



# Chapter 0

## Exercises

Course "Compiler Construction"

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# Section

## Exercises 03

- 3.1: LL(1)
- 3.2: Ambiguity (and assoc, precedence ...)
- 3.3: Ambiguity (assoc ...)

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## 3.1: LL(1)?



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3.1: LL(1)

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3.3: Ambiguity (assoc ...)

$$S \rightarrow (S)S \mid \epsilon$$

# Hint: Recipe



Assume  $A \rightarrow \alpha \in P$ .

1. If  $\mathbf{a} \in \text{First}(\alpha)$ , then add  $A \rightarrow \alpha$  to  $M[A, \mathbf{a}]$ .
2. If  $\alpha$  is *nullable* and  $\mathbf{a} \in \text{Follow}(A)$ , then add  $A \rightarrow \alpha$  to  $M[A, \mathbf{a}]$ .

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## 3.2: Ambiguity, precedence, assoc, dangling else



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3.1: LL(1)

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precedence ...)

3.3: Ambiguity (assoc ...)

$exp \rightarrow exp + exp \mid (exp) \mid \mathbf{if\ } exp \mathbf{\ then\ } exp \mathbf{\ else\ } exp \mid var$   
 $var \rightarrow \dots$

## 3.3: Ambiguity, precedence, assoc, one more time



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$$\begin{aligned} \text{exp} &\rightarrow \text{exp op exp} \mid (\text{exp}) \mid \mathbf{\text{number}} \\ \text{op} &\rightarrow + \mid - \mid * \mid / \mid \uparrow \mid < \mid = \end{aligned}$$

	precedence	assoc
$\uparrow$	highest (3)	right
$*, /$	level 2	left
$+, -$	level 1	left
$<, =$	0	non-associative

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