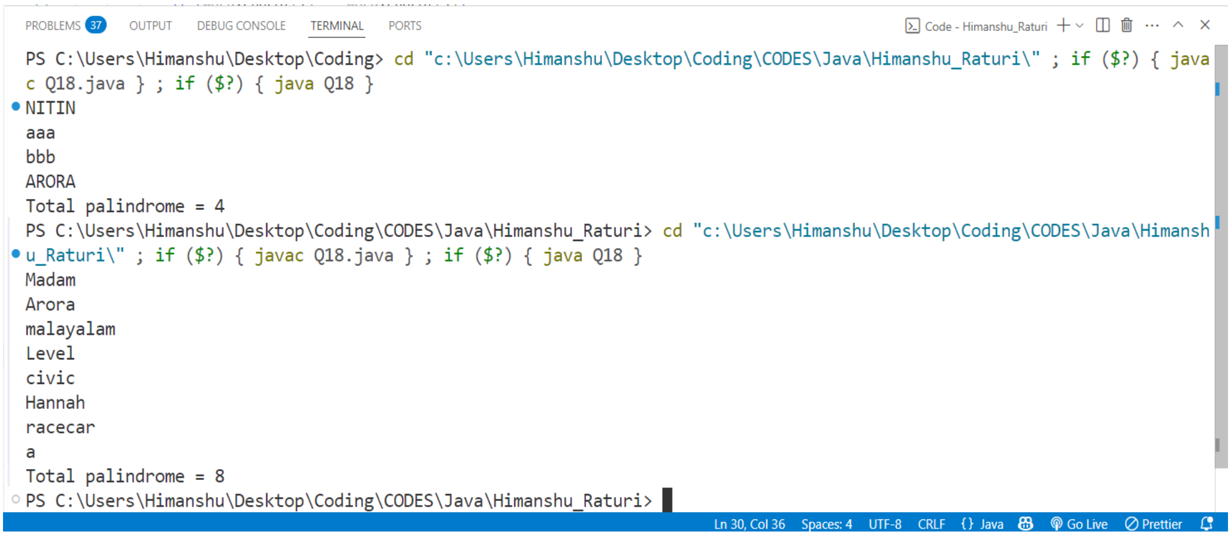
Practical No. 18: Write a java file handling program to count and display the number of palindromes present in a text file "myfile.txt".

Source Code:

```
import java.util.*;
import java.io.*;
public class Q18
{
    static boolean isPalindrome(String word)
    {
        word = word.toLowerCase();
        int i = 0, j = word.length() - 1;
        while (i < j)
        {
            if (word.charAt(i) != word.charAt(j))
            {
                return false;
            }
            i++;
            j--;
        }
        return true;
    }
    public static void main(String args[]) throws IOException
    {
        int count = 0;
        File file = new File("C:\\Users\\Himanshu\\Desktop\\Myfile.txt");
        Scanner sc = new Scanner(file);
        while (sc.hasNext())
        {
            String word=sc.next().replaceAll("[^a-zA-Z]", "");
            if (isPalindrome(word))
            {
                System.out.println(word);
                count++;
            }
        }
        sc.close();
        System.out.println("Total palindrome = " + count);
    }
}
```

OUTPUT:



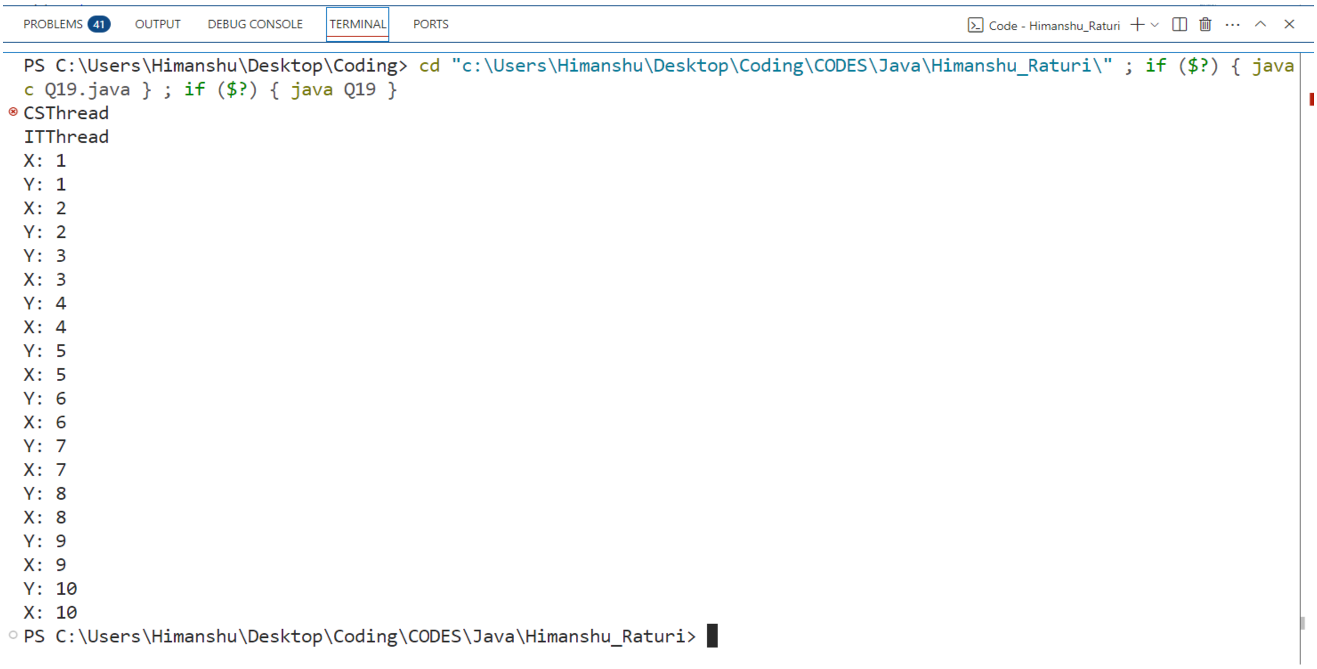
```
PS C:\Users\Himanshu\Desktop\Coding> cd "c:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi\" ; if ($?) { javac Q18.java } ; if ($?) { java Q18 }
NITIN
aaa
bbb
ARORA
Total palindrome = 4
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi> cd "c:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi\" ; if ($?) { javac Q18.java } ; if ($?) { java Q18 }
Madam
Arora
malayalam
Level
civic
Hannah
racecar
a
Total palindrome = 8
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi>
```

Practical No. 19: Write a program MultiThreads that creates two threads-one thread with the name CSthread and the other thread named ITthread.Each thread should display its respective name and execute after a gap of 500 milliseconds. Each thread should also display a number indicating the number of times it got a chance to execute.

Source Code:

```
class CSthread extends Thread{
    public void run()
    {
        int x = 1;
        while(true)
        {
            System.out.println("X: " + x);
            try
            {
                Thread.sleep(500);
            }catch(InterruptedException e)
            {
                System.out.println(e);
            }
            x++;
        }
    }
}
class ITthread extends Thread{
    public void run()
    {
        int y = 1;
        while(true)
        {
            System.out.println("Y: " + y);
            try
            {
                Thread.sleep(500);
            }catch(InterruptedException e)
            {
                System.out.println(e);
            }
            y++;
        }
    }
}
public class Q19 {
    public static void main(String args[])
    {
        CSthread t1 = new CSthread();
        ITthread t2 = new ITthread();
        t1.setName("CSThread");
        t2.setName("ITThread");
        System.out.println(t1.getName());
        System.out.println(t2.getName());
        t1.start();
        t2.start();
    }
}
```

OUTPUT:



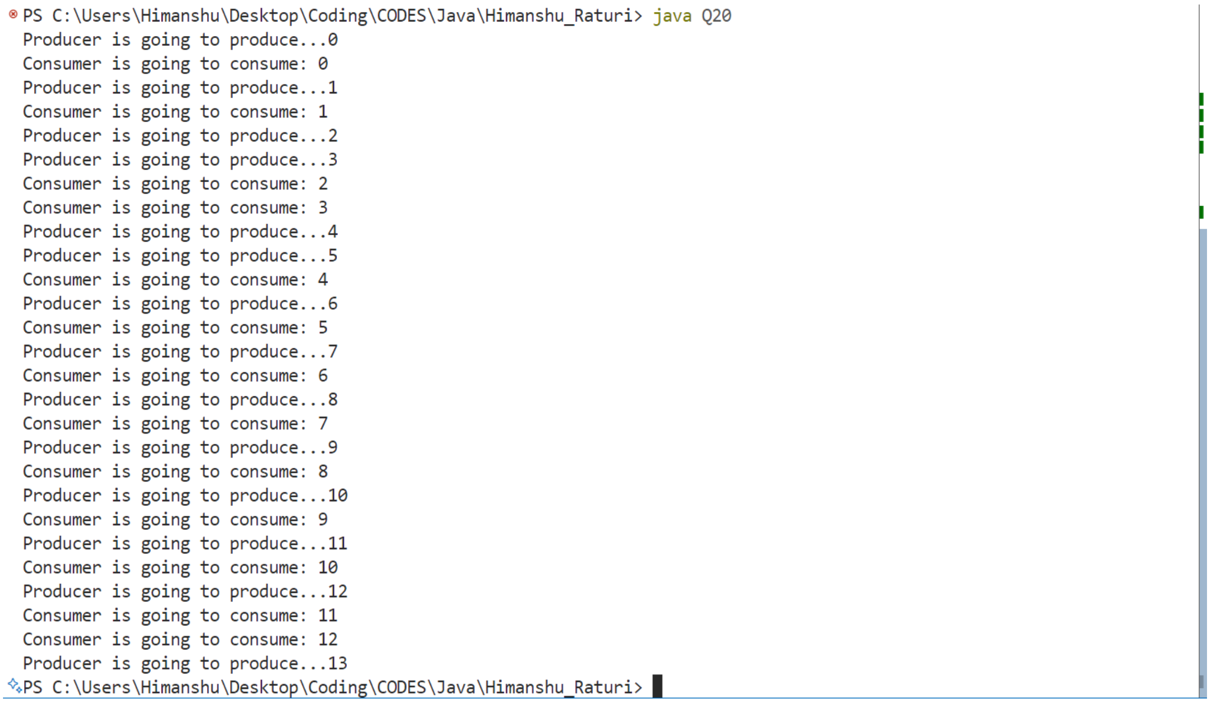
```
PS C:\Users\Himanshu\Desktop\Coding> cd "c:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi\" ; if ($?) { javac Q19.java } ; if ($?) { java Q19 }
CSThread
ITThread
X: 1
Y: 1
X: 2
Y: 2
Y: 3
X: 3
Y: 4
X: 4
Y: 5
X: 5
Y: 6
X: 6
Y: 7
X: 7
Y: 8
X: 8
Y: 9
X: 9
Y: 10
X: 10
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi>
```

Practical No. 20: Write a java program for to solve producer consumer problem in which a producer produce a value and consumer consume the value before producer generate the next value.

Source Code:import java.util.*;

```
class Pc1
{
   LinkedList<Integer> list = new LinkedList<>();
   int capacity = 2;
   public void produce() throws Exception
   {
      int v = 0;
      while(true)
      {
         synchronized(this)
         {
            while(list.size() == capacity)
            {
               wait();
            }
            System.out.println("Producer is going to produce..." +v);
            list.add(v++);
            notify();
            Thread.sleep(500);
         }
      }
   }
   public void consume() throws Exception
   {
      while(true)
      {
            synchronized(this)
            {
                while(list.size() == 0)
                {
                    wait();
                }
                System.out.println("Consumer is going to consume: "+ list.removeFirst());
                notify();
                Thread.sleep(500);
            }
        }
    }
}
class A extends Thread
{
    Pc1 obj = new Pc1();
    A(Pc1 obj)
    {
        this.obj = obj;
    }
    public void run()
    {
        try
        {
            obj.produce();
        }catch(Exception e)
        {
            System.out.println(e);
        }
    }
}
class B extends Thread
{
    Pc1 obj = new Pc1();
    B(Pc1 obj)
    {
        this.obj = obj;
    }
    public void run()
    {
        try
        {
            obj.consume();
        }catch(Exception e)
        {
            System.out.println(e);
        }
    }
}
public class Q20 {
    public static void main(String args[]) throws InterruptedException
    {
        Pc1 obj = new Pc1();
        A t1 = new A(obj);
        B t2 = new B(obj);
        t1.start();
        t2.start();
    }}
```

OUTPUT:



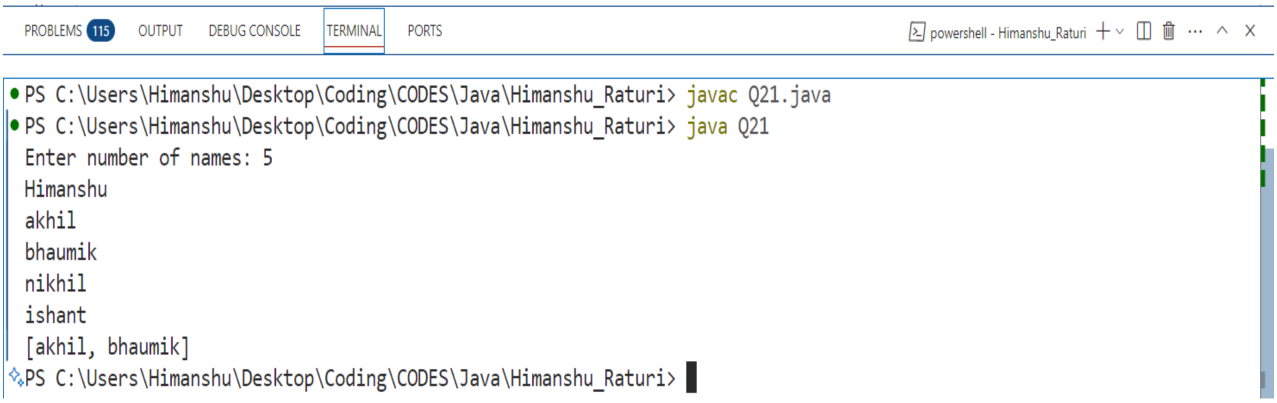
```
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi> java Q20
Producer is going to produce...0
Consumer is going to consume: 0
Producer is going to produce...1
Consumer is going to consume: 1
Producer is going to produce...2
Producer is going to produce...3
Consumer is going to consume: 2
Consumer is going to consume: 3
Producer is going to produce...4
Producer is going to produce...5
Consumer is going to consume: 4
Producer is going to produce...6
Consumer is going to consume: 5
Producer is going to produce...7
Consumer is going to consume: 6
Producer is going to produce...8
Consumer is going to consume: 7
Producer is going to produce...9
Consumer is going to consume: 8
Producer is going to produce...10
Consumer is going to consume: 9
Producer is going to produce...11
Consumer is going to consume: 10
Producer is going to produce...12
Consumer is going to consume: 11
Consumer is going to consume: 12
Producer is going to produce...13
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi>
```

Practical No. 21: Write a method removeEvenLength that takes an ArrayList of Strings as a parameter and that removes all of the strings of even length from the list. (Use ArrayList)

Source Code:

```
import java.util.*;
public class Q21 {
    static void removeEvenLength(ArrayList<String> l1)
    {
        Iterator<String> itr = l1.iterator();
        while (itr.hasNext())
        {
            String str = itr.next();
            if (str.length() % 2 == 0) {
                itr.remove();
            }}}
    public static void main(String args[]) {
        ArrayList<String> l1 = new ArrayList<String>();
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number of names: ");
        int n = sc.nextInt();
        for(int i = 0 ; i < n ; i++)
        {
            String str = sc.next();
            l1.add(str);
        }
        removeEvenLength(l1);
        System.out.println(l1);
        sc.close();
    }
}
```

OUTPUT:



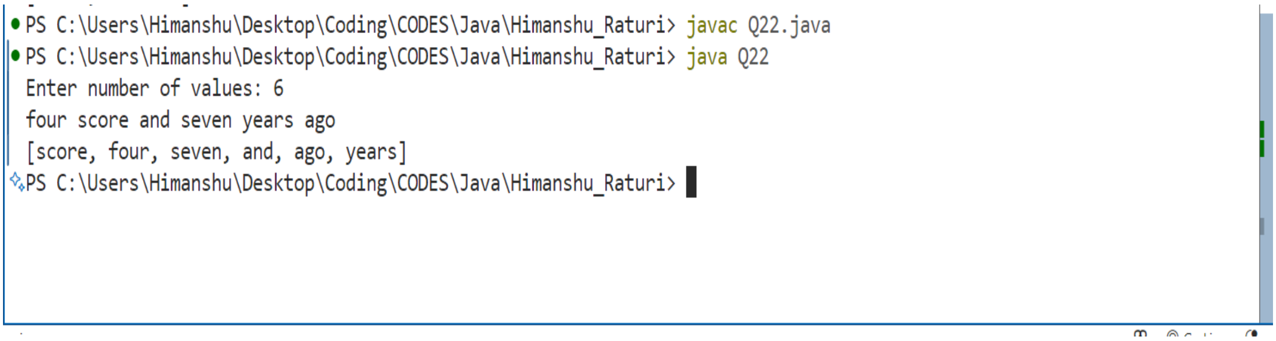
```
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi> javac Q21.java
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi> java Q21
Enter number of names: 5
Himanshu
akhil
bhaumik
nikhil
ishant
[akhil, bhaumik]
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi>
```

Practical No. 22: Write a method swapPairs that switches the order of values in an ArrayList of Strings in a pairwise fashion.Your method should switch the order of the first two values, then switch the order of the next two, switch the order of the next two, and so on.

