EECS 3311
Software Design
Lab 3 (100 points), Version 1

Instructor: Song &Ilir
Release Date: March 3rd, 2022

Due: 11:59 PM, March 14th, 2022

All your lab submissions must be compilable on the department machines. It is then crucial that should you choose to work on your own machine, you are responsible for testing your project before submitting it for grading. This lab is intended to help you get familiar with the basic design by contract principles via JML[1].

Please watch the tutorial video of JML in echo360 (i.e., Lab 3 Tutorial) before you start this lab.

Check the Amendments section of this document regularly for changes, fixes, and clarifications.

Ask questions on our course slack channel.

1 Policies

- Your (submitted or un-submitted) solution to this assignment (which is not revealed to the public) remains the property of the EECS department. Do not distribute or share your code in any public media (e.g., a non-private Github repository) in any way, shape, or form before you get the permission from your instructors.

- You are required to **work on your own for this lab**. No group partners are allowed.
- When you submit your solution, you claim that it is solely your work. Therefore, it is considered as an violation of academic integrity if you copy or share any parts of your code or documentation.
- When assessing your submission, the instructor and TA may examine your doc/code, and suspicious submissions will be reported to the department/faculty if necessary. We do not tolerate academic dishonesty, so please obey this policy strictly.

- You are entirely responsible for making your submission in time.

- You may submit multiple times prior to the deadline: only the last submission before the deadline will be graded.
- Practice submitting your project early even before it is in its final form.
- No excuses will be accepted for failing to submit shortly before the deadline.
- Back up your work periodically, so as to minimize the damage should any sort of computer failures occur. You can use a **private** Github repository for your labs/projects.
- The deadline is strict with no excuses.
- Emailing your solutions to the instruction or TAs will not be acceptable.

[1] http://www.openjml.org/

Amendments

- so far so good

2 Problem

In this lab, you will work on completing the contracts of a simple Library system, which involves two classes, i.e., Library and Book. An object of Library contains a list of books. A library can add new books, delete existing books, find the books by given title, etc. The project we provided has been implemented completely, your task is to write appropriate contracts by using JML.

The resource of JML can be found here:

- JML command-line tool: V-0.8.51
- How to run: Running OpenJML.html
- Contracts examples: http://www.openjml.org/examples/
- **Tutorial of Lab3 is in** https://echo360.ca/

3 Getting Started

- Go to the course eClass page. Under Labs&Project, download the file **eecs3311lab3.zip** which contains the completed java source file for this lab.
- Unzip the file, and you should see a Java file named **Library.java**. Move this file into the folder of JML tool.
- You will use **the command-line version of JML** to verify your contracts.
- Make sure there's no space in the name of your path, otherwise JML will crash, e.g., the following one does not work: " Users\\wangs\\Desktop\\EECS ␣ 3311\\lab3\\" as there's a space in "EECS␣3311".

4 You Tasks

4.1 Complete the Contracts

You are expected to write valid contracts in the **Library** class. Each instance of "TODO:" in the class indicates which contract you have to complete.

4.2 Verify Contracts with JML

You are expected to verify your contracts with the type-checking provided by JML. Note that, the static checking and runtime assertion checking are not required.

command: java -jar openjml.jar Library.java

5 Submission

By the due date, submit via eClass.