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
Website: http://www.clear.rice.edu/comp215/index.shtml
Credits: 4
Instructors: Chris Jermaine (cmj4@rice), Scott Rixner (rixner@rice)

Textbook

The class textbook is Bruce Eckel's *Thinking in Java*. This book is a very nice reference for the Java programming language. We will not "teach from the book" but the book is required because of our feeling that it is important for you to have a trustworthy reference to the Java language at your side. You can download a free PDF for the 4th edition of the book at:

highscore.googlecode.com/files/Thinking%20In%20Java%204th.pdf

The 4th edition is the official "required" class textbook available at the Rice bookstore, but the 5th edition is also fine. The book is available from Amazon.com, for $20 off the list price.

Meeting Times and Locations

Class will be held Monday, Wednesday, Friday from 10:00 to 10:50 in Duncan 1064. Labs will be held in Symonds II, Wednesday 1:00-2:30, Thursday 2:30-4:00, and Friday 4:00-5:30 (one of these will be canceled based on a poll the first day of class).

Topics Covered

At a high level, we will cover (in order): 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; The "Latent Dirichlet Allocation" statistical model for document analysis; The "Locality Sensitive Hashing" indexing framework; The Java virtual machine and garbage collection, and the Javadocs tool.

Communication

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

<see the instructor>

You need to give Chris your email address to get an invite to the group. 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 instructors or TAs ("I need to go out of town on Oct 22nd, can I have an extra day…"). Everything else goes to the group.

Grading and Evaluation

Your grade is based upon a set of programming assignments (80% of your grade) and two exams (20% of your grade).

Assignments

This is an assignment-oriented class. There will be eleven 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 ten 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 keyword 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.

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 8 assignments (A1 thru A8) are all worth 7% of your grade each.

The last two assignments (A9 and A10) are worth 10% of your grade each.

Finally, note that since this is the first time we are offering this class, there is a chance that we won't get through all eleven assignments. In that case, assignments will still be worth 80% of the grade, and we will proportionally scale your scores on all of the assignments that were completed.

Late Assignments and Extensions

If you let us 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.

Labs

We will have a set of lab periods held the same time each week that you can attend to get help on your assignments. A mix of instructors and TAs will attend each lab section. Labs (except to obtain credit for the first part of A0) are optional, but we strongly encourage everyone to attend at least one lab per week.

Exams

There will be two exams. The first is tentatively scheduled for October 19th (in class), and the second is during the designated final time for our class. Both exams are open book, open note, and electronic books and notes are allowed during the exam, though Internet usage is not.

Regrade Requests

These must be made within one week of an assignment or an exam being returned. The request must be in writing, typed and printed out, and attached to the assignment or exam (if applicable) and turned into one of the instructors. 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 instructors) 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 instructors and Disability Support Services regarding any accommodations that they may need.