Simple Calculator :

안상완

목차

1. Class --- Cal_GUi

```java
package Lecture;

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionEvent;
import java.awt.event.ActionListener;
import java.awt.event.KeyAdapter;
import java.awt.event.KeyEvent;

public class Cal_GUI extends JFrame {
    final int txtWidth = 70, lblWidth = 20, height = 20;
    final int btnWidth = 60, btnExtWidth = 90;

    JTextField txtNum1, txtNum2, txtResult; // 왼쪽 오른쪽 결과값
    JLabel lblOp, lblEqual;
    JButton btnAdd, btnSub, btnMul, btnDiv, btnComp, btnReset;
```

```java
Container c;

private void txt_lbl_Layout() {
    txtNum1 = new JTextField("",15);
    txtNum1.setLocation(10, 10);
    txtNum1.setSize(txtWidth, height);
    txtNum1.setHorizontalAlignment(JTextField.RIGHT);
    txtNum1.addKeyListener(new KeyAdapter() {
        @Override
        public void keyTyped(KeyEvent e) {
            if(e.getKeyChar() <'0' || e.getKeyChar() >'9')
                e.consume();
        }
    });

    lblOp = new JLabel("?");
    lblOp.setLocation(85,10);
    lblOp.setSize(lblWidth, height);

    txtNum2 = new JTextField("",15);
    txtNum2.setLocation(100, 10);
    txtNum2.setSize(txtWidth, height);
    txtNum2.setHorizontalAlignment(JTextField.RIGHT);
    txtNum2.addKeyListener(new KeyAdapter() {
        @Override
        public void keyTyped(KeyEvent e) {
            if(e.getKeyChar() <'0' || e.getKeyChar() >'9')
                e.consume();
        }
    });

    lblEqual = new JLabel("=");
    lblEqual.setLocation(180, 10);
    lblEqual.setSize(lblWidth, height);

    txtResult = new JTextField("0", 10);
    txtResult.setLocation(200, 10);
    txtResult.setSize(txtWidth, height);
    txtResult.setHorizontalAlignment(JTextField.RIGHT);
}

private void btn_Layout() {
    btnAdd = new JButton("+");
    btnAdd.setLocation(10, 40);
    btnAdd.setSize(btnWidth, height);
    btnAdd.addActionListener(new ActionListener() {
        @Override
        public void actionPerformed(ActionEvent e) {
            lblOp.setText("+");
        }
    });

    btnSub = new JButton("-");
    btnSub.setLocation(80, 40);
    btnSub.setSize(btnWidth,height);
    btnSub.addActionListener(new ActionListener() {
        @Override
        public void actionPerformed(ActionEvent e) {
            lblOp.setText("-");
```

```java
            }
        });


        btnMul = new JButton("*");
        btnMul.setLocation(150, 40);
        btnMul.setSize(btnWidth,height);
        btnMul.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                lblOp.setText("*");
            }
        });

        btnDiv = new JButton("/");
        btnDiv.setLocation(220, 40);
        btnDiv.setSize(btnWidth,height);
        btnDiv.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                lblOp.setText("/");
            }
        });

        btnReset = new JButton("Reset");
        btnReset.setLocation(50, 70);
        btnReset.setSize(btnExtWidth,height);
        btnReset.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                txtNum1.setText("");
                txtNum2.setText("");
                txtResult.setText("");
                lblOp.setText("?");
                lblEqual.setText("=");
                txtNum1.requestFocus();
            }
        });

        btnComp = new JButton("Compute");
        btnComp.setLocation(150, 70);
        btnComp.setSize(btnExtWidth,height);
        btnComp.addActionListener(new ActionListener() {
            @Override
            public void actionPerformed(ActionEvent e) {
                String distinct = lblOp.getText();
                double num1 = Double.parseDouble(txtNum1.getText());
                double num2 = Double.parseDouble(txtNum2.getText());
                switch (distinct){
                    case "+":
                        txtResult.setText(Double.toString(num1 + num2));
                        break;
                    case "-":
                        txtResult.setText(Double.toString(num1 - num2));
                        break;
                    case "*":
                        txtResult.setText(Double.toString(num1 / num2));
                        break;
                    case "/":
                        txtResult.setText(String.format("%.5f", num1 / num2));
```

```java
                    break;
                default:
                    txtResult.setText("알수없는 오류 또는 NaN");
            }
        }
    });
}
private void GUI_Setup() {
    setTitle("Simple Calculator");
    setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

    txt_lbl_Layout();
    btn_Layout();

    c = getContentPane();
    c.setLayout(null);
//      c.setLayout(new GridLayout(0,1));

//      JPanel panel1 = new JPanel();
//      c.add(panel1);
    c.add(txtNum1);
    c.add(lblOp);
    c.add(txtNum2);
    c.add(lblEqual);
    c.add(txtResult);
//      panel1.add(txtNum1);
//      panel1.add(lblOp);
//      panel1.add(txtNum2);
//      panel1.add(lblEqual);
//      panel1.add(txtResult);

//      JPanel panel2 = new JPanel();
//      c.add(panel2);
    c.add(btnAdd);
    c.add(btnSub);
    c.add(btnMul);
    c.add(btnDiv);
//      panel2.add(btnAdd);
//      panel2.add(btnSub);
//      panel2.add(btnMul);
//      panel2.add(btnDiv);

//      JPanel panel3 = new JPanel();
//      c.add(panel3);
    c.add(btnReset);
    c.add(btnComp);
//      panel3.add(btnReset);
//      panel3.add(btnComp);

    setSize(300, 150);
    setVisible(true);
}

public Cal_GUI() {
    GUI_Setup();
}
}
```

