

Compilers Assignment 6

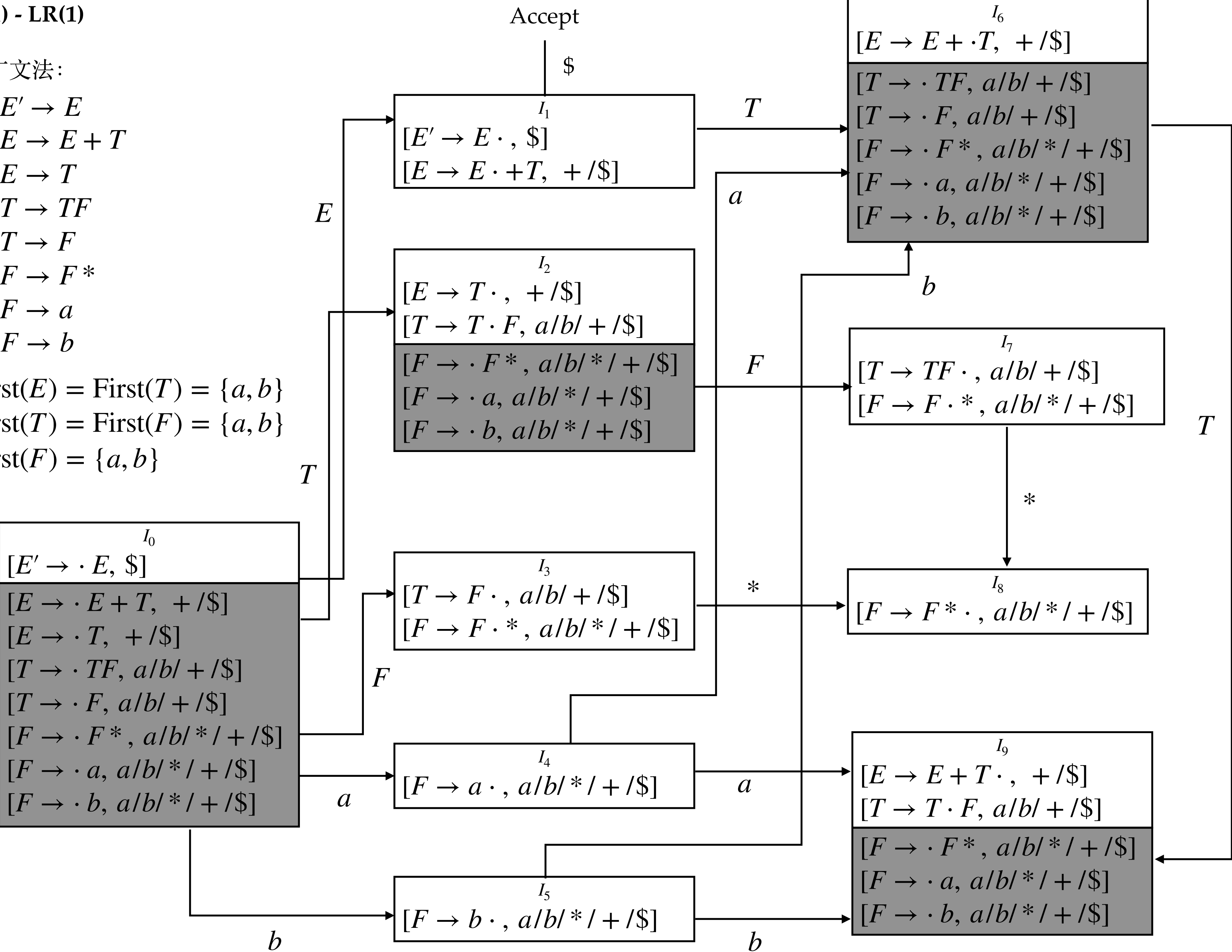
10185101210 陈俊潼

1.(1) - LR(1)

增广文法:

- (0) $E' \rightarrow E$
- (1) $E \rightarrow E + T$
- (2) $E \rightarrow T$
- (3) $T \rightarrow TF$
- (4) $T \rightarrow F$
- (5) $F \rightarrow F *$
- (6) $F \rightarrow a$
- (7) $F \rightarrow b$

$\text{First}(E) = \text{First}(T) = \{a, b\}$
 $\text{First}(T) = \text{First}(F) = \{a, b\}$
 $\text{First}(F) = \{a, b\}$



