Assignment 1

Grade Calculator

**Due:** Thursday, September 26th

**Objectives:** Input/Output, Variable usage, Arithmetic Operators, Using Methods

This assignment is to be done individually.

For this assignment, you must design and code a program that meets the specifications described below.

Follow best practices when programming. Your code must be properly indented, contain good, descriptive variable names, and have helpful inline comments.

# Calculating grades:

Consider a fictional class with the following rubric (note: this is not the rubric our class):

* 3 assignments, equally weighted, which count for 30% total of your mark
* 1 midterm for 25% of your mark
* 1 final worth 40% of your mark
* 3 quizzes, worth 5% of your mark. The lowest quiz mark is dropped.

Additionally, if students perform better on the final then they did in the rest of the class, the final can be worth 100% of their grade.

You must design and code Java methods that will ask the user to input grades for this class and calculate their final mark. To do so, we will need to define the following methods in a class called GradeCalculator.java:

# calculateAssignment(double asst1, double asst2, double asst3):

This method should take three **double** **parameters**, representing the grades of the three assignments. It should **return** the average grade that the student received on their assignments.

**Note**: You should not be using the Scanner or println() methods inside this method. All information required for the method will be passed as parameters, and the answer you compute will be returned using the return statement. If you are confused by what this means, don’t hesitate to ask me (or your fellow classmates)!

**Tip - Developing Larger Programs:** When we write bigger programs, we’ll often want to create many methods before calling them from our main. You’ll note that writing the main method is the last thing we do in this assignment. As you progress through the assignment, you should use your main method to call the methods you’re writing to check that they work! If you wait until the end to start testing, you’ll have so many bugs to fix that you’ll be overwhelmed. If you are not sure how to do this, don’t hesitate to ask me (or your fellow classmates)!

# calculateQuiz(double quiz1, double quiz2, double quiz3):

This method should take three **double parameters**, representing the grades of the three quizzes. It should **return** the average grade that the student received on their quizzes, with the lowest quiz grade being dropped.

To do this, you will need to use the **min** method, as described in the lecture notes. Note, min only finds the minimum of 2 numbers – you’ll need to use it multiple times to find the minimum of 3.

# calculateTotal(double avgasst, double avgquiz, double midterm, double final):

This method should take four **double parameters**, representing the average grade received on the assignments, the average grade received on the quizzes, the midterm grade and the final grade. It should compute a weighted average, using the rubric shown above. It should return the weighted average.

# calculateGrade():

This method should take no parameters. It should start by prompting the user to **input** their 3 assignment grades, their 3 quiz grades, their midterm grade, and their final grade. It should then use the methods you defined above to calculate the assignment average and quiz average. Once the quiz and assignment averages have been calculated, you should use the results of those methods, along with the midterm and final grade input by the user to compute the weighted average. You should **print** out the assignment average, the quiz average, and the weighted average for the course. Finally, you should **print** the higher of either grade received on the final or the computed average to account for the 100% final rule. (To do this you will need to use the **max** method, which works similarly to the **min** method described above, but instead returns the highest of the inputs)

Once all of the above methods have been defined, you can call **calculateGrade()** from within your **main** method**.**

Remember: You must follow the specifications exactly! This means you must create the methods as specified. The only method which should be printing information or using the Scanner is **calculateGrade -** all other methods should be getting information via input parameters, and sharing their results via return statements.

Sample Execution:

Please input your grade on assignment 1: 70

Please input your grade on assignment 2: 80

Please input your grade on assignment 3: 90

Please input your grade on quiz 1: 75

Please input your grade on quiz 2: 80

Please input your grade on quiz 3: 90

Please input your grade on the midterm: 90

Please input your grade on the final: 75

Your assignment average is: 80

Your quiz average (after dropping the lowest) is: 85

Your weighted average is: 80.75

Your final grade is: 80.75

# To submit:

* Your source code in a file called GradeCalculator.java