LINEAR QUEUE :

```
#include<stdio.h>
#include<stdlib.h>
#define queue_size 3
int item,front=0,rear=-1,q[10];
void insertrear()
{
 if(rear==queue_size-1)
 {
        printf("Queue  overflow.\n");
        return;
 }
 rear=rear+1;
 q[rear]=item;
}
int delfront()
{
 if(front>rear)
 {
  front=0;
  rear=-1;
  return -1;
 }
 return q[front++];
}
void display()
{
 int i;
 if(front>rear)
```

```
 {
        printf("Queue  is empty.\n");
        return;
 }
 printf("Contents  of queue are : \n");
 for(i=front;i<=rear;i++)
 {
        printf("%d\n",q[i]);
 }
}
int main()
{
 int choice;
 for(;;)
 {
  printf("\n1:Insertrear  \n2:Deletefront \n3:Display  \n4:Exit\n");
  printf("Enter the choice :");
  scanf("%d",&choice);
  switch(choice)
  {
   case 1:printf("Enter  the item to be inserted:\n");
   scanf("%d",&item);
   insertrear();
   break;
   case 2:item=delfront();
   if(item==-1)
    printf("Queue  is empty.\n");
   else
    printf("Item  deleted is %d\n",item);
```

```
    break;
    case 3:display();
    break;
    default:exit(0);
   }
 }
}
```

D:\Documents\queue.exe

```
1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :1
Enter the item to be inserted:
23

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :1
Enter the item to be inserted:
45

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :1
Enter the item to be inserted:
67

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :1
Enter the item to be inserted:
89
Queue overflow.

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :3
Contents of queue are :
23
45
67

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :2
Item deleted is 23
```

D:\Documents\queue.exe

```
Enter the choice :2
Item deleted is 23

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :2
Item deleted is 45

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :1
Enter the item to be inserted:
49
Queue overflow.

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :3
Contents of queue are :
67

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :2
Item deleted is 67

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :3
Queue is empty.

1:Insertrear
2:Deletefront
3:Display
4:Exit
Enter the choice :4

Process returned 0 (0x0)   execution time : 100.968 s
Press any key to continue.
```

CIRCULAR QUEUE :

```
#include<stdio.h>
#include<stdlib.h>
#include<process.h>
#define queue_size 3
int item,front=0,rear=-1,q[queue_size],count=0;
void insertrear()
{
        if(count==queue_size)
        {
                printf("Queue  overflow.");
                return;
        }
        rear=(rear+1)%queue_size;
        q[rear]=item;
        count++;
}
int deletefront()
{
        if(count==0)
           return -1;
        item = q[front];
        front=(front+1)%queue_size;
        count=count-1;
        return item;
}
void display()
{
        int i,f;
```

```
        if(count==0)
        {
                printf("The queue is empty.");
                return;
        }
        f=front;
        printf("Contents of the queue are : \n");
        for(i=0;i<=count;i++)
        {
                printf("%d\n",q[f]);
                f=(f+1)%queue_size;
        }
}
void main()
{
        int choice;
        for(;;)
        {
                printf("\n1.Insert rear \n2.Delete front \n3.Display \n4.Exit \n");
                printf("Enter the choice : ");
                scanf("%d",&choice);
                switch(choice)
                {
                        case 1:printf("Enter the item to be inserted :");
                             scanf("%d",&item);
                             insertrear();
                             break;
                        case 2:item=deletefront();
                                    if(item==-1)
```

```
                    printf("Queue  is empty.\n");
                    else
                    printf("Item  deleted is %d.\n",item);
                    break;
            case 3:display();
                    break;
            default:exit(0);
          }
      }
}
```

(Output in next page)

D:\Downloads\circular.exe

```
1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 1
Enter the item to be inserted :23

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 1
Enter the item to be inserted :45

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 1
Enter the item to be inserted :67

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 1
Enter the item to be inserted :89
Queue overflow.
1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 3
Contents of the queue are :
23
45
67
23

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 2
Item deleted is 23.

1.Insert rear
2.Delete front
3.Display
```

D:\Downloads\circular.exe

```
3.Display
4.Exit
Enter the choice : 2
Item deleted is 23.

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 3
Contents of the queue are :
45
67
23

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 2
Item deleted is 45.

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 1
Enter the item to be inserted :74

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 3
Contents of the queue are :
67
74
45

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 4

Process returned 0 (0x0)   execution time : 65.470 s
Press any key to continue.
```