Introduction

Why take this course?

CS151 is great fun. 150 (or whatever your first course in programming was) is essentially an exercise in logic. 151 is much more. Now that you know how to write programs, this course will show you how to use this knowledge to do useful and non-obvious things. When students go on job interviews, the questions they are asked usually concern 151 material.

What we cover

The first two weeks of the semester will largely be devoted to transitioning you from Python to Java. For the rest of the term we will look at the Java Collections Framework (ArrayLists, Stacks, Queues, Binary Trees, AVL trees, HashMaps, TreeMaps, etc.) Each week we will take one of these structures, implement it from scratch, and then write an application program with it. By the end of the term you will know the Collections well, and will be able to implement just about anything you can think up.

Course Structure

We will have

- 2 in-class exams

- A final exam (on Thursday January 20 at 2PM)

- 10 labs, starting this week

The Labs

The labs are where you will do most of your learning. The lab sessions are on Monday afternoons (2:30 to 4:30) and Tuesday afternoons (1 to 3). The lab sessions will only get you started. You will probably spend 8 to 10 hours on each of the labs, so schedule your time well. This week's lab is short; it will take most people about an hour, maybe less.

The labs are due each week on Sunday at 6PM.

Late Work

There are 3 stages of late work for the lab:

- Labs that come in by 9AM on Monday are docked at most 10%. If you get your work in before I send the lab to the graders I might not take off anything.

- Labs that come in by 6PM on Wednesday are docked 50%.

- Labs that come in after 6PM on Wednesday are docked 100%

If you fall behind on a lab you are usually better off getting what you can to work and handing it in on time rather than handing it in late and falling behind on the next lab.

Extensions

Sometimes you get sick. You may use up to 2 Late Lab Extensions that allow you to hand in a lab up to Wednesday at 6 without penalty. To use one include a text file in the folder you hand in called LateLabExtension.txt. In the body of the file say which extension you are using (#1 or #2)

Note that I want lab material to come in by Wednesday under any condition. If you are so sick you can't get out of bed for several days let me know. The LLEs should be enough to handle the usual colds, flus, etc. Save them for when you need them rather than for days when you aren't organized enough to get the labs done on time.

Partners

You are always free to talk to anyone in the class about the labs. One of the things you should be learning in this class is how to talk about code.

The first three labs you need to complete on your own. All of the remaining labs you can write with your partner. Any file you hand in should have a comment at the top listing all of the authors. If you intend to have a career in this field you need to learn to work effectively as part of a team, so find a buddy.

If you work with a partner on a lab the pair of you should hand in one copy, under either of your usernames. Again, every code file should have a comment at the top listing everyone who worked on it.

The Honor Code

This should be very straightforward:

- Don't cheat on the exams
- Be honest about who worked on the labs you hand in.

The Text

Data Structures & Problem Solving using Java by Mark Weiss

You need something to read; you can't learn all of the material in this class from the lectures. You will probably find this challenging to read at the start; it should get easier as you get more experience.

Why Eclipse?

We will be using an IDE (Integrated Development Environment) called *Eclipse*. It is more complex than the tools most of you are used to using. Here is why we use it:

- Eclipse is great at handling programs built from multiple files. Real programs use a lot of files. For example, the project from my Compilers course is made up of about 75 files. Handling a program like this without an IDE is a nightmare.

- Eclipse knows about Java and can save you time that you won't have to spend looking through documentation.

- Eclipse can help you integrate unit testing into your development cycle.

- If you get an internship or job as a software engineer, you will have to work in some IDE. Eclipse is probably the simplest of the professional IDEs.