**PROJECT Digital Logic Simulator: Eccles - Jordan Switch**

**Objective** To investigate the mechanisms of a digital flip - flop simulator.

***PROJECT DESCRIPTION***

Examine the given program that performs a flip - flop operation and then modify the application according to the given instructions.

***Information about This Project***

The flip - flop or Eccles - Jordan switch is the fundamental circuit of computers and is built from logic gates.

***Steps to Complete This Project***

**STEP 1 Launch Eclipse, JCreator or Net Beans**

Open a new Java Project.

**STEP 2 Test the Starter Code**

Run the starter code that is given in **Figure 1** . Observe the output when the program runs.

**STEP 3 Modify the Program**

Modify the starter code by placing the pertinent program code segment that creates the flip - flop action into a JButton where the user can click the button to commence the digital simulation.

**STEP 4 Test the Modified Program**

Test the modified program.

**STEP 5 Submit the Project**

Submit a copy of your completed project for credit.

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**Figure 1 Java Code to Perform Digital Logic**

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| **import java.awt.Color;**  **import java.awt.GridLayout;**  **import java.awt.event.ActionEvent;**  **import java.awt.event.ActionListener;**  **import javax.swing.JFrame;**  **import javax.swing.JLabel;**  **import javax.swing.JTextField;**  **import javax.swing.SwingUtilities;**  **import javax.swing.Timer;**  **public class TestTimer**  **{**  **private int count = 0;**  **private Timer timer;**  **private JLabel label1,label2;**  **private JTextField text1,text2;**  **private void initUI()**  **{**  **JFrame frame = new JFrame("Flip Flop Java GUI");**  **frame.setDefaultCloseOperation(JFrame.*EXIT\_ON\_CLOSE*);**  **label1 = new JLabel();**  **label2 = new JLabel();**  **text1 = new JTextField(10);**  **text2 = new JTextField(10);**  **text1.setEnabled(false);**  **text2.setEnabled(false);**  **frame.add(label1);**  **frame.add(text1);**  **frame.add(label1);**  **frame.add(text2);**  **frame.pack();**  **frame.setLayout(new GridLayout(4, 2));**  **frame.setSize(300, 300);**  **frame.setLocationRelativeTo(null);**  **frame.setVisible(true);** |

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**Figure 1 Java Code to Perform Digital Logic ( continued )**

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| **timer = new Timer(1250, new ActionListener()**  **{**  **@Override**  **public void actionPerformed(ActionEvent e)**  **{**  **count++;**  **if (count % 2 == 0)**  **{**  **// count++;**  **label1.setForeground(Color.*BLUE*);**  **label2.setForeground(Color.*RED*);**  **text1.setBackground(Color.*RED*);**  **text2.setBackground(Color.*BLUE*);**  **label1.setText("Flop");**  **}**  **else**  **{**  **label1.setForeground(Color.*RED*);**  **label2.setForeground(Color.*BLUE*);**  **text1.setBackground(Color.*BLUE*);**  **text2.setBackground(Color.*RED*);**  **label1.setText("Flip");**  **}**  **if(count == 10)**  **{**  **timer.stop();**  **}**  **}**  **});**  **timer.start();**  **}**  **public static void main(String[] args)**  **{**  **SwingUtilities.*invokeLater*(new Runnable()**  **{**  **@Override**  **public void run()**  **{**  **new TestTimer().initUI();**  **}**  **});**  **}**  **}** |