EXPERIMENT 10
Circular Queue Implementation

Circular Queue ADT:

```
#define MAX 30
#include<stdio.h>
int queue[MAX],front=-1,rear=-1; void enqueue(int x); int dequeue(); void display(); int isEmpty(); int isFull();

void enqueue(int x)
{
   if(!isFull())
   {
      queue[rear++]=x;
   }
   else
   {
      printf("Queue Overflow");
   }
}

int dequeue()
{
   if(!isEmpty())
   {
```

```
        return queue[front++];
    }
    else
    {
        printf("Queue Underflow");
    }
    return -1;
}


void display()
{
    if(!isEmpty())
    {
        printf("Queue Elements Are:");
        int temp=front;
        while(temp!=rear)
        {
            printf("%d\n",queue[temp]);
            temp++;
        }
    }
    else
    {
         printf("Queue Underflow");
```

```
    }
}


int isEmpty()
{
    if(front!=0 || front<rear)
    {
        return 0;
    }
    return 1;
}

int isFull()
{
    if(rear==MAX)
    {
        return 1 ;
    }
    return 0;
}
```

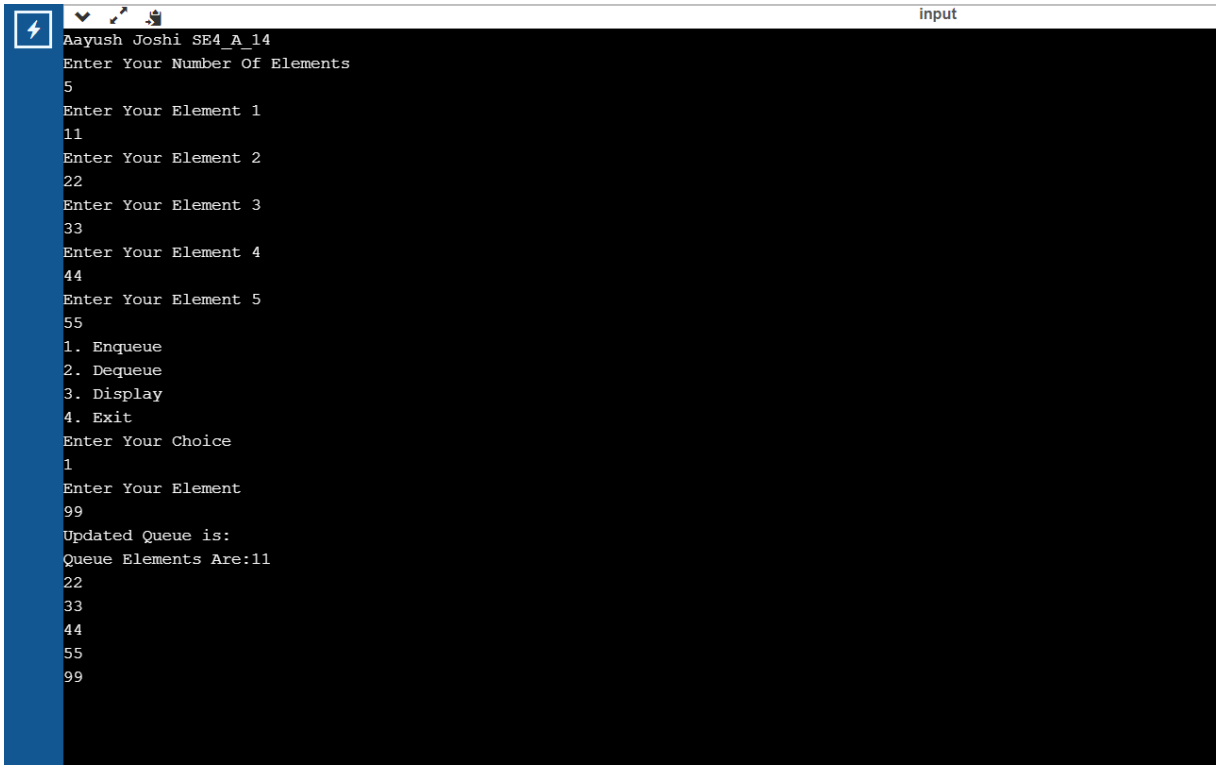
Circular Queue Code:

