

3.

按照顺序从上到下依次消除左递归后,得到的文法如下:

$$\begin{aligned} S &\rightarrow ABS' \\ S' &\rightarrow aS' \mid \varepsilon \\ A &\rightarrow BaA' \\ A' &\rightarrow cA' \mid \varepsilon \\ B &\rightarrow CgB' \mid fB' \\ B' &\rightarrow dA'bS'eB' \mid \varepsilon \\ C &\rightarrow fB'hC' \mid jC' \\ C' &\rightarrow gB'hC' \mid \varepsilon \end{aligned}$$

First集:

$$\begin{aligned} \text{First}(S) &= \text{First}(A) = \text{First}(B) = \text{First}(C) \\ &= \{+, j\} \end{aligned}$$

$$\text{First}(S') = \{a, \varepsilon\}, \text{First}(A) = \{c, \varepsilon\}$$

$$\text{First}(B') = \{d, \varepsilon\}, \text{First}(C') = \{g, \varepsilon\}$$

Follow集:

$$\text{Follow}(S) = \{\$R\}, \text{Follow}(S') = \{\$R, \varepsilon\}$$

$$\text{Follow}(A) = \text{Follow}(A') = \{b\}$$

$$\text{Follow}(B) = \{d\}, \text{Follow}(B') = \{d, h\}$$

$$\text{Follow}(C) = \text{Follow}(C') = \{g\}$$

LL(1)分析表:

	a	b	c	d	e	+	g	h	j	\$R
S						$S \rightarrow ABS'$			$S \rightarrow ABS'$	
S'	$S' \rightarrow aS'$				$S' \rightarrow \varepsilon$					$S' \rightarrow \varepsilon$
A						$A \rightarrow BaA'$			$A \rightarrow BaA'$	
A'		$A' \rightarrow \varepsilon$	$A' \rightarrow cA'$							
B						$B \rightarrow fB'$ $B \rightarrow CgB'$			$B \rightarrow CgB'$	
B'			$B' \rightarrow dA'bS'eB'$ $B' \rightarrow \varepsilon$					$B' \rightarrow \varepsilon$		
C						$C \rightarrow fB'hC'$			$C \rightarrow jC'$	
C'							$C' \rightarrow gB'hC'$ $C' \rightarrow \varepsilon$			

因为LL(1)分析表中有3处冲突, 所以不是LL(1)文法。