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LAB 11

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Section: A

Semester: Third

Course: Operating System (LAB)

Task # 1

Implement Shortest Job First (Non-Preemptive) CPU Scheduling Algorithm.

```
#include <stdio.h>
#include <unistd.h>
void main()
{
int i,j,np,at[10],bt[10],wt[10],tt[10],p[10],pos,temp,total=0;
float avgw,avgt;
printf("\tFirst Come First Serve\n");
printf("Enter the Number of Processes");
scanf("%d",&np);
for(int i=0;i<np;i++)
{
printf("\n Enter Arrival Time of Process p %d:",i+1);
scanf("%d",&at[i]);
}
for(int i=0;i<np;i++)
{
printf("\n Enter Burst Time of Process p %d:",i+1);
scanf("%d",&bt[i]);
p[i]=i+1;
}
for(i=0;i<np;i++)
{
pos=i;
for(j=i+1;j<np;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;
}
printf("\n----------------After Sorting----------\n");
for(i=0;i<np;i++)
{
printf("\nProcess Name = p%d",p[i]);
printf("\nBurst Time = %d",bt[i]);
printf("\nArrival Time = %d",at[i]);
}
//Waiting
wt[0]=0;
for(i=1;i<np;i++)
{
wt[i]=0;
for(j=0;j<i;j++)
{
wt[i] += bt[j];
}
total += wt[i];
}
avgw = (float)total/np;
total = 0;
printf("\nProcess Name \t Waiting Time \t Turnaround Time\n");
//Turn Around Time
for(i=0;i<np;i++)
{
```

```
tt[i] = bt[i] + wt[i];
total += tt[i];
printf("\n p%d \t\t %d \t\t%d",p[i] , wt[i] , tt[i]);
}
avgt = (float)total/np;
printf("\n Average Waiting Time of Process: %f" , avgw);
printf("\n Average Turnaround Time of Process %f", avgt);
printf("\n----------GANT CHART----------\n");
for(i=0;i<np;i++)
{
printf("|\t p %d \t|",p[i]);
}
printf("\n");
printf("0");
for(int i=0;i<np;i++)
{
printf("\t\t%d",tt[i]);
}
printf("\n");
}
```

```
~$ nano sjf.c
~$ gcc sjf.c
~$ ./a.out
        First Come First Serve
Enter the Number of Processes 4

 Enter Arrival Time of Process p 1:0

 Enter Arrival Time of Process p 2:4

 Enter Arrival Time of Process p 3:3

 Enter Arrival Time of Process p 4:2

 Enter Burst Time of Process p 1:6

 Enter Burst Time of Process p 2:5

 Enter Burst Time of Process p 3:3

 Enter Burst Time of Process p 4:4

-----------------After Sorting----------------

Process Name = p3
Burst Time = 3
Arrival Time = 0
Process Name = p4
Burst Time = 4
Arrival Time = 4
Process Name = p2
Burst Time = 5
Arrival Time = 3
Process Name = p1
Burst Time = 6
Arrival Time = 2
Process Name     Waiting Time    Turnaround Time

 p3              0               3
 p4              3               7
 p2              7               12
 p1              12              18
 Average Waiting Time of Process: 5.500000
 Average Turnaround Time of Process 10.000000
-----------------GANT CHART--------------------
|       p 3    ||      p 4    ||      p 2    ||      p 1    |
0               3               7               12              18
~$
```