CISC 672: ADVANCED COMPILER CONSTRUCTION
Spring 2008
Midterm Exam Study Guide
Midterm Time and Date: Class Time on Thursday, October 28, 2008

1. References
    a. Lectures notes and slides from start of course through October 23rd.
    b. Chapters 1 through 4
    c. Phases I and II and Homework

2. Topic Coverage
    a. Overall compiler and compiler-related tools
    b. Lexical specification: regular expressions
    c. Implementation of a lexical analyzer: manually and using JLex
    d. DFA and NFA construction from regular expressions
    e. Syntax specification: context free grammars
    f. Problems with grammars: (should know which problems there could be with grammars and how to handle them (e.g., ambiguity, left recursion, etc.)
    g. Grammar rewriting to attempt to remove ambiguity
    h. Bottom-up parsing: issues in parsing, shift-reduce parsing method, use of JavaCup, LR grammars, DFA and parse table construction
    i. Attribute Grammars and Ad-hoc Syntax Directed Translation
    j. Symbol tables and Types as discussed in Chapter 4 and lecture slides

3. Format of Exam

The exam is open book, open notes, but closed neighbor and you will have the full class period to work. In general, the exam will be a combination of testing your basic knowledge and understanding of the concepts covered in class and application of the concepts. The questions will most likely be of the form:

- Short answers
- Writing regular expressions
- Drawing NFAs/DFAs
- Understanding of a JLex-like specification
- Writing and rewriting context-free grammars
- Identifying problems in context-free grammars
- Deriving strings and constructing parse trees
- Bottom-up parsing: constructing DFAs for LR(0) and LR(1), constructing parse tables from DFAs, issues in the shift-reduce parsing methods
- Short Answers for attribute grammars, ad-hoc syntax directed translation, symbol tables, and types

The questions are NOT multiple choice. Instead, partial credit will be given when possible on any question in the exam.

NOTE: Review your lecture slides/notes, project phases, and textbook chapters.