

1. (a) terminal = '(', ')', ',', 'a'

nonterminal = S, L.

start symbol = S.

(b) leftmost =

$S \rightarrow (\underline{L})$

$\rightarrow (\underline{L}, S)$

$\rightarrow (\underline{L}, S, S)$

$\rightarrow (\underline{S}, S, S)$

$\rightarrow ((\underline{L}), S, S)$

$\rightarrow ((\underline{L}, S), S, S)$

$\rightarrow ((\underline{S}, S), S, S)$

$\rightarrow ((a, \underline{S}), S, S)$

$\rightarrow ((a, a), \underline{S}, S)$

$\rightarrow ((a, a), a, \underline{S})$

$\rightarrow ((a, a), a, (\underline{L}))$

$\rightarrow ((a, a), a, (\underline{S}))$

$\rightarrow ((a, a), a, (\underline{a}))$

(c) rightmost

$S \rightarrow (\underline{L})$

$\rightarrow (\underline{L}, \underline{S})$

$\rightarrow (\underline{L}, (\underline{L}))$

$\rightarrow (\underline{L}, (\underline{S}))$

$\rightarrow (\underline{L}, (a))$

$\rightarrow (\underline{L}, \underline{S}, (a))$

$\rightarrow (\underline{L}, a, (a))$

$\rightarrow (\underline{S}, a, (a))$

$\rightarrow ((\underline{L}), a, (a))$

$\rightarrow ((\underline{L}, \underline{S}), a, (a))$

$\rightarrow ((\underline{L}, a), a, (a))$

$\rightarrow ((\underline{S}, a), a, (a))$

$\rightarrow ((a, a), a, (a))$

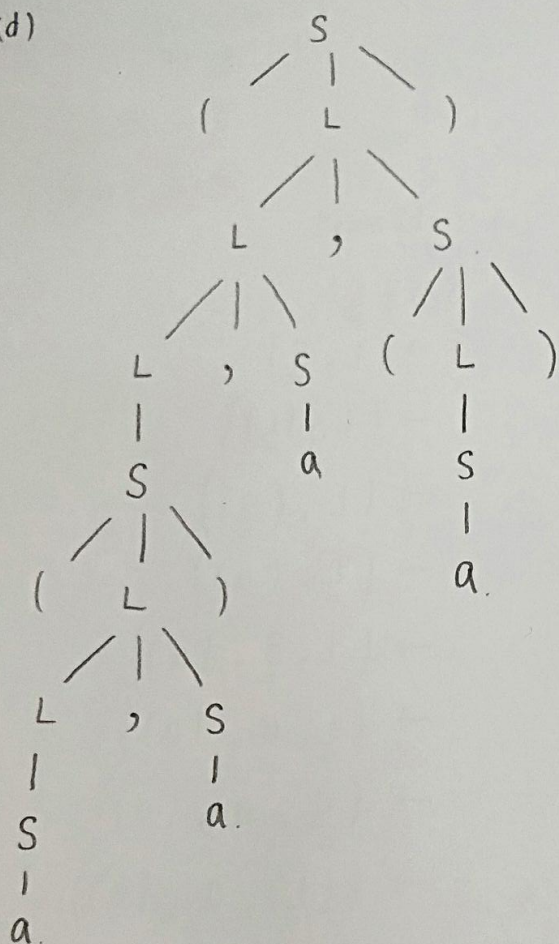
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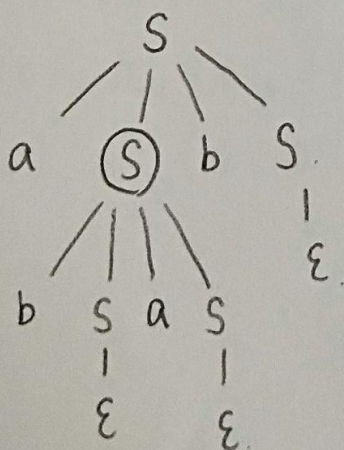
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編譯 H.W.4.

(d)

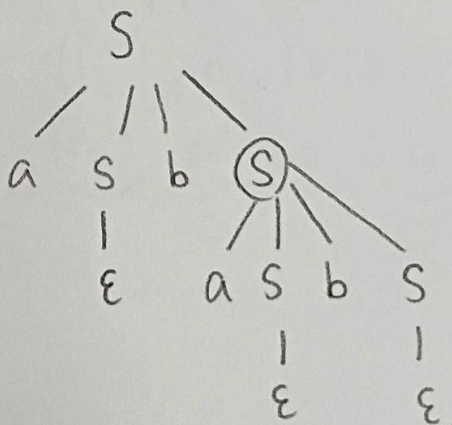


2. $S \rightarrow \underline{aSbS} \mid \underline{bSaS} \mid \epsilon$



\Rightarrow string = abab

\Rightarrow it is not ambiguous.



\Rightarrow string: abab

$$3. (a) \quad S \rightarrow 0S0 \mid 1S1 \mid L$$

$$L \rightarrow 0 \mid 1 \mid \varepsilon$$

(b) (不包含 011)

$$S \rightarrow 1S \mid L$$

$$L \rightarrow E1E \mid E$$

$$E \rightarrow 0E \mid \varepsilon$$