", atat);

    return 0;
}

```

```

D:\c++\Harry_cpp\Assignment3.exe
Enter number of Processes: 4
Enter the Arrival time and Burst time of processes:
Process 1: 0 6
Process 2: 2 8
Process 3: 4 7
Process 4: 6 3
Choose Scheduling Algorithm:
1. Shortest Job First (SJF)
2. Round Robin (RR)
Enter your choice: 1

Process Arrival Time    Burst Time    Turnaround Time    Waiting Time
1         0           3             0              -3
2         2           6            14              8
3         4           7            17             10
4         6           3            22             14
Average Waiting Time = 7.250000
Average Turnaround Time = 13.250000

-----
Process exited after 24.89 seconds with return value 0
Press any key to continue . . .

```

```

D:\c++\Harry_cpp\Assignment3.exe
Enter number of Processes: 5
Enter the Arrival time and Burst time of processes:
Process 1: 0 8
Process 2: 1 6
Process 3: 2 4
Process 4: 3 9
Process 5: 1 5
Choose Scheduling Algorithm:
1. Shortest Job First (SJF)
2. Round Robin (RR)
Enter your choice: 2
Enter the Quantum Time: 3

Process Arrival Time    Burst Time    Turnaround Time    Waiting Time
1         0           8            29              21
2         1           6            20              15
3         2           4            20              18
4         3           9            29              23
5         1           5            26              22
Average Waiting Time = 19.799999
Average Turnaround Time = 24.799999

-----
Process exited after 38.29 seconds with return value 0
Press any key to continue . . .

```