Group Exercise: Rectangle Class
CSCI-UA.0101-00X, Fall 2015
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Step 0: Find a partner, at least one person should have a laptop.

Step 1: Create a project in Eclipse called RectangleExercise and create a new class called Rectangle.java. In Eclipse, do not check the box to add a main method. Moreover, Rectangle.java does not have a main method. Next, create a second class called TestRectangle.java, this one does have a main method.

Step 2: We start by implementing Rectangle.java

a. What data does a rectangle have? What are its attributes? Well, its a 2D geometric object, its two dimensions are height and width. So we have two instance variables height and width, lets make them of type int. (don't worry about access modifiers.)

b. The next thing we need for our Rectangle is a constructor. Remember a constructor is like a special function that is named the same as the class and has no return type. Its what gets called when we create a class with 'new'. You should have one constructor that takes both height and width as parameters. It should initialize the instance variables in step a with their values.

c. The last thing we need is the behavior. So remember, Rectangle is our 'noun'. So what are its 'verbs'? In other words, what methods does the Rectangle have?
   • A 'getArea' method to calculate the area of the rectangle, it takes no arguments and returns a long. (area = height * width)
   • A 'isSquare' method that takes no parameters and returns a boolean, true if the rectangle is a square.
   • A 'draw' void method that takes no parameters and displays the rectangle via System.out. For example, if height = 5 and width = 3 it would display the following... (don't worry about cases where either dimension is less than 3)

* * * * *
*         *
* * * * *

Step 3: Finally, we implement TestRectangle.java. In the main method...

A. Instantiate a Rectangle object with the parameters height = 15 and width = 10. (This is just calling new, ex. like Scanner)

B. Use the getArea method and print its result via System.out.

C. Use the isSquare method and print its result via System.out.

D. Use the draw method.

When you have this ready, raise your hand and show me the result!

Bonus:

Add a second constructor that takes no arguments and initializes the values of width and height to the values of two private, static variables in the Rectangle class.

Ex
   static int DEFAULT_WIDTH = 3;

Update TestRectangle to call this new constructor on another instance and print the result of getArea().