得到语法分析表如下:

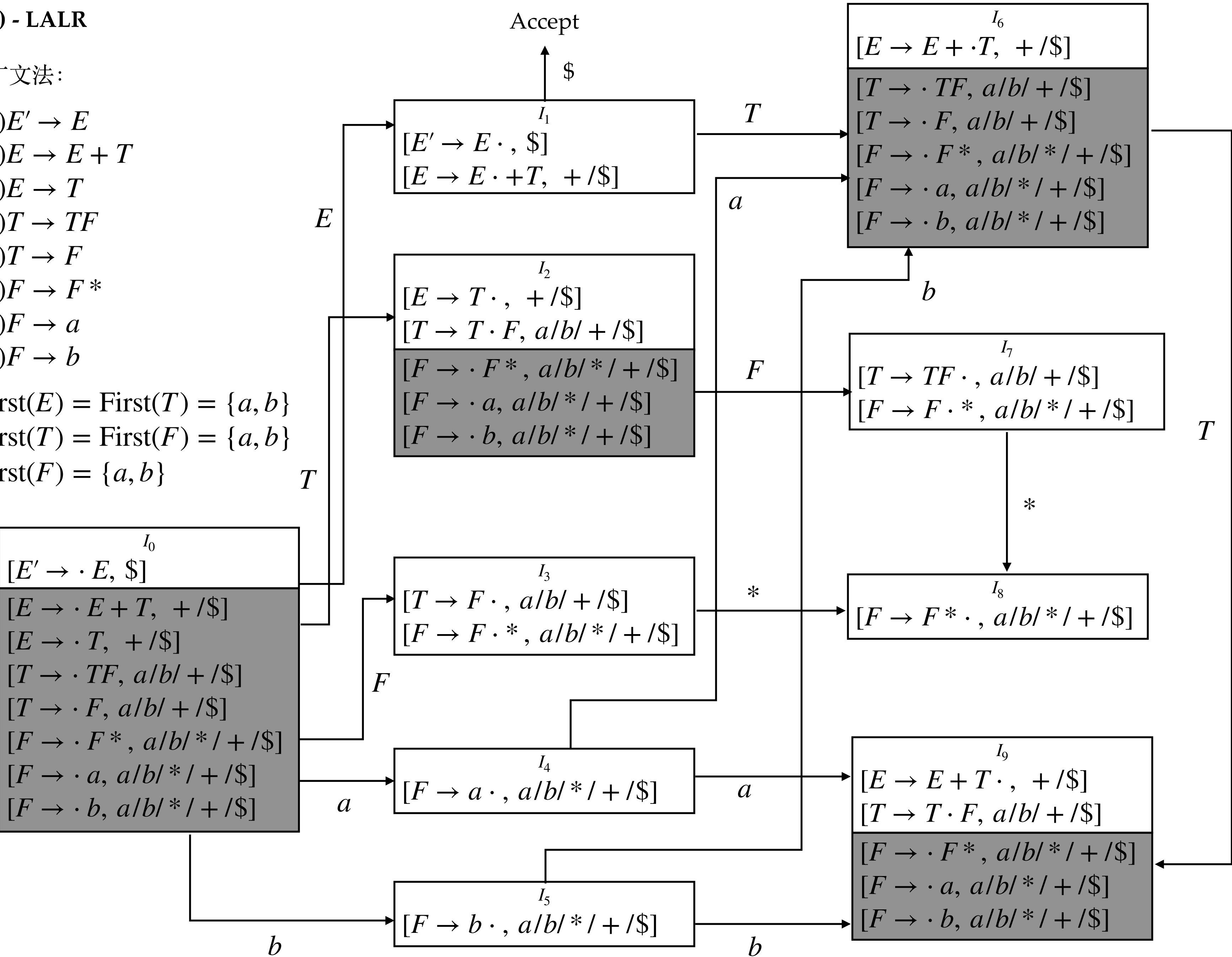
状态	ACTION					GOTO		
	a	b	+	*	\$	E	T	F
0	s4	s5				1	2	3
1			s6		AC			
2	s4	s5	r2		r2			7
3	r4	r4	r4	s8	r4			
4	r6	r6	r6	r6	r6			
5	r7	r7	r7	r7	r7			
6	s4	s5					9	3
7	r3	r3	r3	s8	r3			
8	r5	r5	r5	r5	r5			
9	s4	s5	r1		r1			7

