Ex. No. 10. Implement page replacement algorithms using C.

**Write algorithms on your own.**

**FIFO**

#include<stdio.h>

int main()

{

int i,j,n,a[50],frame[10],no,k,avail,count=0;

            printf("\n ENTER THE NUMBER OF PAGES:\n");

scanf("%d",&n);

            printf("\n ENTER THE PAGE NUMBER :\n");

            for(i=1;i<=n;i++)

            scanf("%d",&a[i]);

            printf("\n ENTER THE NUMBER OF FRAMES :");

            scanf("%d",&no);

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

            frame[i]= -1;

                        j=0;

                        printf("\tref string\t page frames\n");

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

                        {

                                    printf("%d\t\t",a[i]);

                                    avail=0;

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

if(frame[k]==a[i])

                                                avail=1;

                                    if (avail==0)

                                    {

                                                frame[j]=a[i];

                                                j=(j+1)%no;

                                                count++;

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

                                                printf("%d\t",frame[k]);

}

                                    printf("\n");

}

                        printf("Page Fault Is %d",count);

                        return 0;

}

**Optimal**

#include<stdio.h>  
#include<conio.h>  
main()  
{  
    int i,j,k,l,m,n,p,c=0,s;  
    int a[20],b[20],q,max;  
    printf("enter no. of reference string: ");  
    scanf("%d",&n);  
    printf("enter size of frame: ");  
    scanf("%d",&m);  
    printf("enter the elements of ref. string: \n");  
    for(i=0; i<n; i++)  
        scanf("%d",&a[i]);  
    for(j=0; j<m; j++)  
        b[j]=-1; //initialize all frame elements with -1  
    for(i=0; i<n; i++)  
    {  
        for(k=0; k<m; k++)  
            if(b[k]==a[i])  
                goto here;  
        for(j=0; j<m; j++)  
        {  
            if(b[j]==-1)//check if element already present in frame,if true then no page fault.  
            {  
                b[j]=a[i];  
                c++;  
                goto here;  
            }  
        }  
        if(j==m)  
        {  
            l=i+1,max=0;  
            for(j=0; j<m; j++)  
            {  
                for(s=l; s<n; s++)  
                {  
                    if(a[s]==b[j])  
                    {  
                        if(s>max)  
                        {  
                            max=s;  
                            p=j;  
                        }  
                        break;  
                    }  
                }  
                if(s==n)  
                {  
                    max=s;  
                    p=j;  
                }  
            }  
        }  
        b[p]=a[i];  
        c++;  
here:  
        printf("\n\n");  
        for(k=0; k<m; k++)  
            printf(" %d",b[k]);  
    }  
    printf("\n No of page fault is:%d",c);  
    getch();  
}

**LRU**

#include<stdio.h>

main()

{

int q[20],p[50],c=0,c1,d,f,i,j,k=0,n,r,t,b[20],c2[20];

printf("Enter no of pages:");

scanf("%d",&n);

printf("Enter the reference string:");

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

            scanf("%d",&p[i]);

printf("Enter no of frames:");

scanf("%d",&f);

q[k]=p[k];

printf("\n\t%d\n",q[k]);

c++;

k++;

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

            {

                        c1=0;

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

                        {

                                    if(p[i]!=q[j])

                                    c1++;

                        }

                        if(c1==f)

                        {

                                    c++;

                                    if(k<f)

                                    {

                                                q[k]=p[i];

                                                k++;

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

                                                printf("\t%d",q[j]);

                                                printf("\n");

                                    }

                                    else

                                    {

                                                for(r=0;r<f;r++)

                                                {

                                                            c2[r]=0;

                                                            for(j=i-1;j<n;j--)

                                                            {

                                                            if(q[r]!=p[j])

                                                            c2[r]++;

                                                            else

                                                            break;

                                                }

                                    }

                                    for(r=0;r<f;r++)

                                     b[r]=c2[r];

                                    for(r=0;r<f;r++)

                                    {

                                                for(j=r;j<f;j++)

                                                {

                                                            if(b[r]<b[j])

                                                            {

                                                                        t=b[r];

                                                                        b[r]=b[j];

                                                                        b[j]=t;

                                                            }

                                                }

                                    }

                                    for(r=0;r<f;r++)

                                    {

                                                if(c2[r]==b[0])

                                                q[r]=p[i];

                                                printf("\t%d",q[r]);

                                    }

                                    printf("\n");

                        }

            }

}

printf("\nThe no of page faults is %d",c);

}