CPSC 210

Lecture/Lab on Robust Classes

1. Checkout the `RobustTrafficLightStarter` project from the lectures repository.

2. Look at `ca.ubc.cpsc210.trafficlight.model.TrafficLight` class.
    a. Read through the invariants specified for the class.
    b. Read through the unit tests in the `TrafficLightTests` class (not `RobustTrafficLightTests`)
    c. Look at `testsofThingsIdRatherNotBeAbleToDo`. Make sure that assertion checking is turned off and run the `TrafficLightTests` tests. Do they pass? Why? Should they?
    d. Turn assertion checking on and run the tests again. Do they pass? Why? Should they?

3. Let's improve the robustness of the `TrafficLight` system. For the `TrafficLight` class:
    a. Familiarize yourself with the exception hierarchy that has been designed for you in the `ca.ubc.cpsc210.trafficlight.model.exception` package.
    b. Write a specification for the `TrafficLight.setColour` method that is more robust than the version provided to you.
    c. Modify the implementation of `setColour` to adhere to the more robust specification. It is recommended that you design a couple of helper methods to make the implementation cleaner:
        i. `isValidColour` that takes a colour as a parameter and that returns true if the colour is a valid traffic light colour and false otherwise.
        ii. `isInSequence` that takes a colour representing the next traffic light colour as a parameter and that returns true if that colour can follow the current colour and false otherwise.

4. Do you have to make changes to `TrafficLight.advance` method? Make any appropriate changes you think are needed.

5. Uncomment the code in `RobustTrafficLightTests.java` and run the tests contained in `RobustTrafficLightTests` (not `TrafficLightTests`) and make sure that they all pass.

6. Do you have to make any changes to the `IntersectionGUI`? Make any appropriate changes you think are needed. Consider whether you should print any messages to the user from `IntersectionGUI`. Note that this class has a field of type `JLabel` that is used to display the message at the top of the window. Look up the API for the `JLabel` class to figure out how to change the text that appears.

7. Why are the exceptions checked instead of unchecked?