

CLR Parsing table LR(1) items

$$1. S \rightarrow cC$$

$$2. C \rightarrow cC$$

$$3. C \rightarrow d$$

LR(1) items LR(0) + lookahead
is called LR(1) items

$$1. \text{closure} \left[\begin{array}{l} A \rightarrow \alpha.B\beta, a \\ B \rightarrow \gamma, \text{First}(\beta a) \end{array} \right]$$

$$2. \text{Reduce} - A \rightarrow \alpha. a$$

→ Augmented Grammar

$$S' \rightarrow S$$

$$S \rightarrow cC$$

$$C \rightarrow cC$$

$$C \rightarrow d$$

LR(1) items

$$I_0 : S' \rightarrow \cdot S, \$$$

$$S \rightarrow \cdot cC, \text{end } \$$$

$$C \rightarrow \cdot cC, c|d$$

$$C \rightarrow \cdot d, c|d$$

(lookahead is first(c\$)
first(c\$): c, d

goto(I₀, S)

$$I_1 : S' \rightarrow S \cdot, \$$$

goto(I₀, c)

$$I_2 : S \rightarrow c \cdot C, \$ \quad (\text{lookahead first}(\$): \$)$$

$$C \rightarrow \cdot cC, \$$$

$$C \rightarrow \cdot d, \$$$

goto(I₀, c)

$$I_3 : C \rightarrow c \cdot C, c|d$$

$$C \rightarrow \cdot cC, c|d$$

$$C \rightarrow \cdot d, c|d$$

goto (I_0, d)

$I_4: C \rightarrow d \cdot, c|d$

goto (I_2, c)

$I_5: S \rightarrow CC \cdot, \$$

goto (I_2, c)

$I_6: C \rightarrow c \cdot C, \$$

$C \rightarrow \cdot c C, \$$

$c \rightarrow \cdot d \$$

goto (I_2, d)

$I_7: C \rightarrow d \cdot \$$

goto (I_3, c)

$I_8: C \rightarrow cc \cdot, c|d$

goto (I_6, c)

$I_9: C \rightarrow cC \cdot, \$$

CLR Parsing table

state	Action			goto	
	c	d	\$	S	c
0	s ₃	s ₄		1	2
1			acc		
2	s ₆	s ₇			5
3	s ₃	s ₇			8
4	r ₃	r ₃			
5			r ₁		
6	s ₆	s ₇			9
7			r ₃		
8	r ₂	r ₂			
9			r ₂		

LALR Parsing

$I_{36} : c \rightarrow c.c, cld\$$
 $c \rightarrow .c, cld\$$
 $c \rightarrow .d, cld\$$

$I_{47} : c \rightarrow d., cld\$$

$I_{89} : c \rightarrow c.c., cld\$$

LALR Parsing Table

State	Action			goto	
	e	d	\$	S	C
0	S36	S47		1	2
1			acc		
2	S36	S47			5
36	S36	S47			89
47	r3	r3	r3		
5			r1		
89	r2	r2	r2		