LAB 5 : CIRCULAR QUEUE IMPLEMENTATION

WAP to simulate the working of a circular queue of integers using an array. Provide the following operations

a) Insert

b) Delete

c) Display

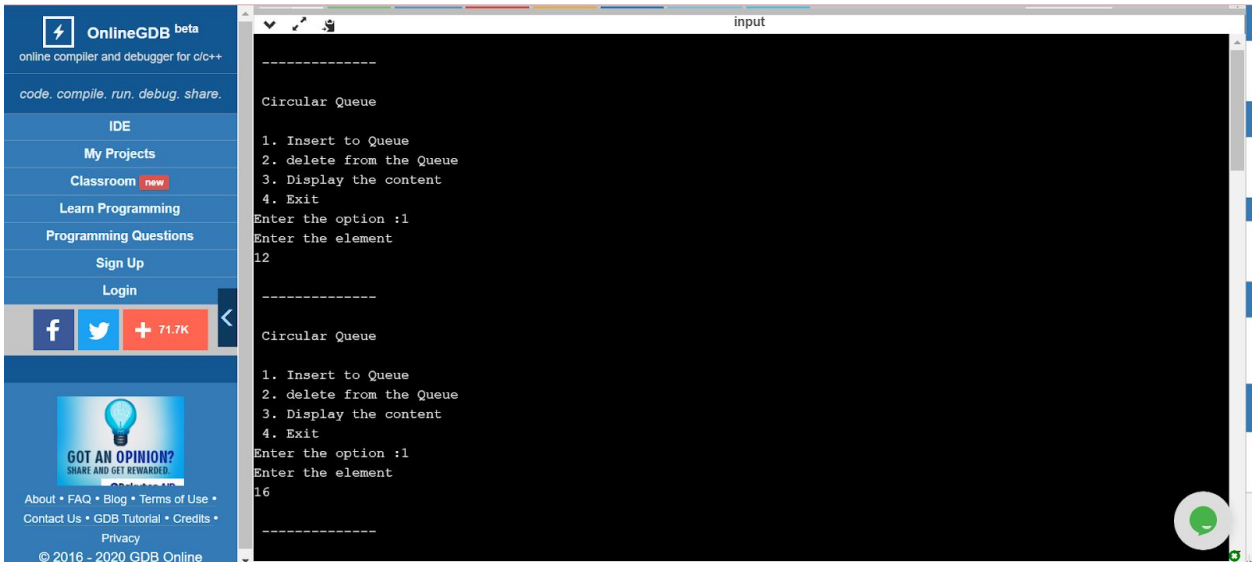
The program should print appropriate messages for queue empty and queue overflow conditions

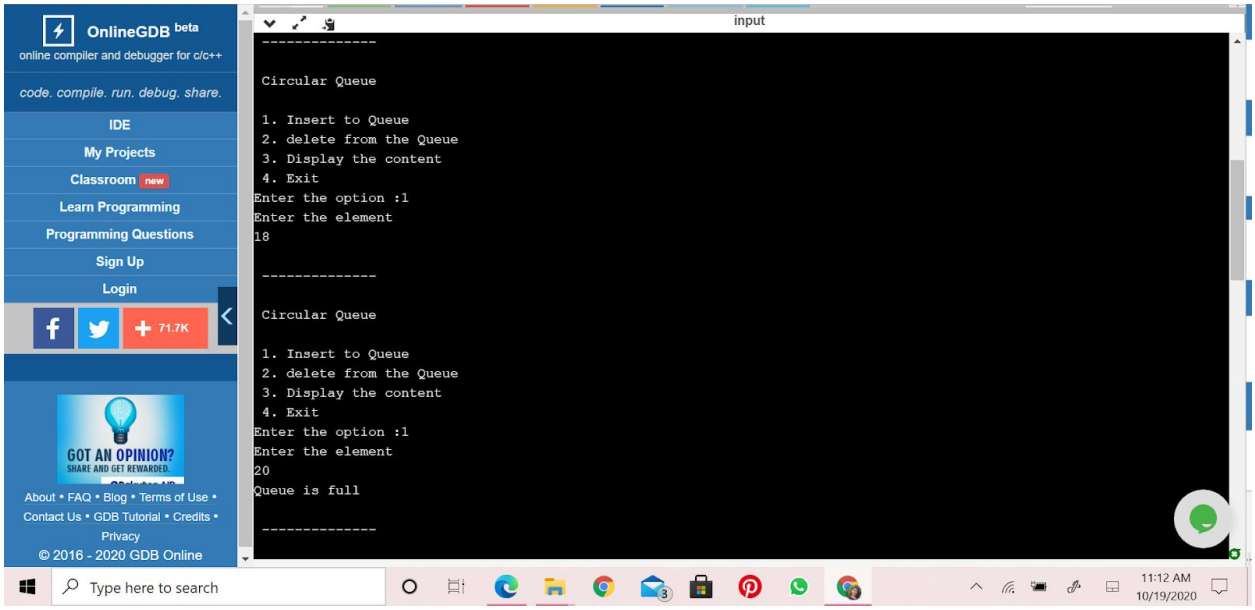
```
#include <stdio.h>
#include <stdlib.h>
#define MAX 3

int front=-1;
int rear=-1;

int queue[MAX];

void Enque(int);
int Deque();
void display();
int main(int argc, char **argv)
{
          int option;
   int item;
   do{
      printf("\n ----------\n");
      printf("\n Circular Queue\n");
      printf("\n 1. Insert to Queue ");
      printf("\n 2. delete from the Queue ");
      printf("\n 3. Display the content ");
      printf("\n 4. Exit\n");
      printf("Enter the option :");
      scanf("%d",&option);
      switch(option)
      {
         case 1:  printf("Enter the element\n");
                  scanf("%d",&item);
                  Enque(item);
                  break;
         case 2: item=Deque();
                 if(item==-1)
                    printf("Queue is empty\n");
                 else
```

```
                printf("Removed element from the queue %d",item);
                break;
          case 3: display();
                break;
          case 4: exit(0);
       }
   } while (option!=4);
           return 0;
}

void Enque(int ele)
{
   if ((rear+1)%MAX==front)
     printf("Queue is full\n");
   else
   {
    rear=(rear+1)%MAX;
    queue[rear]=ele;
    if(front ==-1)
       front=0;


   }
}
int Deque()
{
   int item;
   if((front == -1)&&(rear==-1))
      return -1;
   else
   {
      item=queue[front];
      front=(front+1)%MAX;
      if(front>rear)
      {
         front=-1;
         rear=-1;
      }
      return item;
   }

}

void display()
```

```
{
   int i;
   if((front==0)&& (rear==-1))
      printf("Queue is empty\n");
   else
   {
      printf("\n Queue contents:");
      for(i=front;i<=rear;i++)
         printf("\t %d", queue[i]);
   }
}
```

