Eric Roberts and Jerry Cain
CS 106J

Handout #1
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CS 106J — General Information

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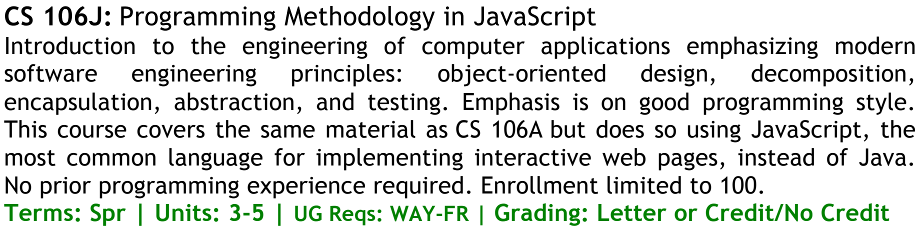
Course description



CS 106J: Programming Methodology in JavaScript

Introduction to the engineering of computer applications emphasizing modern software engineering principles: object-oriented design, decomposition, encapsulation, abstraction, and testing. Emphasis is on good programming style. This course covers the same material as CS 106A but does so using JavaScript, the most common language for implementing interactive web pages, instead of Java. No prior programming experience required. Enrollment limited to 100.

Terms: Spr | Units: 3-5 | UG Reqs: WAY-FR | Grading: Letter or Credit/No Credit

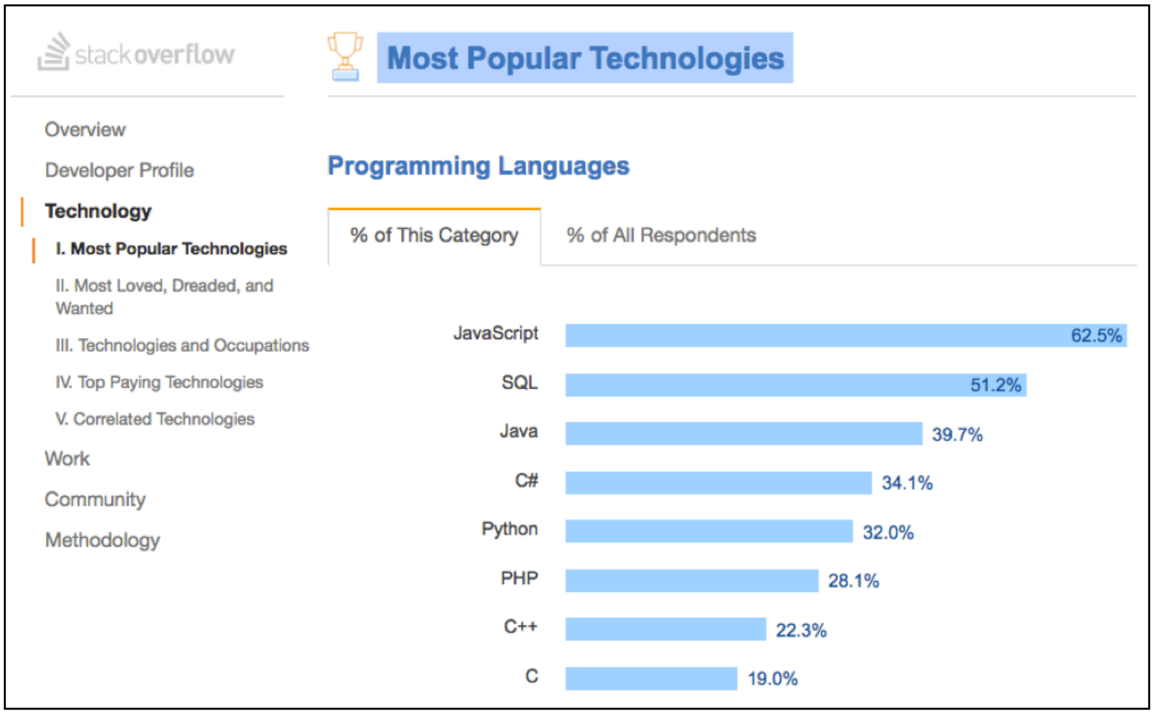
Why JavaScript?

