Sarajevo School of Science and Technology
CS/IS 160 Programming and Problem Solving II
March 2015

Lab #2 – Week 3 – Introduction to Java classes

In this lab, we will explore some basic concepts in *Java* programming language.

Lab setup:

- Create a project named Week3LastnameFirstname
- Create two packages named rectangle and person

1) In package rectangle create two classes **`Rectangle`** and **`RectangleTest`**. Rectangle class models a rectangle with a width and height data member, and which provides methods for setting and getting data properties, for computation of its area, and for printing.

Implement a **`Rectangle`** class with the following specifications:

Private data members (instance variables):

```
- width : double (cannot be negative)
- height : double (cannot be negative)
```

Public constructor:

```
+ Rectangle() (initialize to a "zero" rectangle with width=0, height=0)
```

Public methods:

```
+ setWidth( double w )
+ setHeight( double h )
+ getWidth() : double
+ getHeight() : double
+ computeArea() : double
+ print()
```

Make sure that a user (client of your class) cannot set a negative width or height. In such a case, use the default value of 0. The method **`print`** should output the width and height values to the screen with appropriate labels.

Write a **`main`** method in the **`RectangleTest`** class that declares and creates a single instance of your **`Rectangle`** class. Set the width and height of the object to some values, and print them out using the **`print`** method. Compute the area of your rectangle using its **`computeArea`** method.

50 points

2) Design and implement a class called **`Person`**. The Person class should contain some simple information such as first and last name, age, and gender. It should also contain appropriate constructors, getters and setters. Analyse possible use cases for objects of this class and decide which data types are most suitable for each attribute (here consider alternatives as well as pros and cons of every alternative). Then test your classes without a GUI implementation.

50 points

Extra problems:

3) In package guitest create a class named GuiTest, which we will use to test your **`Rectangle`** class again. Use **`javax.swing.JOptionPane`** to ask a user to input how many times we should test the Rectangle class. Use this number to terminate a **`for`** loop, within which you need to use **`JOptionPane`** to input width and height of a rectangle. Create a Rectangle object, set its width and height, and then print them out using its **`print`** method. Also calculate its area. *Note*: Use methods **`Integer.parseInt`** or **`Double.parseDouble`** to convert numbers written as strings into integers or doubles.

4) Use **`javax.swing.JOptionPane`** to create a GUI interface to enter and display information for your Person class.