2. Class --- Calculator

```java
package Lecture;

import java.util.Scanner;

public class Calculator {
    double num1;
    double num2;
    char op;
    Scanner scannerCal;
    public Calculator(Scanner scannerCal){
        this(0, ' ', 0);
        this.scannerCal = scannerCal;
    }
    public Calculator(double n1, char o, double n2){
        num1 = n1;
        op = o;
        num2 = n2;
    }
    public double compute() {
        switch (op){
            case '+': return num1 + num2;
            case '-': return num1 - num2;
            case '*': return num1 * num2;
            case '/': return num1 / num2;
            default: return Double.NaN;
        }
    }
    private boolean check(){

        return num1 == 0 && num2 == 0 && op == '0'; // char 형이라 이렇게
가능할껄?

    }
    public void operation(){
        while (true){
            try {
                System.out.print("피연산자 연산자 피연산자 로 입력하십시오 종료 == 0
0 0>>> ");
                num1 = scannerCal.nextInt();
                op = scannerCal.next().charAt(0);
                num2 = scannerCal.nextInt();
                if(check()){
                    System.out.println("시스템을 종료합니다...");
                    break;
                }
                System.out.println("연산 결과는>>>"+compute());

            }catch (Exception e){
                e.printStackTrace();
                System.out.println("오류 발생 다시합시다.");
                scannerCal.nextLine(); // 이거 꼭 필요함
            }
```

```
        }
    }
}
```

3. Class --- OperatingClass

```java
package Lecture;

import java.util.Scanner;

public class OperatingClass {
    public void operation(){
        Scanner scanner = new Scanner(System.in);
        String str = "default";
        while (!str.equals("종료")){
            try {
                System.out.print("구이:GUI / 콘솔: Console / 종료 : 종료>>>");
                str = scanner.next();
                switch (str){
                    case "구이":
                        new Cal_GUI();
                        break;
                    case "콘솔":
                        Calculator c = new Calculator(scanner);
                        c.operation();
                        break;
                    case "종료":
                        break;
                    default:
                        System.out.println("다시 하십시오");
                }
            }catch (Exception e){
                e.printStackTrace();
                System.out.println("오류 발생 다시합시다.");
                scanner.nextLine(); // 이거 꼭 필요함
            }
        }
        scanner.close();
    }
    public static void main(String[] args) {
        OperatingClass op = new OperatingClass();
        op.operation();
    }
}
```
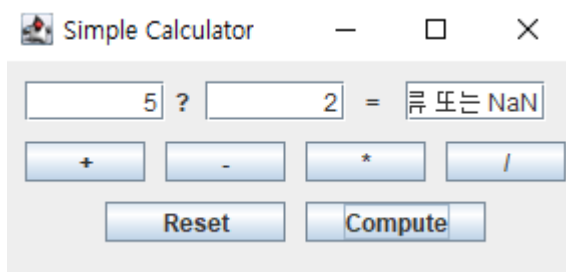
4. 실행사진

