Experiment: LAB 5 CPU Scheduling

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Slot: F2

FCFS WITH ARRIVAL TIME (Non-Preemptive)

```c
#include<stdio.h>
int main()
{
   int  p[10],at[10],bt[10],ct[10],tat[10],wt[10],i,j,temp=0,n;
   float awt=0,atat=0;
   printf("enter no of proccess you want:");
   scanf("%d",&n);
   printf("enter %d process:",n);
   for(i=0;i<n;i++)
   {
   scanf("%d",&p[i]);
   }
   printf("enter %d arrival time:",n);
   for(i=0;i<n;i++)
   {
   scanf("%d",&at[i]);
   }
   printf("enter %d burst time:",n);
   for(i=0;i<n;i++)
   {
   scanf("%d",&bt[i]);
   }
   // sorting at,bt, and process according to at
   for(i=0;i<n;i++)
   {
    for(j=0;j<(n-i);j++)
   {
    if(at[j]>at[j+1])
   {
     temp=p[j+1];
     p[j+1]=p[j];
     p[j]=temp;
     temp=at[j+1];
     at[j+1]=at[j];
     at[j]=temp;
     temp=bt[j+1];
     bt[j+1]=bt[j];
     bt[j]=temp;
    }
   }
   }
   /* calculating 1st ct */
   ct[0]=at[0]+bt[0];
```

```c
/* calculating 2 to n ct */
for(i=1;i<n;i++)
{
 //when proess is ideal in between i and i+1
  temp=0;
 if(ct[i-1]<at[i])
 {
   temp=at[i]-ct[i-1];
 }
 ct[i]=ct[i-1]+bt[i]+temp;
}
/* calculating tat and wt */
printf("\np\t A.T\t B.T\t C.T\t TAT\t WT");
for(i=0;i<n;i++)
{
tat[i]=ct[i]-at[i];
wt[i]=tat[i]-bt[i];
atat+=tat[i];
awt+=wt[i];
}
atat=atat/n;
awt=awt/n;
for(i=0;i<n;i++)
{
  printf("\nP%d\t %d\t %d\t %d \t %d \t %d",p[i],at[i],bt[i],ct[i],tat[i],wt[i]);
}
printf("\naverage turnaround time is %f",atat);

printf("\naverage wating time is %f",awt);
return 0;
}
```

```
spandan@spandan-VirtualBox: ~

spandan@spandan-VirtualBox:~$ gedit fcfs.c
^C
spandan@spandan-VirtualBox:~$ gcc fcfs.c
spandan@spandan-VirtualBox:~$ ./a.out
enter no of proccess you want:4
enter 4 process:1
2
3
4
enter 4 arrival time:4
1
6
3
enter 4 burst time:2
12
5
9

p       A.T     B.T     C.T     TAT     WT
P8      0       0       0       0       0
P2      1       12      13      12      0
P4      3       9       22      19      10
P1      4       2       24      20      18
average turnaround time is 12.750000
spandan@spandan-VirtualBox:~$ gedit fcfs.c
```

