

Experiment No # 07

Experiment Name # Shortest Job First (SJF) Algorithm.

SJF:

1. Best approach to minimize waiting time.
2. Easy to implement in Batch systems where required CPU time is known in advance.
3. Impossible to implement in interactive systems where required CPU time is not known.
4. The processor should know in advance how much time process will take.

Code:

```
#include<stdio.h>
void 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("\nEnter 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];
        }
    }
    avg_wt=(float)total/n;
```

```

total=0;
printf("\nProcess\t Burst Time \tWaiting Time\tTurnaround Time");
for(i=0;i<n;i++){
    tat[i]=bt[i]+wt[i];
    total+=tat[i];
    printf("\np%d\t\t %d\t\t %d\t\t\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);
}

```

Output:

```

user@user-HP-ProBook-450-G2: ~
File Edit View Search Terminal Help
user@user-HP-ProBook-450-G2:~$ gedit SJF.c
user@user-HP-ProBook-450-G2:~$ gcc -o SJF SJF.c
user@user-HP-ProBook-450-G2:~$ ./SJF
Enter number of process: 5

Enter Burst Time:
p1: 5
p2: 13
p3: 8
p4: 4
p5: 10

Process      Burst Time      Waiting Time      Turnaround Time
p4           4              0                4
p1           5              4                9
p3           8              9               17
p5          10             17              27
p2          13             27              40
Average Waiting Time=11.400000
Average Turnaround Time=19.400000
user@user-HP-ProBook-450-G2:~$ 

```