구이:GUI / 콘솔: Console / 종료 : 종료>>>콘솔
피연산자 연산자 피연산자 로 입력하십시오 종료 == 0 0 0>>> 1 - 5
연산 결과는>>>-4.0
피연산자 연산자 피연산자 로 입력하십시오 종료 == 0 0 0>>> 2 * 10
연산 결과는>>>20.0
피연산자 연산자 피연산자 로 입력하십시오 종료 == 0 0 0>>> 0 / 5
연산 결과는>>>0.0
피연산자 연산자 피연산자 로 입력하십시오 종료 == 0 0 0>>> 5 / 0
연산 결과는>>>Infinity
피연산자 연산자 피연산자 로 입력하십시오 종료 == 0 0 0>>> 0 0 0
시스템을 종료합니다...
구이:GUI / 콘솔: Console / 종료 : 종료>>>구이
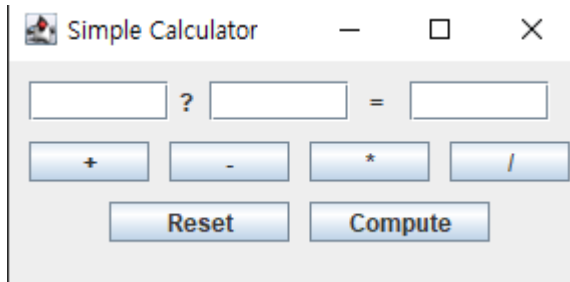구이:GUI / 콘솔: Console / 종료 : 종료>>>
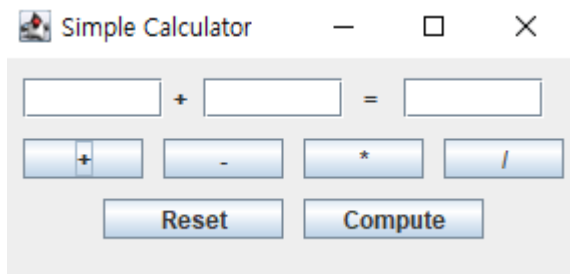Process finished with exit code 0

처음 선택화면 및 콘솔계산기 구동 화면
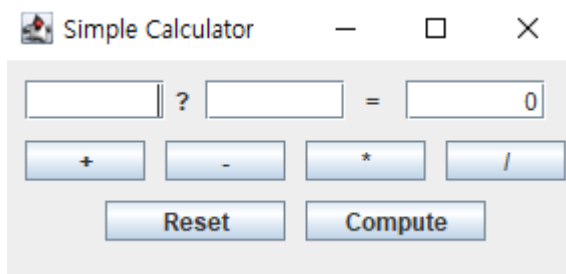
=> 구이 첫 화면
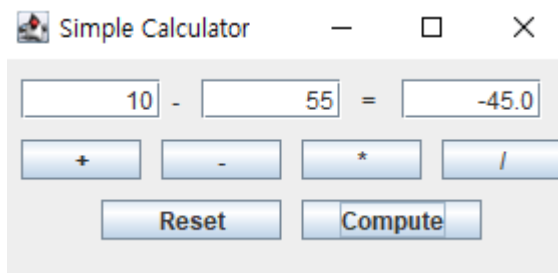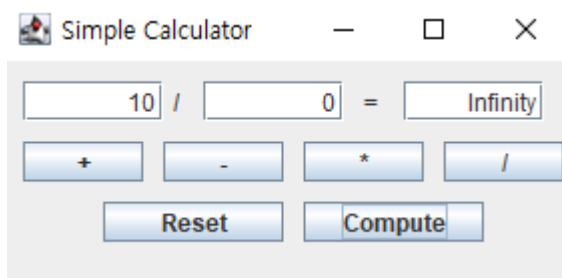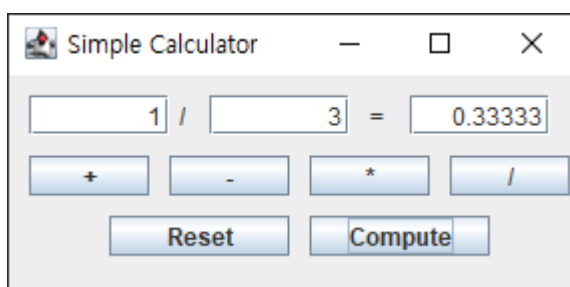

=> 설정 없이 계산 시 오류처리

=> 리셋 버튼 작동이후 화면

=> 플러스 버튼만 누른 상태

=> 빼기 연산 결과

=> 0으로 나눈 결과

=> 소수점 제한 구현

마침.