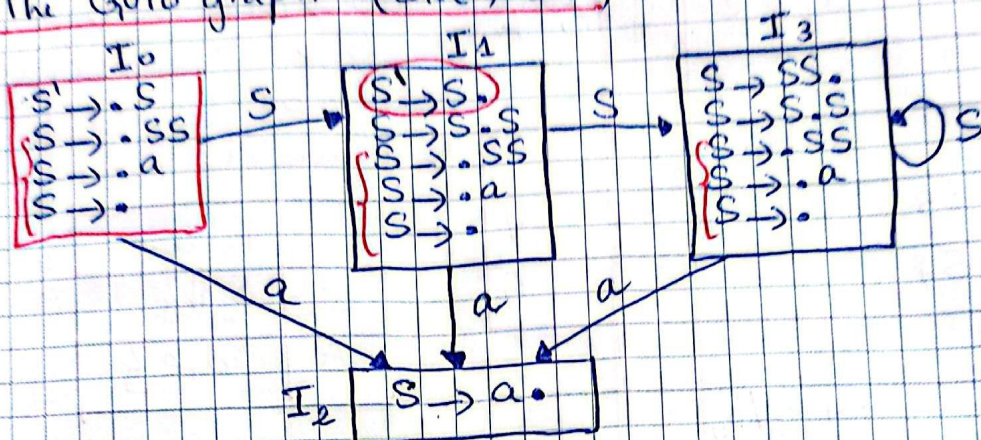


Exercise 4

1) The Goto graph (LR(0) DFA)



2) SR and RR Conflicts

Pausing Table

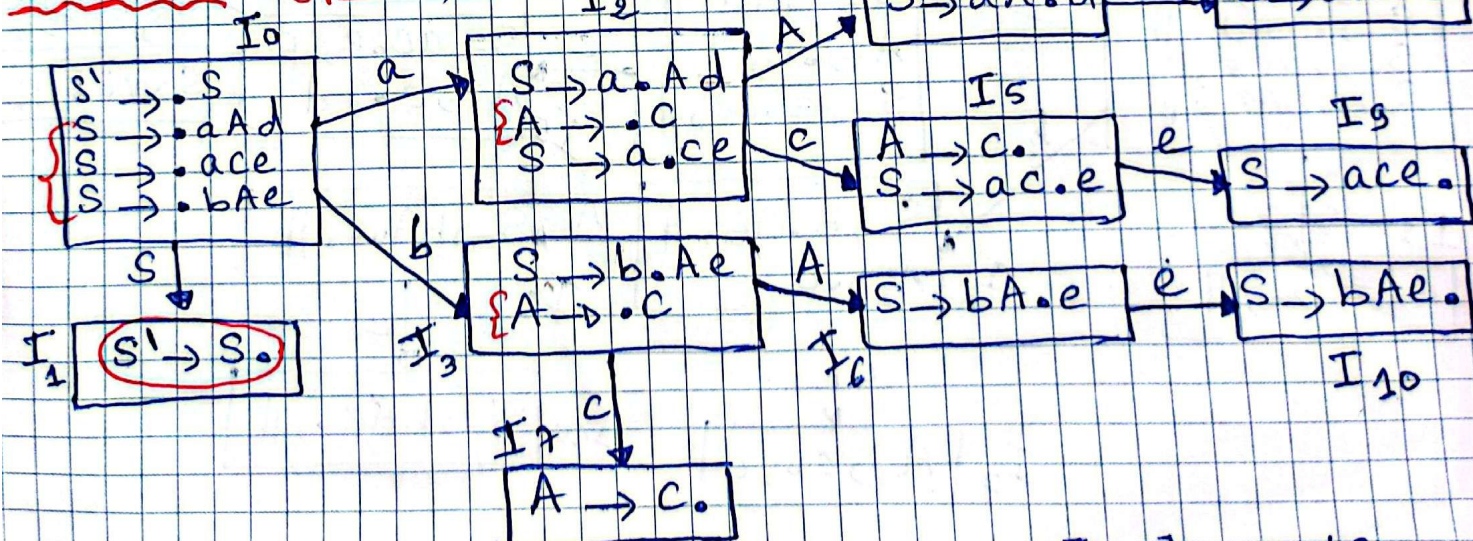
$S \rightarrow SS$ ---- (1)
 $S \rightarrow a$ ---- (2)
 $S \rightarrow \epsilon$ ---- (3)

	Action		GOTO
	a	\$	S
0	S_2/R_3	R_3	1
1	S_2/R_3	Accept/ R_3	3
2	R_2	R_2	
3	$S_2/R_1/R_3$	R_1/R_3	3

Shift-Reduce (SR) conflicts $\rightarrow I_0, I_1, I_3$

Reduce-Reduce (RR) conflicts $\rightarrow I_3$

Exercise 5 LR(0) or SLR(1)?



