#include<stdio.h>

#include<conio.h>

void fcfs()

{

int p[10],bt[10],tt[10],tat[10];

int wt[10],sum,i,no;

int awt,att,at=0,gc[10];

printf("\nEnter the no of process:-");

scanf("%d",&no);

for(i=0;i<no;i++)

{

printf("\nEnter byourst time of the process p%d:-",i);

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

}

gc[0]=0;

for(i=1;i<=no;i++)

{

gc[i]=gc[i-1]+bt[i-1];

}

for(i=0;i<no;i++)

{

wt[i]=gc[i]-at;

}

//Gantt chart

printf("\n\n Gantt chart:");

printf("\n-------------------------\n");

for(i=0;i<no;i++)

{

printf("| p%d",i);

}

printf("|");

printf("\n--------------------------\n");

for(i=0;i<=no;i++)

{

printf("%d ",gc[i]);

}

printf("\n\nProcess ByourstTime WaitingTime TyournAroundTime");

for(i=0;i<no;i++)

{

printf("\n p%d\t %d\t\t %d\t\t %d",i,bt[i],wt[i],gc[i+1]);

}

sum=0;

for(i=0;i<no;i++)

{

sum=sum+wt[i];

}

awt=sum/no;

printf("\nAverage Waitingn Time=:%d",awt);

sum=0;

for(i=1;i<=no;i++)

{

sum=sum+gc[i];

}

att=sum/no;

printf("\nAverage Waitingn Time=:%d",att);

}

void sjf()

{

int bt[10],i,j,wt[10],ft[10],temp,temp\_id,p[10],st[10],tt[10];

int no;

int wat=0,att=0;

printf("\nEnter the no of process:-");

scanf("%d",&no);

for(i=1;i<=no;i++)

{

printf("\nEnter the process id:-");

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

}

for(i=1;i<=no;i++)

{

printf("\nEnter byourst time of the process :-");

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

}

//Sorting

for(i=1;i<=no;i++)

{

for(j=1;j<=no-1;j++)

{

if(bt[j+1]<bt[j])

{

temp=bt[j];

bt[j]=bt[j+1];

bt[j+1]=temp;

temp\_id=p[j];

p[j]=p[j+1];

p[j+1]=temp\_id;

}

}

}

//Gantt chart

printf("\n\nGantt chart:");

for(i=1;i<=no;i++)

{

printf("\np%d\t%d",p[i],bt[i]);

}

for(i=1;i<=no;i++)

{

if(i==1)

{

st[i]=0;

ft[i]=bt[i];

}

else

{

st[i]=st[i-1]+bt[i-1];

ft[i]=st[i]+bt[i];

}

}

printf("\n\n ByourstTime WaitingTime TyournAroundTime");

for(i=1;i<=no;i++)

{

wt[i]=st[i];

}

for(i=1;i<=no;i++)

{

tt[i]=ft[i];

}

for(i=1;i<=no;i++)

{

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

}

printf("\n------------------------------------------\n");

//Average waiting time

for(i=1;i<=no;i++)

{

wat=wat+wt[i];

}

wat=wat/no;

printf("\n\nAverage waitng time:-%d",wat);

// Average tyourn around time

printf("\n\n Average tyourn around time :- ");

for(i=1;i<=no;i++)

{

att=att+tt[i];

}

att=att/no;

printf("%d",att);

}

void priority()

{

int bt[10],i,j,wt[10],ft[10],temp,temp\_id,p[10],st[10],tt[10];

int no,pr[10],temp\_p;

int wat=0,att=0;

printf("\nEnter the no of process:-");

scanf("%d",&no);

for(i=1;i<=no;i++)

{

printf("\nEnter the process id:-");

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

}

for(i=1;i<=no;i++)

{

printf("\nEnter byourst time of the process :-");

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

}

for(i=1;i<=no;i++)

{

printf("\nEnter priority of the process:- ");

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

}

//Sorting

for(i=1;i<=no;i++)

{

for(j=1;j<=no-1;j++)

{

if(pr[j+1]<pr[j])

