LAB 4 : QUEUE IMPLEMENTATION

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

a) Insert

b) Delete

c) Display

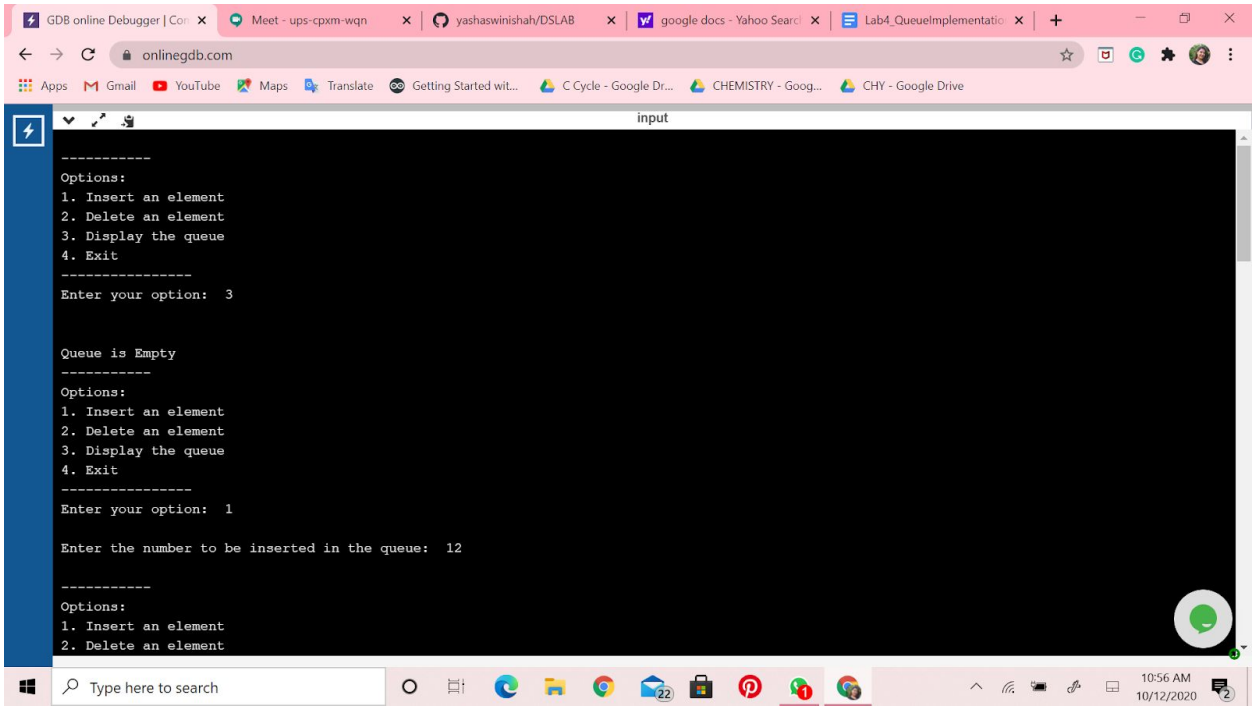
The program should print appropriate messages for queue empty and queue overflow conditions

