

CSCI 447 – Spring 2001

LR Parsing

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Due Date: Thursday May 3, 2001

1. (11 pts) Consider the following grammar:

1: $E \rightarrow (L)$

2: $E \rightarrow \mathbf{a}$

3: $L \rightarrow L, E$

4: $L \rightarrow E$

a. (5 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.

d. (2 pts) Trace the parsing of $((\mathbf{a}), \mathbf{a}, (\mathbf{a}, \mathbf{a})) \mathbf{\$}$. At each step, show the parsing stack, the remaining input, and the parsing action.

2. (9 pts) Given the following grammar

1: $stmtlist \rightarrow stmt ; stmtlist$

2: $stmtlist \rightarrow stmt$

3: $stmt \rightarrow \mathbf{s}$

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.

d. (2 pts) Trace the parsing of $\mathbf{s ; s ; s \mathbf{\$}}$. At each step, show the parsing stack, the remaining input, and the parsing action.