

## PAGE REPLACEMENT ALGORITHMS

```
#include<stdio.h>

#include<conio.h>

int n,m,a[20],p[10];

void fifo()

{

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

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

{

flag=1;

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

{

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

{

flag=0;

break;

}

}

if(flag==1)

{

cnt++;

p[k]=a[i];

k=(k+1)%m;

}

}

printf("\nFIFO-Page faults=%d",cnt);

}

void optimal()

{

int i,j,flag,cnt=0,k=0,t,temp,f,help[10],ct;

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

{

flag=1,f=1,ct=0;
```

```
for(j=0;j<m;j++)
{
help[j]=0;
if(a[i]==p[j])
{
flag=0;
break;
}
}
if(flag==1)
{
cnt++;
for(j=0;j<m;j++)
{
if(p[j]==-1)
{
p[j]=a[i];
f=0;
break;
}
}
if(f==1)
{
for(k=i+1;k<n;k++)
{
for(j=0;j<m;j++)
{
if(p[j]==a[k]&&help[j]==0)
{
temp=j;
help[j]=1;
}
}
}
```

```

}
for(j=0;j<m;j++)
{
if(help[j]==0)
temp=j;
}
p[temp]=a[i];
}
}
}
printf("\nOPTIMAL-Page faults=%d",cnt);
}
void lru()
{
int flag,f,k,cnt=0,i,j,temp,ct,help[10];
for(i=0;i<n;i++)
{
flag=1,f=1,ct=0;
for(j=0;j<m;j++)
{
help[j]=0;
if(p[j]==a[i])
{
flag=0;
break;
}
}
if(flag==1)
{
cnt++;
for(j=0;j<m;j++)
{
if(p[j]==-1)

```

```

{
p[j]=a[i];
{
f=0;
break;
}
}
}
if(f==1)
{
for(k=i-1;k>=0;k--)
{
for(j=0;j<m;j++)
{
if(p[j]==a[k]&& help[j]==0)
{
temp=j;
help[j]=1;
}
}
}
p[temp]=a[i];
}

}

}

printf("\nLRU-Page faults=%d",cnt);
}

void main()
{
int i;
printf("Enter the number of pages:");

```

```

scanf("%d",&n);

printf("\nEnter the page numbers:");

for(i=0;i<n;i++)
{
scanf("%d",&a[i]);
}

printf("\nEnter the number of frames:");

scanf("%d",&m);

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

p[i]=-1;

fifo();

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

p[i]=-1;

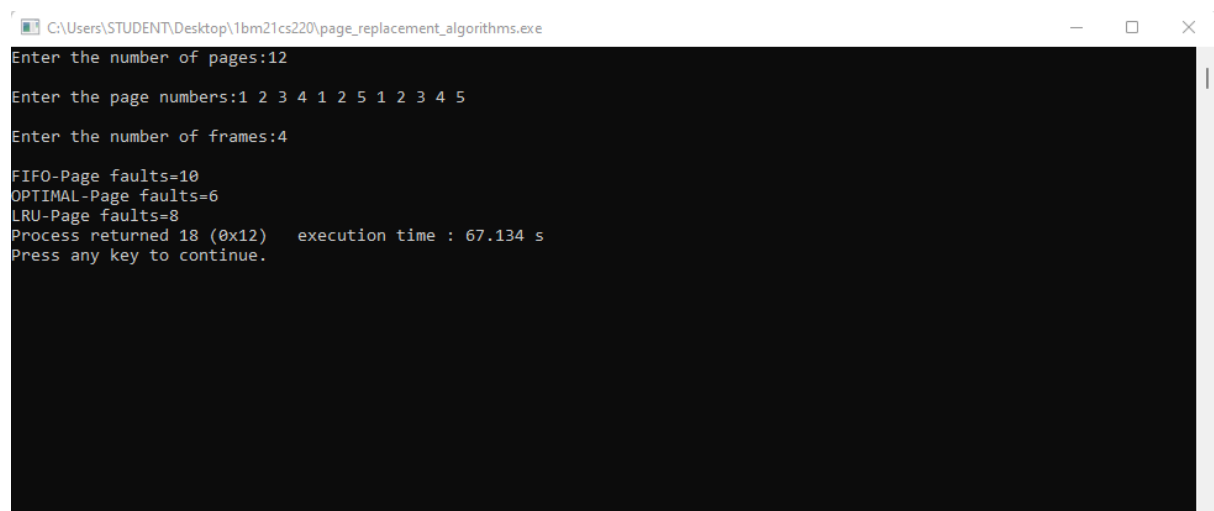
optimal();

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

p[i]=-1;

lru();
}

```



The screenshot shows a Windows command prompt window titled "C:\Users\STUDENT\Desktop\1bm21cs220\page\_replacement\_algorithms.exe". The user has entered the number of pages as 12, the page numbers as 1 2 3 4 1 2 5 1 2 3 4 5, and the number of frames as 4. The program has calculated the number of page faults for three algorithms: FIFO (10 faults), OPTIMAL (6 faults), and LRU (8 faults). It also displays the process return code as 18 (0x12) and the execution time as 67.134 seconds. The prompt asks the user to press any key to continue.

```

C:\Users\STUDENT\Desktop\1bm21cs220\page_replacement_algorithms.exe
Enter the number of pages:12
Enter the page numbers:1 2 3 4 1 2 5 1 2 3 4 5
Enter the number of frames:4
FIFO-Page faults=10
OPTIMAL-Page faults=6
LRU-Page faults=8
Process returned 18 (0x12)   execution time : 67.134 s
Press any key to continue.

```