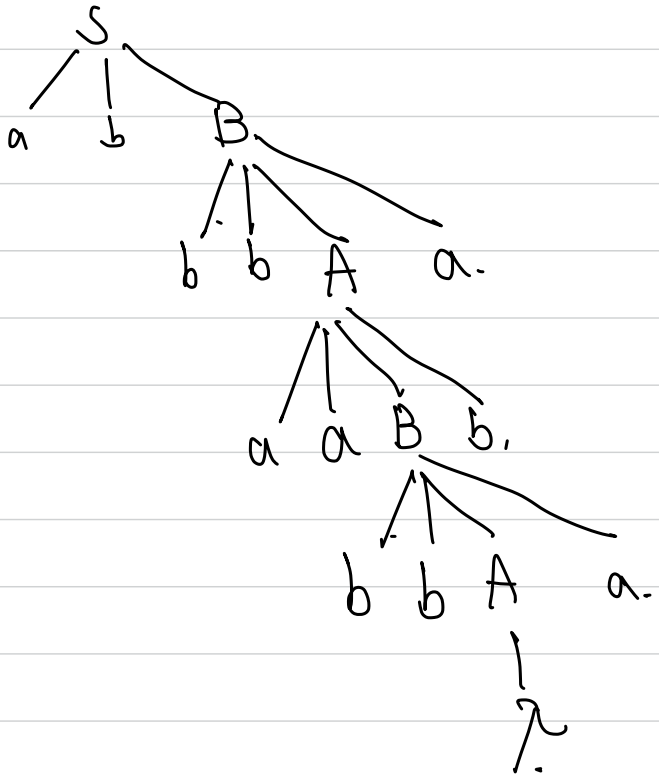
#1.

Give a derivation tree for $w = abbbaabbaba$.

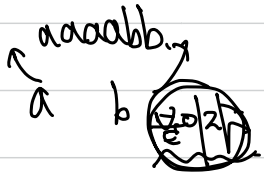
$S \to abB$, $A \to aaBb$, $B \to bbAa$, $A \to \lambda$



#2. Find context-free grammars for the language

$$L = \{a^n b^m \mid n \neq 2m\}.$$

$n < 2m$ $\quad$ $n > 2m$



$S \to aaSb \mid A \mid B$

$A \to aA \mid a$

$B \to bB \mid b$

#3. Find a s-grammar for $L = (000^*11 + 111)$

$A \to ax$

$(A \in V,\ a \in T,\ x \in V^*)$

⇒ 만족한다.

000^*11

$$
\begin{cases}
S \to 0ZA \mid 1B \\
Z \to 0 \\
A \to 0A \mid 1B \\
B \to 1
\end{cases}
$$

$(S, 0)$, $(S, 1)$

$(A, 0)$, $(A, 1)$

$$S = (\{S, Z, A, B\}, \{0, 1\}, S, P)$$

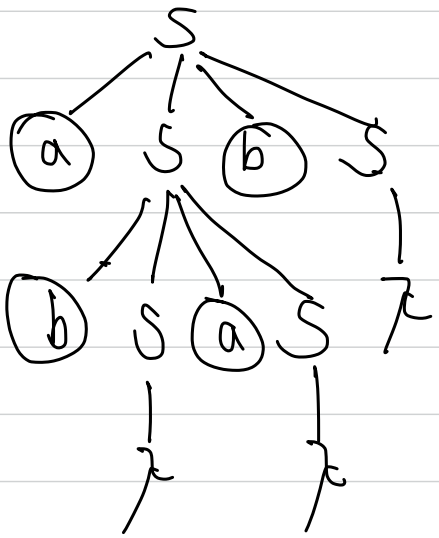
parsing이 한번에 결정되서 매우 좋다.

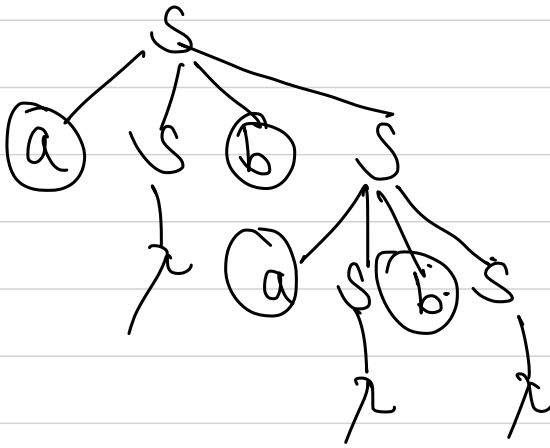
(ambiguity 가 X)

Show that the following grammar is ambiguous.

$S \to bSaS \mid aSbS \mid \lambda$

$w = (abab)$ ⇒ derivation tree 두 개 존재.





" abab "

∴ G is ambiguous "

L is ambiguous 하면 모두 ambiguous

↳ 하나라도 적은 G가 ambiguous

하면 inherently ambiguous 하다. 라고 말한다.