SJF Non-Preemptive with Arrival Time

```c
#include<stdio.h>
int main()
{
   int  p[10],at[10],bt[10],ct[10],tat[10],wt[10],i,j,temp=0,n;
   float awt=0,atat=0;
   printf("enter no of proccess you want:");
   scanf("%d",&n);
   printf("enter %d process:",n);
   for(i=0;i<n;i++)
   {
   scanf("%d",&p[i]);
   }
   printf("enter %d arrival time:",n);
   for(i=0;i<n;i++)
   {
   scanf("%d",&at[i]);
   }
   printf("enter %d burst time:",n);
   for(i=0;i<n;i++)
   {
   scanf("%d",&bt[i]);
   }
   // sorting at,bt, and process according to at
   for(i=0;i<n;i++)
   {
    for(j=0;j<(n-i);j++)
    {
     if(at[j]>at[j+1])
     {
       temp=p[j+1];
       p[j+1]=p[j];
       p[j]=temp;
       temp=at[j+1];
       at[j+1]=at[j];
       at[j]=temp;
       temp=bt[j+1];
       bt[j+1]=bt[j];
       bt[j]=temp;
     }
    }
   }
   /* calculating 1st ct */
   ct[0]=at[0]+bt[0];
   /* calculating 2 to n ct */
   for(i=1;i<n;i++)
   {
    //when proess is ideal in between i and i+1
    temp=0;
    if(ct[i-1]<at[i])
    {
```

```c
      temp=at[i]-ct[i-1];
   }
  ct[i]=ct[i-1]+bt[i]+temp;
  }
 /* calculating tat and wt */
 printf("\np\t A.T\t B.T\t C.T\t TAT\t WT");
 for(i=0;i<n;i++)
 {
 tat[i]=ct[i]-at[i];
 wt[i]=tat[i]-bt[i];
 atat+=tat[i];
 awt+=wt[i];
 }
 atat=atat/n;
 awt=awt/n;
 for(i=0;i<n;i++)
 {
   printf("\nP%d\t %d\t %d\t %d \t %d \t %d",p[i],at[i],bt[i],ct[i],tat[i],wt[i]);
 }
 printf("\naverage turnaround time is %f",atat);

 printf("\naverage wating time is %f",awt);
 return 0;
}
```
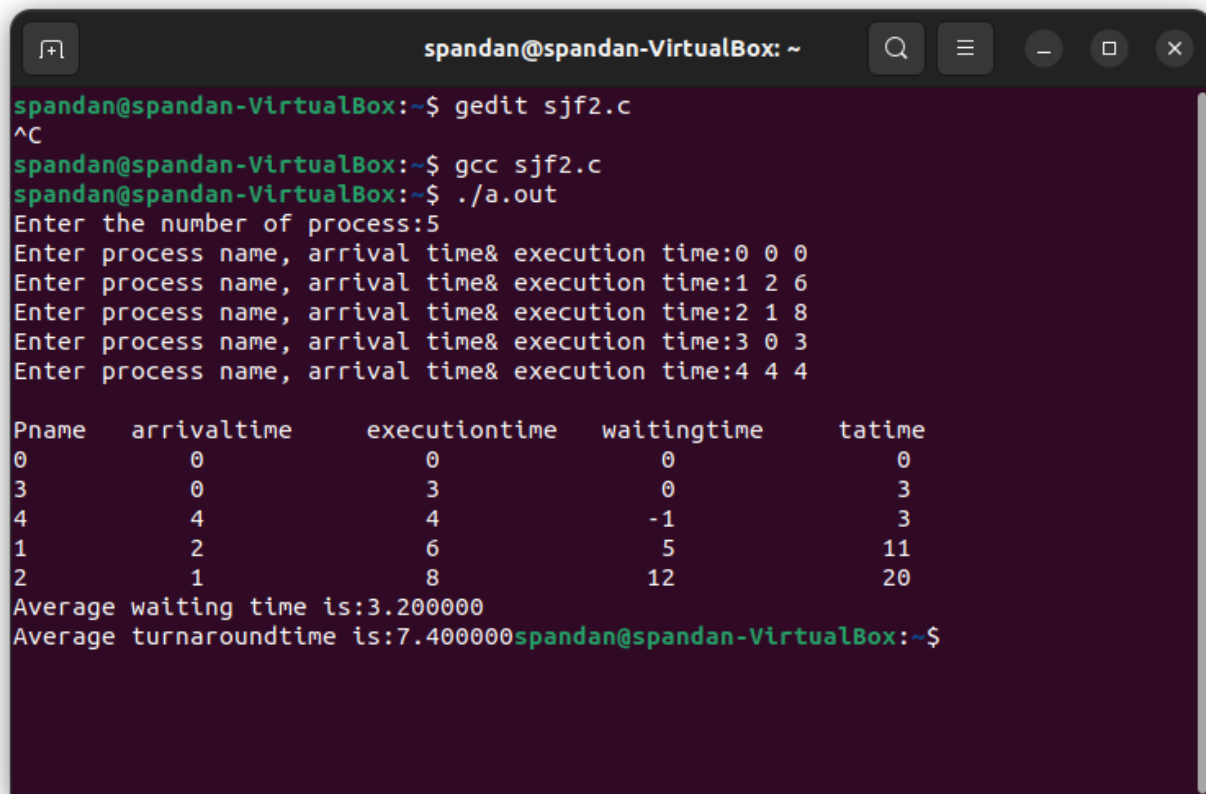
SJF Preemptive with Arrival time

```c
#include<stdio.h>

#include<string.h>
void main()
{
    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];
    //clrscr();
    printf("Enter the number of process:");
    scanf("%d",&n);
    for(i=0; i<n; i++)
    {
        printf("Enter process name, arrival time& execution time:");
        //flushall();
        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\tarrivaltime\texecutiontime\twaitingtime\ttatime");
    for(i=0; i<n; i++)
```

```c
    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",ata);

}
```

```
spandan@spandan-VirtualBox: ~

spandan@spandan-VirtualBox:~$ gedit sjf2.c
^C
spandan@spandan-VirtualBox:~$ gcc sjf2.c
spandan@spandan-VirtualBox:~$ ./a.out
Enter the number of process:5
Enter process name, arrival time& execution time:0 0 0
Enter process name, arrival time& execution time:1 2 6
Enter process name, arrival time& execution time:2 1 8
Enter process name, arrival time& execution time:3 0 3
Enter process name, arrival time& execution time:4 4 4

Pname    arrivaltime      executiontime    waitingtime      tatime
0             0                0                0                0
3             0                3                0                3
4             4                4               -1                3
1             2                6                5               11
2             1                8               12               20
Average waiting time is:3.200000
Average turnaroundtime is:7.400000spandan@spandan-VirtualBox:~$
```