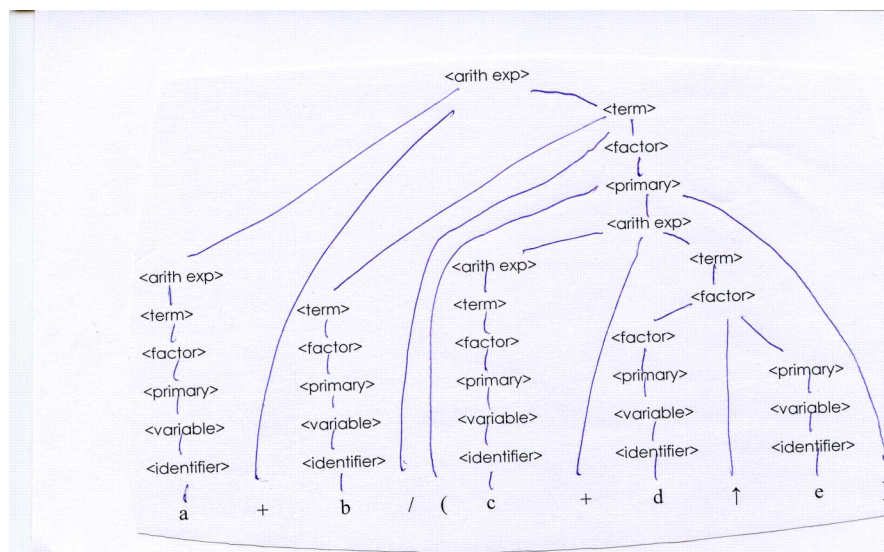


CSE6390 3.0 Special Topics in AI & Interactive Systems II
 Introduction to Computational Linguistics
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 Tuesdays,Thursdays 10:00-11:30 – South Ross 104
 Fall Semester, 2010

BNF Example

G_1 is a (context free) BNF grammar for a simple programming language arithmetic expression.

$\langle \text{arithmetic expression} \rangle$	$\square$	$\langle \text{term} \rangle \mid \langle \text{arithmetic expression} \rangle + \langle \text{term} \rangle \mid$ $\langle \text{arithmetic expression} \rangle - \langle \text{term} \rangle$
$\langle \text{term} \rangle$	$\rightarrow$	$\langle \text{factor} \rangle \mid \langle \text{term} \rangle \times \langle \text{factor} \rangle \mid \langle \text{term} \rangle / \langle \text{factor} \rangle$
$\langle \text{factor} \rangle$	$\rightarrow$	$\langle \text{primary} \rangle \mid \langle \text{factor} \rangle \uparrow \langle \text{primary} \rangle$
$\langle \text{primary} \rangle$	$\rightarrow$	$\langle \text{variable} \rangle \mid \langle \text{number} \rangle \mid (\langle \text{arithmetic expression} \rangle)$
$\langle \text{variable} \rangle$	$\rightarrow$	$\langle \text{identifier} \rangle \mid \langle \text{identifier} \rangle [\langle \text{subscript list} \rangle]$
$\langle \text{subscript list} \rangle$	$\rightarrow$	$\langle \text{arithmetic expression} \rangle \mid \langle \text{subscript list} \rangle , \langle \text{arithmetic expression} \rangle$



a+b/(c+d^e)

The same language may be defined by many different grammars.

G_2 is another BNF grammar for a simple programming language arithmetic expression equivalent to grammar G_1 .

$\langle \text{arithmetic expression} \rangle$	$\square$	$\langle \text{term} \rangle \mid \langle \text{arithmetic expression} \rangle \uparrow \langle \text{term} \rangle \mid$ $\langle \text{arithmetic expression} \rangle \times \langle \text{term} \rangle \mid$ $\langle \text{arithmetic expression} \rangle + \langle \text{term} \rangle$
$\langle \text{term} \rangle$	$\rightarrow$	$\langle \text{primary} \rangle \mid \langle \text{term} \rangle - \langle \text{primary} \rangle \mid \langle \text{term} \rangle / \langle \text{primary} \rangle$
$\langle \text{primary} \rangle$	$\rightarrow$	$\langle \text{variable} \rangle \mid \langle \text{number} \rangle \mid (\langle \text{arithmetic expression} \rangle)$
$\langle \text{variable} \rangle$	$\rightarrow$	$\langle \text{identifier} \rangle \mid \langle \text{identifier} \rangle [\langle \text{subscript list} \rangle]$
$\langle \text{subscript list} \rangle$	$\rightarrow$	$\langle \text{arithmetic expression} \rangle \mid \langle \text{arithmetic expression} \rangle , \langle \text{subscript list} \rangle$