

Homework 12 - Abrudan Rebeca Rafaela 931

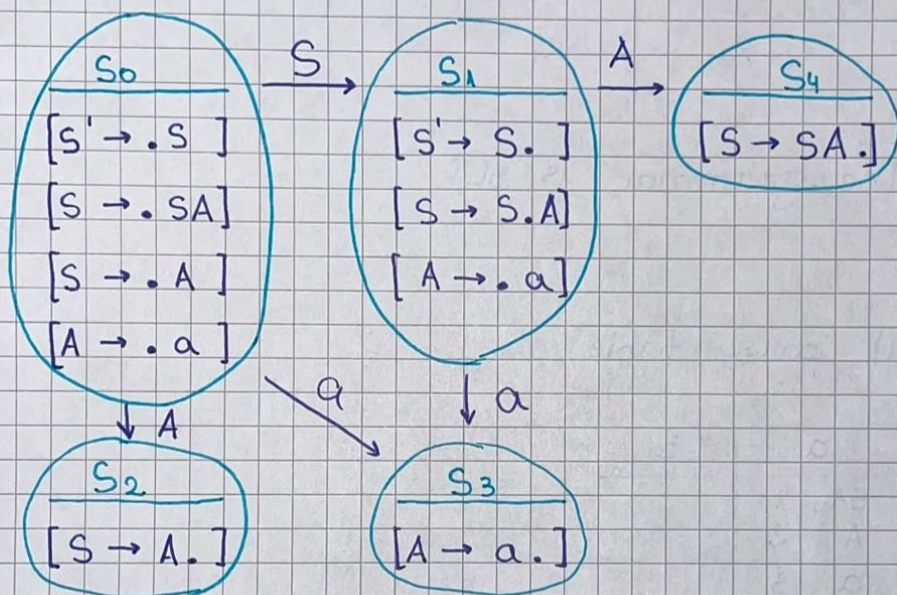
Show that the grammar:

$$S \rightarrow \overset{(1)}{SA} \mid \overset{(2)}{A}$$

$$A \rightarrow \overset{(3)}{a}$$

Is SLR but not LL(1)

$$S_0 = \text{closure}(\{[S' \rightarrow \cdot S]\})$$



$$\begin{aligned} \text{GOTO}(S_0, S) &= \text{closure}(\{[S' \rightarrow S \cdot, \$], [S \rightarrow S \cdot A, \$]\}) = \\ &= \{[S' \rightarrow S \cdot, \$], [S \rightarrow S \cdot A, \$], [A \rightarrow \cdot a, a]\} = S_1 \end{aligned}$$

$$\text{GOTO}(S_0, A) = \text{closure}(\{[S \rightarrow A \cdot, \$]\}) = \{[S \rightarrow A \cdot, \$]\} = S_2$$

$$\text{GOTO}(S_0, a) = \text{closure}(\{[A \rightarrow a \cdot, a]\}) = \{[A \rightarrow a \cdot, a]\} = S_3$$

$$\text{GOTO}(S_1, A) = \text{closure}(\{[S \rightarrow SA \cdot, \$]\}) = \{[S \rightarrow SA \cdot, \$]\} = S_4$$

$$\text{GOTO}(S_1, a) = \text{closure}(\{[A \rightarrow a \cdot, a]\}) = \{[A \rightarrow a \cdot, a]\} = S_3$$

$$\text{FIRST}(S) = \{a\}$$

$$\text{FIRST}(A) = \{a\}$$

$$\text{FOLLOW}(S) = \text{FIRST}(A) + \epsilon = \{\epsilon, a\}$$

$$\text{FOLLOW}(S) = \text{FOLLOW}(S) = \{\epsilon, a\}$$

STATE	ACTION		GOTO	
	a	\$	S	A
S ₀	Sh, S ₃		S ₁	S ₂
S ₁	Sh, S ₃	acc		S ₄
S ₂	R ₂	R ₂		
S ₃	R ₃	R ₃		
S ₄	R ₁	R ₁		

⇒ The grammar is SLR

LL(1) parse table

	a	ε
S	SA, 1 A, 2	
A	a, 3	
a	pop	
ε		

M[S, a] ⇒ 2 entries ⇒ not LL(1)