CS 1050, Mr. Kramer Programming Assignment #9 # of pts: 80

Purpose Calculate savings and investment amounts using Java classes. This builds on the ideas in Assignments #2 and #5.

Due Date Per the Course at a Glance. Cannot be resubmitted.

Submissions In this order: printed copy of the source code with line numbers of both source files (main program and the class), and a screen print showing the output. You will type in three numbers that are the gross pay, savings rate and IRA investment rate, then show those numbers and the output.

Java Topics Java classes, if statements, calculating with percentages.

References Textbook – use the index for relevant topics.

Specification

This program is a revision of Programming Assignments #2 and #5 to use a separate class. See the handout InteractiveAverageClass and InteractiveAverageMain as a model.

Write a separate Java class for calculations named YourName\_S\_09\_Calc that will have three private instance variables of type double for the gross pay, savings rate and IRA investment rate. Note that any calculated fields are NOT private variables in this class. The Java class should contain these methods:

1. A constructor that initializes the instance variables to default values of 0. This Constructor has no parameters
2. A constructor with three parameters that initializes the instance variables to the parameter values. Note this constructor is not used in the assignment.
3. A method for the user to input the gross pay, savings rate and IRA investment rate. Include prompts. Allow values only greater than 0
4. A method that outputs the input values along with appropriate messages
5. A method that returns the savings amount
6. A method that returns the IRA investment amount

This class should be placed in a file that is separate from the class containing the main program. **Note: Only method #2 above has parameters.** As is typical in a class, the rest of the class methods do not have parameters.

Write a Java application main program in Java file YourName\_S\_09 in the order specified below. This code will be in a .java file that is separate from the one for the YourName\_S\_09\_Calc class above. Note that the main method should have savings amount and IRA investment amount as local variables. It should NOT have declarations for the gross pay, savings rate and IRA investment rate.

You can use global scope only for the Toolkit. All other declarations, including creating an instance of the calculation class, should be local to the main program. (If necessary, of course, you can declare local variables in the main program’s methods as needed.)

1. Call a void method in the main program that outputs an explanation of what the program does. Include in the explanation that this program uses a class for caclulations and include your name.
2. Get the gross pay, savings rate and IRA investment rate from the user. Use the method from the calculation class.
3. Calculate the savings amount. Use the method from calculation class.
4. Calculate the IRA investment amount. Use the method from the calculation class.
5. Use a void method to output, with appropriate messages: the gross pay, savings rate and IRA investment rate (use the method from the calculation class), the savings amount, the IRA investment amount and the sum of the latter two.

The style of your code should be similar to that of Interactive Average with a Class. Be sure to include comments – programmer identification, assignment number, section number as appropriate, purpose, and a brief explanation of the methods should appear in the header comment, along with the vocabulary word and quote. Include an explanation for all variables, parameters and methods.