

SLR grammar ('' is ϵ):

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(0) S -> a X
(1) X -> * B S'
(2) X -> S'
(3) S' -> + a S'
(4) S' -> ''
(5) A -> c d A'
(6) A' -> b A'
(7) A' -> ''
(8) B -> A c
(9) B -> C d e
(10) C -> S d
(11) C -> ''
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FIRST / FOLLOW table		
Nonterminal	FIRST	FOLLOW
S	{a}	{\$,d}
X	{*,+, ''}	{\$,d}
S'	{+, ''}	{\$,d}
A	{c}	{c}
A'	{b, ''}	{c}
B	{c,a, '',d}	{+, \$,d}
C	{a, ''}	{d}

SLR closure table			
Goto	Kernel	State	Closure
	{S -> .a X}	0	{S -> .a X}
goto(0, a)	{S -> a.X}	1	{S -> a.X; X -> .* B S'; X -> .S'; S' -> .+ a S'; S' -> .}
goto(1, X)	{S -> a X.}	2	{S -> a X.}
goto(1, *)	{X -> *.B S'}	3	{X -> *.B S'; B -> .A c; B -> .C d e; A -> .c d A'; C -> .S d; C -> .; S -> .a X}
goto(1, S')	{X -> S'.}	4	{X -> S'.}
goto(1, +)	{S' -> +.a S'}	5	{S' -> +.a S'}
goto(3, B)	{X -> * B.S'}	6	{X -> * B.S'; S' -> .+ a S'; S' -> .}
goto(3, A)	{B -> A.c}	7	{B -> A.c}
goto(3, C)	{B -> C.d e}	8	{B -> C.d e}
goto(3, c)	{A -> c.d A'}	9	{A -> c.d A'}
goto(3, S)	{C -> S.d}	10	{C -> S.d}
goto(3, a)	{S -> a.X}	1	
goto(5, a)	{S' -> + a.S'}	11	{S' -> + a.S'; S' -> .+ a S'; S' -> .}
goto(6, S')	{X -> * B S'.}	12	{X -> * B S'.}
goto(6, +)	{S' -> +.a S'}	5	
goto(7, c)	{B -> A c.}	13	{B -> A c.}
goto(8, d)	{B -> C d.e}	14	{B -> C d.e}
goto(9, d)	{A -> c d.A'}	15	{A -> c d.A'; A' -> .b A'; A' -> .}
goto(10, d)	{C -> S d.}	16	{C -> S d.}
goto(11, S')	{S' -> + a S'.}	17	{S' -> + a S'.}
goto(11, +)	{S' -> +.a S'}	5	
goto(14, e)	{B -> C d e.}	18	{B -> C d e.}
goto(15, A')	{A -> c d A'.}	19	{A -> c d A'.}
goto(15, b)	{A' -> b.A'}	20	{A' -> b.A'; A' -> .b A'; A' -> .}
goto(20, A')	{A' -> b A'.}	21	{A' -> b A'.}
goto(20, b)	{A' -> b.A'}	20	

LR table														
State	ACTION								GOTO					
	a	*	+	c	d	b	e	\$	S	X	S'	A	A'	B
0	s1													
1		s3	s5		r4			r4		2	4			
2					acc			acc						
3	s1			s9	r11				10			7		6
4					r2			r2						
5	s11													

Input (tokens): id + id * id

Maximum number of steps: 100

PARSE

Trace				Tree
Step	Stack	Input	Action	
1	0	id + id * id \$		

LR table														
State	ACTION								GOTO					
	a	*	+	c	d	b	e	\$	S	X	S'	A	A'	B C
6			s5		r ₄			r ₄			12			
7				s13										
8					s14									
9					s15									
10					s16									
11			s5		r ₄			r ₄			17			
12					r ₁			r ₁						
13			r ₈		r ₈			r ₈						
14							s18							
15				r ₇		s20						19		
16					r ₁₀									
17					r ₃			r ₃						
18			r ₉		r ₉			r ₉						
19				r ₅										
20				r ₇		s20						21		
21				r ₆										