**OS LAB # 9 CPU SCHEDULING ALGORITHMS**

**Objective**

To schedule the processes use FCFS (First Come First Served) and SJF (Shortest Job First) scheduling algorithms.

**Description**

When a computer is multi programmed, it has multiple processes competing for the CPU at the same time frequently. This situation occurs whenever two or more processes are simultaneously in the ready state. If only one CPU is available, a choice has to be made which process has to be in CPU. The part of the operating system that makes the choice is called the scheduler and the algorithm is called scheduling algorithm.

**FCFS**

In this scheduling policy the processes are assigned the CPU according to the order they arrive.

**SJF**

In this scheduling the process with shortest burst will be selected first. The processes are sorted in ascending order according to the CPU burst time.

**Sample Input**

Enter the number of processes: 3

Process 1

Enter the CPU burst time: 5

Process 2

Enter the CPU burst time: 10

Process 3

Enter the CPU burst time: 4

**Sample Output**

Process Name Arrival Time Burst Time Wait time start End

The order in which the

Processes are executed:

Waiting time for every

Process Total waiting time is:

Average waiting time

For given FCFS:

Average turnaround time:

**Program 1: Write a C program for FCFS CPU scheduling algorithm**

**Source Code:**

#include<stdio.h>

void main()

{

int i,j,bt[10],n,pt[10],wt[10],tt[10],t,k,l,w1=0,t1=0;

wt[0]=0,tt[0]=0;

float at,aw;

printf("enter no of jobs \n");

scanf("%d",&n);

printf("enter burst time \n");

for(i=0;i<n;i++)

scanf("%d",&bt[i]);

for(i=0;i<n;i++)

{

wt[i+1]=bt[i]+wt[i];

tt[i]=wt[i]+bt[i];

w1=w1+wt[i];

t1=t1+tt[i];

}

aw=w1/n;

at=t1/n;

printf("\n bt \t wt \t tt \n");

for(i=0;i<n;i++)

printf("%d \t %d \t %d \n",bt[i],wt[i],tt[i]);

printf("aw=%f \n at=%f",aw,at);

//getch();

}

**Input:**

enter no of jobs

3

enter bursttime

12

8

20

**output:**

bt wt tt

12 0 12

8 12 20

20 20 40

aw=10.666670

at=24.00000

**Program 3: Write a C Program for priority CPU scheduling algorithm.**

**Source Code:**

#include<stdio.h>

main()

{

int i,j,bt[10],n,pt[10],wt[10],tt[10],t,k,l,w1=0,t1=0;

wt[0]=0,tt[0]=0;

float at,aw;

printf("enter no of jobs\n");

scanf("%d",&n);

printf("enter burst time\n");

for(i=0;i<n;i++)

scanf("%d",&bt[i]);

printf("enter priority values\n");

for(i=0;i<n;i++)

scanf("%d",&pt[i]);

for(i=0;i<n;i++)

for(j=0;j<n;j++)

if(pt[i]<pt[j])

{

t=pt[i];

pt[i]=pt[j];

pt[j]=t;

k=bt[i];

bt[i]=bt[j];

bt[j]=k;

}

for(i=0;i<n;i++)

{

wt[i+1]=bt[i]+wt[i];

tt[i]=wt[i]+bt[i];

w1=w1+wt[i];

t1=t1+tt[i];

}

aw=w1/n;

at=t1/n;

printf("\nbt\tprority\twt\ttt\n");

for(i=0;i<n;i++)

printf("%d\t%d\t%d\t%d\n",bt[i],pt[i],wt[i],tt[i]);

printf("aw=%f\nat=%f",aw,at);

//getch();

}

**Input:**

Enter no of jobs

4

Enter burst time

10

2

4

7

Enter priority values

4

2

1

3

**Output:**

Bt priority wt tt

4 1 0 4

2 2 4 6

7 3 6 13

10 4 13 23

aw=5.750000

at=12.500000

**Program 2: Write a C program for SJF CPU scheduling algorithm**

**Source Code:**

#include<stdio.h>

main()

{

int i,j,bt[10],n,pt[10],wt[10],tt[10],t,k,l,w1=0,t1=0;

wt[0]=0,tt[0]=0;

float at,aw;

printf("enter no of jobs \n");

scanf("%d",&n);

printf("enter burst time \n");

for(i=0;i<n;i++)

scanf("%d",&bt[i]);

for(i=0;i<n;i++)

for(j=0;j<n;j++)

if(bt[i]<bt[j])

{

t=bt[i];

bt[i]=bt[j];

bt[j]=t;

}

for(i=0;i<n;i++)

{

wt[i+1]=bt[i]+wt[i];

tt[i]=wt[i]+bt[i];

w1=w1+wt[i];

t1=t1+tt[i];

}

aw=w1/n;

at=t1/n;

printf("\nbt\twt\ttt\n");

for(i=0;i<n;i++)

printf("%d\t%d\t%d\n",bt[i],wt[i],tt[i]);

printf("aw=%f\nat=%f",aw,at);

//getch();

}

**Input:**

Enter no of jobs

4

Enter burst time

5

12

8

20

**Output:**

Bt wt tt

5 0 5

12 5 13

8 13 25

20 25 45

aw=10.75000

at=22.000000