学院：数据科学与计算机学院　　专业：计算机科学与技术
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编译原理

理论四

Exercise 4.6.2: Construct the SLR sets of items for the (augmented) grammar of Exercise 4.2.1. Compute the GOTO Function for these sets of items. Show the parsing table for this grammar. Is the grammar SLR?

扩充文法如下：

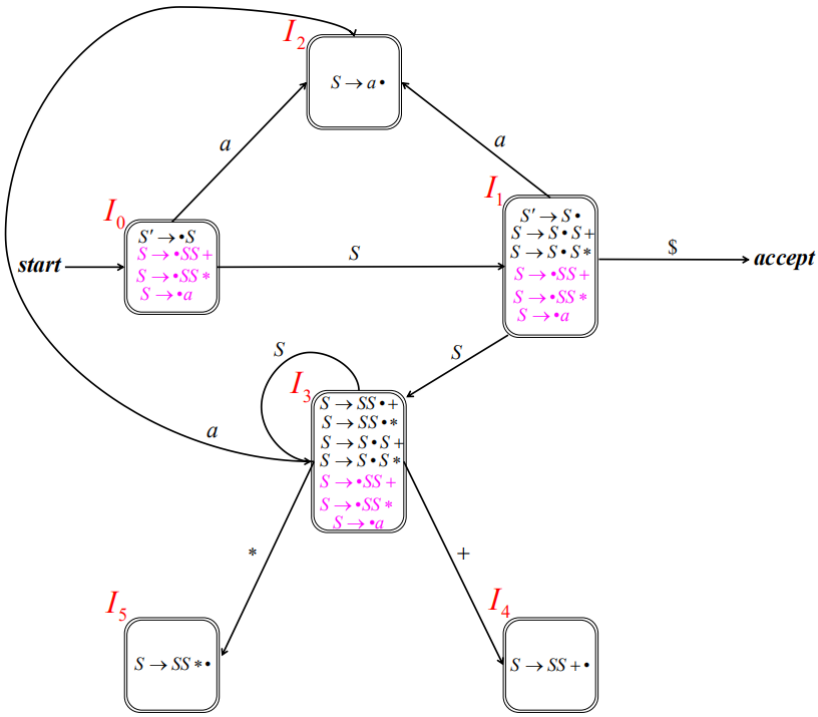
(1) $S' \to S$

(2) $S \to SS+$

(3) $S \to SS*$

(4) $S \to a$

构建的LR(0)自动机：



构建非终端符号的FIRST | FOLLOW表：

NON-TERMINAL	FIRST	FOLLOW
S	$\{a\}$	$\{a, +, *, \$\}$

得到以下分析表：

State	ACTION				GOTO
	a	+	*	$	S
0	s2				1
1	s2			acc	3
2	r4	r4	r4	r4	
3	s2	s4	s5		3
4	r2	r2	r2	r2	
5	r3	r3	r3	r3	

因为分析表中并没有出现冲突，所以该文法是SLR文法。

Exercise 4.6.3: Show the actions of your parsing table from Exercise 4.6.2 on the input $aa*a+$.

	STACK	SYMBOLS	INPUT	ACTION
(1)	0		$aa*a+\$$	shift
(2)	0 2	a	$a*a+\$$	reduce by $S \to a$
(3)	0 1	S	$a*a+\$$	shift
(4)	0 1 2	Sa	$*a+\$$	reduce by $S \to a$
(5)	0 1 3	SS	$*a+\$$	shift
(6)	0 1 3 5	$SS*$	$a+\$$	reduce by $S \to SS*$
(7)	0 1 3	S	$a+\$$	shift
(8)	0 1 3 2	Sa	$+\$$	reduce by $S \to a$
(9)	0 1 3	SS	$+\$$	shift
(10)	0 1 3 4	$SS+$	$\$$	reduce by $S \to SS+$
(11)	0 1	S	$\$$	accept