Homework 06

Due Date: Monday 03 March 2014 11:59 PM MST
Note: If you submit after the due date (but before the hard deadline), your submission score will be penalized by 20%.

Hard Deadline: Wednesday 05 March 2014 11:59 PM MST
Note: If you submit any time after the hard deadline, you will not receive credit.

Problem 01 (15 points)

A class called time is given that has separate int member data for hours, minutes, and seconds. One constructor initializes this data to 0, and another initializes it to fixed values. Another member function displays it, in 11:59:59 format. The final member function adds two objects of type time passed as arguments. A main() program creates two initialized time objects and one that isn't initialized. Then it adds the two initialized values together, leaving the result in the third time variable. Finally it displays the value of this third variable.

- Modify the time class so that instead of a function add_time() it uses the overloaded + operator to add two times. Add statements to main() to test this operator.

- Augment the time class referred to in Exercise 3 to include overloaded increment (++) and decrement (--) operators that operate in both prefix and postfix notation and return values. Add statements to main() to test these operators.

Problem 02 (15 points)

A class called Complex is given that enables operations on so-called *complex numbers*. These are numbers of the form realPart + imaginaryPart * *i*, where *i* has the value

$$\sqrt{-1}$$

In the given program, the operator + (to calculate addition of complex numbers) and == (to allow comparison of complex numbers) have been overloaded to work properly with complex numbers.

- Follow the example of overloaded + operator, modify the class to overload the – operator to calculate subtraction of complex numbers.
- Follow the example of overloaded == operator, overload the != operators to allow comparisons of complex numbers.
- Add statements to main() to test these new overloaded operators.