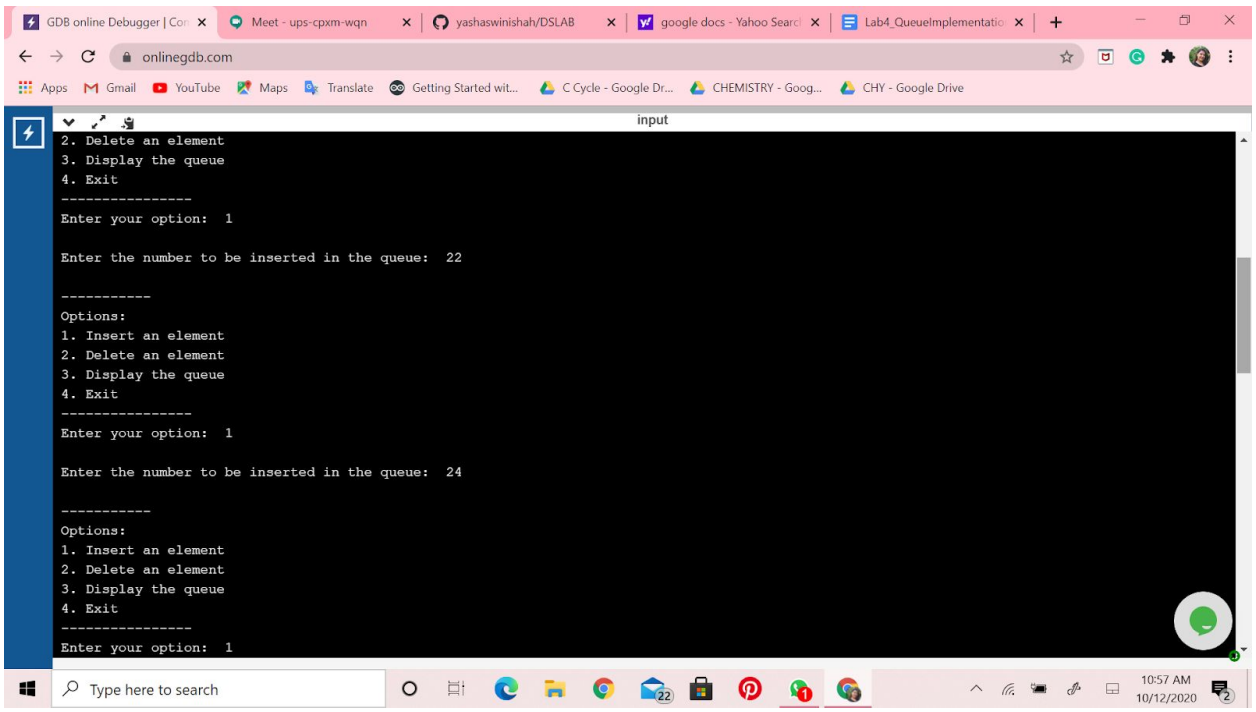
```
#include <stdio.h>
#define MAX 10
int queue[MAX];
int front=-1,rear=-1;
void insert ();
int delete_element();
void display();
int main()
{
 int option,val;
 do
 {
    printf("\n ----------");
    printf("\n Options:");
    printf("\n 1. Insert an element");
    printf("\n 2. Delete an element");
    printf("\n 3. Display the queue");
    printf("\n 4. Exit");
    printf("\n ----------");
    printf("\n Enter your option:  ");
    scanf("%d",&option);
    switch(option)
    {
       case 1:
       insert();
       break;
       case 2:
       val=delete_element();
       if(val!=-1)
       printf("\n The number deleted is :%d",val);
       break;
       case 3:
       display();
       break;
    }
```

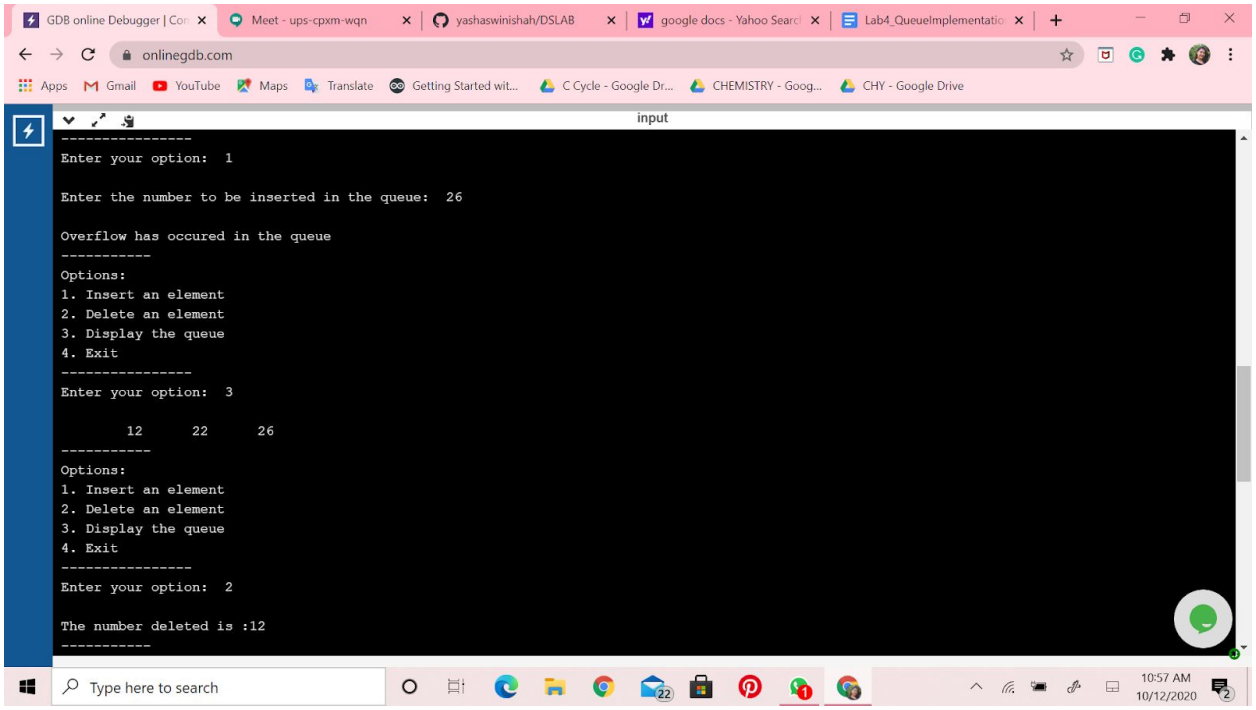
```
 }
 while(option!=4);
 return 0;
}

void insert()
{
   int num;
   printf("\n Enter the number to be inserted in the queue:  ");
   scanf("%d",&num);
   if (rear==MAX-1)
   printf("\n Overflow has occured in the queue");
   else if(front==-1 && rear==-1)
   front=rear=0;
   else
   rear++;
   queue[rear]=num;
}
int delete_element()
{
   int val;
   if (front==-1 || front>rear)
   {
      printf("\n Underflow has occured in the queue");
      return -1;
   }
   else
   {
      val=queue[front];
      front++;
      if (front>rear)
      front=rear=-1;
      return val;
   }
}
void display()
{
   int i;
   printf("\n");
   if (front ==-1 || front>rear)
   printf("\n Queue is Empty");
   else
   for(i=front; i<=rear;i++)
   printf("\t %d",queue[i]);
```

