Lab 2

Debugging

Announcements

Homework 0B is due Wednesday, 1/29 at 11:59 pm

Pre-Semester Survey is due Friday, 1/31 at 11:59pm

Mini-Project 0 is due Monday, 2/3 at 11:59 pm

Homework 1 is due Friday, 2/7 at 11:59 pm

Test Driven Development

What is Test Driven Development (TDD)?

A **very important** process in software engineering that we will try to iterate throughout this course.

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Test-driven development is a process that involves designing test cases for program features before designing the code that implements those features.

- The idea is to first write test cases to show what your program should do.
- We want to write as little code as possible to pass all tests.
    - We then clean up the code and check if it still passes.

So, why is it important?

It builds a solid foundation. In other words, you know what to expect from your code.

It helps to develop the logic in your code - the tests can be used to guide your thinking as you build your program and add functionality.

It improves the quality of your code. You're keeping your code clean and optimized, as you're testing each step of the way.

It prevents bugs early on in the development process (meaning there's less digging for the bug in your 1000 lines of code).

But seriously, testing will be your best friend in this class. If you don't know where to start, don't be afraid to ask for help!

Debugging

What's debugging?

It's the process of finding and fixing bugs in your program (bugs being some kind of error).

- Test driven development will definitely help in avoiding some nasty bugs, but inevitably, running into bugs is part of the software development cycle.

So, what kind of bugs will you run into and how do you find and resolve them?

Types of Errors

Compile-Time Errors/Compiler Errors: prevents code from compiling

- These errors are typically detected **before** you run your program.
- Ex. Syntax errors like missing semicolon, missing braces, class not found

Types of Errors

Run Time Errors: Errors detected **while running** your program.

- Not detected by the java compiler (aka, you won't see the bug until running the program)
- Ex. Dividing by 0.

Types of Errors

Logical Errors: Mistakes by the programmer.

- Code will run normally without problem, but the **result isn't intended**.
- Ex. You want to multiply two numbers, but instead, your output is the summation of two numbers.

Summary

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So, how to debug?

That's what today's lab is for! You'll learn about the tools at your disposal in the IntelliJ IDE.

- The main takeaway from this lab is getting comfortable with the debugging tools in IntelliJ and how to use them when a bug shows up.

Go through it carefully and make sure to follow along with the lab. Ask questions and play around with the lab until you feel comfortable. This lab is important, and will help you a lot in the future.

Debugging Demo

Lab Overview

An Overview

Lab 2 is due Friday, 1/31 at 11:59 pm.

- As a reminder, to get the lab assignment, run `git pull skeleton main` in your personal repository.

Deliverables:

- Complete `BombMain.java` and find the 3 passwords for each phase.
- **Note: Do not modify Bomb.java or BombTest.java. You will not pass the autograder if you do!**

For help, use cs61b-oh.eecs.berkeley.edu/queue/lab

Attendance

https://forms.gle/jk9dZ1hLyBRsBqFMA