

15/02/2020  
Monday

# Java Internal Lab Examination

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R3 11

TKM19CS011

Fibonacci

1. Write a Java Swing program to display numbers in a list [Use collections framework] upto limit entered using text field. The event handling ~~code~~ as well as ~~code~~ code for clearing the components must be provided.

Ans. Algorithm :-

Start

1. Import the swing packages [java.awt, javax.swing, java.awt.event]
2. Initialise a JFrame and set its layout and bounds.
3. Initialise a TextField ~~and add it to the~~ manager, JButton for calculate ~~and~~, JButton for clear and add them to the frame. and JLabel for display
4. Make frame visible.
- ~~5. //Event handler for calculate button~~
5. ~~reference~~ n = Parsed text into Integer obtained from TextField
6. ~~for i=1, j=2, res=0, ArrayList list~~
7. ~~while (i <= n) list.add(i), list.add(i)~~

8. list.add(<sup>2</sup>)  
 9. while (~~list.add(i+j)~~ ~~res~~ <= n) do  
 10.     res = i + j  
 11.     list.add(~~res~~ res + 1)  
 12.     ~~i = j~~  
 13.     j = res  
 14. endwhile

~~//Event handler for Erase button~~

15. label.setText(list.toString())

~~//Event handler for Erase button~~

16. ~~label.setText("")~~

~~stop~~

[ If n=1, label.setText("1")  
 If n=2, label.setText("1 2")  
 If n>2, start from step 7 ]

\* ————— \*

## PROGRAM CODE

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;
import java.util.*;

class Fibonacci
{
    Fibonacci()
    {
        JFrame frame = new JFrame("Fibonacci");

        TextField text = new TextField("Enter limit");
        JButton calc = new JButton("Display");
        JButton clear = new JButton("Clear");
        JLabel label = new JLabel();

        frame.setLayout(new FlowLayout());
        frame.setBounds(0,0,500,100);
        frame.setVisible(true);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

        frame.add(text);
        frame.add(calc);
        frame.add(clear);
        frame.add(label);

        calc.addActionListener(new ActionListener(){
            public void actionPerformed(ActionEvent ae){

                try {

                    int n = Integer.parseInt(text.getText());

                    if(n == 1)
                        label.setText("[1,1]");
                    else if(n == 2)
                        label.setText("[1,1,2]");
                    else if(n < 1)
                        label.setText("Enter a natural number");
                    else {
                        ArrayList<String> list = new ArrayList<>();
                        list.add("1");
                        list.add("1");
                        list.add("2");
```

```

        int i = 1, j = 2, res = 0;

        while(i+j <= n)
        {
            res = i+j;
            list.add(res+"");
            i = j;
            j = res;
        }

        label.setText(list.toString());
    }

    } catch (Exception e) {
        label.setText("Enter a natural number");
    }

    }

});

clear.addActionListener(new ActionListener(){
    public void actionPerformed(ActionEvent ae){

        text.setText("");
        label.setText("");

    }

});

}

public static void main(String args[])
{
    new Fibonacci();
}

}

```

## OUTPUT

