EGR 125 - Introduction to Engineering Methods (C++) Due date: _____
File: N125-Ch9L

Chapter 9 Homework – Objects and Classes

Reading Assignment:

Read Chapter 9 in Introduction to Programming with C++, 3rd Edition by Liang

Problem Assignment:

Submit each of the following by the assigned due date.

1. (10 pts) Work CheckPoint Exercise 9.5 on page 350.
2. (45 pts) Work Programming Exercise 9.1 (class Rectangle) in the textbook on page 367. Additional specifications:
   - Use separate header and implementation files.
   - The main program (not the functions) should display the values of perimeter and area after calling the functions.
   - The problem refers to ***accessor*** (get) and ***mutator*** (set) functions for all the data fields. This means the following functions should be included:
     - ***getHeight( );***
     - ***getWidth( );***
     - ***setHeight( );***
     - ***setWidth( );***
   - Run the main program for two cases (each case has two rectangle):
     1) Text example (W = 4, H = 40 for the first rectangle. W = 3.5, H = 35.9 for the second rectangle)
     2) An additional example of your choice.
   - The program output should include the length, width, area, and perimeter.
   - Turn in printouts of:
     - The main function
     - The class implementation file
     - The class header file
     - The results from running the program three times.
     - The class diagram (UML diagram) – you may want to create this in Word or Excel

2. (45 pts) Work Programming Exercise 9.6 (class QuadraticEquation) in the textbook. Additional specifications:
   - Use separate header and implementation files.
   - The main program (not the functions) should display the values of roots or any error messages.
   - Run the main program for three different sets of values for a, b, and c.
     1) One example with a positive discriminant – display the two roots
     2) One with a zero discriminant – display the one root
     3) One with a negative discriminant – display "The equation has no real roots)
   - Turn in printouts of:
     - The main function
     - The class implementation file
     - The class header file
     - The results from running the program three times.
     - The class diagram (UML diagram)