

## LL Problem

(1)

$S \rightarrow xE$

$| z$

$E \rightarrow cE'$

$E' \rightarrow aEE'$

$| bEE'$

$| \varepsilon$

(2)

Already LL.

(3)

$S \rightarrow xES'$

$| z$

$S' \rightarrow y$

$| \varepsilon$

$E \rightarrow aE$

$| b$

## LR Problem

### (1) First set and follow set

First(S) = ( , \*

First(V) = \* , p

Follow(S) = \$ , ( , ) , \*

Follow(V) = \$ , ( , ) , \*

Action					
	p	*	(	)	\$
0		S	S		
1		S	S		
2	S	S			
3					
4		R2	R2	R2	R2
5	S	S			
6		R4	R4	R4	R4
7				S	
8		R3	R3	R3	R3
9		R1	R1	R1	R1

Go To						
	p	*	(	)	\$	S
0		2	1			
1		0	1			3
2	6	5				4
3						7
4						
5	6	5				8
6						
7				9		
8						
9						

States:

0. S -> @ ( S S )

| @ \* V

1. S -> ( @ S S )

S -> @ ( S S )

| @ \* V

2. S -> \* @ V

V -> @ \* V

| @ p

3. S -> ( S @ S )

4. S -> \* V @

5. V -> \* @ V

V -> @ \* V

| @ p

6. V -> p @

7. S -> ( S S @ )

8. V -> \* V @

9. S -> ( S S ) @