S.No: 3	Exp. Name: ***SJF scheduling algorithm***	Date:2025-04-09

Aim:

Aim: Simulation of SJF scheduling algorithm.

Description: Shortest Job First (SJF)

- This is a non-preemptive, pre-emptive scheduling algorithm.
- Best approach to minimize waiting time.
- Easy to implement in Batch systems where required CPU time is known in advance.
- Impossible to implement in interactive systems where required CPU time is not known.
- The processer should know in advance how much time process will take.

Source Code:

SJF.c

```
#include<stdio.h>
int main()
{
   int bt[20],p[20],wt[20],tat[20],i,j,n,total=0,pos,temp;
   float avg_wt,avg_tat;
   printf("Enter number of process:");
   scanf("%d",&n);
   printf("Enter Burst Time:\n");
   for(i=0;i<n;i++)
      {
         printf("p%d:",i+1);
         scanf("%d",&bt[i]);
         p[i]=i+1;
      }
   for(i=0;i<n;i++)
      {
         pos=i;
         for(j=i+1;j<n;j++)
            {
               if(bt[j]<bt[pos])
                  pos=j;
            }
         temp=bt[i];
         bt[i]=bt[pos];
         bt[pos]=temp;
         temp=p[i];
         p[i]=p[pos];
         p[pos]=temp;
      }
   wt[0]=0;
   for(i=1;i<n;i++)
      {
         wt[i]=0;
         for(j=0;j<i;j++)
            wt[i]+=bt[j];
         total+=wt[i];
      }
```


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```
    avg_wt=(float)total/n;
    total=0;
    printf("Process\tBurstTime\tWaitingTime\tTurnaround Time");
    for(i=0;i<n;i++)
       {
          tat[i]=bt[i]+wt[i];
          total+=tat[i];
          printf("\np%d \t %d \t %d \t %d",p[i],bt[i],wt[i],tat[i]);
       }
    avg_tat=(float)total/n;
    printf("\nAverage Waiting Time=%f",avg_wt);
    printf("\nAverage Turnaround Time=%f\n",avg_tat);
 }
```

Execution Results - All test cases have succeeded!

Test Case - 1

User Output

```
Enter number of process: 5
Enter Burst Time: 5
p1: 5
p2: 3
p3: 4
p4: 9
p5: 3
Process BurstTime       WaitingTime     Turnaround Time
p2       3       0       3
p5       3       3       6
p3       4       6       10
p1       5       10      15
p4       9       15      24
Average Waiting Time=6.800000
Average Turnaround Time=11.600000
```

Test Case - 2

User Output

```
Enter number of process: 4
Enter Burst Time: 7
p1: 7
p2: 9
p3: 4
p4: 2
Process BurstTime       WaitingTime     Turnaround Time
p4       2       0       2
p3       4       2       6
p1       7       6       13
p2       9       13      22
Average Waiting Time=5.250000
Average Turnaround Time=10.750000
```