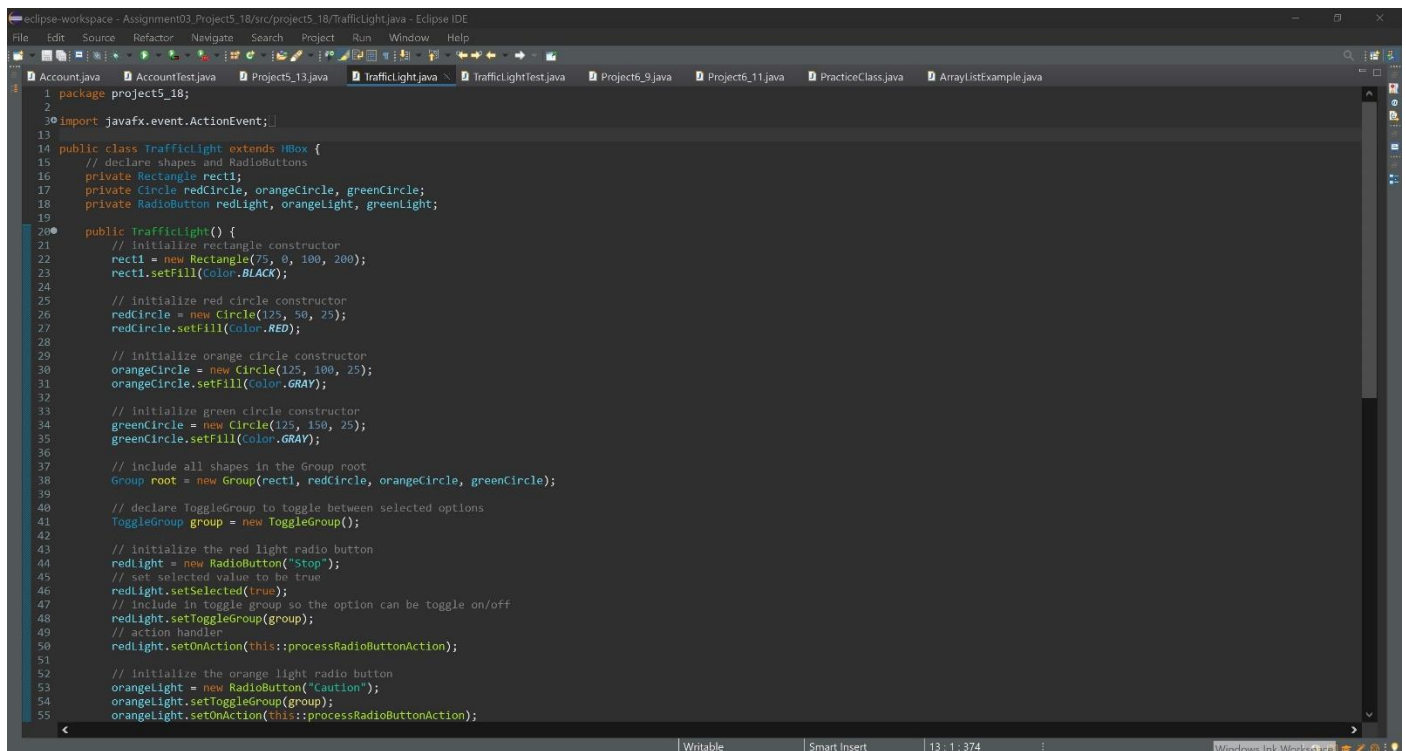


Java program “Traffic Light”

Project 5.18: The goal of this project was to create a drawing of a traffic light and have three radio buttons to decide the state of light (stop, caution, and go). First, I declare the Rectangle, three circles, and radio buttons as private members. I initialize the Rectangle (rect1) to have x coordinate 75, y coordinate 0, width 100, and height 200. I initialize the redCircle coordinates to be on top of the rect1 set the fill to red. I initialize the orangeCircle to be on top of rect1, below redCircle, and set the fill to gray. I initialize the greenCircle to be on top of the rect1, below orangeCircle, and set the fill to gray. I include all the shapes to be in the Group root. Then I declare the ToggleGroup() to be able to toggle between the selected options for the radio buttons. I initialize the redLight radio button to be “Stop”, setSelected to be true, setToggleGroup to be group, action handler to processRadioButtonAction. I did the same for the orangeLight radio button (“Caution”) and greenlight radio button (“Go”), but I did not specify setSelected() method. Then, I included the radio buttons in the VBox (“options”) so the layout would be vertical. I used getChildren().addAll() method to add the VBox options and Group root. For the event handler for the processRadioButtonAction I have an if statement for if the redLight is selected to change the color to red and rest gray. Else if statement orangeLight is selected to change the color to orange and rest gray. Else if statement greenlight is selected to change the color to green and the rest gray. When I run the TrafficLightTester java file the “Stop” radio button would already be selected so redCircle is currently red and the rest are gray. If I clicked on “Caution” radio button the orangeCircle would turn orange and the rest would be gray.



