**CSCI 1583 Fall 2013**

**Homework Three – Grade Book**

You have written two programs so far. By now you should be comfortable writing programs. As mentioned in the last homework, developing your ability to determine the sequence of steps, decisions, etc. that need to happen in a program is very important. To start this exercise you should get pencil and paper and work out in plain English (or whatever is your primary language) the logic of the program. Do this before you sit down in front of the computer.

You must fully understand the problem you are trying to solve with your program, and need to workout the basic steps for solving it, in some detail, before you can write a program to solve it.

**Submission**

As with the last assignment, you will need to create a new project repository on the GitLab website. You will then need to clone the repository to your machine. Once you have finished writing the program, add , commit, and push your file to the remote repository on the GitLab server. Be sure to name your file Homework3.java.

**Problem Statement**

For this assignment you will be writing a grade book program. The program will work for one student. It will need to take as input the students name. The user will then be asked to input grades into three categories in this order: 1) homework; 2) quizzes; 3) tests.

The grades in a given category will be averaged to one number that is the average of all grades in that category. The final average will be the weighted average of each category, where homework is worth 25% quizzes are worth 25%, and test are worth 50%. Like this

Homework Grades: 65, 70, 75, 80, 80 Homework Average: 74

Quiz Grades: 75, 80, 85, 80. Quiz Average: 80

Test Grades: 75, 80, 85, 75 Test Average: 78.75

Final Average = 0.25\*HomeworkAvg + 0.25\*QuizAvg + 0.50\*TestAvg = 77.87

The sequence of input and output needs to be exactly this:

1. Print a menu with these choices:   
 1) Average grades for a new student;

2) Quit

2. If the user enters “1”, ask for the student’s name:

3. The user enters the student's name

4. Print instructions telling the user the order the grades will be entered in and what to enter to indicate that there are no more grades to enter for that category.

5. For each category print what category of grade they are entering then the user is repeatedly prompted to enter a grade and this keeps going until a “-1” is entered.

6. Once the user has entered a “-1” for a category move on to the next category.

7. Once grades have been entered for all three categories, the student’s name and current average is printed to the screen.

8. Repeat steps 1 through 6 until the user enters “2” at the main menu to indicate that the user has no more students to grade, and the program should terminate.

**Program Structure**

In the last assignment you were given pseudo-code to follow. In this assignment you will have to do a little more thinking for yourself. Below is an overview of the things you will need in your program.

1. Declare any variables that will be need for the program first

2. Create a loop that will repeatedly execute steps 3 to 10 of this program structure, until the quit option is chosen.

3. Print the main menu as described above

4. Ask for the students name and store it in a variable

5. Print the instructions to the screen

6. Create a loop asking the user for the next homework grade.

7. Inside the loop you will need to add the entered grade to a running total

8. Increment a counter tracking the number of grades entered for that category.

9. After the loop calculate the average for that category

10. Create two similar loops, as steps 6 to 9 one each for quizzes and tests

11. After all three category loops, calculate the final average using the formula given in this handout

12. Print the students name and the newly calculated final average for that student

13. The loop created in step 2 should loop over steps 3 to 12 until the user enters a 2 when prompted by the main menu.

**Due Date:**

You need to have completed the assignment and pushed your source code by the start of class on Monday, September 16th.