Program-1

Write a C program to simulate the following non-pre-emptive CPU scheduling algorithm to find turnaround time and waiting time.

(a) FCFS

(b) SJF

Code:

```
#include<stdio.h>
   int n, i, j, pos, temp, choice, Burst_time[20], Waiting_time[20], Turn_around_time[20],
   process[20], total=0;
   float avg_Turn_around_time=0, avg_Waiting_time=0;

int FCFS()
{
   Waiting_time[0]=0;

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

   printf("\nProcess\t\tBurst Time\t\tWaiting Time\t\tTurnaround Time");

   for(i=0;i<n;i++)
   {
      Turn_around_time[i]=Burst_time[i]+Waiting_time[i];
avg_Waiting_time+=Waiting_time[i];
avg_Turn_around_time+=Turn_around_time[i];

printf("\nP[%d]\t\t%d\t\t\t%d\t\t\t%d",i+1,Burst_time[i],Waiting_time[i],Turn_around_time[i]);
   }

   avg_Waiting_time =(float)(avg_Waiting_time)/(float)i;
avg_Turn_around_time=(float)(avg_Turn_around_time)/(flo
at)i;     printf("\nAverage Waiting
Time:%.2f",avg_Waiting_time);
   printf("\nAverage Turnaround Time:%.2f\n",avg_Turn_around_time);

   return 0;
```

```
}

int SJF()
{
   //sorting
for(i=0;i<n;i++)
   {
pos=i;
for(j=i+1;j<
n;j++)
{

if(Burst_time[j]<Burst_time[pos])
pos=j;
      }

      temp=Burst_time[i];
      Burst_time[i]=Burst_time[pos];
      Burst_time[pos]=temp;

      temp=process[i];
process[i]=process[pos];
      process[pos]=temp;
   }
      Waiting_time[0]=0;


   for(i=1;i<n;i++)
   {
      Waiting_time[i]=0;

      for(j=0;j<i;j++)
         Waiting_time[i]+=Burst_time[j];

      total+=Waiting_time[i];
   }


avg_Waiting_time=(float)total/n;
total=0;

   printf("\nProcess\t\tBurst Time\t\tWaiting Time\t\tTurnaround Time");

   for(i=0;i<n;i++)
   {
      Turn_around_time[i]=Burst_time[i]+Waiting_time[i];
total+=Turn_around_time[i];
```

```
printf("\nP[%d]\t\t%d\t\t\t%d\t\t\t\t%d",process[i],Burst_time[i],Waiting_time[i],Turn_around_ti
me[i]);
    }

    avg_Turn_around_time=(float)total/n;
    printf("\n\nAverage Waiting Time=%f",avg_Waiting_time);
    printf("\nAverage Turnaround Time=%f\n",avg_Turn_around_time);
}

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

    printf("\nEnter Burst Time:\n");
for(i=0;i<n;i++)
    {
        printf("P[%d]:",i+1);
scanf("%d",&Burst_time[i]);
        process[i]=i+1;
    }

    while(1)
    {   printf("\n-----MAIN MENU-----\n");
printf("1. FCFS Scheduling\n2. SJF
Scheduling\n");
        printf("\nEnter your choice:");
scanf("%d", &choice);
        switch(choice)
        {
            case 1:
FCFS();
break;

            case 2: SJF();
            break;

            default: printf("Invalid Input!!!");
        }
    }
    return 0;
}
```

Output:

```
Enter the total number of processes:4

Enter Burst Time:
P[1]:1
P[2]:2
P[3]:3
P[4]:2

-----MAIN MENU-----
1. FCFS Scheduling
2. SJF Scheduling

Enter your choice:1

Process         Burst Time              Waiting Time            Turnaround Time
P[1]            1                       0                               1
P[2]            2                       1                               3
P[3]            3                       3                               6
P[4]            2                       6                               8
Average Waiting Time:2.50
Average Turnaround Time:4.50

-----MAIN MENU-----
1. FCFS Scheduling
2. SJF Scheduling

Enter your choice:2

Process         Burst Time              Waiting Time            Turnaround Time
P[1]            1                       0                               1
P[2]            2                       1                               3
P[4]            2                       3                               5
P[3]            3                       5                               8

Average Waiting Time=2.250000
Average Turnaround Time=4.250000
```