

Parsing

Homework 8 (LL(1)), due 31 May 2022, 10.30 am

Laura Kallmeyer

SS 2022, Heinrich-Heine-Universität Düsseldorf

Question 1 (LL(1) grammar)

Consider a CFG with $N = \{S, A, C\}$, $T = \{a, b, c\}$, start symbol S and the following productions:

$$S \rightarrow ACb, A \rightarrow aAa, A \rightarrow C, C \rightarrow cC \mid \varepsilon$$

1. Compute the First sets for all non-terminals.
2. Compute the Follow sets of all non-terminals.
3. Is this grammar LL(1)? Explain your answer.

Question 2 (LL(1) grammar)

Consider a CFG with $N = \{S, A, C\}$, $T = \{a, b, c\}$, start symbol S and the following productions:

$$S \rightarrow ACb \mid Cb \mid b, A \rightarrow aa, C \rightarrow cC \mid c$$

1. Do a left factoring on this grammar (this concerns the C -productions that share a prefix).
2. Give the LL(1) parse table for the resulting grammar.

	S	A	C	...
a				
b				
c				
$\$$				

3. According to your table, is the grammar LL(1)?