CS 1181 - Computer Science II

Practice Problem: Testing Time

Purpose: To review and practice unit testing.

For this lab you will use starter code provided in Pilot. The starter code implements a class called Clock that stores a time of day. A Clock object contains an integer hour, an integer number of minutes, and a string designating whether the hour is a.m. or p.m. The start code also includes a main method demonstrating the use of a Clock object.

Part A:

Your task is to write a single unit test for class Clock. This test should ensure that the `minutes` field of class Clock always has a value between 0 and 60, inclusive.

Demonstrate for your lab TA that your unit test **fails** with the code provided.

Next, update class Clock so that when a Clock object is created with a minutes value not in the range, the minutes value is set to zero instead. Demonstrate for your lab TA that the updated Clock code passes your unit test.

*Note: Setting the value to zero is **not** a good choice. What would be a better way to handle an invalid minutes value?*

Part B:

Class Clock also includes a method called `getEarlier`. This method expects two Clock objects and returns a reference to the one with the earlier time. Your task is to write a *comprehensive* set of unit tests showing that this method works correctly. To start with you may want to test what happens when:

- The first time is p.m. and the second is a.m.
- Both times are identical
- Both times are a.m., but the times are not identical
- etc.

Think of every case you can and write a test for that case. Demonstrate for the lab TA that the `getEarlier` method passes all your Unit tests.