Lab Program 6

Develop a menu driven Program in C for the following operations on Circular QUEUE of Characters (Array Implementation of Queue with maximum size MAX)
a. Insert an Element on to Circular QUEUE
b. Delete an Element from Circular QUEUE
c. Demonstrate Overflow and Underflow situations on Circular QUEUE
d. Display the status of Circular QUEUE
e. Exit
Support the program with appropriate functions for each of the above operations

```
#include <stdio.h>
#include <conio.h>
#define SIZE 5
int CQ[SIZE];
int front=-1;
int rear=-1, ch;
int IsCQ_Full();
int IsCQ_Empty();
void CQ_Insert(int );
void CQ_Delet();
void CQ_Display();
void main()
{
printf("1.Insert\n2.Delete\n3.Display\n4.Exit\n");
while(1)
{
int ele;
printf("Enter your choice\n");
scanf("%d",&ch);
switch(ch)
{
case 1: if(IsCQ_Full())
printf("Circular Queu Overflow\n");
else
{
printf("Enter the element to be inserted\n");
scanf("%d",&ele); CQ_Insert(ele);
}
break;
case 2: if(IsCQ_Empty())
printf("Circular Queue Underflow\n");
else
CQ_Delet();
break;
case 3: if(IsCQ_Empty())
printf("Circular Queue Underflow\n");
```

```
else
CQ_Display();
break;
case 4: exit(0);
}
}
}
void CQ_Insert(int item)
{
if(front==-1)
front++;
rear = (rear+1)%SIZE;
CQ[rear] =item;
}
void CQ_Delet()
{
int item; item=CQ[front];
printf("Deleted element is: %d",item);
front = (front+1)%SIZE;
}
void CQ_Display()
{
int i;
if(front==-1)
printf("Circular Queue is Empty\n");
else
{
printf("Elements of the circular queue are..\n");
for(i=front;i!=rear;
i=(i+1)%SIZE);
{
printf("%d\t",CQ[i]);
}
printf("%d\n",CQ[i]);
}
}
int IsCQ_Full()
{
if(front ==(rear+1)%SIZE)
return 1;
return 0;
}
int IsCQ_Empty()
{
if(front == -1)
return 1;
else if(front == rear)
```

```
{
printf("Deleted element is: %d",CQ[front]);
front=-1;
return 1;
}
return 0;
}
```

Sample Output 1

```
Circular Queue operations
1.insert
2.delete
3.display
4.exit
Enter your choice:1
Enter element to be insert:10
Enter your choice:1
Enter element to be insert:20
Enter your choice:1
Enter element to be insert:30
Enter your choice:3 10 20 30
rear is at 30 front is at 10
Enter your choice:2 Deleted element is:10
Enter your choice:3 20 30
rear is at 30 front is at 20
Enter your choice:4
Exit
```

Sample Output 2

```
Circular Queue operations
1.insert
2.delete
3.display
4.exit
Enter your choice:1
Enter element to be insert:1000
Enter your choice:1
Enter element to be insert:2000
Enter your choice:1
Enter element to be insert:3000
Enter your choice:3
1000 2000 3000
rear is at 3000
front is at 1000
Enter your choice:2
Deleted element is:1000
Enter your choice:3
2000 3000
rear is at 3000
```

front is at 2000
Enter your choice:4
Exit