CS193j — Programming in Java

The Class

CS193J is a "Java as a second language" course, designed to introduce a skilled C programmer to the object-oriented paradigm, the Java programming language, and the built-in Java packages.

CS193j is an intermediate course for people with a basic programming background. It is not for complete beginners -- people without significant prior programming experience. Neither is it an advanced course appropriate only for CS majors (those people should consider CS108, also offered this quarter).

Topics to be covered include object-oriented programming (classes, objects, messaging, inheritance), Java language features (interfaces, exceptions, packages, concurrency, garbage collection), the built-in packages (lang, util, io, networking, graphics), understanding applications and applets, security and verification, implementation and the Java virtual machine. The coursework will consist of regular programming assignments and a final exam. By the end, you will have explored the Java language and OOP design principles in solving a variety of problems. The only way to truly learn a language, especially one as rich as Java, is by writing programs, so do expect to invest time into your assignments in order that you may successfully master the language and its built-in facilities.

The Student

The prerequisite for the class is programming and problem solving at the CS106B/X level in C. Thus it is assumed you are proficient in C with a good understanding of arrays, strings, pointers, and dynamic memory allocation and debugging skills.

Course Page

Being a hip, modern class, CS193j will have all sorts of material maintained at the course page..

http://www.stanford.edu/class/cs193j/

If you are looking for anything having to do with CS193j, the course page will be a good place to start. In particular, handouts, links to online resources, compiler information, and homework materials will all be linked off the course page.

Instructor

- Nick Parlante
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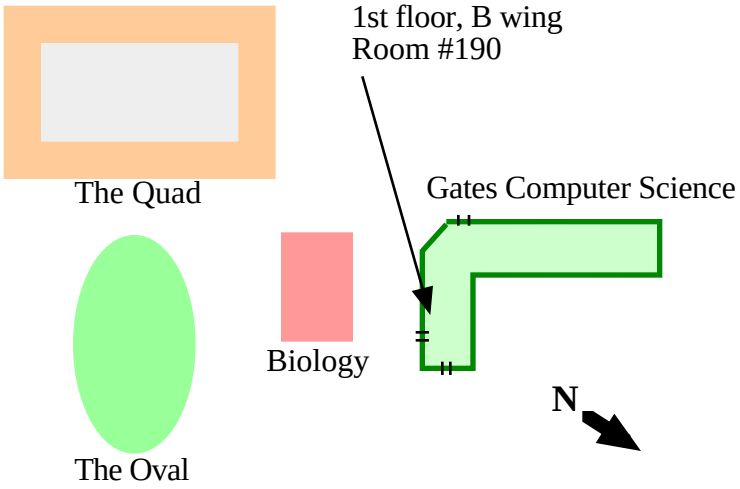
Nick's Office

Gates 190. On the first floor, facing the green Biology building.



Nick's Office hours:

The exact staff office hour scheduling will be published separately, but as a general rule, I'm around and available much of the afternoon Mon, Wed, Fri. Feel free to call or stop by. My office hours are often empty, so feel free to come by and get individual help (this is one of many areas where shyness is not going to benefit your college experience).

Books

There are many, many Java books that more-or-less cover our topics. There is no required text, but many people like to have a written text to refer to. Our recommended book is *Just Java*, by van der Linden which covers a lot of material in one book. I also like the *Core Java 2* series (Vol 1 = Basic and Vol 2 = Advanced) by Horstmann. There are many other reasonable choices available, so you can follow your personal preference. In any case, there will also be lots of material to read in online form (naturally, this will be linked off the course page).

Handouts

Often there will be some sort of outline or source code to go with a day's lecture. These will be available at the course page in PDF format at least 60 minutes before lecture.

Questions: cs193j@cs.stanford.edu

Please send questions to the staff-collective email address cs193j@cs.stanford.edu. We'll maintain FAQs on the course page for common questions. For debugging questions, try to describe what you've done to narrow down where the bug might be. Short questions work great by email, longer questions probably need to be handled in office hours.

Java

CS193j uses Java. For the most part, this frees you to build on whatever platform you wish that supports Java (Solaris, Windows, MacOS, MacOS X, Linux), although you will need to turn in your work on the leland Unix systems since that's where we do the grading. There are links on the course page explaining how to set up the various compilers. We will mostly use Java 1.3 features, possibly taking advantage of a few 1.4 features in the later weeks. We will emphasize properly structured, cross-platform code (nothing platform specific). We will test your code against the current leland Java install, which is currently Java 1.4. There's a section on the course page that explains how to run Java on the various platforms. Stanford has a site license for CodeWarrior which runs on Macs and PCs and has a decent Java environment. You can also use the free Net Beans and Eclipse development environments for Java development. See the course page for more information.

