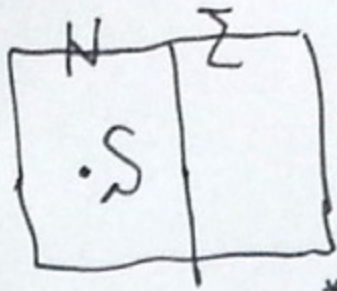


10/16 (*) 기미 12. 10 Derivation of CFG 애매한 문법 (ambiguous)

CFG $G = (N, \Sigma, P, S)$



$P: A \rightarrow \alpha \quad A \in N, \alpha \in (N \cup \Sigma)^*$

~~$E \rightarrow E+E$~~

$N_1 \rightarrow N_1 + N_1 \mid N_1 * N_1$

$|N_1| \geq 2$

$|S \text{ in } N_1 \mid N_1^*$

Let $\alpha, \gamma \in (N \cup \Sigma)^*$ ~~and~~ $B \in N, B \rightarrow \beta \in P$. Then

$\alpha B \gamma \Rightarrow \alpha \beta \gamma$ derivation

$\Rightarrow \subseteq (N \cup \Sigma)^* \times (N \cup \Sigma)^*$

$\rightarrow \subseteq \Rightarrow$ is an extension of \rightarrow
 finite infinite

$\Rightarrow^0 : \Rightarrow^0$
 $\Rightarrow^n : \Rightarrow^n$

$\Rightarrow^* \triangleq \bigcup_{i \in \mathbb{N}_0} \Rightarrow^i \quad G = (N, \Sigma, P, S)$

$L(G) = \{ \alpha \in \Sigma^* \mid S \Rightarrow^* \alpha \}$

Derivation of CFG

~~$G_1 \quad E \rightarrow E+T \mid E * T \mid a \mid (E)$~~

$G_2 \quad E \rightarrow E+T \mid T * F \mid a \mid (E)$

$T \rightarrow T * F \mid a \mid (E)$

$F \rightarrow a \mid (E)$

두개의 Nondeterminism

1. 어떤 순서로 바꿀지?

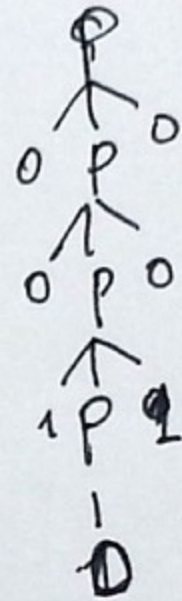
2. 어떤 우선순위로 바꿀지?

왼쪽 우선 \rightarrow leftmost derivation
 오른쪽 우선 \rightarrow rightmost derivation

$P \Rightarrow 0P0 \Rightarrow 00P00$

$\Rightarrow 001P100 \Rightarrow 001100$

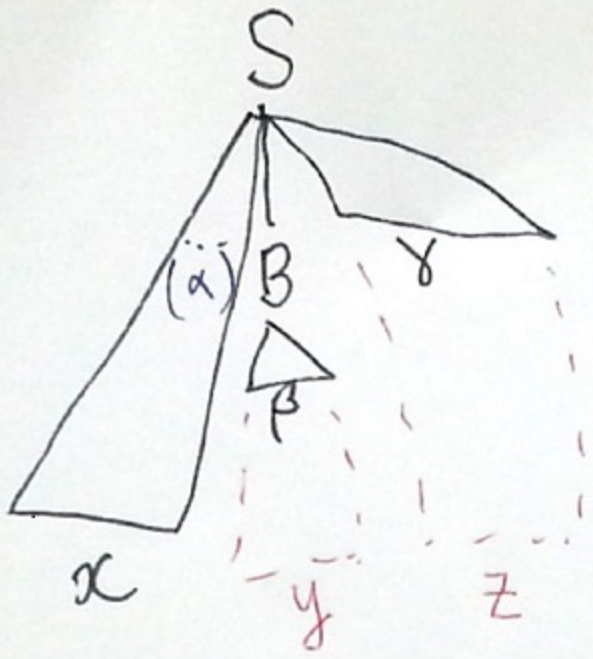
$\Rightarrow 0010100$



Parse Tree (Derivation)

R.E \rightarrow AST \rightarrow E-NFA

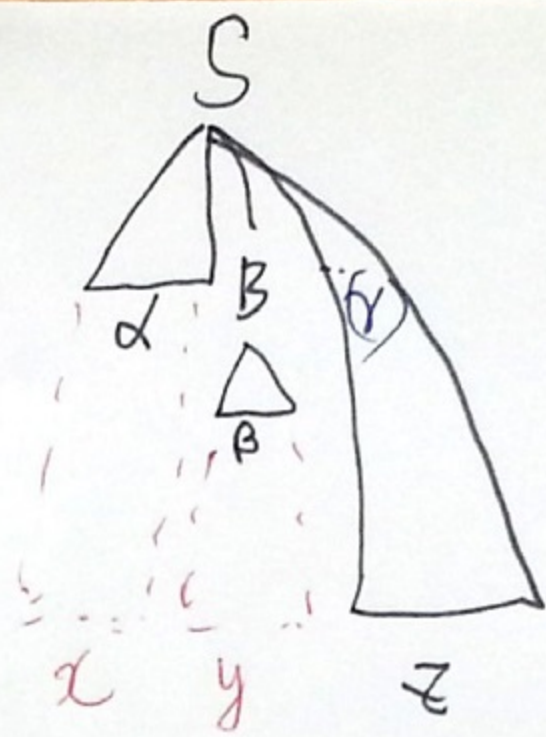
lex + yacc



lm

LL(k)

Left-to-right scan with
Leftmost derivation ~~using~~ using
k-lookahead symbols



rm

LR(k)

Left-to-right scan with
Rightmost derivation
in reversed order using
k-lookahead symbols