Source Code:

```
import java.util.*;

public class Q22 {

    static void swapPair(ArrayList<String> list)

    {

        for(int i = 0 ; i < list.size()  - 1; i+=2)

        {

            String temp = list.get(i);

            list.set(i,list.get(i+1));

            list.set(i+1 , temp);

        }

    }

    public static void main(String[] args)

    {

        ArrayList<String> list = new ArrayList<String>();

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter number of values: ");

        int n = sc.nextInt();

        for(int i = 0 ; i < n ; i++)

        {

            String str = sc.next();

            list.add(str);

        }

        swapPair(list);

        System.out.println(list);

    }

}
```

OUTPUT:



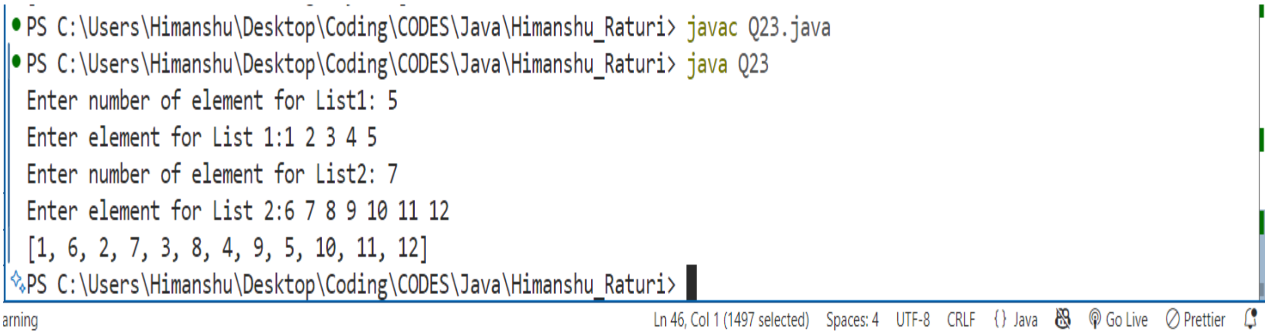
```
● PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi> javac Q22.java
● PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi> java Q22
  Enter number of values: 6
  four score and seven years ago
  [score, four, seven, and, ago, years]
  PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi>
```

Practical No. 23: Write a method called alternate that accepts two Lists of integers as its parameters and returns a new List containing alternating elements from the two lists.

Source Code:

```
import java.util.*;
public class Q23 {
    static LinkedList<Integer> alternate(LinkedList<Integer> list1 , LinkedList<Integer> list2)
    {
        LinkedList<Integer> list3 = new LinkedList<Integer>();
        Iterator<Integer> itr1 = list1.iterator();
        Iterator<Integer> itr2 = list2.iterator();
        while(itr1.hasNext() || itr2.hasNext())
        {
            if(itr1.hasNext())
            {
                list3.add(itr1.next());
            }
            if(itr2.hasNext())
            {
                list3.add(itr2.next());
            }
        }
        return list3;
    }
    public static void main(String args[])
    {
        LinkedList<Integer> list1 = new LinkedList<Integer>();
        LinkedList<Integer> list2 = new LinkedList<Integer>();
        LinkedList<Integer> list3 = new LinkedList<Integer>();
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter number of element for List1: ");
        int n = sc.nextInt();
        System.out.print("Enter element for List 1:");
        for(int i = 0 ; i< n ; i++)
        {
           list1.add(sc.nextInt());
        }
        System.out.print("Enter number of element for List2: ");
        int m = sc.nextInt();
        System.out.print("Enter element for List 2:");
        for(int i = 0 ; i< m ; i++)
        {
           list2.add(sc.nextInt());
        }
        list3 = alternate(list1,list2);
        System.out.println(list3);
    }
}
```

OUTPUT:



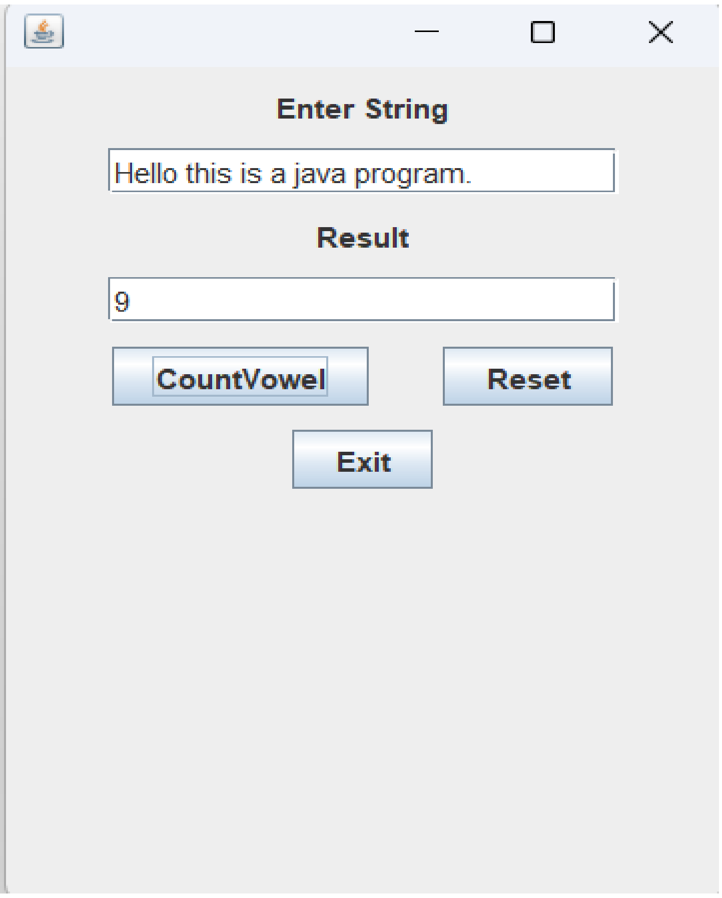
```
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi> javac Q23.java
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi> java Q23
Enter number of element for List1: 5
Enter element for List 1:1 2 3 4 5
Enter number of element for List2: 7
Enter element for List 2:6 7 8 9 10 11 12
[1, 6, 2, 7, 3, 8, 4, 9, 5, 10, 11, 12]
PS C:\Users\Himanshu\Desktop\Coding\CODES\Java\Himanshu_Raturi>
```

Practical No. 24: Write a GUI program to develop an application that receives a string in one text field, and count number of vowels in a string and returns it in another text field, when the button named “CountVowel” is clicked.When the button named “Reset” is clicked it will reset the value of textfield one and Textfield two . When the button named “Exit” is clicked it will closed the application.

Source Code:

```
import java.awt.*;

import java.awt.event.*;

import javax.swing.*;

class Q24 extends JFrame implements ActionListener

{

   JTextField tf1 , tf2;

   Q24()

   {

      tf1 = new JTextField(20);

      tf2 = new JTextField(20);

      JLabel l1 = new JLabel("Enter String");

      JLabel l2 = new JLabel("Result");

      JButton b1 = new JButton("CountVowel");

      JButton b2 = new JButton("Reset");

      JButton b3 = new JButton("Exit");

      setLayout(new FlowLayout(FlowLayout.CENTER,30,10));

      add(l1); add(tf1);

      add(l2); (tf2);

      add(b1); (b2);

      add(b3);

      b1.addActionListener(this);

      b2.addActionListener(this);

      b3.addActionListener(this);

   }
   public void actionPerformed(ActionEvent e)
   {
      String s = tf1.getText();
      int l = s.length();
      int vCount = 0;
      for(int i = 0 ; i < l ; i++)
      {
         char x = s.charAt(i);
         if(x == 'a' || x == 'e' || x == 'i' || x == 'o' || x == 'u')
            vCount++;
      }
      String a = e.getActionCommand();
      if(a.equals("CountVowel"))
      {
         tf2.setText(Integer.toString(vCount));
      }else if(a.equals("Reset"))
      {
         tf1.setText("");
         tf2.setText("");
      }else
      {
         System.exit(0);;
      }
}
     public static void main(String[] args) {
      Q24 d = new Q24();
      d.setSize(300,400);
      d.setVisible(true);
   }}
```

OUTPUT:



Enter String

Hello this is a java program.

Result

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