This grammar is not LR(0) because ACTION $[5, e] = S_9/R_4$

③ SLR(1) Parsing Table

	ACTION						GOTO	
	a	b	c	d	e	\$	S	A
0	S ₂	S ₃					1	
1						ACC		
2			S ₅					4
3			S ₇					6
4				S ₈				
5				R ₄ S ₉ /R ₄				
6					S ₁₀			
7				R ₄ R ₄				
8						R ₁		
9						R ₂		
10						R ₃		

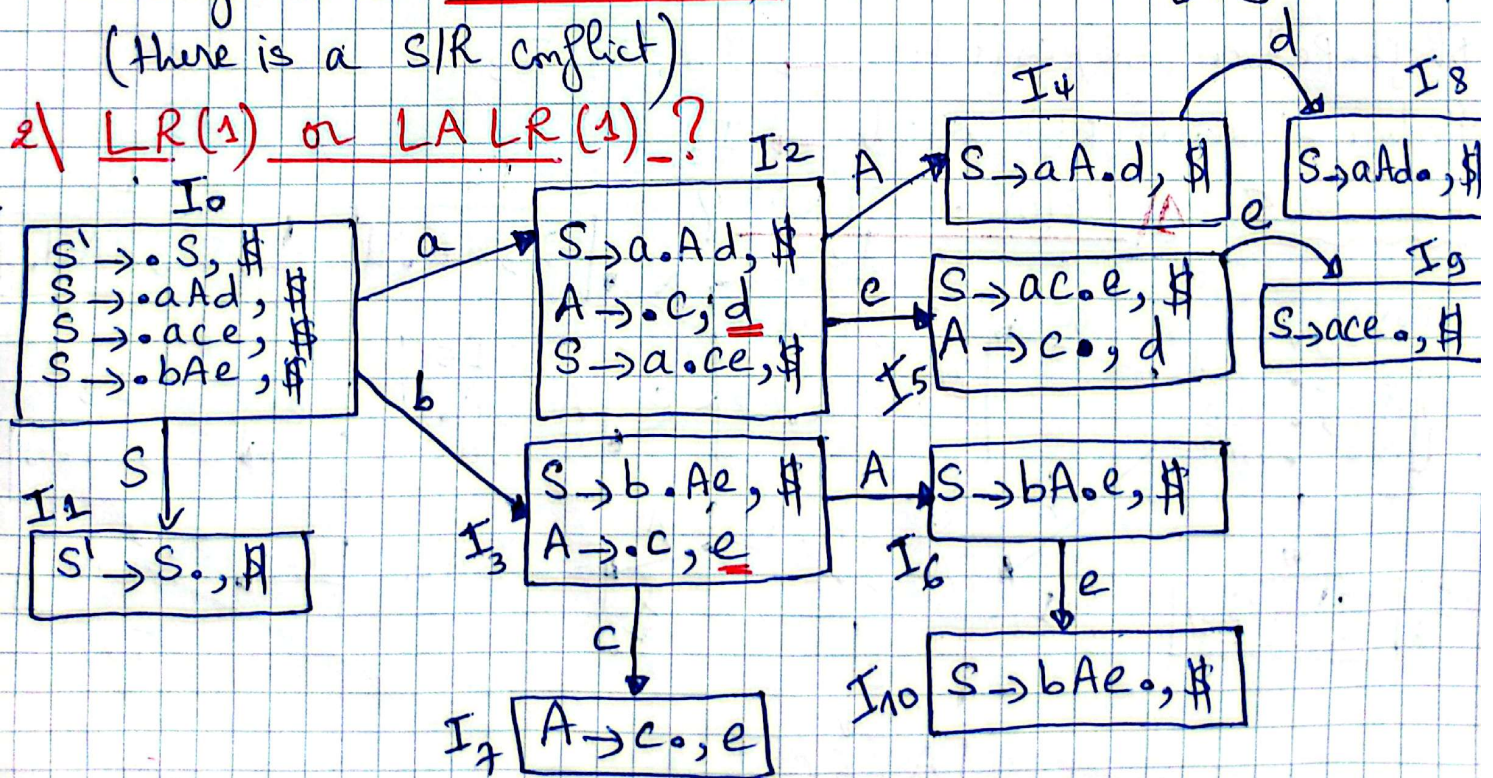
- ① Numbered grammar
- $S \rightarrow aAd \dots (1)$
 - $S \rightarrow ace \dots (2)$
 - $S \rightarrow bAe \dots (3)$
 - $A \rightarrow c \dots (4)$

② Follow sets

	Follow
S	{ \$ }
A	{ d, e }

This grammar is not SLR(1) because ACTION [5,e] = S₉/R₄ (there is a S/R conflict)

2) LR(1) or LALR(1)?



* LR(1) parsing Table

- $S \rightarrow aAd$ (1)
 $S \rightarrow ace$ (2)
 $S \rightarrow bAe$ (3)
 $A \rightarrow c$ (4)

	ACTION							GOTO	
	a	b	c	d	e	\$		S	A
0	S ₂	S ₃						1	
1						Acc			
2			S ₅						4
3			S ₇						6
4				S ₈					
5				R ₄	S ₉				
6					S ₁₀				
7					R ₄				
8						R ₁			
9						R ₂			
10						R ₃			

⇒ This grammar is LR(1) because there is no conflicts in The ACTION table

* LALR(1) Parsing Table

- This grammar is LALR(1) since it is LR(1).

- The LALR(1) parsing Table for this grammar is the same as LR(1) parsing table because LR(1) item sets that have the same LR(0) core doesn't exist.

4) Parsing Process for input $w = "bce"$

We use LR(1)/LALR(1) parsing table

Stack	Input	Action
#	bce\$	Push state 0
\$0	bce\$	S3: shift 'b' and stack state 3
\$0b3	ce\$	S7: shift 'c' // // // 7
\$0b3c7	e\$	R4: Reduce by $A \rightarrow c \Rightarrow$ Pop 2 symbols, Replace by A and push Goto[3,A] = 6
\$0b3A6	e\$	S10: shift 'e' and stack state 10
\$0b3A6e10	\$	R3: Reduce by $S \rightarrow bAe \Rightarrow$ Pop 6 symbols, Replace by S and push Goto[0,S] = 1
\$0S1	\$	Accept
	Accept!	