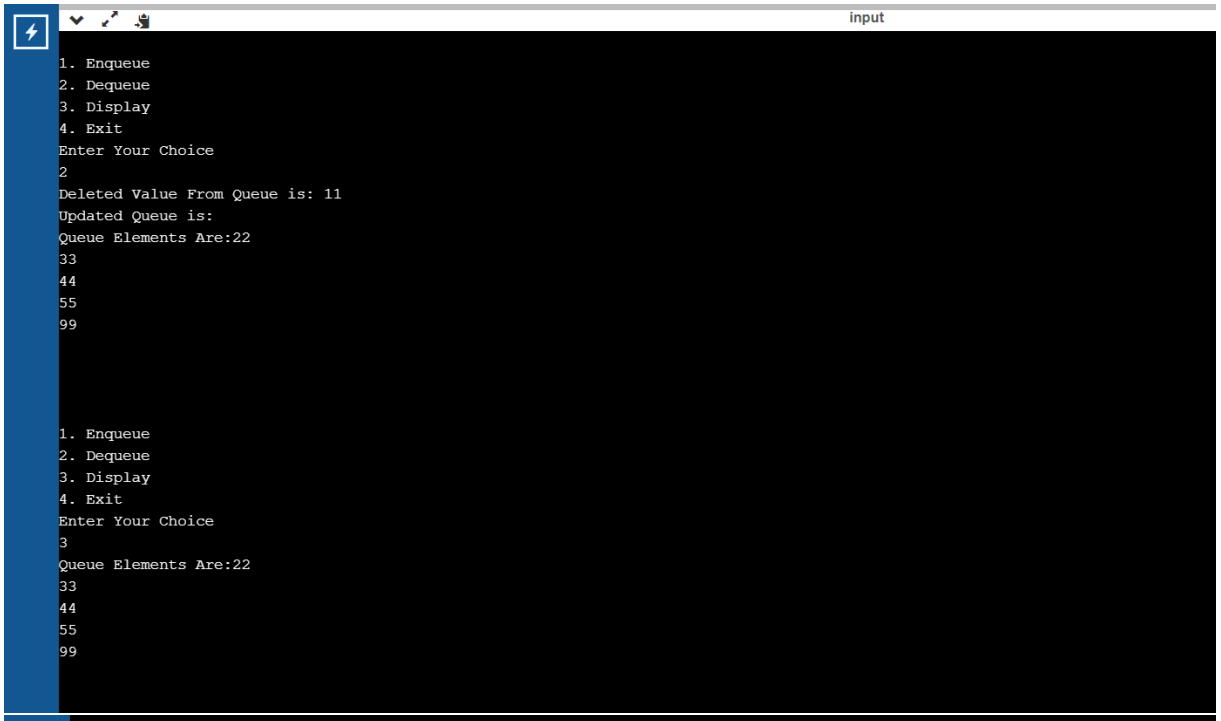
```
#include<stdio.h>
#include<conio.h>
#include"cqueue.h"
```

