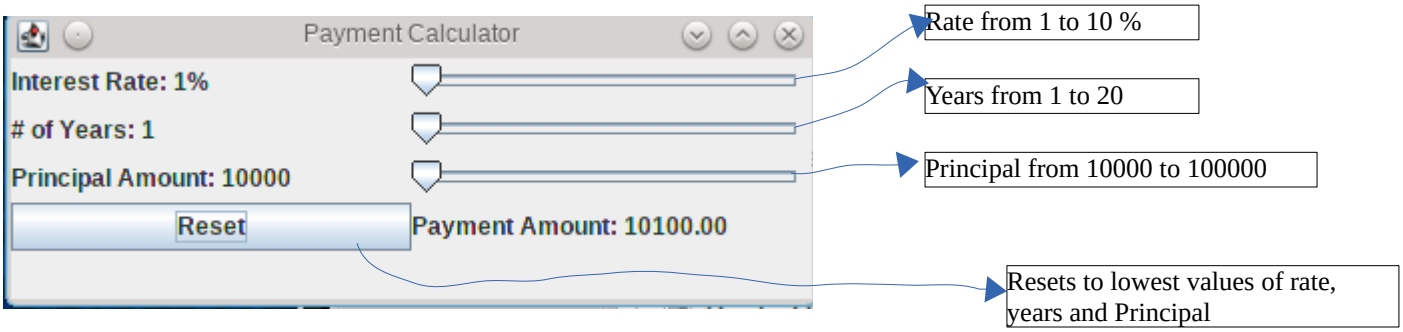
OOP - Test 3 - 4/2/'15 **NAME**_____

The following Java Swing application (watch video first) calculates and displays a re-payment amount for selected principal amount, interest rate and term (# of years loan is in effect). It is a simple compound interest, assumed to be paid back at the end of the term in lump sum. It is based on the formula for compound interest, $A = Principal * (1 + \frac{rate}{100})^n$ - code to calculate it is given below.



A complete implementation is given below.
Your task is to implement the ActionListeners and ChangeListeners needed to make the application work.

```
import java.awt.*;
import java.awt.geom.*;
import java.awt.event.*;
import javax.swing.*;
import javax.swing.event.*;
import java.text.DecimalFormat;
public class Test3 {
   private static final int FRAME_WIDTH = 600;
   private static final int FRAME_HEIGHT = 600;
   private static final int rateMin=1;
   private static final int yearMin=1;
   private static final int principalMin=10000;
   private static JLabel rateLabel;
   private static JLabel principalLabel;
   private static JLabel yearLabel;
   private static JLabel displayLabel;
   private static JSlider rateSlider;
   private static JSlider principalSlider;
   private static JSlider yearSlider;
   private static JButton resetButton;
   private static int rate;
   private static int years;
   private static int principal;
   private static Double amount;
   private static DecimalFormat df=new DecimalFormat("#.00");
   public static void main(String[] args){
         JFrame frame = new JFrame("Payment Calculator");
         frame.setSize(FRAME_WIDTH, FRAME_HEIGHT);
         frame.setLayout(new GridLayout(5,2));
         rateLabel=new JLabel("Interest Rate:");
         principalLabel=new JLabel("Principal Amount");
         yearLabel = new JLabel("# of Years");
         displayLabel =new JLabel("Payment Amount: ");
```

```
        rateSlider=new JSlider(rateMin,10);
        principalSlider = new JSlider(principalMin,100000);
        yearSlider = new JSlider (yearMin, 20);
        resetButton = new JButton("Reset");
        rateSlider.addChangeListener(createSliderMonitor());
        principalSlider.addChangeListener(createSliderMonitor());
        yearSlider.addChangeListener(createSliderMonitor());
      //YOUR CODE to make resetButton work
```

Note that you need only one ChangeListener to deal with all the slider controls.

```
        frame.add(rateLabel);
        frame.add(rateSlider);
        frame.add(yearLabel);
        frame.add(yearSlider);
        frame.add(principalLabel);
        frame.add(principalSlider);
        frame.add(resetButton);
        frame.add(displayLabel);
        frame.setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);
        frame.pack();
        rateSlider.setValue(rateMin);
        yearSlider.setValue(yearMin);
        principalSlider.setValue(principalMin);
        frame.setVisible(true);
    } //Closes public static void main(){

    //YOUR CODE to make sliders work
```

THIS IS HOW TO CALCULATE REPAYMENT AMOUNT

```
amount=principal* Math.pow( (1.0+rate/100.0),years);
```

} //closes *public class Test3{*