

OS LAB FAT

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Question Number = $74 \bmod 8 = 2$

Question 2 : Implement a C program to simulate the **Shortest Job First scheduling** algorithms to find out the average turnaround time and average waiting time.

Process	Burst Time	Arrival Time
P1	8	0
P2	4	1
P3	9	2
P4	5	3

Code :

```
#include<stdio.h>
#include<string.h>
void main()
{
    printf("KULVIR SINGH 19BCE2074\nSJF\n");
    int et[20],at[10],n,i,j,temp,st[10],ft[10],wt[10],ta[10];
    int totwt=0,totta=0;
    float awt,ata;
    char pn[10][10],t[10];
    printf("Enter the number of process:");
    scanf("%d",&n);
    for(i=0; i<n; i++)
    {
        printf("Enter process name, arrival time& execution time:");
        scanf("%s%d%d",pn[i],&at[i],&et[i]);
    }
    for(i=0; i<n; i++)
```

```

for(j=0; j<n; j++)
{
    if(et[i]<et[j])
    {
        temp=at[i];
        at[i]=at[j];
        at[j]=temp;
        temp=et[i];
        et[i]=et[j];
        et[j]=temp;
        strcpy(t,pn[i]);
        strcpy(pn[i],pn[j]);
        strcpy(pn[j],t);
    }
}
for(i=0; i<n; i++)
{
    if(i==0)
        st[i]=at[i];
    else
        st[i]=ft[i-1];
    wt[i]=st[i]-at[i];
    ft[i]=st[i]+et[i];
    ta[i]=ft[i]-at[i];
    totwt+=wt[i];
    totta+=ta[i];
}
awt=(float)totwt/n;
ata=(float)totta/n;
printf("\nPname\tarrivalttime\texecutiontime\twaitingtime\tttime");
for(i=0; i<n; i++)
    printf("\n%s\t%5d\t\t%5d\t\t%5d\t\t%5d",pn[i],at[i],et[i],wt[i],ta[i]);
printf("\nAverage waiting time is:%f",awt);
printf("\nAverage turnaroundtime is:%f\n",ata);
}

```

Code Screenshots :

```
1  #include<stdio.h>
2  #include<string.h>
3  void main()
4  {
5      printf("KULVIR SINGH 19BCE2074\nSJF\n");
6      int et[20],at[10],n,i,j,temp,st[10],ft[10],wt[10],ta[10];
7      int totwt=0,totta=0;
8      float awt,ata;
9      char pn[10][10],t[10];
10     printf("Enter the number of process:");
11     scanf("%d",&n);
12     for(i=0; i<n; i++)
13     {
14         printf("Enter process name, arrival time& execution time:");
15         scanf("%s%d%d",pn[i],&at[i],&et[i]);
16     }
17     for(i=0; i<n; i++)
18         for(j=0; j<n; j++)
19         {
20             if(et[i]<et[j])
21             {
22                 temp=at[i];
23                 at[i]=at[j];
24                 at[j]=temp;
25                 temp=et[i];
26                 et[i]=et[j];
27                 et[j]=temp;
28                 strcpy(t,pn[i]);
29                 strcpy(pn[i],pn[j]);
30                 strcpy(pn[j],t);
31             }
32         }
33     for(i=0; i<n; i++)
34     {
35         if(i==0)
36             st[i]=at[i];
37         else
38             st[i]=ft[i-1];
39         wt[i]=st[i]-at[i];
40         ft[i]=st[i]+et[i];
41         ta[i]=ft[i]-at[i];
42         totwt+=wt[i];
43         totta+=ta[i];
44     }
45     awt=(float)totwt/n;
46     ata=(float)totta/n;
47     printf("\nName\tarrivaltime\texecutiontime\twaitingtime\ttatime");
48     for(i=0; i<n; i++)
49         printf("\n%s\t%5d\t\t%5d\t\t%5d\t\t%5d",pn[i],at[i],et[i],wt[i],ta[i]);
50     printf("\nAverage waiting time is:%f",awt);
51     printf("\nAverage turnaroundtime is:%f\n",ata);
52 }
```

Output Screenshots :

```
kulvir06@ubuntu:~/Desktop/OS LAB/DA 2$ gcc aSJF.c
kulvir06@ubuntu:~/Desktop/OS LAB/DA 2$ ./a.out
KULVIR SINGH 19BCE2074
SJF
Enter the number of process:4
Enter process name, arrival time& execution time:P1 0 8
Enter process name, arrival time& execution time:P2 1 4
Enter process name, arrival time& execution time:P3 2 9
Enter process name, arrival time& execution time:P4 3 5

Pname    arrivaltime    executiontime    waitingtime    tatime
P2        1              4                0              4
P4        3              5                2              7
P1        0              8               10             18
P3        2              9               16             25
Average waiting time is:7.000000
Average turnaroundtime is:13.500000
kulvir06@ubuntu:~/Desktop/OS LAB/DA 2$
```