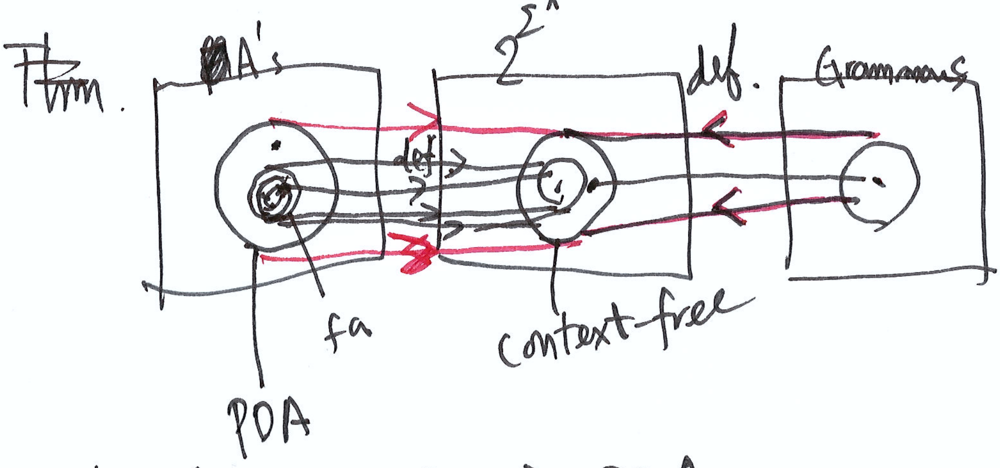
11/8(Thu) PDA & CFG

Thm.



$L^* \subseteq \Sigma^*$

$\varepsilon \notin \Sigma$

Thm 6.13 CFG $\Longrightarrow$ PDA.

If $G=(V,T,P,S)$ is a cfg. Then $\exists$PDA $P \ni$. $L(G)=N(P)$.

~~Proof)~~ Construct PDA) Guess-verify PDA (parser)

$P = (\{q\}, T, V \cup T, \delta, q, S, \phi)$.

$(p,\gamma) \in \delta(q,a,X)$

δ: $(q,\alpha) \in \delta(q,\varepsilon,A)$ $\forall A \to \alpha \in P$.

$(q,\varepsilon) \in \delta(q,a,a)$ $\forall a \in T$

$V=\{P\}$ $P=\{P\to 0P0, P\to 1P1, \ldots, P\to 1P1\}$

$T=\{0,1\}$

Example) G: $P \to 0P0 \mid 1P1 \mid 1 \mid 0 \mid \varepsilon$

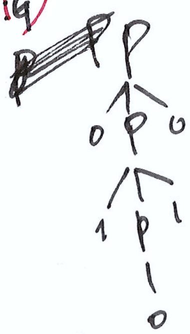
P_G: $\delta(q,\varepsilon,P) = \{(q,0P0),(q,1P1),(q,1),(q,0),(q,\varepsilon)\}$

↳ guess A as α (P: $0P0$, $1P1$, 1, 0, ε)

$\delta(q,0,0)=\{(q,\varepsilon)\}$, $\delta(q,1,1)=\{(q,\varepsilon)\}$ $\longrightarrow$ verify

$L(G)=N(P_G)$

ex 01010



G. $P \Rightarrow 0P0 \Rightarrow 01P10 \Rightarrow 01\,1\,10$

P_G