```
1 package project5_18;
2
3 import javafx.event.ActionEvent;
4
5 public class TrafficLight extends HBox {
6     // declare shapes and RadioButtons
7     private Rectangle rect1;
8     private Circle redCircle, orangeCircle, greenCircle;
9     private RadioButton redLight, orangeLight, greenLight;
10
11     public TrafficLight() {
12         // initialize rectangle constructor
13         rect1 = new Rectangle(75, 0, 100, 200);
14         rect1.setFill(Color.BLACK);
15
16         // initialize red circle constructor
17         redCircle = new Circle(125, 50, 25);
18         redCircle.setFill(Color.RED);
19
20         // initialize orange circle constructor
21         orangeCircle = new Circle(125, 100, 25);
22         orangeCircle.setFill(Color.GRAY);
23
24         // initialize green circle constructor
25         greenCircle = new Circle(125, 150, 25);
26         greenCircle.setFill(Color.GRAY);
27
28         // include all shapes in the Group root
29         Group root = new Group(rect1, redCircle, orangeCircle, greenCircle);
30
31         // declare ToggleGroup to toggle between selected options
32         ToggleGroup group = new ToggleGroup();
33
34         // initialize the red light radio button
35         redLight = new RadioButton("Stop");
36         // set selected value to be true
37         redLight.setSelected(true);
38         // include in toggle group so the option can be toggle on/off
39         redLight.setToggleGroup(group);
40         // action handler
41         redLight.setOnAction(this::processRadioButtonAction);
42
43         // initialize the orange light radio button
44         orangeLight = new RadioButton("Caution");
45         orangeLight.setToggleGroup(group);
46         orangeLight.setOnAction(this::processRadioButtonAction);
47
48         // initialize the green light radio button
49         greenLight = new RadioButton("Go");
50         greenLight.setToggleGroup(group);
51         greenLight.setOnAction(this::processRadioButtonAction);
52
53         // add children to the HBox
54         getChildren().addAll(root, redLight, orangeLight, greenLight);
55     }
56
57     // processRadioButtonAction method
58     public void processRadioButtonAction(ActionEvent event) {
59         if (redLight.isSelected()) {
60             // set red circle to red and others to gray
61             redCircle.setFill(Color.RED);
62             orangeCircle.setFill(Color.GRAY);
63             greenCircle.setFill(Color.GRAY);
64         } else if (orangeLight.isSelected()) {
65             // set orange circle to orange and others to gray
66             redCircle.setFill(Color.GRAY);
67             orangeCircle.setFill(Color.ORANGE);
68             greenCircle.setFill(Color.GRAY);
69         } else if (greenLight.isSelected()) {
70             // set green circle to green and others to gray
71             redCircle.setFill(Color.GRAY);
72             orangeCircle.setFill(Color.GRAY);
73             greenCircle.setFill(Color.GREEN);
74         }
75     }
76 }
```

```
eclipse-workspace - Assignment03_Project5_18/src/project5_18/TrafficLight.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
Account.java AccountTest.java Project5_13.java TrafficLight.java TrafficLightTest.java Project6_9.java Project6_11.java PracticeClass.java ArrayListExample.java

56 // initialize green light radio button
57 greenLight = new RadioButton("Go");
58 greenLight.setToggleGroup(group);
59 greenLight.setOnAction(this::processRadioButtonAction);
60
61 // include the radio buttons in VBox to lay it out in vertical column
62 VBox options = new VBox(redLight, orangeLight, greenLight);
63
64 // set the position and spacing
65 options.setAlignment(Pos.CENTER_LEFT);
66 options.setSpacing(10);
67
68 // add radio buttons and shapes
69 getChildren().addAll(options, root);
70
71 }
72
73 // event handler for radio button press
74 public void processRadioButtonAction(ActionEvent event) {
75     // if selected "Stop"
76     if (redLight.isSelected()) {
77         // turn circle color red
78         redCircle.setFill(Color.RED);
79         // leave/make the rest blank
80         orangeCircle.setFill(Color.GRAY);
81         greenCircle.setFill(Color.GRAY);
82     }
83     // if selected "Caution"
84     else if (orangeLight.isSelected()) {
85         // turn circle color orange
86         orangeCircle.setFill(Color.ORANGE);
87         // leave/make the rest blank
88         redCircle.setFill(Color.GRAY);
89         greenCircle.setFill(Color.GRAY);
90     }
91     // if selected "Go"
92     else {
93         // turn circle color green
94         greenCircle.setFill(Color.GREEN);
95         // leave/make the rest blank
96         redCircle.setFill(Color.GRAY);
97         orangeCircle.setFill(Color.GRAY);
98     }
99 }
100 }
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