#include<stdio.h>

#include<conio.h>

int page\_str[30],n\_pages;

void fifo();

void lru();

void optimal();

void main()

{

int ch,i;

char ans;

clrscr();

printf("Total= 20 \n\t\t7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1\n");

printf("\n\t\tENTER NO PAGES IN REFERENCE STRING::->");

scanf("%d",&n\_pages);

printf("\n\tENTER %d PAGE NO.S::->",n\_pages);

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

scanf("%d,",&page\_str[i]);

do

{

printf("\n\t\tMENU\n");

printf("\n\t\t1.FIFO PAGE REPLACEMENT");

printf("\n\t\t2.LRU PAGE REPLACEMENT");

printf("\n\t\t3.OPTIMAL");

printf("\n\t\t4.EXIT");

printf("\n\t\tENTER YOUR CHOICE::->");

scanf("%d",&ch);

switch(ch)

{

case 1:fifo();

break;

case 2:lru();

break;

case 3:optimal();

break;

}

printf("\nDo u want to cont..");

flushall();

scanf("%c",&ans);

}while(ans=='y'||ans=='Y');

getch();

}

void fifo()

{

int col=0,size\_frame,flag,fault=0,page[3]={-1,-1,-1};

int i=0,j=0,k=0;

printf("\nENTER SIZE OF PAGE FRAME:");

scanf("%d",&size\_frame);

printf("\n Page String:\n");

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

printf("%d ",page\_str[i]);

printf("\nFIFO PAGE REPLACEMENT ALGO:\n\n");

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

{

for(j=0;j<size\_frame;j++)

{

flag=1;

if(page[j]==page\_str[i])

{

flag=0;

break;

}

}

if(flag==1)

{

fault++;

if(col>=size\_frame)

col=0;

page[col++]=page\_str[i];

}

printf("\n");

for(k=0;k<size\_frame;k++)

{

printf("%d",page[k]);

}

}

printf("\nFault:-%d",fault);

}

void lru()

{

int flag1=0,col=0,i,j,k,min=0,cflag=0,page[3]={-1,-1,-1};

int cnt[3]={-1,-1,-1,},fault=0,size\_frame;

printf("\nENTER SIZE OF PAGE FRAME:");

scanf("%d",&size\_frame);

printf("\n Page Frame:\n");

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

printf("%d ",page\_str[i]);

printf("\nLRU PAGE REPLACEMENT ALGO:\n\n");

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

{

for(j=0;j<size\_frame;j++)

{

flag1=1;

if(page[j]==page\_str[i])

{

flag1=0;

cnt[j]=i;

break;

}

}

if(flag1==1)

{

fault++;

if(col>=size\_frame)

{

col=0;

cflag =1;

}

min = cnt[0];

for(j=0;j<size\_frame;j++)

{

if(min > cnt[j] && cnt[j]!=-1)

{

min = cnt[j];

col = j;

}

}

if(min == cnt[0]&&cflag == 1)

{

col = 0;

}

cnt[col]=i;

page[col++]=page\_str[i];

}

for(k=0;k<size\_frame;k++)

{

printf(" %d ",page[k]);

}

printf("\n\n");

}

printf("\nNo of Faults :%d",fault);

}

void optimal()

{

int p[30],i,j,fs[3],no\_of\_pages,size\_frame,max,

found=0,lg[3],index,k,l,flag1=0,flag2=0,pf=0,

fr[10]={-1,-1,-1};

printf("20\n7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1\n");

printf("\nENTER NO PAGES IN REFERENCE STRING::->");

scanf("%d",&no\_of\_pages);

printf("\nENTER %d PAGE NO.S::->",no\_of\_pages);

for(i=0;i<no\_of\_pages;i++)

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

printf("\nENTER SIZE OF PAGE FRAME:");

scanf("%d",&size\_frame);

printf("\n");

for(j=0;j<no\_of\_pages;j++)

{

flag1=0;

flag2=0;

for(i=0;i<size\_frame;i++)

{

if(fr[i]==p[j])

{

flag1=1;

flag2=1;

break;

}

}

if(flag1==0)

{

for(i=0;i<size\_frame;i++)

{

if(fr[i]==-1)

{

fr[i]=p[j];

flag2=1;

pf++;

break;

}

}

}

if(flag2==0)

{

for(i=0;i<size\_frame;i++)

lg[i]=0;

for(i=0;i<size\_frame;i++)

{

for(k=j+1;k<no\_of\_pages;k++)

{

if(fr[i]==p[k])

{

lg[i]=k-j;

break;

}

}

}

found=0;

for(i=0;i<size\_frame;i++)

{

if(lg[i]==0)

{

index=i;

found=1;

break;

}

}

if(found==0)

{

max=lg[0];

index=0;

for(i=1;i<size\_frame;i++)

{

if(max<lg[i])

{

max=lg[i];

index=i;

}

}

}

fr[index]=p[j];

pf++;

}

for(k=0;k<size\_frame;k++)

printf(" %d ",fr[k]);

printf("\n");

}

printf("\nNO.OF PAGE FAULTS:- %d",pf);

}

**OUTPUT**

Total= 20

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

ENTER NO PAGES IN REFERENCE STRING::->20

ENTER 20 PAGE NO.S::->7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

MENU

1.FIFO PAGE REPLACEMENT

2.LRU PAGE REPLACEMENT

3.OPTIMAL

4.EXIT

ENTER YOUR CHOICE::->1

ENTER SIZE OF PAGE FRAME:3

Page String:

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

FIFO PAGE REPLACEMENT ALGO:

7 -1 -1

7 0 -1

7 0 1

2 0 1

2 0 1

2 3 1

2 3 0

4 3 0

4 2 0

4 2 3

0 2 3

0 2 3

0 2 3

0 1 3

0 1 2

0 1 2

0 1 2

7 1 2

7 0 2

7 0 1

Fault:-15

Do u want to cont..y

MENU

1.FIFO PAGE REPLACEMENT

2.LRU PAGE REPLACEMENT

3.OPTIMAL

4.EXIT

ENTER YOUR CHOICE::->2

ENTER SIZE OF PAGE FRAME:3

Page Frame:

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

LRU PAGE REPLACEMENT ALGO:

7 -1 -1

7 0 -1

7 0 1

2 0 1

2 0 1

2 0 3

2 0 3

4 0 3

4 0 2

4 3 2

0 3 2

0 3 2

0 3 2

1 3 2

1 3 2

1 0 2

1 0 2

1 0 7

1 0 7

1 0 7

No of Faults :12

Do u want to cont..y

MENU

1.FIFO PAGE REPLACEMENT

2.LRU PAGE REPLACEMENT

3.OPTIMAL

4.EXIT

ENTER YOUR CHOICE::->3

20

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

ENTER NO PAGES IN REFERENCE STRING::->20

ENTER 20 PAGE NO.S::->7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

ENTER SIZE OF PAGE FRAME:3

7 -1 -1

7 0 -1

7 0 1

2 0 1

2 0 1

2 0 3

2 0 3

2 4 3

2 4 3

2 4 3

2 0 3

2 0 3

2 0 3

2 0 1

2 0 1

2 0 1

2 0 1

7 0 1

7 0 1

7 0 1

NO.OF PAGE FAULTS:- 9

Do u want to cont..n