**Group : B**

**Assignment No. : 5.1**

**Title : Write a program to implement SJF.**

**Roll No. : 2365**

**-------------------------------------------------------------------------------------------**

package Assign5;

import java.util.\*;

class Process

{

Scanner sc=new Scanner(System.in);

int pid,at,bt,wt,tt,ft;

public Process()

{

pid=at=bt=wt=tt=ft=0;

}

public void accept() {

System.out.print("Enter Arrival Time::");

at=sc.nextInt();

System.out.print("Enter Burst Time::");

bt=sc.nextInt();

}

}

class ProcessQ

{

int n;

Scanner sc=new Scanner(System.in);

Process p[]=new Process[20];

public void sjf()

{

System.out.println("Enter no. of processes::");

n=sc.nextInt();

//Process initialization

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

{

p[i]=new Process();

}

//Accept arrival and burst time

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

{

p[i].pid=i;

p[i].accept();

}

Process temp=new Process();

//Sort Processes as per the arrival time

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

{

for(int j=i+1;j<n;j++)

{

if(p[i].bt>p[j].bt)

{

temp.pid=p[i].pid;

p[i].pid=p[j].pid;

p[j].pid=temp.pid;

temp.at=p[i].at;

p[i].at=p[j].at;

p[j].at=temp.at;

temp.bt=p[i].bt;

p[i].bt=p[j].bt;

p[j].bt=temp.bt;

}

}

}

//calculate final time

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

{

if(i==0)

{

p[i].ft=p[i].ft+p[i].bt;

}

else

{

p[i].ft=p[i-1].ft+p[i].bt;

}

}

//calculate turn around and wait time

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

{

p[i].tt=p[i].ft-p[i].at;

p[i].wt=p[i].tt-p[i].bt;

}

//Display Execution Sequence

System.out.print("\nProcess Execution Sequence\n|");

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

{

System.out.print(" P"+p[i].pid+" |");

}

System.out.println();

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

{

System.out.print(" "+p[i].ft+"|");

}

//Display arrival,burst,finish time

System.out.println("\nProcess Arrival Burst Finish Turnaround Wait ");

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

{

System.out.print("\nP"+p[i].pid+"\t"+p[i].at+"\t"+p[i].bt+"\t"+p[i].ft+"\t"+p[i].tt+"\t"+p[i].wt);

}

double avtWT=0.0,avtTT=0.0;

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

{

avtWT=avtWT+p[i].wt;

avtTT=avtTT+p[i].tt;

}

System.out.println("\nAverage Waiting Time::"+(avtWT/n));

System.out.println("Average Turnaround Time::"+(avtTT/n));

}

}

public class SJF

{

public static void main(String args[])

{

ProcessQ pq=new ProcessQ();

Scanner scan=new Scanner(System.in);

pq.sjf();

}

}

/\*Enter no. of processes::

4

Enter Arrival Time::0

Enter Burst Time::3

Enter Arrival Time::0

Enter Burst Time::7

Enter Arrival Time::0

Enter Burst Time::6

Enter Arrival Time::0

Enter Burst Time::2

Process Execution Sequence

| P3 | P0 | P2 | P1 |

2| 5| 11| 18|

Process Arrival Burst Finish Turnaround Wait

P3 0 2 2 2 0

P0 0 3 5 5 2

P2 0 6 11 11 5

P1 0 7 18 18 11

Average Waiting Time::4.5

Average Turnaround Time::9.0

\*/