1. Program 6 Instructions, CS102, Prof. Loftin

Write the code for a Java applet which draws a traffic light and uses a push button to change the state of the light (from green to yellow to red to green in the usual way). Derive the drawing surface from the JPanel class and use another panel to organize the drawing surface and the button.

You should write a class TrafficLightPanel which extends JPanel. You should include the graphics for the traffic light (of another class Light which also extends JPanel), and also a button (of the standard class JButton) to push to change the light.

You will also have to implement the Light class, extending JPanel.

To run the program, you should use the class TrafficLight (see below), and an html file to access the applet. These files are provided below, and you should not change them.

2. TrafficLightPanel class

This class extend JPanel and should contain two pieces of private data, a JButton representing the button, and a Light representing the graphics of the light. You should import the needed Java libraries as in FahrenheitPanel.java.

You should implement the constructor

```
public TrafficLightPanel()
```

which should initialize the button and the light. It should also set up an action listener associated to the button, and set the background color to Color.white. Use FahrenheitPanel.java in Chapter 4 of Lewis & Loftus as a model for setting up the button.

The action listener associated to the button should be implemented using an inner class. The actionPerformed method should only call a method associated to the Light data member to change it to the next color.

3. Light class

This class should also extend JPanel, and should include a private int data member which determines which color the light is (so it need only assume the values 0,1,2 to represent red, green, yellow).

There should be three public methods

```
Light() // constructor
void paintComponent(Graphics page) // override JPanel method
void changeLight()
```
The constructor should set the initial color of the light to red and should set the dimensions of the Light panel.

The paintComponent method should draw a black rectangle as background, and then draw three colored circles representing the red, yellow and green lights. Only the currently active color of the light should be done in full color Color.red, Color.green, or Color.yellow. The other two circles should be colored using a darkened version of their color. You may find it useful to use these darkened version of the colors:

```java
Color darkGreen = new Color(0,63,0);
Color darkRed = new Color(63,0,0);
Color darkYellow = new Color(63,63,0);
```

The rectangle should be drawn using the `page.fillRect` method. The circles should be drawn afterward using the `page.fillOval` method, where `page` is the `Graphics` object passed into the `paintComponent` method.

The changeLight method should change the state of the light, and then call the `repaint()` method to update the graphics to reflect the new light.

4. Submission

You should submit your TrafficLightPanel.java and Light.java as email attachments to loftin@rutgers.edu.

5. Due date: October 26, 2009

6. The applet class TrafficLight.java

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

public class TrafficLight extends JApplet{
    public void init(){
        Container content = getContentPane();
        TrafficLightPanel panel = new TrafficLightPanel();
        content.add(panel);
    }
}
```
7. The HTML file TrafficLight.html

<html>
<head>
<title>Testing TrafficLight Java applet</title>
</head>
<body>
<applet code = "TrafficLight.class" width="200" height="200">
</applet>
</body>
</html>

8. Compiling and running your applet

Work in your pegasus account. Type ls to see if you have a public_html directory. If you do not have such a directory, type mkdir public_html to create one. Go into your public_html directory by typing cd public_html. Put the files TrafficLight.html and TrafficLight.java into your public_html directory. The classes TrafficLightPanel.java and Light.java should also be in your public_html directory.

Once all these files are in the proper place, type javac TrafficLight.java to compile the classes. To run the applet, direct your web browser to http://pegasus.rutgers.edu/~yourname/TrafficLight.html where you replace yourname with your pegasus login name (this is your website on pegasus).

9. My version of the applet

Available at
http://andromeda.rutgers.edu/~loftin/cs102fal09/TrafficLight.html