Ex. No.: 6b)

SHORTEST JOB FIRST

Aim:

To implement the Shortest Job First (SJF) scheduling technique

Algorithm:

1. Declare the structure and its elements.
2. Get number of processes as input from the user.
3. Read the process name, arrival time and burst time
4. Initialize waiting time, turnaround time & flag of read processes to zero. 5. Sort based on burst time of all processes in ascending order 6. Calculate the waiting time and turnaround time for each process. 7. Calculate the average waiting time and average turnaround time. 8. Display the results.

Program Code:

```
#include <stdio.h>

int main() {
   int n, i, j;
   int bt[20], p[20], wt[20], tat[20], temp;
   float avg_wt = 0, avg_tat = 0;

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

   for(i = 0; i < n; i++) {
      printf("Enter burst time for process %d: ", i + 1);
      scanf("%d", &bt[i]);
      p[i] = i + 1;
   }

   for(i = 0; i < n - 1; i++) {
      for(j = i + 1; j < n; j++) {
         if(bt[i] > bt[j]) {
            temp = bt[i];
            bt[i] = bt[j];
            bt[j] = temp;

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

```
            }
        }
    }

    wt[0] = 0;
    for(i = 1; i < n; i++) {
        wt[i] = 0;
        for(j = 0; j < i; j++)
            wt[i] += bt[j];
    }

    for(i = 0; i < n; i++) {
        tat[i] = bt[i] + wt[i];
        avg_wt += wt[i];
        avg_tat += tat[i];
    }

    avg_wt /= n;
    avg_tat /= n;

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

    printf("\nAverage Waiting Time = %.2f", avg_wt);
    printf("\nAverage Turnaround Time = %.2f\n", avg_tat);

    return 0;
}
```

Sample Output:

Enter the number of process:
4
Enter the burst time of the processes:
8 4 9 5

Process	Burst Time	Waiting Time	Turn Around Time
2	4	0	4
4	5	4	9
1	8	9	17
3	9	17	26

Average waiting time is: 7.5
Average Turn Around Time is: 13.0

Output:

Enter total number of processes: 4
Enter burst time for process 1: 6
Enter burst time for process 2: 8
Enter burst time for process 3: 7
Enter burst time for process 4: 3

Process	Burst Time	Waiting Time	Turnaround Time
P4	3	0	3
P1	6	3	9
P3	7	9	16
P2	8	16	24

Average Waiting Time = 7.00
Average Turnaround Time = 13.00

Result:

The Shortest Job First (SJF) scheduling technique has been implemented successfully and the output has been verified.