PROGRAM CODE

```
#include<stdio.h>
#include<stdlib.h>

void fifo(int arr[],int n,int f)
{
    int frame[f];
    for(int i=0;i<f;i++)
    {
        frame[i]=-1;
    }
    int page_fault=0;
    int count=0;
    int k=0;
    for(int i=0;i<n;i++)
    {
        count=0;
        for(int j=0;j<f;j=j+1)
        {
            if(frame[j]==arr[i])
            {
                count=1;
                break;
            }
        }
            if(count==0)
            {
                frame[k]=arr[i];
                k=(k+1)%f;
                page_fault=page_fault+1;
            }
    }
    printf("\npage fault for FIFO=%d\n",page_fault);
}
int pos(int cf[],int f)
{
    int min=cf[0];
    int position=0;
    for(int i=1;i<f;i++)
    {
        if(cf[i]<min)
        {
            min=cf[i];
            position=i;
        }
    }
    return position;
}
void lru(int arr[],int n,int f)
{
    int frame[f],cf[f];
    for(int i=0;i<f;i++)
    {
        frame[i]=-1;
    }
    int page_fault=0;
    int count1,count2;
    int counter=0;
    for(int i=0;i<n;i++)
    {
        count1=0;
        count2=0;
        for(int j=0;j<f;j++)
        {
            if(frame[j]==arr[i])
            {
                counter++;
                cf[j]=counter;
                count1=1;
                count2=1;
                break;
            }
        }
        if(count1==0)
        {
            for(int j=0;j<f;j++)
            {
                if(frame[j]==-1)
                {
                    counter++;
                    page_fault++;
                    frame[j]=arr[i];
                    cf[j]=counter;
                    count2=1;
                    break;
                }
            }
        }
        if(count2==0)
        {
            int position=pos(cf,f);
            counter++;
            cf[position]=counter;
            page_fault++;
            frame[position]=arr[i];
        }
    }
printf("\npage fault for LRU=%d\n",page_fault);
}
void lfu(int arr[],int n,int f)
{
    int frame[f];
    int temp[f];
    int max,position;
    for(int i=0;i<f;i++)
    {
        frame[i]=-1;
        temp[i]=0;
    }
    int page_fault=0;
    int k=0;
    for(int i=0;i<n;i++)
    {
        int flag=0;
        for(int j=0;j<f;j++)
        {
            if(arr[i]==frame[j])
            {
                flag=1;
                temp[j]++;
                break;
            }
        }
        if(flag==0&&page_fault<f)
        {
            frame[k]=arr[i];
            temp[k]=1;
            k=(k+1)%f;
            page_fault++;
        }
        else if(flag==0)
        {
            int ri=0;
            int lc=temp[0];
            for(int j=1;j<f;j++)
            {
                if(temp[j]<lc)
                {
                    ri=j;
                    lc=temp[j];
                }
            }
            frame[ri]=arr[i];
            temp[ri]=1;
            page_fault++;
        }
    }
    printf("\npage fault for LFU=%d\n",page_fault);
}
void main()
{
    printf("\nenter the number of page reference string:-\n");
    int n;
    scanf("%d",&n);
    printf("\nenter the page reference string\n");
    int arr[n];
    for(int i=0;i<n;i++)
    {
        scanf("%d",&arr[i]);
    }
    printf("\nenter the number of frames\n");
    int f;
    scanf("%d",&f);
    printf("\nFIFO page replacement:-\n");
    fifo(arr,n,f);
    printf("\nLRU page replacement:-\n");
    lru(arr,n,f);
    printf("\nLFU page replacement:-\n");
    lfu(arr,n,f);
}
```

OUTPUT

```
sahal@kali:~/bash_script$ ./a.out

enter the number of page reference string:-
10

enter the page reference string
4
7
6
1
7
6
1
2
7
2
```

```
enter the number of frames
3

FIFO page replacement:-

page fault for FIFO=6

LRU page replacement:-

page fault for LRU=6

LFU page replacement:-

page fault for LFU=5
```