LAB ASSIGNMENT-7

Q1. Write a menu driven program using class, methods and array ~~of elements~~ to construct a queues and implements the operations as Insert, delet and display.

Ans.

```
import java.util.*;
public class Q1
{
    public static final int MAXSIZE=5;
    public static int front = -1;
    public static int rear = -1;
    public static int Q[] = new int [MAXSIZE];
    public static void main (String[] args)
    {
        Scanner sc= new Scanner (System.in);
        while (true)
        {
            System.out.println("*** MENU ***");
            System.out.println("0: Exit");
            System.out.println ("1: Insert");
            System.out.println ("2: Delete");
            System.out.println("3: Display");
            System.out.println("Enter your choice");
```

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```
            int choice = sc.nextInt();
            switch (choice)
            {
                case 0:
                    System.exit(0);
                    break;
                case 1:
                    insert();
                    break;
                case 2:
                    delete();
                    break;
                case 3:
                    display();
                    break;
                default:
                    System.out.println("Invalid
                    choice");
                    break;
            }
        }
    }
    public static void insert()
    {
        if (isFull())
        {
```

```
            System.out.println("Overflow!!");
        }
        else
        {
            Scanner sc=new Scanner(System.in);
            System.out.print("Enter element:");
            int ele=sc.nextInt();
            if (rear==-1)
            {
                front=0;
                rear=0;
            }
            else
            {
                rear=rear+1;
            }
            Q[rear]=ele;
        }
    }
    public static void delete()
    {
        if (isEmpty())
        {
            System.out.println("~~Queue is empty~~
            "Underflow");
        }
        else
        {
```

```
            int ele = Q[front];
            front += 1;
            System.out.println("Deleted
            element is " + ele);
        }
    }
    public static void display()
    {
        if ( rear == -1 || front == -1 )
        {
            System.out.println("Queue is
            empty");
        }
        else
        {
            System.out.println("Elements in the
            queue are :");
            for (int i = front; i <= rear; i++)
            {
                System.out.println(Q[i]);
            }
        }
    }
    public static void isFull()
    {
        if (rear == MAXSIZE - 1)
```

```
        {
            return true;
        }
        else
        {
            return false;
        }
    }
    public static void isEmpty()
    {
        if (rear == -1 || front == -1)
        {
            return true;
        }
        else
        {
            return false;
        }
    }
}
```

Q2: Write a menu driven java program using class, methods and Linked List to construct a Queue and implement operations as: insertion, deletion and display.

Ans.

```
import java.util.*;
public class Q2
{
class node
{
    int info;
    node next;
}
public class Q2
{
    public static void push()insert()
    {
        node p = new node();
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter info:");
        p.info = sc.nextInt();
        p.next = null
        if (front == null)
        {
            front = p;
            rear = p;
        }
```

```
        else
        {
            rear.next = p;
            rear = p;
        }
    }
    public static void delete()
    {
        if (front == null)
        {
            System.out.println("LinkedList is
            empty");
        }
        else
        {
            System
            node q = front;
            front = front.next;
            front.next = null;
            System.out.println("Deleted node
            is " + q.info);
        }
    }
    public static void display()
    {
        if (front == null)
        {
            System.out.println("LinkedList is
            empty");
        }
```

```
        else
        {
            node q = front;
            while (q != null)
            {
                System.out.println(q.info + "
                → ");
                q = q.next;
            }
        }
    }
~~public static void main (S~~
static node front = null;
static node rear = null;
public static void main (String[] args)
{
    Scanner sc = new Scanner (System.in);
    while (true)
    {
        System.out.println ("*** MENU ***");
        System.out.println ("0: Exit");
        System.out.println ("1: Insert");
        System.out.println ("2: Delete");
        System.out.println ("3: Display");
        System.out.println ("Enter your choice");
        int choice = sc.nextInt();
```

```
switch (choice)
{
    case 0 :
        System.exit(0);
        break;
    case 1:
        insert();
        break;
    case 2 :
        delete();
        break;
    case 3 :
        display();
        break;
    default:
        System.out.println("Wrong Choice");
        }
    }
}
}
```