NAME: TANISHA C A

ROLLNO:230701390

EX-7: Implementation of Queue using Array and Linked list

```
LINKED LIST IMPLEMENTATION-QUEUE
#include <stdio.h>
#include<stdlib.h>
 struct node {     int
data;     struct node
*link;
}*F=NULL,*R=NULL;
 int IsEmpty();
void Enqueue(int);
void Dqueue();
void Display();
int IsEmpty() {
    if(F==NULL&&R==NULL)
    {
return 1;     }
else     return
0; }
void Enqueue(int val)
{
    struct node*newnode;
    newnode=(struct node*)malloc(sizeof(struct node));
newnode->data=val;     if(IsEmpty()){
F=R=newnode;
    }
else
    {
        R->link=newnode;
        R=newnode;
    }
    newnode->link=NULL;
} void
Dqueue() {
    struct node*temp=F;
if(IsEmpty())     {
        printf("list is empty");
    }
else     {
        printf("\nDeleted element is: %d",temp->data);
        if (F==R)
F=R=NULL;         else
F=F->link;
free(temp);

    } }
```

```
void Display()
{     struct
node*temp=F;
if(IsEmpty())
    {
        printf("underflow");
    }
else     {
        while(temp!=NULL)
        {
            printf("\n%d",temp->data);
temp=temp->link;
        }
    } } int main() {
int choice,t=1,val;
while (t==1)
    {
        printf("\n\n\nMENU\n");
        printf("1.Insert an element\n2.Delete an element\n3.Display the
Queue\n4.EXIT\n");
        printf("\nEnter your choice:");
scanf("%d",&choice);         switch
(choice)
        {
case 1:
            printf("Enter the value to be inserted:");
            scanf("%d",&val);
Enqueue(val);
break;             case 2:
Dqueue();             break;
case 3:
Display();             break;
case 4:             t=0;

        }
    }
}
```

ARRAY IMPLEMENTATION-QUEUE

```
#include<stdio.h>
#include<stdlib.h>
#define size 5
int que[size];
void Enqueue(int);
void Dqueue();
void Display();
int IsFull(); int
IsEmpty(); int F=-
1,R=-1; int
IsFull() {
    if (size-1==R)
{         return
1;     }     else
return 0; } int
IsEmpty() {
if(F==-1)
```

```
return 1;     else
return 0; }
void Enqueue(int data)
{
if(IsFull())
{
        printf("overflow");
    }     else
if(F==-1)     {
        F=0;
    }     R=R+1;
que[R]=data;
}  void
Dqueue() {
    if(IsEmpty())
{
        printf("underflow");
    }
else     {
       printf("Deleted Element is:%d",que[F]);
if (R==F)           R=F=-1;        else
F=F+1;
    } } void
Display() {
    if(IsEmpty())
{
        printf("No elements in queue");
    }
    else
{
        for(int i=F;i<=R;i++)
        {
            printf("%d\n",que[i]);
        }
    } } int main() {
int choice,t=1,val;
while (t==1)
    {
        printf("\n\n\nMENU\n");
        printf("1.Insert an element\n2.Delete an element\n3.Display the
Queue\n4.EXIT\n");
        printf("\nEnter your choice:");
scanf("%d",&choice);         switch
(choice)
        {
case 1:
            printf("Enter the value to be inserted:");
            scanf("%d",&val);
Enqueue(val);
break;             case 2:
Dqueue();             break;
case 3:
Display();             break;
case 4:             t=0;
```

```
                }
         }   }
```

```
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 10
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 20
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 30
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 40
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 50
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 1
Enter the element : 60 Queue
is Overflow...!
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 3
10 20 30 40 50
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 2
10
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
Enter your choice : 2
20
1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT
```

```
Enter your choice : 2

30

1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT

Enter your choice : 2

40

1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT

Enter your choice : 2

50

1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT

Enter your choice : 2

Queue is Underflow...!

1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT Enter your choice : 3 Queue Underflow...!

1.ENQUEUE 2.DEQUEUE 3.DISPLAY 4.EXIT

Enter your choice : 4
```