Assignment #3 – Thinking Inside of the Box

Prepare to work on this assignment by creating a work folder called assign3 in your w-number folder. Call your main program BoxThink.java. Include source files for any other classes used by your program in the same folder. If there are any resource files used by your program, they should be included in this folder as well.

What to do

This assignment is a slight modification of problem 7.1 (pp. 255-256) of the sixth edition textbook, as follows:

7.1  (The Rectangle class) Design a class named Rectangle to represent a rectangle. The class contains:

- Two double data fields named width and height that specify the width and height of the rectangle. The default values are 1 for both width and height.
- Two integer data fields named xOrig and yOrig that specify the coordinate location of the upper-left corner of the rectangle.
- A string data field named edgeColor that specifies the color of a rectangle edge. The default color is black.
- A string data field named fillColor that specifies the interior color of a rectangle. Hypothetically, assume that all rectangles have the same interior color. The default color is white.
- A no-arg constructor that creates a default rectangle.
- A constructor that creates a rectangle with a specified width and height.
- The accessor and mutator methods for all six data fields.
- A method named getArea that returns the area of this rectangle.
- A method named getPerimeter that returns the perimeter of this rectangle.
- A method named drawMe that takes a reference to your main graphics program as a parameter, and draws the rectangle on its graphics canvas.

Draw the UML diagram for the class (use MS Word which has facilities for making boxed text, and submit it as assign3.doc in your assign3 folder). Implement the class. Assuming that the graphics window will be 640Hx480W, make sure that unworkable values are never allowed for the data fields (convert them to reasonable alternatives). Write a test program called BoxThink that:

- Creates two Rectangle objects. Assign width 4 and height 40 to the first object and width 3.5 and height 35.9 to the second object. Assign origin points of (0, 0) to the first object, and (100, 800) to the second object. Assign edge color of blue to first object, and green to the second object.
- Assign interior color red to all Rectangle objects.
- Display the properties of both objects in the console area, display their areas and perimeters in the console area, and draw the rectangles themselves in the graphics canvas.

What to turn in

Commit all necessary source code files and any necessary resource files in your assign3 folder using CVS before the beginning of class on Thursday, March 8, 2007. Remember that you may commit multiple times if you wish (and it is a good idea to do so for every major change or at the end of each work session). Remember to have fun, and get help from the instructor when you need it!