



Sample: Java JSP JSF - Sequence

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

public class Sequence extends JFrame implements ActionListener {

    private JLabel lblEnterN = new JLabel();
    private JLabel lblResult = new JLabel();
    private JLabel lblEfficiency = new JLabel();
    private JLabel lblIterative = new JLabel();
    private JLabel lblRecursive = new JLabel();
    private JLabel lblFree = new JLabel();

    private JRadioButton rbIterative = new JRadioButton();
    private JRadioButton rbRecursive = new JRadioButton();
    private ButtonGroup radioButtonsGroup = new ButtonGroup();

    private JTextField txtInputNumber = new JTextField(10);
    private JTextField txtResult = new JTextField(10);
    private JTextField txtEfficiency = new JTextField(10);

    private JButton btncompute = new JButton();

    private int efficiency;//variable for efficiency
    //Constructor
    public Sequence() {

        super("Project 3");
        setSize(300, 200);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        this.setLayout(new GridLayout(6, 2));
        radioButtonsGroup.add(rbIterative);
        rbIterative.setSelected(true);
        rbIterative.setText("Iterative");
        radioButtonsGroup.add(rbRecursive);
        rbRecursive.setText("Recursive");
        lblEnterN.setText("Enter n: ");
        btncompute.setText("Compute");
        btncompute.addActionListener(this);
        lblResult.setText("Result: ");
        lblEfficiency.setText("Efficiency: ");

        //Add components to main container
        this.add(lblIterative);
        this.add(rbIterative);
        this.add(lblRecursive);
        this.add(rbRecursive);
        this.add(lblEnterN);
        this.add(txtInputNumber);
        this.add(lblFree);
        this.add(btncompute);
        this.add(lblResult);
        this.add(txtResult);
        this.add(lblEfficiency);
        this.add(txtEfficiency);
    }

    public void actionPerformed(ActionEvent event) {
        int result=0;
        efficiency = 0;
        if(!txtInputNumber.getText().equals("")){
            if (rbIterative.isSelected()) {
```



```
        result =
IterativeMethod(Integer.parseInt(txtInputNumber.getText()));
    } else {
        result =
RecursiveMethod(Integer.parseInt(txtInputNumber.getText()));
    }
    txtResult.setText(Integer.toString(result));
    txtEfficiency.setText(Integer.toString(efficiency));
}
//Iterative Method
private int IterativeMethod(int inputNumber) {
    int Iterativeresult = 0;
    if (inputNumber == 0) {
        Iterativeresult = 0;
    } else if (inputNumber == 1) {
        Iterativeresult = 1;
    } else {
        int secondPrevious = 0;
        int previous = 1;
        for (int i = 2; i <= inputNumber; i++) {
            efficiency++;
            Iterativeresult = 2 * previous + secondPrevious;
            secondPrevious = previous;
            previous = Iterativeresult;
        }
    }
    return Iterativeresult;
}
//Recursive Method
private int RecursiveMethod(int inputNumber) {
    int Recursiveresult;
    efficiency++;
    if (inputNumber == 0) {
        Recursiveresult = 0;
    } else if (inputNumber == 1) {
        Recursiveresult = 1;
    } else {
        Recursiveresult = 2 * RecursiveMethod(inputNumber - 1) +
RecursiveMethod(inputNumber - 2);
    }
    return Recursiveresult;
}

public static void main(String[] args) {
    new Sequence().setVisible(true);
}
}
```