Ex No: 6 (b) SHORTEST JOB FIRST (SJF)

Date: 4.3.2025

Aim:

To implement the Shortest Job First (SJF) scheduling technique.

Algorithm:

1. Start the program.
2. Get the number of processes.
3. Read the burst time of each process.
4. Assign process IDs (or names) and initialize waiting time and turnaround time to 0.
5. Sort the processes in ascending order of their burst time.
6. Calculate the waiting time:
   - First process waiting time = 0
   - For others: waiting_time[i] = waiting_time[i-1] + burst_time[i-1]
7. Calculate turnaround time:
   turnaround_time[i] = waiting_time[i] + burst_time[i] 8.

Compute average waiting time and turnaround time.

9. Display the results.
10. End.

Program Code (in C):

```
#include <stdio.h>


int main() { int n, i, j, temp; int
   bt[20], p[20], wt[20], tat[20];
```

```
float total_wt = 0, total_tat = 0;


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

```
printf("Enter the burst time of the processes:\n");
for (i = 0; i < n; i++) {
    scanf("%d",  &bt[i]);  p[i]
    = i + 1; // process ID


}


// Sorting burst time using selection sort
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] =

        wt[i - 1] + bt[i - 1];

        total_wt += wt[i];

    }

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

```
        tat[i] = wt[i] + bt[i];

        total_tat += tat[i];

    }


    printf("Process\tBurst Time\tWaiting Time\tTurn Around Time\n");

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

        printf("%d\t%d\t\t%d\t\t%d\n", p[i], bt[i], wt[i], tat[i]);


    }


    printf("Average waiting time is: %.1f\n", total_wt / n);

    printf("Average Turn Around Time is: %.1f\n", total_tat / n);



    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
```

Result:

The SJF scheduling algorithm was successfully implemented. The program displayed waiting time and turnaround time for each process, along with their averages.