

Quiz #8 Exercise

Hints:

- Draw LR(0) computation.
- $\text{Follow}(\text{Start}) = \{ \}$
 $\text{Follow}(\text{StmtList}) = \{ \$ \}$
 $\text{Follow}(\text{Stmt}) = \{ \text{semi}, \$ \}$
- Construct the parse table
- Check whether there is any conflict. If no, you proved it. If yes, you disproved it.

- Prove or disprove that the following grammar is SLR(1).

$\text{Start} \rightarrow \text{StmtList } \$$
 $\text{StmtList} \rightarrow \text{Stmt semi StmtList}$
 $\quad \quad \quad | \text{Stmt}$
 $\text{Stmt} \rightarrow s$

Grammar

1. $\text{Start} \rightarrow \text{StmtList } \$$
2. $\text{StmtList} \rightarrow \text{Stmt semi StmtList}$
3. $\quad \quad \quad | \text{Stmt}$
4. $\text{Stmt} \rightarrow s$

I. LR(0) computation

State 0	Go to
$\text{Start} \rightarrow \bullet \text{ StmtList } \$$	1
$\text{StmtList} \rightarrow \bullet \text{ Stmt semi StmtList}$	3
$\text{StmtList} \rightarrow \bullet \text{ Stmt}$	3
$\text{Stmt} \rightarrow \bullet s$	6

State 1	Go to
$\text{Start} \rightarrow \text{StmtList } \bullet \$$	2

State 2	Go to
$\text{Start} \rightarrow \text{StmtList } \$ \bullet$	

State 3	Go to
$\text{StmtList} \rightarrow \text{Stmt } \bullet \text{ semi StmtList}$	4
$\text{StmtList} \rightarrow \text{Stmt } \bullet$	

State 4 StmtList → Stmt semi ● StmtList	Go to 5
StmtList → ● Stmt semi StmtList	3
StmtList → ● Stmt	3
Stmt → ● s	6

State 5 StmtList → Stmt semi StmtList ●	Go to
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State 6 Stmt → s ●	Go to
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Follow(Start) = { }

Follow(StmtList) = { \$ }

Follow(Stmt) = { semi, \$ }

II. parse table

State	s	semi	\$	Start	StmtList	Stmt
0	6			accept	1	3
1			2			
2			1			
3		4	3			
4	6				5	3
5			2			
6		4	4			

III. Prove or disprove that the following grammar is SLR(1).

State 3 StmtList → Stmt ● semi StmtList StmtList → Stmt ●	Go to 4
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因為 Follow(StmtList) = { \$ } 中沒有 semi 4，沒有 conflict，所以 this grammar is SLR(1).