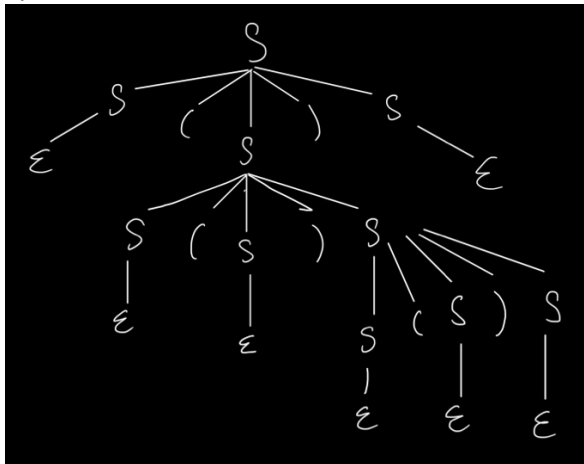


Problem 4.2.2 c

!c) S --+ S(S)SIE with string(00)

$$\begin{aligned} & 1/S = \text{Im} \Rightarrow S(S)S \Rightarrow (S)S \Rightarrow (S(S)S)S \Rightarrow ((S)S)S \Rightarrow (()S)S \Rightarrow (()S(S)S)S \Rightarrow (()S(S)S)S \Rightarrow (()())S \\ & \Rightarrow (()())S \Rightarrow (()()) \end{aligned}$$
$$\begin{aligned} 2 / S &= rm \Rightarrow S(S)S \Rightarrow S(S) \Rightarrow S(S(S)S) \Rightarrow S(S(S)) \Rightarrow S(S()) \Rightarrow S(S(S)S()) \Rightarrow S(S(S)()) \Rightarrow S(S())() \\ &\Rightarrow S(()()) \Rightarrow (()()) \end{aligned}$$

3/ Omit



4/ Ambiguous because there are more than one left most derivation.

5/ The set of all strings of symmetrical parentheses due to the bracket string

Problem 4.2.3 a

a) The set of all strings of 0s and 1s such that every 0 is immediately followed by at least one 1.

$$S \rightarrow (0?1)^*$$

Problem 4.4.1.c

$$! S \rightarrow S (S) S \mid \varepsilon$$

Eliminate left-recursion:

$S \rightarrow A$

$$A \rightarrow (S) S A \mid \varepsilon$$

Nonterminal	Enter your symbol		
	()	\$
S	$S \rightarrow A$	$S \rightarrow A$	$S \rightarrow A$
A	$A \rightarrow (S) S A$	$A \rightarrow \epsilon$	$A \rightarrow \epsilon$
	$A \rightarrow \epsilon$		