Computer Science 160
Translation of Programming Languages

Instructor: Christopher Kruegel
CS 160 Info


- Discussion board (Piazza)
  - class page: http://piazza.com/ucsb/fall2016/cs160/home
  - signup: http://piazza.com/ucsb/fall2016/cs160
Requirements

- The course requirements include
  - several projects
  - a midterm and a final exam
- The projects (and exams) are individual efforts
- The final grade will be determined according to the following weight
  - projects: 50%
  - exams: 50%
• Goal of entire project is to build a compiler

• Sub-projects cover all parts of compilation process
  – Read in and parse code
  – Check code for semantic properties (type checking)
  – Generate executable x86 machine code

• Compiler will work on a simple, C-like language

• You will use well-known tools and some C++ code that we provide
Material

• The course will adopt the following book:
  Keith D. Cooper and Linda Torczon
  Engineering a Compiler (EaC) – 2\textsuperscript{nd} edition
  Morgan Kaufman (Elsevier)

• The set of assignments will be updated during the course

• Additional material is provided on the class Web page

• Questions to instructor, TAs and fellow students via Piazza
What you will learn in this class?

- High-level understanding of the steps involved in compiling a program down to something a machine can read

- In-depth understanding of some of the interesting parts of the compiler: For example, how is your code parsed and how is machine code generated?

- Understanding of what needs to be done to read and write complex input and output formats (such as program source code, XML, Java bytecode)
Topics

- Overview of compilers
- Lexical analysis (Scanning)
- Syntactic analysis (Parsing)
- Intermediate representations
- Type checking
- Symbol tables
- Code generation
- Runtime environments
- Code optimization (if time permits)
## Expectations

**Students**

- Check the webpage often
- Check the announcements and FAQ often, and before emailing a question
- Answer questions in class
- Stay on top of your work

**Please go first to TA for all project questions**

- If you want a re-grade, re-grade will be for the full assignment/test
- Know the vocabulary of compilers
- No Cheating

**Instructor and TA**

- Announcements will be posted on piazza
- Check email/posts and respond promptly
- Be available before tests or project deadlines
- Return exam and project results promptly
- Take cheating seriously