For several years, CS 106A has been the largest courses at Stanford as well as one of the university's most popular offerings. We have great faculty and lecturers teaching the classes, and almost every undergraduate at Stanford takes at least one course from our department. The current version of the class is working well. So why would we think about changing it?

Computer science is one of the most dynamic disciplines in today's world. Technology changes rapidly, and it is important for our courses to avoid sinking into obsolescence. The Java language—which has been the basis for instruction in CS 106A over the last decade—is showing signs of age. When we adopted Java, it seemed likely that Java would become one of the primary languages used in the age of the World Wide Web. As things turned out, Java's model for interacting with the web through the use of programs called applets did not succeed. When Java failed to provide a platform for implementing web content, the language that rose to take over that responsibility was JavaScript, which has become the most widely used language in industry today, as shown in Figure 1.

Our reason for experimenting with JavaScript in CS 106A, however, goes beyond its success in the web domain. At its core, JavaScript is a highly expressive and flexible programming language with a surprising level of elegance and beauty. We believe that it will be considerably easier to learn than Java, mostly because there are fewer extraneous concepts that get in the way of understanding the fundamental concepts of programming. Our goal this quarter is to see whether JavaScript works as well as we expect.

Figure 1. Most popular programming languages according to stack overflow



Source: http://stackoverflow.com/insights/survey/2017#technology

Lectures

Lectures are scheduled for Monday, Wednesday, and Friday at 11:30 A.M. in Lathrop 282. Lectures will not be recorded. The schedule for individual lectures is given on the accompanying calendar handout.

In addition to lecture, you must also sign up for a weekly 50-minute section, which will be scheduled to begin in the second week of the quarter. Details on signing up for sections will be distributed on Wednesday.

Units

If you are an undergraduate, you are required to take CS 106J for 5 units of credit. If you are a graduate student, you may enroll in CS 106J for 3 units if it is necessary for you to reduce your units for administrative reasons. Taking the course for reduced units does not imply any change in the course requirements.

Drop/add deadlines

You may not add or drop courses from your study list after 5:00 P.M. on Friday, April 21, without having that course appear on your transcript with a notation indicating that you have withdrawn from the course. The last day to change your status to CR/NC or to withdraw from the course is Friday, May 26.

Web page

The web page for CS 106J is `http://cs106j.stanford.edu/`. All the materials and course announcements will be posted on this website, so be sure to check it frequently.

Course materials

The required text for this class is a draft of a new book, tentatively titled *Understanding Programming through JavaScript*, which is available from the Stanford Bookstore. In addition to the textbook, we will also distribute additional material in the form of class handouts. After class, any extra copies of the handouts will be placed in the "Handout Hangout" bins in the entryway to the Gates B-wing between Gates 182 and 188. The handouts are also available in PDF format on the CS 106J web site. If you miss a handout in class, you can print your own copy from the web.

Assignments for this class must be implemented using the **JSKarel** and **SJS** programming environments, which will be published on the course web site. Instructions for downloading the necessary software will be distributed on Wednesday, along with the first assignment.

Examinations

The midterm examination will be administered at two different times on **Tuesday, May 9 from 3:30 to 5:30 P.M.** and from **7:00 to 9:00 P.M.** The final examination will be offered on **Wednesday, June 14, from 8:30 to 11:30 A.M.** The examinations are designed so that you should be able to complete them in less than the fully allotted time: the midterm is designed to take one hour and the final is designed to take 100 minutes. All examinations are open-book, and you may use any notes or materials from the class.

Programming assignments and problem sets

This quarter, CS 106J requires six programming assignments, which are due on the dates given in the calendar handout. Except for Assignment #6 (which is due at the very end of the quarter), each assignment is graded during an interactive, one-on-one session with your section leader, who assigns two grades—one for functionality and one for style—chosen according to the following scale:

++ An absolutely fantastic submission of the sort that will only come along a few times during the quarter. To ensure that this score is given only rarely, any grade of ++ must be approved by the instructor and TA. Since your section leader would almost certainly want to show off any assignment worthy of a ++, this review process should not be too cumbersome.

