CSCI 447 – Fall 2002

LR Parsing

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Due Date: Monday, December 9, 2002

1. (14 pts) Consider the following grammar:

1: $E \rightarrow$ **(** L **)**
2: $E \rightarrow$ **a**
3: $L \rightarrow E$ **,** L
4: $L \rightarrow E$

a. (3 pts) Construct the DFA of LR(0) items for this grammar.

b. (2 pts) Construct the LR(0) parsing table. Is this grammar LR(0)? Explain.

c. (2 pts) Construct the SLR(1) parsing table. Is this grammar SLR(1)? Explain.

d. (5 pts) Construct the LR(1) DFA and parsing table. Is this grammar LR(1)? Explain.

e. (2 pts) Trace the parsing of **(a , (a)) $** according to the LR(1) parsing table of part *d*. At each step, show the parsing stack, the remaining input, and the parsing action.

2. (6 pts) Given the following grammar

1: *stmtlist* $\rightarrow$ *stmt* **;** *stmtlist*
2: *stmtlist* $\rightarrow$ *stmt*
3: *stmt* $\rightarrow$ **s**

a. (4 pts) Construct the DFA of LR(0) items and the SLR(1) parsing table for this grammar.

b. (2 pts) Trace the parsing of **s ; s ; s $**. At each step, show the parsing stack, the remaining input, and the parsing action.