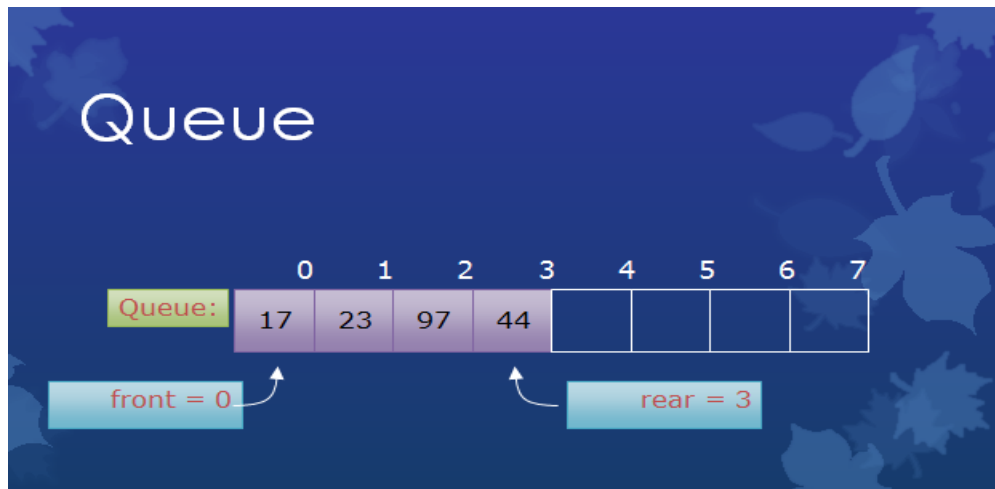


Queue:

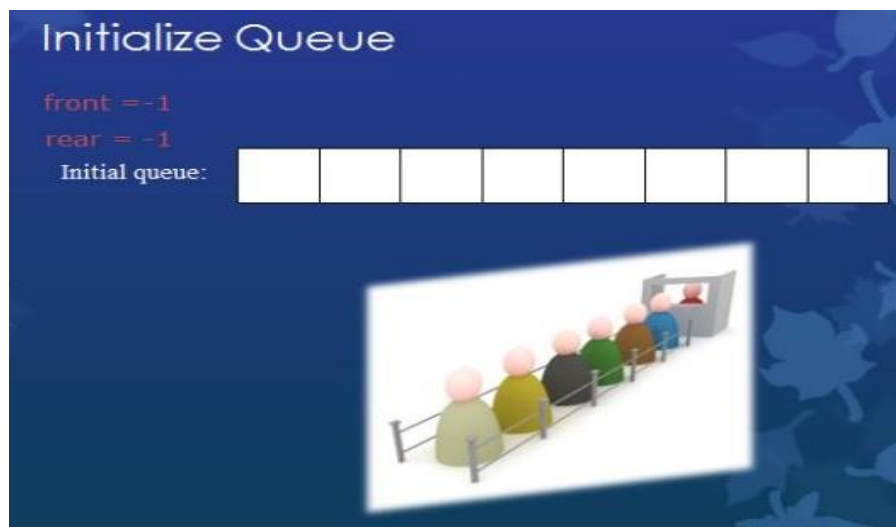
A Queue is an ordered collection of homogeneous items from which items may be deleted at one end (called the front of the queue) and into which items may be inserted at the other end (the rear of the queue).

The first element inserted into the queue is the first element to be removed. For this reason a queue is sometimes called a fifo (first-in first-out) list as opposed to the stack, which is a lifo (last-in first-out).