+ A submission that exceeds our standard expectation for the assignment. The program must reflect additional work beyond the requirements or get the job done in a particularly elegant way.

✓+ A submission that satisfies all the requirements for the assignment—a job well done.

✓ A submission that meets the requirements for the assignment, possibly with a few small problems.

✓– A submission that has problems serious enough to fall short of the requirements for the assignment.

– A submission that has extremely serious problems, but nonetheless shows some effort and understanding.

– – A submission that shows little effort and does not represent passing work.

From past experience, we expect most grades to be ✓+ and ✓. Dividing the grades into categories means that your section leader can spend more time talking about what you need to learn from the assignment and not have to worry about justifying each point.

For each assignment, you must make an appointment with your section leader for an interactive-grading session. Your section leader will explain in section how to schedule these sessions and go over the grading process in more detail.

Late policy

Assignments are submitted electronically as described in the first assignment handout. **Important note: all assignments are due at 5:00P.M. on the date indicated on the assignment handout. Assignments submitted after 5:00 will be considered late.**

Because each of you will probably come upon some time during the quarter where so much work piles up that you need a little extra time, every student begins the quarter with two free “late days.” To avoid any ambiguity, a “day” is defined as a class day. Thus, if your assignment was due on Friday but turned in the following Monday, that assignment would be one day late. After your late days for the quarter are exhausted, programs are assessed a late penalty of one category point per late day used (a ✓+ turns into a ✓, and so forth). Late days are valuable, and it pays to keep some around for the harder assignments toward the end of the quarter. In all cases, assignments must be turned in within a calendar week of their published due date.

In special circumstances such as extended medical problems or other emergencies, extensions may be granted beyond the late days. To request an extension, send email to **cheson@stanford.edu** no later than 24 hours before the program is due. Only Jason is authorized to approve such extensions. In particular, do not ask your section leader.

Contests

As shown on the calendar handout, there are three contests scheduled at different points during the term. The point of these contests is to give you a chance to show creativity and initiative beyond what is formally required by the course. Rules for each contest will be distributed in class when they are announced.

To encourage greater participation in the contests, we will offer two additional incentives. First, every reasonably serious entry gets you one virtual ticket in a random drawing for a special grand prize at the end of the quarter. The more contests you enter, the more chances you have. Winning runner-up prizes or honorable mentions in a contest or submitting assignments nominated for ++ scores give you additional chances. The random drawing will take place at the beginning of the review section for the final exam.

In this experimental version of CS 106, you have an additional opportunity to win virtual tickets. The draft reader has not yet been edited and will certainly contain errors. Similarly, the programming environments are new and will almost certainly have bugs. If you find a bug in either the reader or the programming environments, send it to **eroberts@cs.stanford.edu**. If you’re the first person to report a problem that turns out to be real, you get a ticket for the random drawing.

As yet another incentive to encourage participation, we're going to borrow a page from Harry Potter and award "house points" for extra-credit activities according to your year of entry. If you're a first-year student, for example, entering a contest not only gives you a virtual ticket in the end-of-the-quarter contest, but also gives the first-year class one point in the standings. The class with the most points in proportion to the number of students from that class will win bragging rights at the end of the term. The current standings will be displayed on the course web page. Graduate students and others who have managed to be around more than four years will be counted with the seniors.

Grading

The most important component of the final grade in CS 106J is always the programming assignments, which typically count for approximately half the final grade. Even so, one of the complaints we regularly hear from students is that the assignments don't count for enough relative to the exams. Many students feel that as long as they can implement the assignments correctly, it shouldn't be necessary to suffer through an examination taken under arbitrary time constraints without the aid of a computer.

Although we're sympathetic with this argument in theory, there is a problem. Computer science courses—here at Stanford as well as at most other institutions—have been marked by an intolerably high number of Honor Code cases. Given that reality, we use exams as a check to ensure that students have learned the material. Someone who copies their assignments from someone else may do very well on those assignments (assuming we don't catch it), but will in all probability do poorly on the midterm and the final.

Here, then, are the weights for the different components of the course:

Programming assignments	55%
Final examination	25%
Midterm examination	15%
Section participation	5%