

Practice Problems – Parsing

This short set of practice problems will help you review your understanding of LR(1) parsing.

1. Consider the following grammar and corresponding action and goto tables:

				<i>action</i>			<i>goto</i>			
				<i>state</i>	<i>a</i>	<i>b</i>	<i>\$</i>	<i>S</i>	<i>A</i>	<i>B</i>
0.	S'	$\rightarrow$	S	0	s5			1	2	
1.	S	$\rightarrow$	AB	1			<i>accept</i>			
2.	A	$\rightarrow$	aA	2		s3				4
3.	A	$\rightarrow$	a	3		s7				
4.	B	$\rightarrow$	bb	4			<i>r1</i>			
				5	s5	<i>r3</i>			6	
				6		<i>r2</i>				
				7			<i>r4</i>			

Give a table, following the format on slide 39 of the lexing and parsing lectures, showing the stack, input, and action at each step of parsing the string *aaabb*.

2. Draw the LR(1) parsing DFA (following slide 55) for the following grammar:

1. $S \rightarrow aSa$
2. $S \rightarrow B$
3. $B \rightarrow Bbb$
4. $B \rightarrow c$

3. Draw the LALR(1) parsing DFA for the grammar above. Does switching from LR(1) to LALR(1) parsing introduce any parsing conflicts?