To insert: put new element in location 4, and set rear to 4

To delete: take element from location 0, and set front to 1

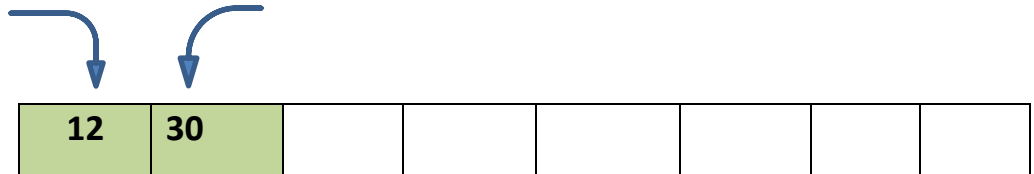


Front =0 rear=0

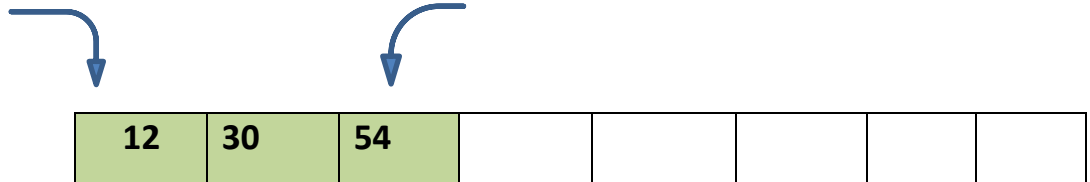
After insert



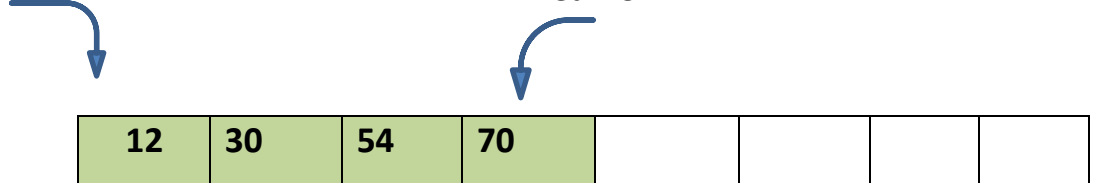
Front =0 rear =1

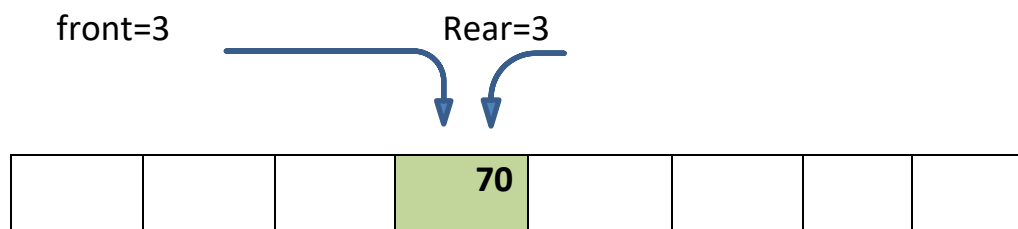
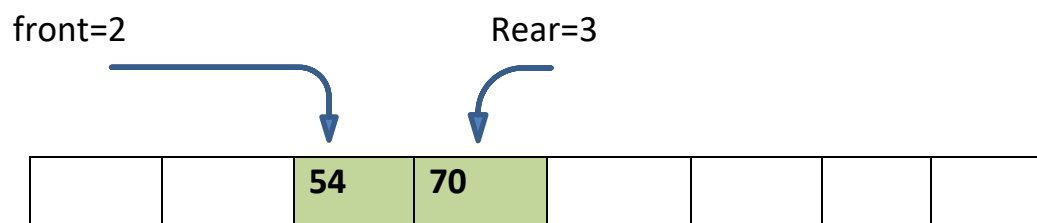
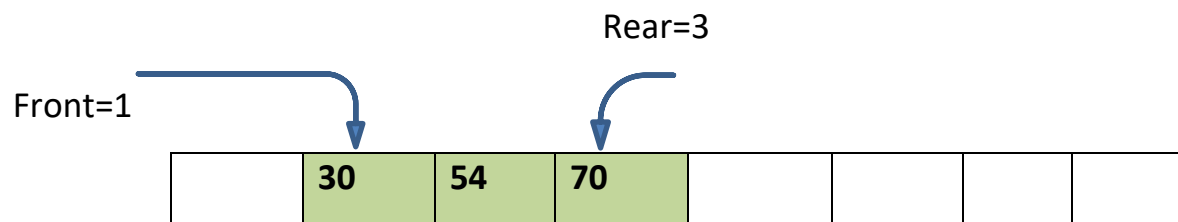


Front=0 Rear=2



Fron=0 Rear=3





Rear=front=-1



_ برنامج عمليات الطابور البسيط [simple queue] _

```

#include<iostream.h>
const int size=5;
int full_q(int r)    ← دالة تختبر حالة الامتلاء
{
    if(r>=size-1)return 1;
    else
        return 0;
}
int empty_q(int f) ← دالة تختبر اذا كان المقدس فارغ
{
    if(f==0)return 1;
    else
        return 0;
}
void enq(char q[size],int&f,int&r,char x) ← دالة الاضافة
{
    if(full_q(r))cout<<"Queue is full!!";
    else
    {
        r++;
        q[r]=x;
        if(f==0)f=1; // هنا عندما يضيف يطبع موقع المضاف في الطابور
        cout<<"Q["<<r<<"]="<<q[r]; } }
void deq(char q[size],int&f,int&r,char &x) ← دالة الحذف
{
    if(empty_q(r))cout<<"Queue is empty!!";
    else
    {
        x=q[f];
        cout<<"Q["<<f<<"]="<<x; // عندما يسحب يطبع المسحوب من الطابور
        if(f==r)f=r-1;
        else
            f++;
    }
}

```

Void main()

```
{
```

```

char q[size],x;
int f=-1,r=-1,no;
do{
cout<<"\n\n 1.en_Q.\n";
cout<<" 2.de_Q.\n";
cout<<" 3.exit\n\n";
cout<<"ENTER YOUR CHOICE:";
    cin>>no;
    switch(no)
    {
    case 1:cout<<"enter char which you want to add in Q:";
            cin>>x;
            enq(q,f,r,x); break;
    case 2: deq(q,f,r,x); break;
    case 3: break;
    }
}while(no!=3);
}

```

```

//output
1.en_Q.
2.de_Q.
3.exit
ENTER YOUR CHOICE:1
enter char which you want to add in Q:d
Q[0]=d
1.en_Q.
2.de_Q.
3.exit
ENTER YOUR CHOICE:1
enter char which you want to add in Q:w
Q[1]=w 1.en_Q.
2.de_Q.
3.exit
ENTER YOUR CHOICE:

```

Ex2: write program to read string and check if it palindrome using the queue concept.

Ex3: how many elements in circle queue with size =10 where R=2 and F=8.