EECS1022 -Summer 2022- Lab05
Due Date: Friday, July 1, 2022, before 22:00

Contents

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Instructions:

Important Reminders

- You should attend your lab session (the one you are enrolled in). If you need to change your lab enrollment, you should contact the Undergraduate Office in the department. *Instructors or TAs cannot change your enrollment*.

- You can submit your lab work in eClass any time before 22:00 on Friday (**July 1, 2022**) of the week the lab is due. Your last submission will overwrite the previous ones, **and only the last submission will be graded**.

- The deadline is strict with no excuses: **you receive 0 for not making your electronic submission in time**. *Emailing your solutions to the instructors or TAs will not be acceptable.*

- To submit your work, you need to use the York eClass.

- **Your submission will be graded by JUnit tests given to you and additional JUnit tests covering some other input values. This is to encourage you to take more responsibility for the correctness of your code by writing more JUnit tests.**

- Developing and submitting a correct solution for this lab without compilation errors is essential. Hence, it's important you take a reasonable amount of time to test your code in different ways. If you submitted a solution with a small mistake in terms of syntax or do not comply with lab instructions, then you may receive 0 as a grade for the implementation of this lab

- There will be **a 25% penalty** on your lab final grade if your submitted code does not compile due to *minor compilation errors*, given that TAs can fix these minor compilation errors. **You will receive a zero if your code contains major compilation errors that TAs can not fix**.

Academic Honesty

- Students are expected to read the Senate Policy on Academic Honesty. See also the EECS Department Academic Honesty Guidelines.

- **All labs are to be completed individually: no group work is allowed. Do not discuss solutions with anyone other than the instructor or the TAs. Do not copy or look at specific solutions from the net. If you are repeating the course, you are not allowed to submit your own solution developed in previous terms or for other purposes. You should start from scratch and follow the instructions.**

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Learning Objectives

The goal of Lab5 is to familiarize the student with Java static (Utility) class, JUnit Testing, Java Control Structures (selection structures, repetition structures, and nested Loops), `string`, **1D** and **2D** Arrays. In Lab5, we will use the JUnit tool to test your implementation of `ArrayUtility` and `StringUtility` Classes. The Classes specifications are provided to you in the form of API. Your task is to write the Java code that meets these classes' specifications. Also, test your Java code using JUnit testing.

- To create a static (Utility) class where all methods are static.
- To use Use Java controls structure (selection structures, repetition structures, and nested Loops)
- To be familiar with using Arrays: 1D and 2D
- To use String data type and its methods
- To use JUnit Tests to verify your work
- To create methods based on a given API

Style Rules

Please refer to the Lab2 handout for style rules.

Getting Started

1. Start eclipse.
2. **Download the starter code "Lab5.zip" from the eClass course site**
3. Import the test project by doing the following:
    1. Under the **File** menu, choose **Import...**
    2. Under **General,** choose **Existing Projects into Workspace** and press **Next**
    3. Click the **Select archive file** radio button, and click the **Browse...** button. You may have to wait about 10 seconds before the file browser appears.
    4. In the file browser that appears, navigate to your home directory.
    5. Select the file **Lab5.zip** and click **OK**
    6. Click **Finish**.
4. All files you need for this lab should now appear in eclipse.

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Lab Structure

After successfully importing the starter code/project "Lab5.zip"

The lab folder/directory structure is as follows:

- **src/lab5**/: directory contains Java files: **ArrayUtility.java, StringUtility.java and Rectangle.java**.
- **src/lab5**/: directory contains Java files (JUnit test cases): **JunitTest_ArrayUtility.java** and **JunitTest_StringUtility.java.** These files contain several JUnit test cases that can help to test your code.
  It should be noted that you need to tun the JUnit tester **JunitTest_ArrayUtility.java** *and* **JunitTest_StringUtility.java.** *after you complete the* **ArrayUtility.java and StringUtility.java** *classes to check your work. Nonetheless, passing all given tests does not guarantee full marks for this lab. Therefore, you are required to write additional tests to ensure the correctness of your implementations.*
- **doc/**: directory contains Java documentations for lab5 in HTML format.

Lab Restrictions:

- Any use of Java library classes or methods (e.g., **ArrayList, System.arraycopy**) is forbidden. That is, there must **not** be any import statement at the beginning of this class. Violation of this requirement will result in a **70% penalty** on your marks.

- **Hint: You may use `java.util.Arrays` class, class `Character` or Class `String`.**

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Lab Exercise

In this lab, you need to write Java code to implement the **ArrayUtility.java** and **StringUtility.java** classes described by the given Java API inside the **doc folder** where the documentation for this lab is stored. You'll see there is a file called **index.html**. Clicking on this file shows the lab/project documentation in your browser.

You do not have to include JavaDoc comments.

Submit your work by using the course eClass

Check List:

Before submitting your files for this lab, you need to make sure you completed the following

	There is No compilation error generated from your implementation
	The **ArrayUtility.java and StringUtility.java** files contain the implementation for this lab.

Submit The Following File:

1) You need to submit **two** files **ArrayUtility.java and StringUtility.java.**