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

Code:

```
#include  <stdio.h>
#include
<stdlib.h>  #define
N 5

int q[N];
int front = -1, rear = -1;
void insert(int);
int deleteq();
void display();

int main()
{
   int n, choice;
   do
   {
      printf("\n1.Insert\n2.Delete\n3.Display\n4.Exit\n");
      printf("Enter your option : \n");
      scanf("%d", &choice);
      switch (choice)
      {
      case 1:
         printf("Enter the number to be inserted in the queue : \n");
         scanf("%d", &n);
         insert(n);
         break;
      case 2:
         n = deleteq();
         if (n != -1)
            printf("\n The number deleted is : %d\n", n);
         break;
      case 3:
         display();
         break;
      case 4:
         exit(0);
         break;
      default:
```

```
            printf("Invalid option\n");
            exit(0);
            break;
        }
    } while (choice != 4)
}
void insert(int num)
{

    if (rear == N - 1)
        printf("\n OVERFLOW");
    else if (front == -1 && rear == -1)
        front = rear = 0;
    else
        rear++;
    q[rear] = num;
}
int deleteq()
{
    int val;
    if (front == -1 || front > rear)
    {
        printf("\n UNDERFLOW");
        return -1;
    }
    else
    {
        val = q[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", q[i]);
    }
```

```
1.Insert
2.Delete
3.Display
4.Exit
Enter your option :
1
Enter the number to be inserted in the queue :
1

1.Insert
2.Delete
3.Display
4.Exit
Enter your option :
1
Enter the number to be inserted in the queue :
2

1.Insert
2.Delete
3.Display
4.Exit
Enter your option :
2

 The number deleted is : 1

1.Insert
2.Delete
3.Display
4.Exit
Enter your option :
2
```

```
 The number deleted is : 2

1.Insert
2.Delete
3.Display
4.Exit
Enter your option :
2

 UNDERFLOW
1.Insert
2.Delete
3.Display
4.Exit
Enter your option :
1
Enter the number to be inserted in the queue :
1

1.Insert
2.Delete
3.Display
4.Exit
Enter your option :
1
Enter the number to be inserted in the queue :
2

1.Insert
2.Delete
3.Display
4.Exit
Enter your option :
3

         1       2
```

```
1.Insert
2.Delete
3.Display
4.Exit
Enter your option :
4
```