ITSE 2321 – OBJECT-ORIENTED PROGRAMMING JAVA
Program 8 – Classes and Objects

Create a class called **SavingsAccount**. The class should have a static variable named **annualInterestRate**, to store the annual interest rate for all account holders. Each object of the class should contain a private instance variable named **savingsBalance**, indicating the amount the saver currently has on deposit.

Write methods to perform the following:

- ***calculateMonthlyInterest*** – calculates the monthly interest and adds it to the balance.
- ***depositAmount*** – allows the customer to deposit money into the account (thereby increasing the balance. Do not accept negative amount.
- ***withdrawAmount*** – allows the customer to withdraw money from the account (thereby decreasing the balance. Do not accept negative amount.
- ***modifyInterestRate*** (static) – allows the bank to change the annual interest rate. Accept only floating-point values between 2 and 5.
- ***toString*** – get string representation of **SavingsAccount** object (prints the variable, savingsBalance

Write a test class named **Program8** to test the **SavingsAccount** class. Instantiate two objects, saver1 and saver2, with balances of $2000.00 and $3000.00, respectively. Set the annual interest rate to 4%, then calculate the monthly interest for each of the 12 months, starting with January, and print the new balance, at the end of each month, for both savers.

Use a setter method to deposit $1500.00 to saver1's account and withdraw $550.00 from saver2's account. Next use a setter method to change the annual interest rate to 5% and calculate the **next month's** interest and print the new balance for both savers.

No input, processing or output should happen in the main method. **All work in the test class should be delegated to other methods in the class**. Include the recommended minimum documentation for each method. See the program one template for more details.

All methods not indicated as static should be non-static.

Every method in your program should be limited to performing a single, well-defined task, and the name of the method should express that task effectively.

Run your program and copy and paste the output to a file named **Program8output.txt**. Create a folder named, **YourFullName_Program8**. Copy your source code and the output file to the folder. Zip the folder and upload it to Blackboard.

Before you upload your program to Blackboard:

- Ensure that your code conforms to the style expectations set out in class and briefly discussed below.

- Make sure your variable names and methods are descriptive and follow standard capitalization conventions.

- Put comments wherever necessary. Comments at the top of each module should include your name, file name, and a description of the module. Comments at the beginning of methods describe what the method does, what the parameters are, and what the return value is. See the **Program1-Template.java** for more details.

- *Program readability and elegance are as important as correctness.* After you have written your method, read and re-read it to eliminate any redundant lines of code, and to make sure variables and methods names are intuitive and relevant.

Read the assignment very carefully to ensure that you have followed all instructions and satisfied all requirements. **You will not get full credit for this program if it is not written as instructed even if it works as expected**.