1.(2) - LALR

增广文法:

- (0) $E' \rightarrow E$
- (1) $E \rightarrow E + T$
- (2) $E \rightarrow T$
- (3) $T \rightarrow TF$
- (4) $T \rightarrow F$
- (5) $F \rightarrow F *$
- (6) $F \rightarrow a$
- (7) $F \rightarrow b$

$\text{First}(E) = \text{First}(T) = \{a, b\}$
 $\text{First}(T) = \text{First}(F) = \{a, b\}$
 $\text{First}(F) = \{a, b\}$



得到语法分析表如下:

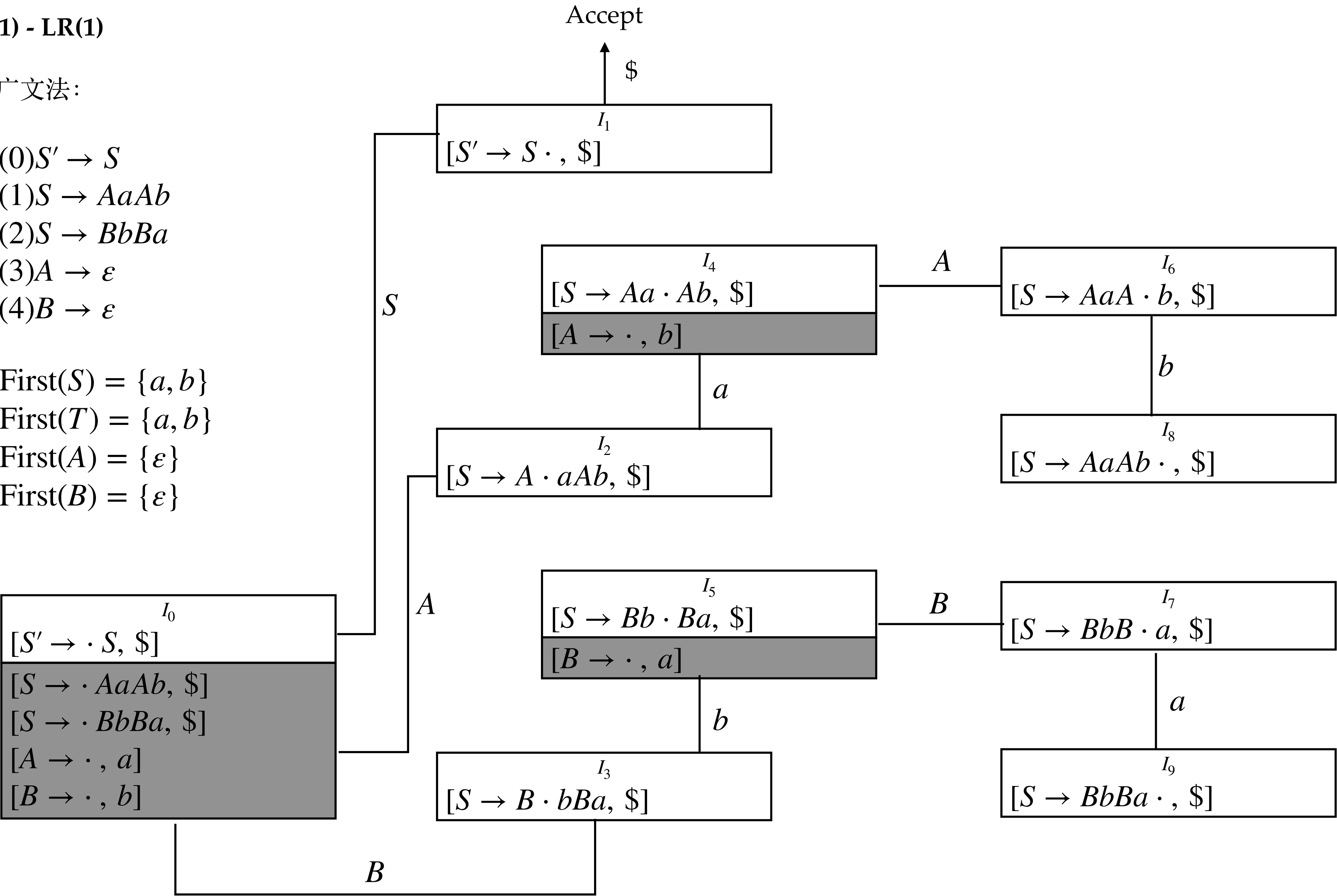
状态	ACTION					GOTO		
	a	b	+	*	\$	E	T	F
0	s4	s5				1	2	3
1			s6		AC			
2	s4	s5	r2		r2			7
3	r4	r4	r4	s8	r4			
4	r6	r6	r6	r6	r6			
5	r7	r7	r7	r7	r7			
6	s4	s5					9	3
7	r3	r3	r3	s8	r3			
8	r5	r5	r5	r5	r5			
9	s4	s5	r1		r1			7

