```c
//FIFO


#include<stdio.h>
int arr[100],frame[100],n=20,size=3;
 void print(){     for(int
i=0;i<size;i++){
printf("%d ",frame[i]);
    }
}  int
main(){

         for(int
i=0;i<n;i++){
scanf("%d",&arr[i]);
    }      for(int
i=0;i<size;i++){
frame[i]=-1;     }     int
r=0,pf=0;     for(int
i=0;i<n;i++){         int j;
for(j=0;j<size;j++){
if(arr[i]==frame[j]){
break;
            }
}
if(j!=size)
{
               printf("%d  -----------\n",arr[i]);
            }             else{
printf("%d ",arr[i]);
print();                  printf("\n");
frame[r]=arr[i];
r=(r+1)%size;                 pf++;
            }
    }
    printf("\n\n%d",pf);

return 0;
}
```

//LRU

```
#include<stdio.h> int
arr[100],frame[100],n=10,size=3,priority[100];
 void print(){     for(int
i=0;i<size;i++){
printf("%d ",frame[i]);
    }
}  int minindex(int j){
for(int i=0;i<size;i++){
for(int k=j;k>=0;k--){
if(frame[i]==arr[k]){
priority[i]=k;
break;
            }
        }     }     int
min=0,minval=priority[0];
for(int i=0;i<size;i++){
if(minval > priority[i]){
minval=priority[i];
min = i;


        }
    }

    return min;
}

int main(){
    for(int i=0;i<n;i++){
scanf("%d",&arr[i]);
    }     printf("\n\n");
for(int i=0;i<size;i++){
frame[i]=-1;     }     int
r=0,pf=0;     for(int
i=0;i<n;i++){         int
j=0;
for(j=0;j<size;j++){
if(arr[i]==frame[j]){
printf("%d  --------
\n",arr[i]);
break;
            }         }
if(j==size){             if(r<size){
frame[r]=arr[i];
printf("%d ",arr[i]);
print();                 printf("\n");
r++;             }             else{
```

```
                // printf("allo");
int in = minindex(i);                   //
printf("in: %d\n ",in);
frame[in]=arr[i];
printf("%d ",arr[i]);
print();                  printf("\n");

}
pf++;
        }



    }
    printf("\nPF:%d",pf);


    return 0;
}
```

```
// OPTIMAL

#include<iostream>
#include<iomanip>
using namespace std;
int n,length,arr[100],que[100],pr[100];

void print(){
   for(int i=0;i<length;i++){
      cout<<que[i]<<setw(3);
   }
}

int min_index(int i){
   int p;
   for(int k=0;k<length;k++){
      for(p=i;p<n;p++){
         if(que[k]==arr[p]){
            pr[k]=p;
            break;
         }
      }
      if(p==n){
         pr[k]=n;
      }
   }
   int maxindex=0,maxval=pr[0];
   for(int q=1;q<length;q++){
      if(maxval<pr[q]){
         maxval=pr[q];
         maxindex=q;
      }
   }
   return maxindex;
}

int main(){
   int j,r=0,count=0;
   cout<<"Enter number of elements: ";cin>>n;
   cout<<"Enter the numbers:"<<endl;
   for(int i=0;i<n;i++){
      cout<<(i+1)<<": ";cin>>arr[i];
   }
   cout<<"Enter the size of frame: ";cin>>length;
   for(int i=0;i<length;i++){
      que[i]=-1;
   }
   for(int i=0;i<n;i++){
      cout<<arr[i]<<"  ";
      for(j=0;j<length;j++){
         if(arr[i]==que[j]){
```

```
            cout<<"--------";
            break;
          }
        }
        if(j==length){
          count++;
          if(r<length){
            que[r]=arr[i];
            r++;
          }
          else{
            int lol=min_index(i);
            que[lol]=arr[i];
          }
          print();cout<<" +";
        }
        cout<<endl;
    }
    cout<<endl<<"Page Fault Frequency is:
"<<((float)(count)/float(n))*100.0<<"%";
    return 0;
}
```