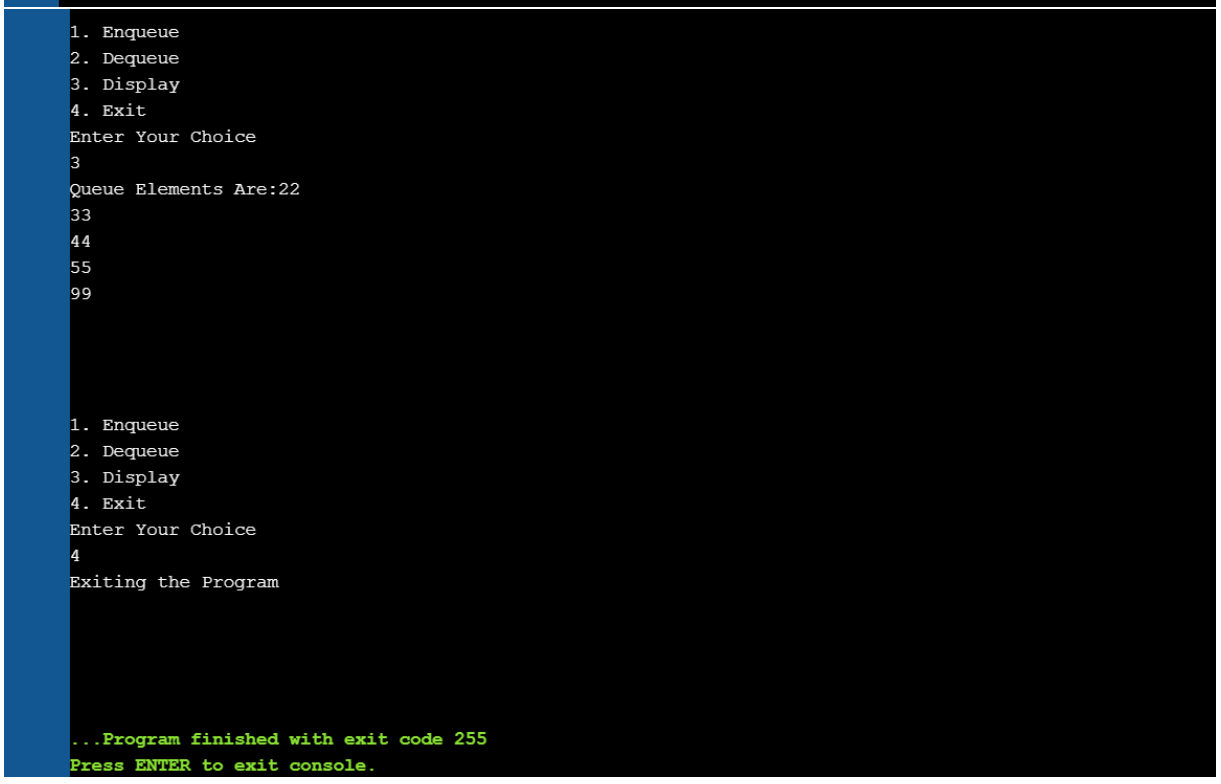
```
void main()
{
   int en,de,ch,n,i;
   printf("Aayush Joshi SE4_A_14\n");
   printf("Enter Your Number Of Elements\n");
   scanf("%d",&n);
   for(i=0;i<n;i++)
   {
      printf("Enter Your Element %d\n",i+1);
      scanf("%d",&en);
      enqueue(en);
   }
   do
   {
      printf("1. Enqueue\n");
      printf("2. Dequeue\n");
      printf("3. Display\n");
      printf("4. Exit\n");
      printf("Enter Your Choice\n");
      scanf("%d",&ch);
      switch(ch)
      {
         case 1: printf("Enter Your Element\n");
                 scanf("%d",&en);
                 enqueue(en);
```

```
                printf("Updated Queue is:\n");
                display();
                printf("\n");
                break;
        case 2: de=dequeue();
                printf("Deleted Value From Queue is: %d\n",de);
                printf("Updated Queue is:\n");
                display();
                printf("\n");
                break;
        case 3: display();
                printf("\n");
                break;
        case 4: printf("Exiting the Program\n");
                break;
        default:printf("Invalid Choice\n");
      }
      printf("\n\n\n");
   }
   while(ch!=4);  getch();
}
```

Output:


input
Aayush Joshi SE4_A_14
Enter Your Number Of Elements
5
Enter Your Element 1
11
Enter Your Element 2
22
Enter Your Element 3
33
Enter Your Element 4
44
Enter Your Element 5
55
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter Your Choice
1
Enter Your Element
99
Updated Queue is:
Queue Elements Are:11
22
33
44
55
99


input
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter Your Choice
2
Deleted Value From Queue is: 11
Updated Queue is:
Queue Elements Are:22
33
44
55
99
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter Your Choice
3
Queue Elements Are:22
33
44
55
99


1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter Your Choice
3
Queue Elements Are:22
33
44
55
99
1. Enqueue
2. Dequeue
3. Display
4. Exit
Enter Your Choice
4
Exiting the Program
...Program finished with exit code 255
Press ENTER to exit console.