DEPARTMENT OF COMPUTER SCIENCE
COMP-421 Compiler Design
Fall 2011 Midterm 2 Study Guide

[ALSU07] Chapter 4 – Syntax Analysis

- Role of a parser
- Context-free grammars
  a. Definition
  b. Be able to deduce if a sentence belongs to the grammar using both derivations and parse trees
     i. Building a parse tree (graphical representation of derivation)
     ii. Derivation (leftmost and rightmost)
- Writing grammars
  a. Understand what a grammar is and how to construct one!
  b. Given a regular expression, construct a context-free grammar for the same language
  c. Eliminate ambiguity (be able to show that there are multiple parse trees)
  d. Eliminate left recursion (immediate)
  e. Left factoring
- Top-down parsing
  a. Definition
  b. Predictive parsers
     i. Nonrecursive manner using a predictive table
     ii. Be able to show the moves made by a predictive parser given a string and a predictive table for the grammar
     iii. Be able to compute first and follow sets
     iv. Be able to construct a predictive parsing table
     v. LL(1) grammar
- Bottom-up parsing
  a. Definition
  b. Shift-reduce parsing (LR parsing)
     i. Be able to perform reduction and rightmost derivation to recognize the handles
     ii. Be able to show the moves made by a shift-reduce parser given a string and action, goto tables