{

temp\_p=pr[j];

pr[j]=pr[j+1];

pr[j+1]=temp\_p;

temp=bt[j];

bt[j]=bt[j+1];

bt[j+1]=temp;

temp\_id=p[j];

p[j]=p[j+1];

p[j+1]=temp\_id;

}

}

}

//Gantt chart

printf("\n\nGantt chart:");

for(i=1;i<=no;i++)

{

printf("\np%d\t%d",p[i],bt[i],pr[i]);

}

for(i=1;i<=no;i++)

{

if(i==1)

{

st[i]=0;

ft[i]=bt[i];

}

else

{

st[i]=st[i-1]+bt[i-1];

ft[i]=st[i]+bt[i];

}

}

printf("\n\n ByourstTime WaitingTime TyournAroundTime");

for(i=1;i<=no;i++)

{

wt[i]=st[i];

}

for(i=1;i<=no;i++)

{

tt[i]=ft[i];

}

for(i=1;i<=no;i++)

{

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

}

printf("\n---------------------------------------------");

//Average waiting time

for(i=1;i<=no;i++)

{

wat=wat+wt[i];

}

wat=wat/no;

printf("\n\nAverage waitng time:-%d",wat);

// Average tyourn around time

printf("\n\n Average tyourn around time :- ");

for(i=1;i<=no;i++)

{

att=att+tt[i];

}

att=att/no;

printf("%d",att);

}

void round\_robin()

{

int arr[20],awt[10],no,ch;

int tat[30],pro[30],rr[30],pro1[30],bt[30],flag[15],

flag1[20],gc[20];

int i,j,k,at,sum,tq,rnd\_up,a=0;

float avg,temp;

at=sum=temp=0;

printf("\n\nEnter the number of procceses u want :");

scanf("%d",&no);

printf("\nEnter the time quantum :");

scanf("%d",&tq);

//------------Enter process byourst time-----------

for(i=0;i<no;i++)

{

printf("\nEnter the process number ,byourst time :");

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

flag[i]=flag1[i]=gc[i]=0;

bt[i]=arr[i]; //store the byourst time

if(temp<=arr[i])

temp=arr[i];

}

temp=temp/tq;

rnd\_up=ceil(temp); //No of Passes

k=0 ;

rr[k]=0;

for(i=0;i<rnd\_up;i++) //No of Passes

{

for(j=0;j<no;j++) //No of Processes

{

if(arr[j]!=0) //Check if arr[j]!=0

{

if(arr[j]>=tq)

{

rr[++k]=tq;

pro1[k-1]=pro[j];

arr[j]=arr[j]-tq;

}

else

{

rr[++k]=arr[j];

pro1[k-1]=pro[j];

arr[j]=0;

}

}

}

}

for(i=1;i<=k;i++)

{

arr[i]=arr[i-1]+rr[i];

}

printf("\n\tGANTT CHART");

printf("\n-----------------------------------------------\n");

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

{

printf("| P%d",pro1[i]);

}

printf("|");

printf("\n-----------------------------------------------\n");

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

printf("%d ",arr[i]);

//----------------Waiting Time------------

printf("\n-------------------------------\n");

for(i=0;i<no;i++)

{

a=i;//set a to ith position

gc[i]=gc[i]+arr[a];

for(j=i+1;j<k;j++)

{

if(pro1[j]==pro1[i])

{

gc[i]=gc[i]+arr[j]-arr[a+1];

a=j;

flag[i]=1;

}

}

tat[i]=arr[a+1];

a=0;

}

//-------------------Printing--------------

for(i=0;i<no;i++)

{

if(flag[i]==0)

{

gc[i]=arr[i];

}

}

printf("\n\nProcess\tByourst time\tWaiting time\t\tTyourn Around Time");

for(i=0;i<no;i++)

{

printf("\nP%d\t%d\t\t%d\t\t%d",pro[i],bt[i],gc[i],tat[i]);

}

//---------Average Waiting Time-------

sum=0;

for(i=0;i<no;i++)

{

sum=sum+gc[i];

}

avg=sum/no;

printf("\n\nAverage Waiting Time :%3.2f",avg);