}

The outputs:
(for the outputs i have used 3 as max size)



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input

Enter your option: 1
Enter the number to be inserted in the queue: 26
Overflow has occured in the queue

Options:
1. Insert an element
2. Delete an element
3. Display the queue
4. Exit

Enter your option: 3
12 22 26

Options:
1. Insert an element
2. Delete an element
3. Display the queue
4. Exit

Enter your option: 2
The number deleted is :12

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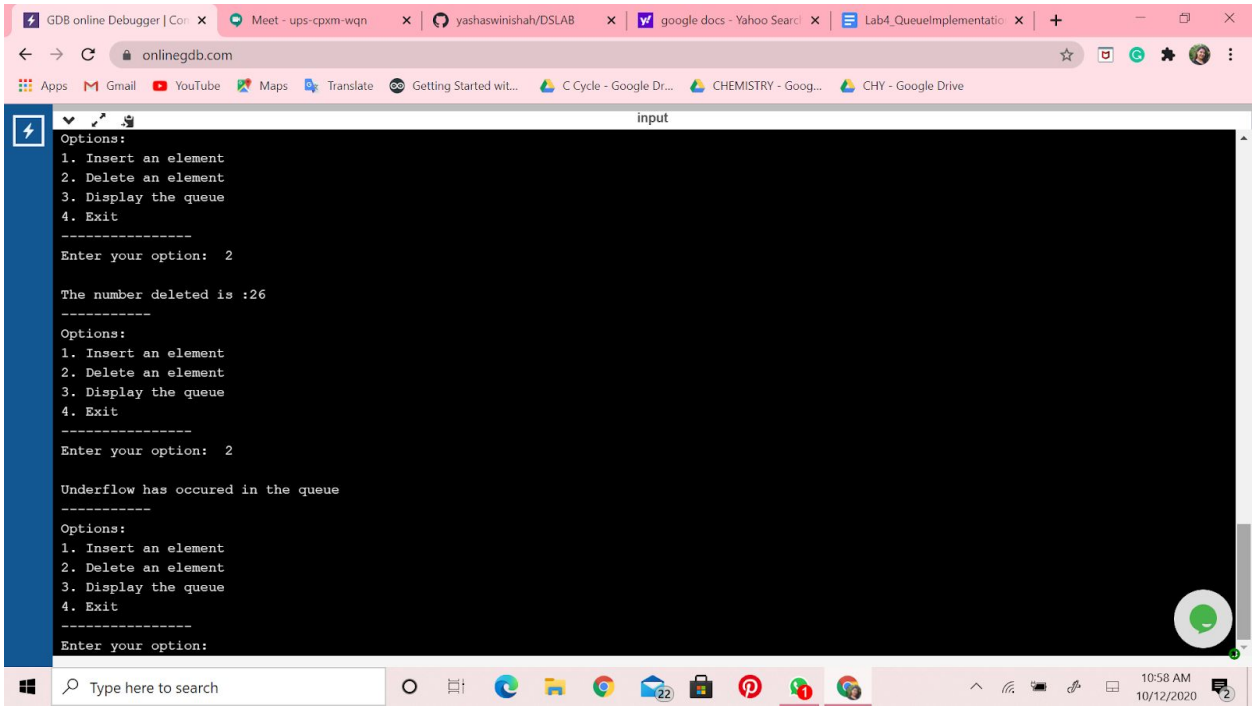
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input
Options:
1. Insert an element
2. Delete an element
3. Display the queue
4. Exit

