COMPUTER SCIENCE 322 (Winter Term 2004)
Compiler Construction
Prof. Levy

Problem Set 5

Due Wednesday 25 February

Reading Assignment: Dragon Book Sections 4.5, 4.7

Written Assignment

4.33 (a)-(d)

Turn this in to me on paper.

Programming Assignment

Part of the appeal of object-oriented programming is that it allows you to encapsulate different sorts of behavior in separate classes, instead of having a large sequence of **if-then-else if**... conditionals. For this assignment, you will take this approach to implementing the LR parsing algorithm in Fig. 4.30 (p. 219) of the Dragon book. Specifically, you will create the classes `Shift`, `Reduce`, and `Accept`, as subclasses of the abstract class `Action` for LR parsing table actions. The API for these three classes is provided in the documentation for the assignment. After you have written the three classes, it should be easy to implement the algorithm in Fig 4.30, by completing the code for the `LRParser` class.

A sample LR parsing table is provided, based on Fig. 4.31. After you have successfully tested your LRParser program on this table (see Fig. 4.32), use this table as a model for encoding the SLR parsing table from the written assignment. Submit this new table, along with the files `Shift.java`, `Reduce.java`, `Accept.java`, and `LRParser.java`. The output of your final program should be just the sequence of productions used for the reverse rightmost derivation.