Compilers

Professor: Torgersen

Office Phone: 758-5536

Office Hours: Monday and Wednesday 2:00 to 4:00. Also by appointment.

Text: Aho, Sethi, and Ullman, <u>Compilers: Principles, Techniques, and Tools</u>

Facilities: Grad lab, undergrad lab, laptops, telesto, freyr, and genesis.

Goals:

1. A basic understanding of compiler construction

    (a) Theory
         i. Finite Automata
         ii. Grammars
         iii. Attribute Grammars

    (b) Techniques and topics
         i. Lexical Analysis.
         ii. Symbol tables.
         iii. Parsing, and parse trees
             A. parsing algorithms, top-down vs. bottom-up parsing
             B. operator precedence parsing, recursive descent
             C. LR parsing, automatic construction of LR parsing tables
         iv. Syntax trees
         v. Semantic checking
         vi. Intermediate code
         vii. Introduction to code optimization (if time)

    (c) Compilers in the "real world"
         i. Compiler development for a new architecture
             A. "bootstrapping"
             B. cross compilers
         ii. Compiler development tools
             A. Scanner generators (e.g., lex)
             B. Parser generators. (e.g., yacc, bison)

2. Develop your programming abilities and organizational skills

Expectations:

1. Class participation / Communicate when things get confusing.

2. Write a compiler for a simplified language.

3. Graduate students are required to implement additional language features in their compiler project.

Grading: 3 exams (55%), 1 programming project, collected/reviewed in stages (45%). The compiler project **must** be submitted ready to compile and run on the SUN/Sparc platform.

Disability Notice:
If you have a disability that may require an accommodation for taking this course, then please contact the Learning Assistance Center (758-5929) within the first two weeks of the semester.

Pandemic Planning Notice:
The University has requested that faculty collect personal contact information as part of emergency planning and preparation. The information you provide is strictly confidential.