

## Lab 14

**Instructions:** Complete the steps below. Be sure to upload a copy of all your source code (.java) files to the link on Brightspace by its deadline, so that you can receive credit for this lab.

Use the following UML Editors to develop UML diagrams for your class:  
download a UML editor, such as Violet (you can download the .jar file and run it with `java -jar violet.jar`):

- <http://alexdp.free.fr/violetumleditor/page.php>
  - <https://www.draw.io> (nothing to be downloaded, just run in the browser, save the diagrams in Google Drive): use the UML tools
- Note: there are other UML tools such as Visual Paradigm Community Edition or UMLet, but they are more complicated to use.
1. Rectangle.java and Rectangle.jpg:
    - Design and implement a class named Rectangle to represent a rectangle. The class contains:
      - a. 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.
      - b. A string data field named color that specifies the color of a rectangle. Hypothetically, assume that all rectangles have the same color. The default color is white.
      - c. A no-arg constructor that creates a default rectangle.
      - d. A constructor that creates a rectangle with the specified width and height.
      - e. The accessor and mutator methods for all three data fields.
      - f. A method named `getArea()` that returns the area of this rectangle.
      - g. A method named `getPerimeter()` that returns the perimeter.
    - Draw the UML diagram for the class using any UML editor. Implement the class. Write a test program 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 color red to all Rectangle objects. Display the properties of both objects and find their areas and perimeters.

**Grading Guidelines:** This lab is graded on a scale of **0-3 points**, assigned as follows:

- **0** - The student did not attend the lab,
- **3** - The solutions are complete OR the student spent the entire lab solving the required lab problems (in this case, the students may not arrive at the lab after the lab started and may not leave until the lab ends).