COMP 215: Introduction to Program Design

Description

This course covers the principles of programming and program design. The course is organized around a number of individual programming assignments that fit together to complete a significant, real-world application (a document management and search engine). Each assignment emphasizes one or more of the basic principles of software design. The Java programming language will be used. An introduction tot he basics of the Java language itself (including Java syntax and semantics) will be provided.

Prerequisite: COMP 182
Credits: 4
Instructor: Chris Jermaine (cmj4@rice)

Textbook

The class textbook is Bruce Eckel's *Thinking in Java.* This book is a very nice reference for the Java programming language. I did not order the book for the Rice bookstore this year because previously, the 4th edition of the book was available for free download electronically. Unfortunately, it no longer is. The book is available from Amazon.com.

Should you buy it? It is up to you. We will not discuss the book in class. It is not required, and many people who had a copy last fall did not use it. Others used it extensively. That fact is that many Java programmers (including me) get used to using Google to get questions answered, rather than any particular textbook.

Meeting Times and Locations

Class will be held Monday, Wednesday, Friday from 10:00 to 10:50 in Duncan 1064.

Topics Covered

At a high level, we will cover: Control flow in Java; Objects, types and classes in Java; Containers; Inheritance and polymorphism; Abstract types and interfaces in Java; Testing; Recursion; Java generics; Linked structures; I/O in Java; and The Java virtual machine and garbage collection. We'll also cover a lot of algorithms and program design.

Communication

The class will have a moderated Google group for all day-to-day communication:

It is expected that if you have a technical question on an assignment or an upcoming exam, you will post it to the group rather than sending an email to either instructor or the TAs. This guarantees a fast response and means that everyone can benefit from the question and the answer. In general, only inquiries of private or personal nature should be made directly to the instructor ("I need to go out of town on Oct 22nd, can I have an extra day..."). Everything else goes to the group.

Classroom times will be reserved for discussion of course material, assignments, mini-quizzes, and other activities. All lectures (where I introduce new material) will be recorded offline, and then made available online as videos with the associated PDF slides (via Dropbox) for you to watch outside of class time. The schedule (when you should be watching each video) will be announced as we go; it is expected that you've been keeping up and watching the videos and studying the slides, or else you might have a difficult time on the in-class activities (which might harm your grade!).

What You Need To Do in the Next 36 Hours

In the next 36 hours, you need to (1) Sign up for the Comp 215 Google group, (2) Get invited to share my Dropbox files (I'll invite you when I let you into the Google group) and make sure you can see them (3) Make sure you have Java and DrJava (http://www.drjava.org/) installed, (4) Watch Lecture 1 (it'll be available on Dropbox), and (5) Attend a lab session Tuesday night, from 7-8 or 9-10 (the location will be announced on the Google group).

Grading and Evaluation

Your grade is based upon a set of programming assignments (80% of your grade) and in-class activities and mini-quizzes (20% of your grade; there will be 25 of these at 1% each; you can drop the lowest 5 scores).

Assignments

This is an assignment-oriented class. There will be ten programming assignments, all completed individually (no teams) using the Java programming language. You will have one to two weeks for each assignment.

The first assignment is a standalone "warmup" assignment. The next nine all fit together so that by the end of the semester you will have constructed a functional document indexing and retrieval system that utilizes a state-of-the-art statistical machine learning model called "Latent Dirichlet Allocation" to answer queries over the indexed documents. Since the assignments fit together, a reasonable question is, "If I mess up on assignment one, am I doomed for the entire semester?" The answer is no, since we will supply you with a library of implementations that you can plug in as a replacement for your own code if you can't get something to work.

(*Warning: the following is approximate, and may be altered/updated; if I do alter this, I'll let you know!*). The warmup assignment ("A0") is worth 4% of your grade and has two parts. For the first part of A0 (1% of your grade) you must show up at one of the lab sessions held during the worst week of class and show that you are able to get a small "Hello World" program running. The second part of A0 (3% of your grade) will be completed on your own.

The next 6 assignments (A1 thru A6) are all worth 7% of your grade each. A7 is 15% of your grade, A8 7%, and A9 12%. A demo of A9 will take place during finals week.

Late Assignments and Extensions

If you let me know at least one week (seven days) before an assignment is due, we will be sympathetic to reasonable requests for additional time due to conflicts with other classes, job interviews, athletic team commitments, and other important life events. However, within seven days of the due date, no extensions will be given for any reason short of a documented, catastrophic, and unforeseeable event that clearly makes it impossible to devote any time to working on the assignment.

All assignments are due at 11:55PM (that is, 11:55 in the evening) of the due date. Assignments that are between one second and 24 hours late will be accepted and will receive a 20% penalty. After 24 hours past the due date, no credit will be given.

In-Class Activities

There are no exams. However, more often than not, there will be an in-class activity that is turned in (a small mini-quiz, for example). There will be 25 of these, with absolutely no make-ups for missed activities. However, since I know that many people will have travel, sports, sick days, etc., the lowest 5 scores you receive (including zeros for missed assignments) will not count towards your grade.

Regrade Requests

These must be made within **one week** of an assignment or an in-class activity being returned. The request must be in writing, typed and printed out, and attached to the assignment or exam (if applicable) and turned into the instructor. You can discuss grading with us orally, but regrade requests must be in writing.

Academic Misconduct

In a programming class, there is sometimes a very fine line between "cheating" and acceptable and beneficial interaction between peers. Thus, it is very important that you fully understand what is and what is not allowed in terms of collaboration with your classmates. Our goal here is to be 100% precise, so that there can be no confusion.

The rule on collaboration and communication with your classmates is very simple: you

cannot transmit or receive code from or to anyone in the class in any way---visually (by showing someone your code), electronically (by emailing, posting, or otherwise sending someone your code), verbally (by reading code to someone) or in any other way we have not yet imagined. Any other collaboration is acceptable.

The rule on collaboration and communication with people who are not your classmates (or your TAs or instructor) is also very simple: it is not allowed in any way, period. This disallows (for example) posting any questions of any nature to programming forums.

As far as going to the web and using Google, we will apply the "two line rule". Go to any web page you like and do any search that you like. But you cannot take more than two lines of code from an external resource and actually include it in your assignment in any form. Note that changing variable names or otherwise transforming or obfuscating code you found on the web does not render the "two line rule" inapplicable. It is still a violation to obtain more than two lines of code from an external resource and turn it in, whatever you do to those two lines after you first obtain them.

Any violations of these rules will be reported to the honor council. Just don't do it!

Students with Disabilities

Students with disabilities should contact the course instructor and Disability Support Services regarding any accommodations that they may need.