

Thursday, September 10

Name SOLUTIONS

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Miniquiz #5

5 Minutes

Eliminate left recursion from these grammars.

1. The following grammar is left-associative. Provide a new grammar that specifies the same language but is right-associative.

$S \rightarrow a$
 $S \rightarrow S \text{ ', ' } a$

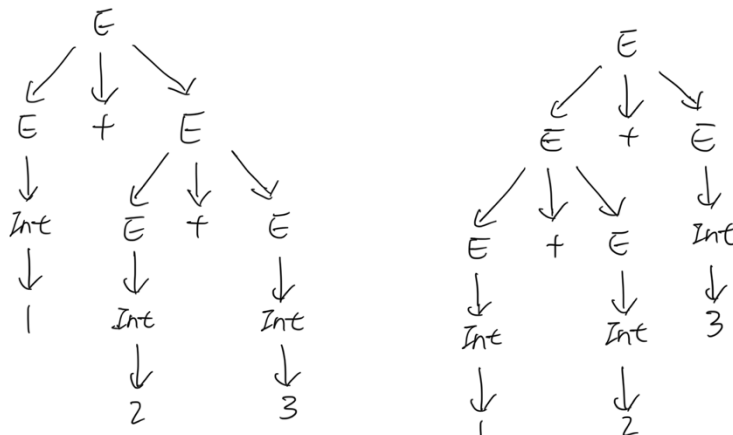
$S \rightarrow a S'$
 $S' \rightarrow \text{' , ' } a S'$
 $S' \rightarrow \varepsilon$

2. The following grammar is ambiguous.

$Int = [0-9]$

$E \rightarrow Int$
 $E \rightarrow E \text{ '+ ' } E$

a) Show two different parse trees for the string $1 + 2 + 3$.



b) Provide a new unambiguous grammar that still defines the same language.

$E \rightarrow Int E'$
 $E' \rightarrow \text{' + ' } Int E'$
 $E' \rightarrow \varepsilon$