Assignment 16
(Java Programming Practices)
(Due **by Thursday Midnight**, 5/6/2010)
(**No Late Submission** Accepted)

Your name:	Score:

Important Notice:
1. Have the Instructor check your submission before the due time and return this paper to the instructor (if you cannot have the instructor check in the lab, send your project—a compressed file that contains the WHOLE project)—to the instructor by email):
2. The full score for this assignment is 100 points, **20%** of which go to your J**ava code programming style** (if you have followed the Java Code Convention).

First download Java Project Examples at
http://cs.salemstate.edu/~b_yi/2010Spring/CSC201J/resources/CSC201J_projectExamples_from_Joe.zip
(prepared by Prof. Kasprzyk) (this compressed file is at the course website: go through the link "Here" and then you will find it right under "Supplementary Materials" in the resource page). Test the projects and pay particular attention to the following topics: (1). Interface, Class (and Main class); (2) verification procedures.

Then apply what you have learned from these above Java Projects to the following project:

(1). Create an Interface called **RectangeSpec** that specifies two methods: *calArea*() and *calPerimeter*(), both of which should have a return data type of double.

(2). Create a class **Rectangle** (which should *implement the interface* you defined above) with attributes *length* and *width*, each of which defaults to 1.0. Provide methods that calculate the rectangle's perimeter and area. It has *set* and *get* methods for both *length* and *width*. It also has **two** constructors: one with no argument and another one that takes two arguments (i.e., the length and width). The set methods and constructors should verify that length and width are each floating-point numbers larger than 1.0 and less than 20.0 (otherwise, the default value should be used instead). You must also provide a *toString* method that clearly displays the rectangle's length, width, perimeter, and area.

(3). Then write a program to test class *Rectangle* (this program should be implemented in another class) in which you create 2 rectangles (*Rectangle* instances) with its 2 different constructors (your program must prompt the user for the length and width inputs for one of the constructor). The program will display the information about the two rectangles (with use of *toString* method). Then choose one of the rectangles and change its width and length with a negative number and a number larger than 20.0, display the information about this rectangle again.