

CS480

Compilers

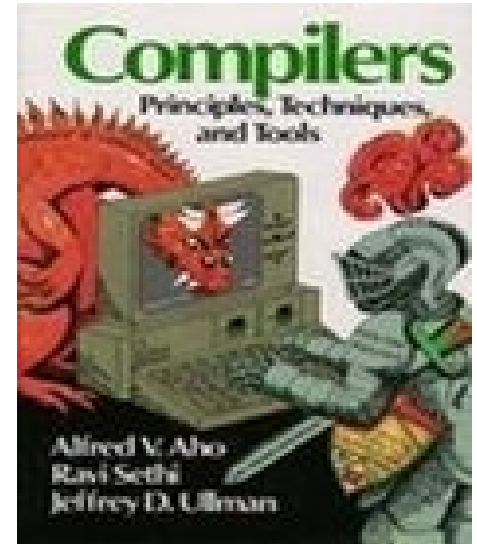
February 2, 2009

Welcome to Compilers.

You are already behind!

Goals of the class

- Understand the theory behind compilers
 - Grammars
 - Parsing
 - Activation Records
- Build a complier!
 - Semester long project
 - Each project builds on the previous
 - Don't fall behind (or I'll see you again in two years)
 - Eclipse/Subversion/Make/Linux/C/Dynamic Memory
 - First assignment Due Friday
 - Start early!



Prerequisites

- **CS 310 with a C or better**
 - Grammars, parsing,
- CS 300
 - Hash tables, dynamic memory with C, Makefiles
 - Pointers, pointers, pointers
- CS 380
 - Efficiency, trees
- CS 430
 - Activation records, assembly language, stack
- Various
 - Eclipse, Linux, Subversion, ...

Restated....

I expect much more out of you in this class

Syllabus

Compiler Project

- Input:
 - Simple C-lite language (grammar provided)
 - int, if, else, for, return, input, output, ...
 - functions
- Output:
 - Machine instructions for simple virtual machine
 - 150 quads and 500 words of data
 - Quads
 - operator operand1 operand2 operand3
 - Various addressing modes
 - Add, subtract, multiply, branch, ...

Breakdown

- Symbol Table & Error Handler
- Lexical Analyzer
- Recursive Descent Parser (top down)
- Operator Precedence Parser (bottom up)
- Semantic Actions for Declarations
- Semantic Actions for Expressions
- Remaining Semantic Actions
- *Final Integration*
- Each worth 1/8 of project grade*

Design

- Design is very important
 - What are your function prototypes?
 - What are your data structures?
 - What data gets passed around to whom?
- All pieces must work apart and together
- Easy to code yourself into a corner
 - Short cuts today will cause problems later

Testing

- I will post a few public test cases
 - With correct output
- You need to come up with good test cases
 - What makes an interesting test case?
 - I may ask the class for test cases ...

Message Boards

- Use them
- Don't post source code for your compiler
- I will monitor the messages
 - Answer questions
 - Post questions
- Only available from within campus

Coding Standards

- 30% of your project grade is style points
- Readable code is a must
 - For me and for you
- Comments cannot be an afterthought

Subversion/Make/Eclipse/C

- In class lab Wednesday
 - 222 Strain
- Some of this will be review
- Some of this will be new
- All will be of vital importance to the project
- Read handouts before class!

Today's Project....

Recommendations (of the letter writing type)

- Ask me in person
 - I'll tell you how positive/negative it will be
- I need:
 - Consent form
 - Up to date resume
 - Grades in CS classes I have not taught
 - Information on receiver (U/job/scholarship)
 - SIX WEEK NOTICE

CS Lab

- Printers Work!
- WinXP (32 bit)
- Updated Linux (64 bit)
- New monitors
 - With speakers!
- Be mindful of others
- Clean your dishes
- Print double sided
- Turn off monitors