NAME –KASYAP VARANASI REGISTRATION NUMBER –20BCE7315

- Q1. Write a program to implement following modified circular queue.
- a) Enqueue () --> insert an element at rear side
- b) Dequeue ()--> remove a maximum element from queue

```
CODE-
import java.util.ArrayList;

class CircularQueue{

private int size, front, rear;

private ArrayList<Integer> queue = new
ArrayList<Integer>();
```

```
CircularQueue(int size)
{
this.size = size;
```

```
this.front = this.rear = -1;
}
public void enQueue(int data)
    if((front == 0 && rear == size - 1) ||
    (rear == (front - 1) % (size - 1)))
         System.out.print("Queue is Full");
    else if(front == -1)
         front = 0;
         rear = 0;
         queue.add(rear, data);
    else if(rear == size - 1 && front != 0)
```

```
rear = 0;
          queue.set(rear, data);
    else
          rear = (rear + 1);
          if(front <= rear)</pre>
               queue.add(rear, data);
          else
               queue.set(rear, data);
          }
}
```

```
public int deQueue()
{
    int temp;
    if(front == -1)
         System.out.print("Queue is Empty");
         return -1;
    temp = queue.get(front);
   if(front == rear)
         front = -1;
         rear = -1;
```

```
else if(front == size - 1)
         front = 0;
    else
         front = front + 1;
    return temp;
}
public void displayQueue()
    if(front == -1)
         System.out.print("Queue is Empty");
         return;
```

```
System.out.print("Elements in the " +
                     "circular queue are: ");
if(rear >= front)
     for(int i = front; i <= rear; i++)</pre>
          System.out.print(queue.get(i));
          System.out.print(" ");
     System.out.println();
else
     for(int i = front; i < size; i++)</pre>
```

```
System.out.print(queue.get(i));
              System.out.print(" ");
         for(int i = 0; i \le rear; i++)
              System.out.print(queue.get(i));
              System.out.print(" ");
         System.out.println();
}
public static void main(String[] args)
    CircularQueue q = new CircularQueue(5);
    q.enQueue(14);
    q.enQueue(22);
```

```
q.enQueue(13);
    q.enQueue(-6);
    q.displayQueue();
    int x = q.deQueue();
   if(x != -1)
        System.out.print("Deleted value = ");
        System.out.println(x);
x = q.deQueue();
   if(x != -1)
        System.out.print("Deleted value = ");
        System.out.println(x);
```

```
q.displayQueue();
q.enQueue(9);
q.enQueue(20);
q.enQueue(5);
q.displayQueue();
q.enQueue(20);
}
```

OUTPUT-

```
Command Prompt
Microsoft Windows [Version 10.0.19042.928]
(c) Microsoft Corporation. All rights reserved.
C:\Users\HP>D:
D:\>CD 20BCE7315
D:\20bce7315>javac CircularQueue.java
D:\20bce7315>java CircularQueue
Elements in the circular queue are: 14 22 13 -6
Deleted value = 14
Deleted value = 22
Elements in the circular queue are: 13 -6
Elements in the circular queue are: 13 -6 9 20 5
Queue is Full
D:\20bce7315>
```

Q2. Write a program to read a number (n) and extract digit by digit from n and enqueue() into queue. By using dequeue() find reverse of n.

CODE-

```
import java.util.Scanner;
class Queueclass {
  public static int front, tail;
  public static int max;
  public static char queue[];
  Queueclass(int c){
     front = tail = 0;
     max = c;
     queue = new char[max];
}
  public void enqueueRear(char data){
     if (max == tail) {
        System.out.println("queue is full");
       return;
  }
     else {
       queue[tail] = data;
       tail++;
     return;
```

```
public void displayQueueReverse() {
     int i;
     if (front == tail) {
        System.out.println("Queue is empty");
        return;
     for (i = tail-1; i >= front; i--) {
        System.out.print(queue[i]);
  }
     return;
}
}
public class Qreverse{
  public static void main(String[] args) {
     Scanner sc = new Scanner(System.in);
     System.out.println("Enter the number");
     String n = sc.nextLine();
```

}

```
int digits = n.length();
    Queueclass queue = new Queueclass(digits);
    for (int i = 0; i < digits; i++) {
       queue.enqueueRear(n.charAt(i));
}
    queue.displayQueueReverse();
}
}
OUTPUT-
```

Command Prompt

Microsoft Windows [Version 10.0.19042.928] (c) Microsoft Corporation. All rights reserved.

C:\Users\HP>d:

D:\>cd 20bce7315

D:\20bce7315>javac Qreverse.java

D:\20bce7315>java Qreverse

Enter the number

1542

2451

D:\20bce7315>