2.(1) - LR(1)

增广文法：

- (0) $S' \rightarrow S$
- (1) $S \rightarrow AaAb$
- (2) $S \rightarrow BbBa$
- (3) $A \rightarrow \varepsilon$
- (4) $B \rightarrow \varepsilon$

$\text{First}(S) = \{a, b\}$
 $\text{First}(T) = \{a, b\}$
 $\text{First}(A) = \{\varepsilon\}$
 $\text{First}(B) = \{\varepsilon\}$



得到语法分析表如下：

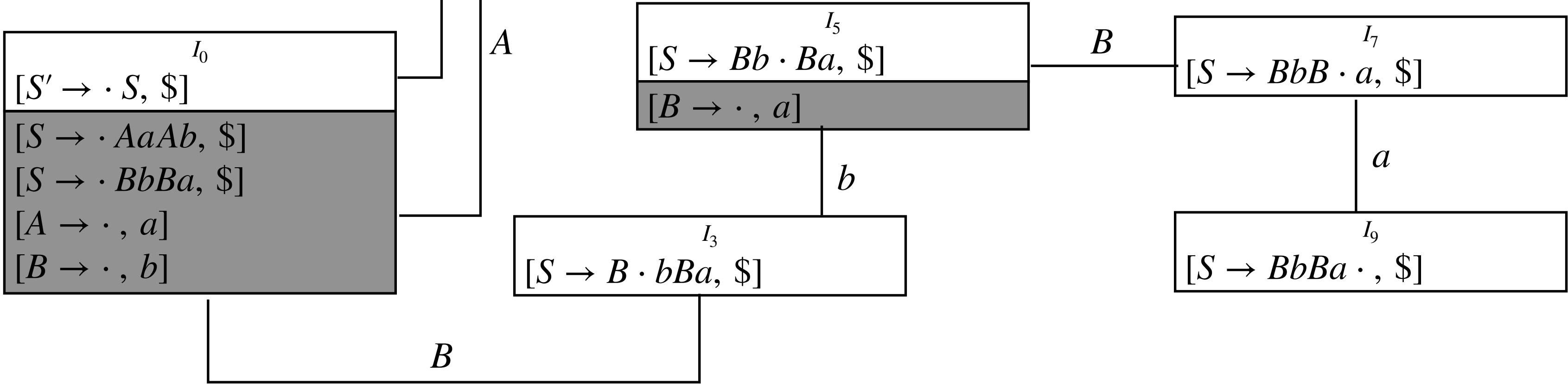
状态	ACTION			GOTO		
	a	b	\$	S	A	B
0	r3	r4		1	2	3
1			AC			
2	s4					
3		s5				
4		r3			6	
5	r4					7
6		s8				
7	s9					
8			r1			
9			r2			

2.(1) - LALR

增广文法：

- (0) $S' \rightarrow S$
- (1) $S \rightarrow AaAb$
- (2) $S \rightarrow BbBa$
- (3) $A \rightarrow \varepsilon$
- (4) $B \rightarrow \varepsilon$

$\text{First}(S) = \{a, b\}$
 $\text{First}(T) = \{a, b\}$
 $\text{First}(A) = \{\varepsilon\}$
 $\text{First}(B) = \{\varepsilon\}$



得到语法分析表如下：

状态	ACTION			GOTO		
	a	b	\$	S	A	B
0	r3	r4		1	2	3
1			AC			
2	s4					
3		s5				
4		r3			6	
5	r4					7
6		s8				
7	s9					
8			r1			
9			r2			