Enter your option: 2
The number deleted is :26

Options:
1. Insert an element
2. Delete an element
3. Display the queue
4. Exit

Enter your option: 2
Underflow has occured in the queue

Options:
1. Insert an element
2. Delete an element
3. Display the queue
4. Exit

Enter your option:
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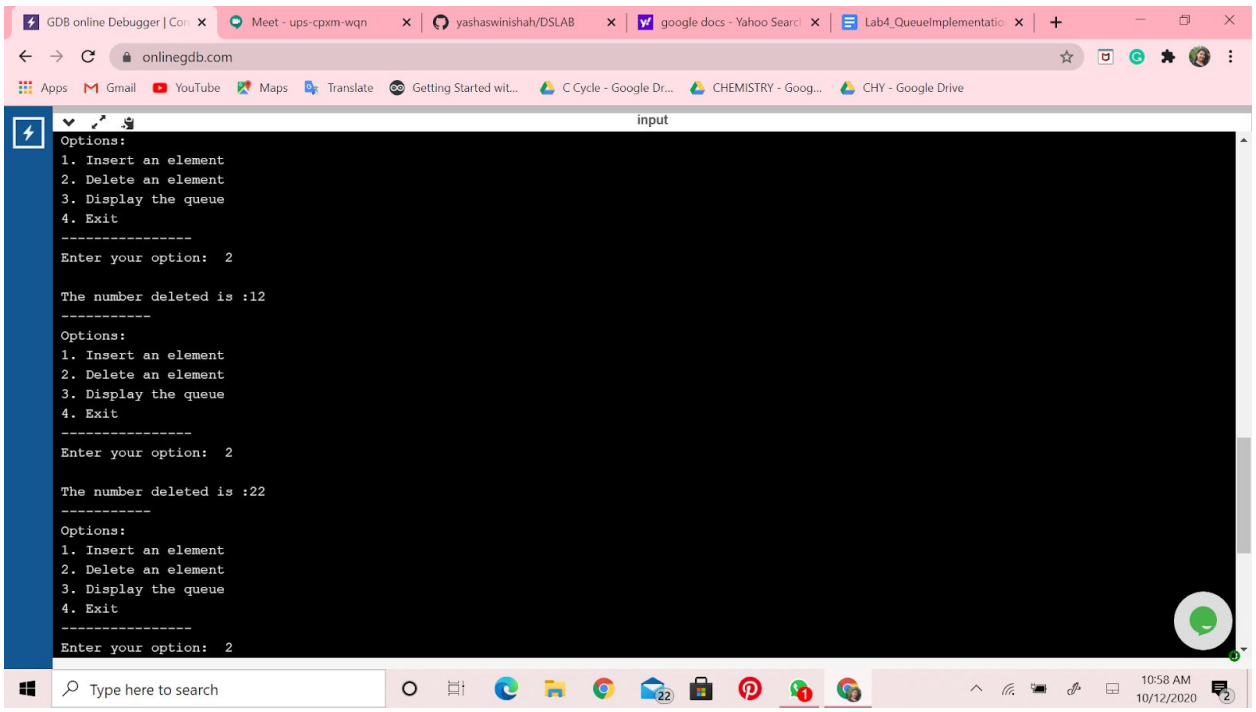
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input
Options:
1. Insert an element
2. Delete an element
3. Display the queue
4. Exit

Enter your option: 2
The number deleted is :12

Options:
1. Insert an element
2. Delete an element
3. Display the queue
4. Exit

Enter your option: 2
The number deleted is :22

Options:
1. Insert an element
2. Delete an element
3. Display the queue
4. Exit

Enter your option: 2
Type here to search
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