Grading and Exams

The course grading is divided between 4 programming assignments, one assigned every 1-2 weeks, and 1 final exam. The approximate grade breakdown is assignments 50%, final exam 50%. To receive a passing grade, you must complete passing work for both the programs and the exams. The final exam will be Thu Mar 20th, 7:00-10:00 pm. SCPD students may take the exam at their site.

CR/NC teams

The class is offered with either letter or CR/NC grading options. According to university policy, a CR/NC student needs to earn a course grade of C- or better to pass. Course requirements generally don't differ for students under the CR/NC option, however, we will allow CR/NC students to work in a teams of two on the programming assignments if they would like.

If you choose to work with a partner, you may work with only one other student per assignment and both students must be CR/NC. In between assignments, you can switch partners or switch to working on your own. The exams will be taken individually.

Late Submissions

Instead of having to ask for extensions on a catastrophe by catastrophe basis, everyone gets three calendar “late days” to extend the due dates of any of the weekly assignments (except possibly the last one). In keeping with the all electronic, 24-hours a day theme of the post-Internet world, late days will be measured in straight calendar days with no distinction for weekends or holidays. All homework deadlines will be at midnight Pacific time. If an assignment is due on "Thursday", that means the midnight at the end of Thursday.

These late days are intended to deal with the ordinary events of student life, both frivolous and serious: 2 midterms that day, inadvertently spent all night playing Quake, disk crash, med. school interview, illness, started way too late...After your late days are used up, late work loses pretty quickly— about a half a letter grade per day. Come and see me in person in exceptional circumstances. Note

that disk failure, network outages and other computer problems probably *do not* represent exceptional occurrences. Hoard your late days “just in case,” or spend them early and fly with no parachute— it's up to you.

In the grade database, every homework is recorded with both its score and the number of days late it was turned in. The Great Spreadsheet Reckoning at the end of the quarter figures out if you went over your late day budget.

Giving students their own late-day supply seems more fair since all the students are on the same footing. However it means you now need to make your own decisions about when to use a late day, and when to just turn in what you have. The late days should allow you to do a better job and hopefully learn more in the cases where your schedule gets disrupted. However, three late days do not provide too large a cushion. You should plan to finish your homeworks on time and reserve the late-days for real problems.

Honor Code

You are free to discuss ideas and problem approaches with others, but all the work you hand in should be your own creation (or the creation of your team for a team project). **In particular, sharing or copying code is not OK**. **There are tools we may use that do an extremely aggressive job of finding little sections plagiarism within the submissions.** Doing your own work is the right thing to do, and it's a lot better than getting suspended. If a student is in a bad situation, they should talk to me first.

If you feel a particular bit of collaboration may have crossed the line, just clearly cite what help you got and from whom in your project's Readme. You can never get in Honor Code trouble if the help is clearly credited.

If we are using the Foo module, and you find the key 8 lines in the docs or in a book or on the Internet that describe how to call the Foo module best, it's fine to use those lines without comment in your Readme. OOP programming is filled with episodes like that. If I have asked you to implement the Bar module, copying the 200 lines you found that implements Bar is not ok without giving credit.

Schedule

A rough outline to give you an idea of the topics we are likely to cover —expect adjustments and changes as the quarter develops. We start with fundamental Java structures and the OOP paradigm for the first few weeks, followed by 2 weeks of GUI programming. After that, the topics will vary a little more depending on interest and how things are going, but we will certainly get through concurrency, I/O, and basic networking.

Week	**Topics**
1	Introduction to Java. Start OOP: class, object message, method
2	Arrays, strings, static. OOP design 1 -- encapsulation.
3	OOP design 2 -- inheritance, abstract superclasses. Interfaces, inner classes, packages.
4	Building GUIs with Swing. Components, drawing, layouts, graphics.
5	Listeners, buttons, mouse tracking.
6	Threads and concurrency. Threads, critical sections, synchronization.
7	Finish threads, exceptions, I/O, streams
8	Networking, MVC structure
9	Misc advanced topics, such as XML, JVM implementation, and performance techniques
10	More advanced topics.
11	**Final Exam:** Thu Mar 20, 7:00-10:00 pm