LAB - 5 Linear 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>
#include <stdlib.h>
#define MAX 5
int front =0;
int rear =-1;

int queue[MAX];

void Enqueue(int);

int Deque();

void display();

int main()
{
    int option;
    int item;
```

```
do {
    printf("\n 1. Insert to Queue (EnQueue)");
    printf("\n 2. Delete from the Queue (DeQueue)");
    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 elements \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 == MAX-1)
     printf("Queue is full \n");
     else
     {
       rear ++;
       queue [rear] = ele;
     }
}
int Deque()
{
     int item;
     if (front == 0) && (rear == -1)
       return -1;
     else
     {
       item = queue [front];
       front ++;
       if ( front > rear)
       {  front = 0;
          rear = -1;
       }
       return item;
}
```

```
void display()
{
    int i;
    if (front == 0)        && rear = -1
      printf(" Queue is empty.\n");

    else
    {
      printf("\n The Que contents: ");

      for( i = front ; i <= rear ; i++)
          printf(" %d ", queue[i]);
    }
}
```

expected output:

1. Insert to Queue (EnQueue)
2. delete from the Queue (DeQueue)
3. Display the content
4. Exit

Enter the option: 1
Enter the element
1

1. Insert to Queue (EnQueue)
2. delete from the Queue (DeQueue)
3. Display the content
4. Exit

Enter the option: 1

Enter the element
2

1. Insert to Queue (EnQueue)
2. delete from the queue (DeQueue)
3. Display the content
4 - Exit

Enter the option: 3

Que contents : 12

1. Insert to Queue (EnQueue)
2. delete from the Queue (DeQueue)
3. Display the content
4. Exit.

Enter the option: 2
Removed element from the Que

1. Insert to Queue (EnQueue)
2. delete from the Queue (DeQueue)
3. display the content
4. Exit
enter the option: 2

Removed element from the Que 2

1. Insert to Queue (EnQueue)
2. delete from the Queue (De Queue)
3. Display the content
4 - Exit

Enter the option: 2

Queue is Empty

1. Insert to Queue (EnQueue)
2. delete from the Queue (DeQueue)
3. Display the content
4. Exit

Enter the option : 4