//--------Average Tyourn Around Time-------

sum=0;

for(i=0;i<no;i++)

{

sum=sum+tat[i];

}

avg=sum/no;

printf("\n\nThe Average Tyourn Around Time :%3.2f",avg);

}

void main()

{

int ch;

char ans;

clrscr();

do

{

printf("\n\*\*\*\*MENU\*\*\*\*\*\* ");

printf("\n1.FCFS");

printf("\n2.SJF");

printf("\n3.PRIORITY");

printf("\n4.ROUND ROBIN");

printf("\n5.Exit");

printf("\nEnter your choice:-");

scanf("%d",&ch);

switch(ch)

{

case 1:

fcfs();

break;

case 2:

sjf();

break;

case 3:

priority();

break;

case 4:

round\_robin();

break;

case 5:

exit();

break;

default:

break;

}

printf("\n\n Do u want continue?");

flushall();

scanf("%c",&ans);

}

while(ans=='y');

getch();

}

**OUTPUT**

\*\*\*\*MENU\*\*\*\*\*\*

1.FCFS

2.SJF

3.PRIORITY

4.ROUND ROBIN

5.Exit

Enter yoyour choice:-1

Enter the no of process:-3

Enter byourst time of the process p0:-3

Enter byourst time of the process p1:-2

Enter byourst time of the process p2:-3

Gantt chart:

-------------------------

| p0| p1| p2|

--------------------------

0 3 5 8

Process ByourstTime WaitingTime TyournAroundTime

p0 3 0 3

p1 2 3 5

p2 3 5 8

Average Waiting Time=:2

Average Waiting Time=:5

Do u want continue?y

\*\*\*\*MENU\*\*\*\*\*\*

1. FCFS

2. SJF

3. PRIORITY

4. ROUND ROBIN

5. Exit

Enter your choice:-2

Enter the no of process:-3

Enter the process id:-0

Enter the process id:-1

Enter the process id:-2

Enter byourst time of the process:-6

Enter byourst time of the process:-2

Enter byourst time of the process:-4

Gantt chart:

p1 2

p2 4

p0 6

ByourstTime WaitingTime TyournAroundTime

2 0 2

4 2 6

6 6 12

-------------------------------------------------------

Average waiting time:-2

Average tyourn around time: - 6

Do u want continue? Y

\*\*\*\*MENU\*\*\*\*\*\*

1.FCFS

2.SJF

3.PRIORITY

4.ROUND ROBIN

5.Exit

Enter your choice:-3

Enter the no of process:-3

Enter the process id:-0

Enter the process id:-1

Enter the process id:-2

Enter byourst time of the process :-2

Enter byourst time of the process :-6

Enter byourst time of the process :-4

Enter priority of the process:- 1

Enter priority of the process:- 0

Enter priority of the process:- 2

Gantt chart:

p1 6

p0 2

p2 4

ByourstTime WaitingTime TyournAroundTime

6 0 6

2 6 8

4 8 12

-------------------------------------------------------------

Average waiting time:-4

Average tyourn around time :- 8

Do u want continue? Y

\*\*\*\*MENU\*\*\*\*\*\*

1.FCFS

2.SJF

3.PRIORITY

4.ROUND ROBIN

5.Exit

Enter your choice:-4

Enter the number of procceses u want :5

Enter the time quantum :3

Enter the process number ,byourst time :0 9

Enter the process number ,byourst time :1 4

Enter the process number ,byourst time :2 8

Enter the process number ,byourst time :3 2

Enter the process number ,byourst time :4 3

GANTT CHART

----------------------------------------------------------------

| P0| P1| P2| P3| P4| P0| P1| P2| P0| P2|

----------------------------------------------------------------

0 3 6 9 11 14 17 18 21 24 26

----------------------------------------------------------------

Process Byourst time Waiting time Tyourn Around Time

P0 9 15 24

P1 4 14 18

P2 8 18 26

P3 2 9 11

P4 3 11 14

Average Waiting Time :13.00

The Average Tyourn Around Time :18.00

Do u want continue?n