FOR **OUTPUT** I have define size as 3:

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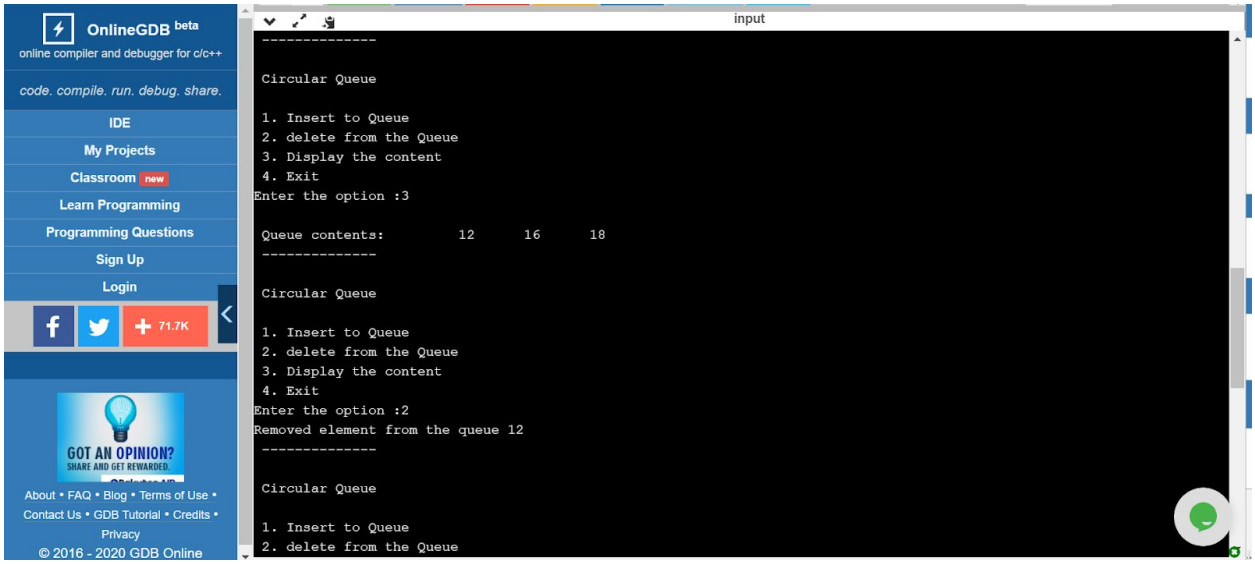
input

Circular Queue
1. Insert to Queue
2. delete from the Queue
3. Display the content
4. Exit
Enter the option :1
Enter the element
18

Circular Queue
1. Insert to Queue
2. delete from the Queue
3. Display the content
4. Exit
Enter the option :1
Enter the element
20
Queue is full

Type here to search
11:12 AM
10/19/2020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input

Circular Queue
1. Insert to Queue
2. delete from the Queue
3. Display the content
4. Exit
Enter the option :3
Queue contents: 12 16 18

Circular Queue
1. Insert to Queue
2. delete from the Queue
3. Display the content
4. Exit
Enter the option :2
Removed element from the queue 12

Circular Queue
1. Insert to Queue
2. delete from the Queue