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| **CS1101 Lab 12 – Repetition and** File Handling |

**Released on: Monday October, 30**   
**Due on: Monday November, 6**  
**How:** submit on Piazza in folder lab12  
**What:** a zipped folder named after you as LastNameFirstName-Lab12.zip, which contains the file myIO.java completed as requested and a word document named LastNameFirstName-Lab12.docx

**Objective of this lab:** more practice on **repetition** and learn how to **handle files**.

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| In this lab, you will become familiarized with **reading from a file** and **writing in a file**. You will have to implement some I/O (input/output) code yourself.  At the same time, you will get more practice on repetitions (loops and recursion) and arrays. |

You are given two java files: **ReadWrite.java** and **myIO.java**, and one txt file: **students.txt** that will serve as an example of file to read for Activity 2 of this lab.

Note: ***students.txt*** is just an example. For instance, you are likely to test your code on files that have a lot more (or fewer) students and a lot more (or fewer) grades per student.

**Here is what you have to do:**

Activity 1/ You have to **fully understand the code** that is given to you in ReadWrite.java and the method dimensionsFile in myIO.java, and be able to explain it to your TA or instructor whenever asked. This includes being able to explain what would happen if part(s) of the code were to be altered.

Activity 2/ You then have to **implement three methods: readGradesFromFile, writeAveragesToFile, and averageAtGivenLine** in myIO.java, as specified directly in the code, to read information from a file and write relevant information to another file based on what you read, and finally to practice recursion. For each of these methods,

**1/ Write its algorithm** in the word document that you will turn in, and

**2/ Write the java code of these algorithms** in the java file provided to you, myIO.java.

Be ready to demonstrate the working of your java program and to explain what it does to your TA.

**What do you have to turn in?**

A zipped folder named after you as LastNameFirstName-Lab12, which contains:

1/ The **updated myIO.java** file with your name as line 4 of the code

2/ A full description of the methods of Activity 2 in a word document that you will name **“yourLastNameYourFirstNameLab12.docx”**. A good description of a method contains (1) what it is supposed to do, including a clear description of its signature, and (2) how it works – in other words, its algorithm (not java).

**Criteria for grading:**

0/ [10 pts] Your lab is submitted according to specifications  
1/ [ 5 pts] Your file should compile and execute without any glitch  
2/ [15 pts] The algorithms you described in the word document are sound and unambiguous  
3/ [15 pts] When executed, your program should perform as expected (15 points per correct method)  
4/ [20 pts] Your code is a correct translation of your algorithms, and it makes sense  
5/ [10 pts] Your code is well indented  
6/ [10 pts] Your code is commented appropriately (think that someone else would use it in the future)  
7/ [10 pts] When asked to demonstrate your lab, you show mastery of the java file content and are able to modify it on the spot as requested