CSE1030 Lab 02

Tuesday, July 8, 2014
Due: Thursday, July 10, 2014, before 17:00

Introduction

The goals of this lab are to implement a small immutable class representing 3D points.

You will need to implement the following features in your class:

- constructors
- accessor methods
- `equals` method
- `toString` method

Question 1: Implement a small immutable class

Recall that an immutable class is a class whose instances cannot modify their state after they have been constructed.

Implement the class named `IPoint3D` that represents immutable points in the real 3D plane. Every `IPoint3D` object has *x*, *y*, and *z* coordinates.

In eclipse:

1. Create a new Java Project (perhaps called `lab2`)
2. In your project, create a new Package named `cse1030.drawing`
3. In the package `cse1030.drawing` create a new Java class named `IPoint3D`.
4. Complete the class `IPoint3D` so that it implements the following API:
   - cse1030.drawing.IPoint3D

   This means that you must create and complete the following fields, constructors, and methods:

   - a field for the x coordinate
   - a field for the y coordinate
   - a field for the z coordinate
   - `IPoint3D()`
   - `IPoint3D(double x, double y, double z)`
   - `getX()`
   - `getY()`
   - `getZ()`
   - `distanceTo(IPoint3D other)`
   - `equals(Object obj)`
   - `toString()`

5. Finally, create a main function that demonstrate how your code works. E.g.,

```
Vector 1: (3.0, 3.2, 4.6)
Vector 2: (5.0, 3.8, 5.3)
Vector 3: (6.0, 3.7, 7.7)
Vector 4: (6.0, 3.7, 7.7)

V1 - V2 distance: xx
V1 - V3 distance: xx
V2 - V3 distance: xx

V2 is equal to V4: false
V3 is equal to V4: true
```

Submit

Submit your solution using the `submit` command. Remember that you first need to find your workspace directory, then you need to find your project directory.

```
submit 1030 L2 IPoint3D.java
```

Alternatively, you may use the web form at
`https://webapp.eecs.yorku.ca/submit/index.php`

Some things to think about

- Which of the fields needed to be kept static or non-static, private or public, final or non-final?