CSE 304: Compiler Design

http://www.cs.sunysb.edu/~cse304/

MWF 9:35am – 10:30am

ESS 079

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Office Hours: Tue., Thu. 1pm–2pm, or by appointment

http://www.cs.sunysb.edu/~cram

Prerequisites

- Courses:
  - **CSE 219/260:** Programming
  - **CSE 220:** Computer Organization
  - **CSE 303:** Automata Theory (preferred)
- Programming Experience:
  - **C++:** Structures, pointers, `malloc`, STL, etc.
  - **UNIX:** Debuggers (*e.g.*, `gdb`), `make`, etc.

  You can also pick these up as you go...

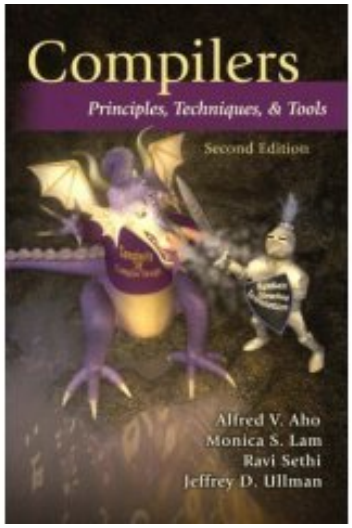
Organization

- Concepts and Basic Ideas in the lectures
- Concrete Implementation in a large programming project:

  Build your own compiler in 5 (easy?) steps.

  25% of final grade
- Other units of evaluation:
  - Two Mid-Term Exams (50% of final grade)
  - Final Exam (25% of final grade)

Textbook



Aho, Lam, Sethi, Ullman
Compilers: Principles, Techniques, and Tools
(2nd ed., Addison Wesley)

Effort Level

The effort required by this course is **High**

but so are the rewards:

- Hands on experience in large-scale programming ($>$ 3000 lines of C code).
- Use of high-level tools.
- Exposure to inner workings of Object Oriented Programming.
- In-depth knowledge of *how* programs written in high-level languages are translated and executed.

Course Objectives

To learn the process of translating a modern high-level language to executable code.

- Learn the fundamental techniques from lectures, text book and exercises from the book.
- Apply these techniques in practice to construct *a fully working compiler* for a non-trivial Java-like called `Decaf`.

In the end, you should be able to compile small Java-like programs with your compiler, and see it actually work!

The Rules of the Game

Project work:

- Individual projects.
- Projects due on stated due date. No Extensions.
- Best 5 scores (out of possible 6) will be taken for programming projects.
- Limit discussion of projects to *problems*, not *solutions*.
- Cheating, illegal collaboration and plagiarism will be treated with maximum seriousness.

Course Support

Course web pages are hosted by the Blackboard system.
Using Blackboard, you can access:

- **Course Material:** handouts, homeworks, notes, etc.
- **Course Announcements:** check these regularly.

All homework assignments will be submitted via the Blackboard system.

Course Discussion Board

- Use this to discuss any course-related material: lectures, homework problems, exams, etc.
- If you have any questions on the material, first check to see if any one else had the same question as you have, and whether the question has been answered already; otherwise post the question on the board.
- We'll try to answer all questions on the board asap: within 24 hrs for normal days, and much quicker near exam/homework deadlines.

Questions

How to contact the instructor:

- Post your question on the discussion board.
- Come to office hours (or fix an appointment).
- Send email. (Post on discussion board unless the question is personal.)
- Meet after class.