Canonical LR(1). CLR(1)

Date-18/10/22

* In CLR(1), we find LR(1) items.

LR(1) = LR(0) items + Lookahead

Construction of CLR(1) parsing table.

- Step-1 Write the Augmented Grammar.
- Step-2 find the LR(1) items.
  means collection of LR(1) items.
- Step 3 Defining 2 functions; Goto(NT) & Action(T).
- Step-4 Create Parsing table
- step-5 Check weather string (w) is accepted or not.

Question (construct LR(1) parsing table of given grammar $S \rightarrow AA$, $A \rightarrow aA/b$ And check the string (w = abb) is accepted by grammar or not.

Answer
$S \rightarrow AA$ — production (1)
$A \rightarrow aA$ — production (2)
$A \rightarrow b$ — production (3)

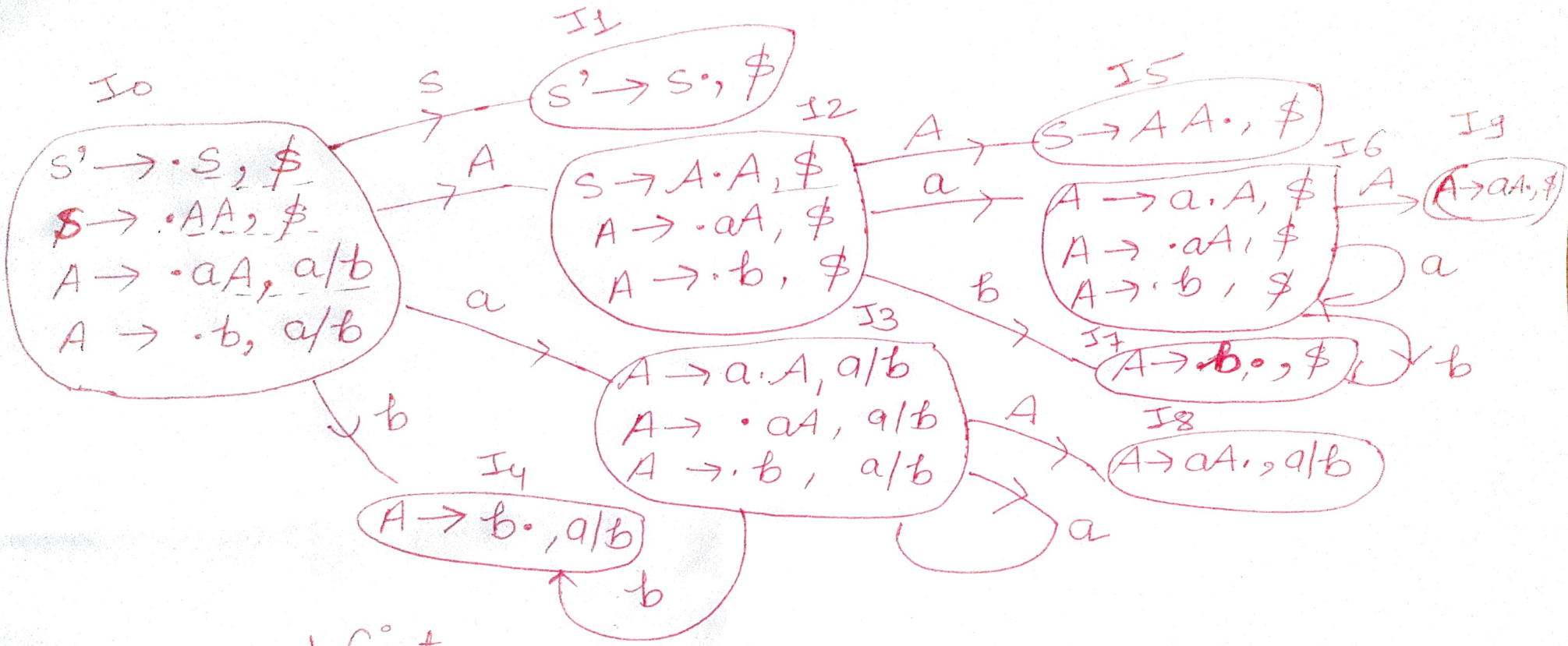
Step-1 Write Augmented Grammar.

$S' \rightarrow S$
$S \rightarrow AA$
$A \rightarrow aA$
$A \rightarrow b$

Step-2 Find LR(1) collection of items.

LR(1) = LR(0) + look ahead (1).

* For look head we find first() of grammar.



	First
S → AA	(a, b)
A → aA / b	(a, b)

1. Parsing Table (LR(1))

$S \rightarrow AA$ — (1)
$A \rightarrow aA$ — (2)
$A \rightarrow b$ — (3)

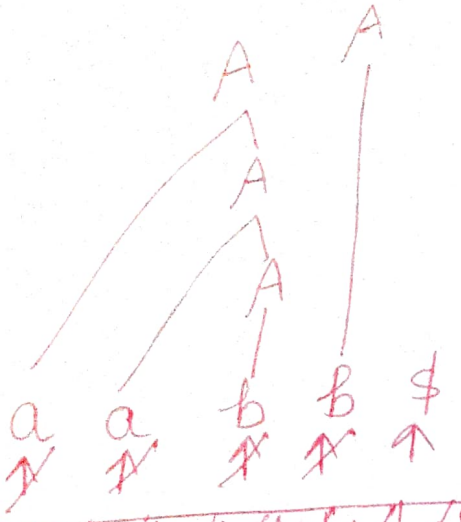
State	Action			Goto	
	a	b	$	S	A
0	S_3	S_4		1	2
1			Accepted		
2	S_6	S_7			5
3	S_3	S_4			8
4	R_3	R_3			
5			R_1		
6	S_6	S_7			9
7			R_3		
8	R_2	R_2			
9			R_2		

Step-5 check weather string (ω = aabb) is accepted by grammar or not.

Append $ into string ω = aabb

aabb$

$S \to AA$ — (1)
$A \to aA$ — (2)
$A \to b$ — (3)



0	a	3	a	3	b	4	A	$	A	$	A	2	B	7	A	$	S	-1

Accepted

Two Conflit

(1) SR

S	R

(2) RR

R_1	R_1
R_2	R_3

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