Class Display10


```
1  import javax.swing.*;
2  import java.util.*;
3  import java.awt.*;
4  /**
5   * Display10 is embedded in Panel10 to execute Lab10
6   *
7   * @author      Nathan Chen
8   * @teacher     Coglianese
9   * @period      2
10  * @version     3-5-19
11  */
12 public class Display10 extends JPanel
13 {
14     //Instance Variables
15     private JLabel[] bits;
16     private JLabel decimal;
17     /**
18      * Default constructor
19      */
20     public Display10(){
21         setLayout(new GridLayout(1, 9));
22         bits = new JLabel[8];
23         for(int x = 0; x < bits.length; x++){
24             bits[x] = new JLabel("", SwingConstants.CENTER);
25             bits[x].setFont(new Font("Serif", Font.BOLD, 50));
26             add(bits[x]);
27         }
28         decimal = new JLabel("",SwingConstants.CENTER);
29         decimal.setFont(new Font("Serif", Font.BOLD,14));
30         add(decimal);
31         randomize();
32     }
33
34     /**
35      * Randomizes the bits
36      */
37     public void randomize(){
38         for(int x = 0; x < bits.length; x++){
39             bits[x].setText(""+(int)(Math.random()*2));
40         }
41         convert();
42     }
43
44     /**
45      * Swaps the left and right bits
46      */
47     public void reverse(){
48         for(int x = 0; x < bits.length/2; x++){
49             String flip = bits[x].getText();
```

```
50              String flop = bits[bits.length-x-1].getText();
51              bits[x].setText(flop);
52              bits[bits.length-x-1].setText(flip);
53          }
54          convert();
55      }
56
57      /**
58       * Shift the numbers to the left
59       */
60      public void shift(){
61          for(int x = 0; x < bits.length-1; x++){
62              bits[x].setText(bits[x+1].getText());
63          }
64          bits[bits.length-1].setText("0");
65          convert();
66      }
67
68      /**
69       * Rotates the numbers to the left,
70       * Moves left most bit to rightmost bit
71       */
72      public void rotate(){
73          boolean b = false;
74          if (bits[0].getText().equals("1")){
75              b=true;
76          }
77          for(int x = 0; x < bits.length-1; x++){
78              bits[x].setText(bits[x+1].getText());
79          }
80          if (b){
81              bits[bits.length-1].setText("1");
82          }
83          else{
84              bits[bits.length-1].setText("0");
85          }
86          convert();
87      }
88
89      /**
90       * Converts binary number to decimal,
91       * then displays it on the label
92       */
93      public void convert(){
94          int[] arr = new int[bits.length];
95          for(int i=0;i<arr.length;i++){
96              arr[arr.length-1-i]=(int)Math.pow(2,i);
97          }
98          int total = 0;
```

```
99          for(int x = 0; x < bits.length; x++){
100             if(bits[x].getText().equals("1")){
101                 total+=arr[x];
102             }
103         }
104         decimal.setText(""+total+".0");
105     }
106 }
```