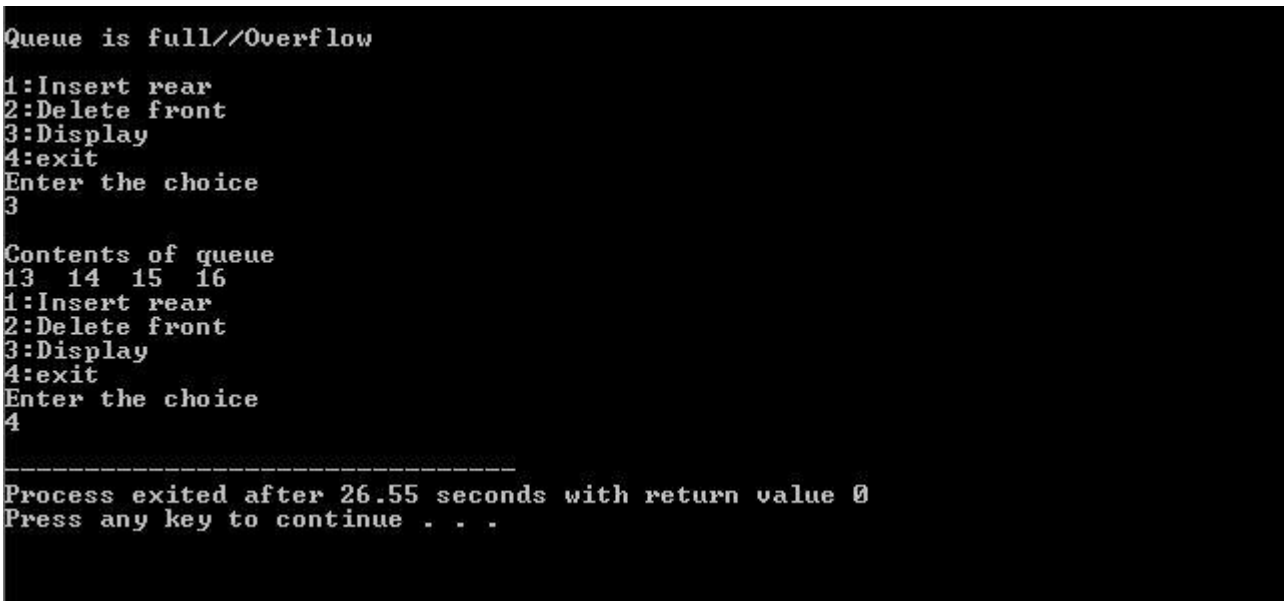
1)QUEUE using Stack

```
#include<stdio.h>
#include<stdlib.h>
#define QUE_SIZE 5
int item,front=0,rear=-1,q[10];
void insertrear()
{
        if(rear==QUE_SIZE-1)
        {
          printf("\nQueue is full//Overflow\n");
          return;
        }
        printf("\nEnter the item to be inserted\n");
        scanf("%d",&item);
        rear=rear+1;
        q[rear]=item;
}
int deletefront()
{
   if (front>rear)
        {
          front=0;
          rear=-1;
          return -1;
        }
        return q[front++];
```

```
}
void displayQ()
{
        int i;
        if (front>rear)
        {
                printf("\nQueue is empty\n");
                return;
        }
        printf("\nContents of queue\n");
        for(i=front;i<=rear;i++)
        {
                printf("%d  ",q[i]);
        }
}
int main()
{
        int choice;
        for(;;)
        {
                printf("\n1:Insert rear\n2:Delete front\n3:Display\n4:exit\n");
                printf("Enter the choice\n");
                scanf("%d",&choice);
                switch(choice)
                {
                        case 1:         insertrear ();
                                        break;
                        case 2:         item=deletefront();
```

```
                    if(item==-1)
                    printf("\nQueue is empty//Underflow\n");
                    else
                    printf("Item deleted=%d\n",item);
                    break;
            case 3:     displayQ();
                    break;
            default:exit (0);

        }

    }
}
```

```
1:Insert rear
2:Delete front
3:Display
4:exit
Enter the choice
1

Enter the item to be inserted
12

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

Enter the item to be inserted
13

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

Enter the item to be inserted
14

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

Enter the item to be inserted
15

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

Enter the item to be inserted
16

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

Contents of queue
12  13  14  15  16
1:Insert rear
2:Delete front
3:Display
4:exit
Enter the choice
2
Item deleted=12

1:Insert rear
2:Delete front
3:Display
4:exit
Enter the choice
1
```



