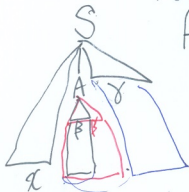


7월 17일 강. Strong LL(k).



Let $k \geq 0$, A be a set of symbols. $\alpha, \beta \in A^*$
 vocabulary strings

$\alpha \oplus_k \beta = k: \alpha \beta$ Ex: $\alpha = \text{hot}, \beta = \text{water}$
 $\alpha \oplus_2 \beta = \text{ho water}$ $\alpha \oplus_1 \beta = \text{hotwater}$

$\oplus_k: A^+ \times A^+ \rightarrow A^{\leq k} \triangleq \{\epsilon\} \cup A \cup A^2 \cup \dots \cup A^k$ $\alpha \oplus_k \beta = \text{hotwater}$

$|A^{\leq k}| = \frac{|A|^{k+1} - 1}{|A| - 1} \iff A^k \cup A^{k-1} \cup A^{k-2} \cup \dots \cup A^1$

$\alpha \in (NU\Sigma)^*$, $K \subseteq (NU\Sigma)^*$

$\in 2^{(NU\Sigma)^*}$

Formal Language

$L: (NU\Sigma)^* \rightarrow \Sigma^* \xrightarrow{\text{ext}} L: 2^{(NU\Sigma)^*} \rightarrow \Sigma^*$

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

$L(K) = \bigcup_{\alpha \in K} L(\alpha)$ $L(\alpha)$ instead of $L(\text{set } \alpha)$

First $_k$: $2^{(NU\Sigma)^*} \rightarrow \Sigma^{\leq k}$

First $_k(K) = k: L(K)$

First $_k(K) = \{w \in \Sigma^{\leq k} \mid \exists \alpha \in K, \alpha \Rightarrow^* w, k:w\}$

$$\text{First}_k(X_1 X_2 \dots X_n) = \text{First}_k(X_1) \oplus_k \text{First}_k(X_2) \oplus_k \dots \oplus_k \text{First}_k(X_n)$$

$X \in \text{NUS}$. $k \geq 0$.

i) $X \in \Sigma$ $\text{First}_k(a) = \{a\}$ if $k \geq 1$.

ii) $X \in N$ $\text{First}_k(A) = k: L(A)$

Wdefin A
 $\text{Follow}_k(A)$ $A \in N$.



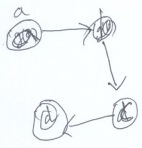
$$A \rightarrow \alpha \in P \quad A \overset{w}{\rightarrow} \alpha \overset{w}{\in} P$$

if $\alpha \in \text{First}_k(w) \oplus_k \text{Follow}_k(A)$

$$= \dots \cup L_k$$

$$\geq \dots \cup S_k$$

$w = k: yz$



$$f(a) = g(a) \cup f(b)$$

$$g(b) \cup f(c)$$

$$= g(a) \cup g(b) \cup g(c) \cup f(d)$$

3) Ex) $E \rightarrow E+T | T$
 $T \rightarrow T*F | F$
 $F \rightarrow a | (E)$

$E \rightarrow TE'$
 $E' \rightarrow +TE' | \epsilon$
 $T \rightarrow FT'$
 $T' \rightarrow *FT' | \epsilon$
 $F \rightarrow a | (E)$

$A \rightarrow \alpha B \beta \in P$
 if $\alpha \Rightarrow^* \epsilon$, AB
 ϵ

1-graph

