CST 3503
Instructor: Adnan A. Khan
Fall 2021
Assignment 2

Assignment Due Date: Monday November 15, 11:59 pm.

Exercise 1: *(Ref: Fig 9.28 to 9.30)*

a) Develop a SavingsAccount class. Use a **static** data member *annualBonusRate* to store the annual bonus rate for each of the savers (i.e. objects). *(Hint: declare static variable inside the class but initialize it outside the class)*
b) The class contains a private data member *savingsBalance* indicating the amount the saver currently has on deposit.
c) Provide member function *calculateMonthlyBonus* that calculates the monthly bonus by multiplying the *savingsBalance* by *annualBonusRate* divided by 12; this bonus should be added to *savingsBalance*.
d) Provide a **static** member function *modifyBonusRate* that has a parameter and use it to set the static *annualBonusRate* to a new value.
e) Write a driver program (containing *main*) to test class SavingsAccount.
    - Instantiate two different objects of class *SavingsAccount*, *saver1* and *saver2*, with balances of $2000.00 and $3000.00, respectively.
    - Set *annualBonusRate* to 3 percent only **once**.
    - Then calculate the monthly bonus and print the new balance for object, *saver1*.
    - Will the *annualBonusRate* be same for all objects? Explain your answer.

Exercise 2: Download Data-Assign2.zip folder from Assignment2 in Blackboard. Unzip it. Consider class Complex given in Figs. 10.14–10.16 (these figs. are in Data-Assign2 folder). The class has two private data members, *real* and *imaginary*.

a) Overload the << operator to enable output of data members of complex objects. Make the overloaded operator function a friend of class Complex.
b) Overload the == operator. The overloaded operator function compares two complex objects. It returns true if both data members of two objects are equal and false otherwise.
    - It first checks whether *real* data member of two complex objects are equal or not.
    - If *real* data members of two objects are equal, then it checks whether *imaginary* data member of two objects are equal or not.
c) Overload -- operator (only prefix) that will decrement *real* data member of an object by 1.
d) Test the overloaded <<, == and -- operator (only prefix) by using them in fig 10.16

Submission: Submit the assignment via Blackboard. From the CST3503 Course in Blackboard, Click *Assignments and Classwork* link on the left panel to access the Assignment. Click on Assignment2 and then attach the zipped (.zip) file containing all .cpp and .h files.

- Name of the zipped file will be your lastname_assign2 (e.g., khan_assign2)
- Make sure zipped file contains all code files like .cpp and .h files.
- Do **not** submit only **.sln** file as it cannot be opened from another computer

Late Submission: 10% off each week from due date.