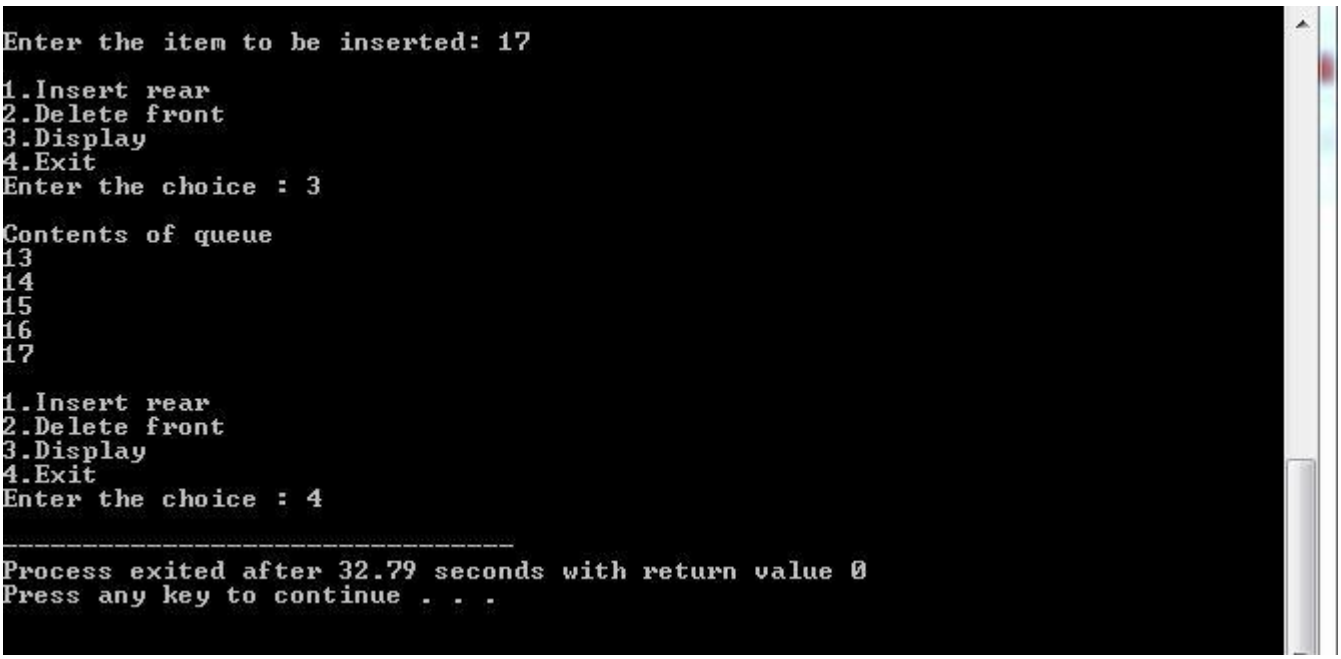
2) CQUEUE Using Array

```
#include<stdio.h>
#include<stdlib.h>
#include<process.h>
#define que_size 5
int item,front=0,rear=-1,q[que_size],count=0;
void insertrear()
{
 if(count==que_size)
 {
  printf("\nQueue is full//Overflow\n");
  return;
 }
 printf("\nEnter the item to be inserted: ");
 scanf("%d",&item);
 rear=(rear+1)%que_size;
 q[rear]=item;
 count++;
```

```
}
int deletefront()
{
 if(count==0) return -1;
 item = q[front];
 front=(front+1)%que_size;
 count=count-1;
 return item;
}
void displayq()
{
 int i,f;
 if(count==0)
 {
  printf("\nQueue is empty\n");
  return;
 }
 f=front;
 printf("\nContents of queue \n");
 for(i=0;i<count;i++)
 {
  printf("%d\n",q[f]);
  f=(f+1)%que_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:insertrear();
          break;
   case 2:item=deletefront();
       if(item==-1)
       printf("\nQueue is empty//Underflow\n");
       else
       printf("Item deleted is: %d \n",item);
       break;
          case 3:displayq();
       break;
    default:exit(0);
  }
 }

}
```

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

Enter the item to be inserted: 12

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

Enter the item to be inserted: 13

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

Enter the item to be inserted: 14

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

Enter the item to be inserted: 15

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

Enter the item to be inserted: 16

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

Queue is full//Overflow

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

Contents of queue
12
13
14
15
16

1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 2
Item deleted is: 12

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


Enter the item to be inserted: 17
1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 3
Contents of queue
13
14
15
16
17
1.Insert rear
2.Delete front
3.Display
4.Exit
Enter the choice : 4
Process exited after 32.79 seconds with return value 0
Press any key to continue . . .