LAB-1

1. Write a C program to simulate the following CPU scheduling algorithm to find turnaround time and waiting time.
   a) FCFS
   b) SJF

```c
//FCFS
#include<stdio.h>
int main(){
    int n, i, bt[20], wt[20], tat[20];
    float wta=0, tata=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]);
    }

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

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

    wta/=n;
    tata/=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",i+1,bt[i],wt[i],tat[i]);
    }

    printf("Average Waiting Time = %.2f\n",wta);
    printf("Average Turnaround Time = %.2f\n",tata);

    return 0;
}
```

```c
//SJF
#include <stdio.h>

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

    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;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;
            }
        }
    }

    float wta=0,tata=bt[0];
    wt[0]=0;
    tat[0]=bt[0];
    for(i=1;i<n;i++){
        wt[i]=wt[i-1]+bt[i-1];
        tat[i]=tat[i-1]+bt[i];
        wta+=wt[i];
        tata+=tat[i];
    }
    wta/=n;
    tata/=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",wta);
    printf("\nAverage Turnaround Time = %.2f",tata);
```

```
}
```

OUTPUT:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    PORTS

PS D:\1BM23CS122\OS LAB> cd "d:\1BM23CS122\OS LAB\lab1\" ; if ($?) { gcc 1_1.c -o 1_1 } ; if ($?) { .\1_1 }
Enter total number of processes: 4
Enter burst time for process 1: 1
Enter burst time for process 2: 2
Enter burst time for process 3: 3
Enter burst time for process 4: 4

Process Burst Time      Waiting Time    Turnaround Time
P1      1               0               1
P2      2               1               3
P3      3               3               6
P4      4               6               10
Average Waiting Time = 2.50
Average Turnaround Time = 5.00
PS D:\1BM23CS122\OS LAB\lab1> cd "d:\1BM23CS122\OS LAB\lab1\" ; if ($?) { gcc 1_2.c -o 1_2 } ; if ($?) { .\1_2 }
Enter Total Number of Processes: 4
Enter Burst Time for Process 1: 3
Enter Burst Time for Process 2: 6
Enter Burst Time for Process 3: 7
Enter Burst Time for Process 4: 8

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

Average Waiting Time = 7.00
Average Turnaround Time = 13.00
PS D:\1BM23CS122\OS LAB\lab1>
```