[redacted]

6.5

Compiler Construction Quiz-3

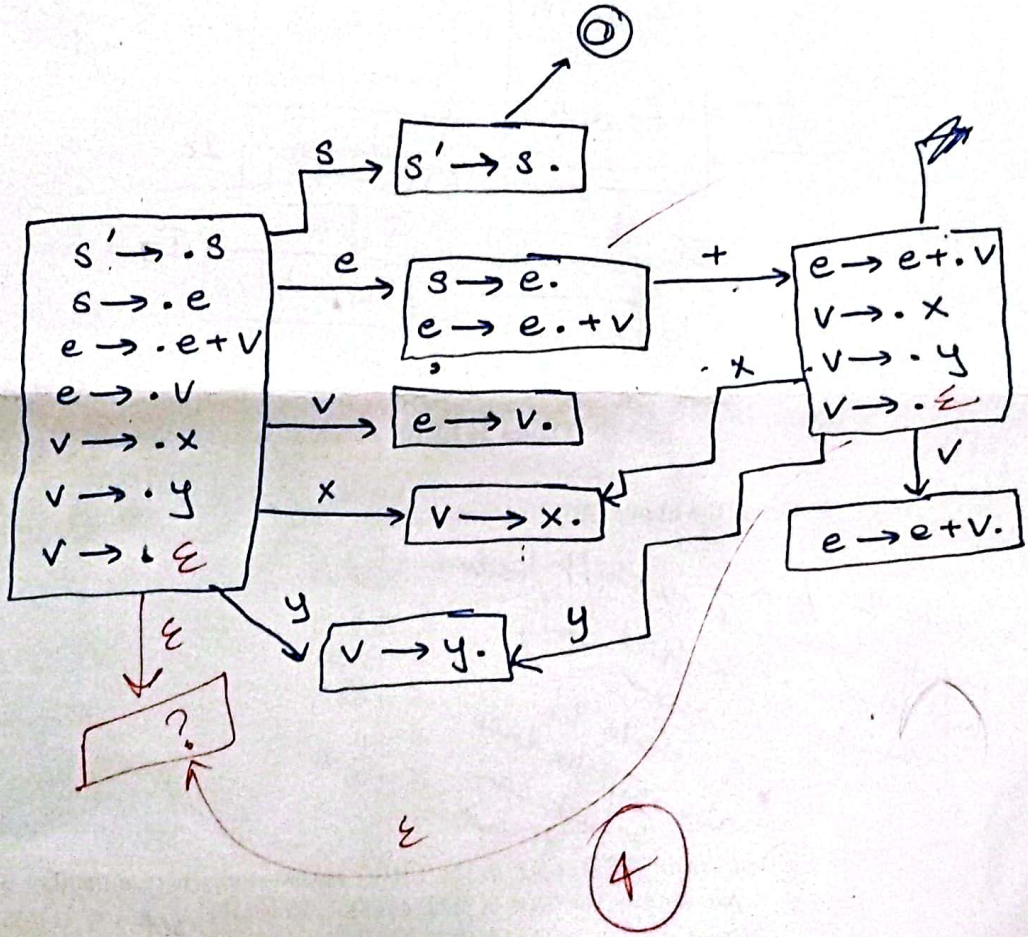
1. Given CFG:

$$s \to e$$
$$e \to e + v \mid v$$
$$v \to x \mid y \mid \varepsilon$$

create LR(0) automaton. [5 Marks]

S→e
e→ e+v |v
v→ x|y|ε

Augmented
S'→S
S→e
e→e+v
e→v
v→x
v→y
v→ε



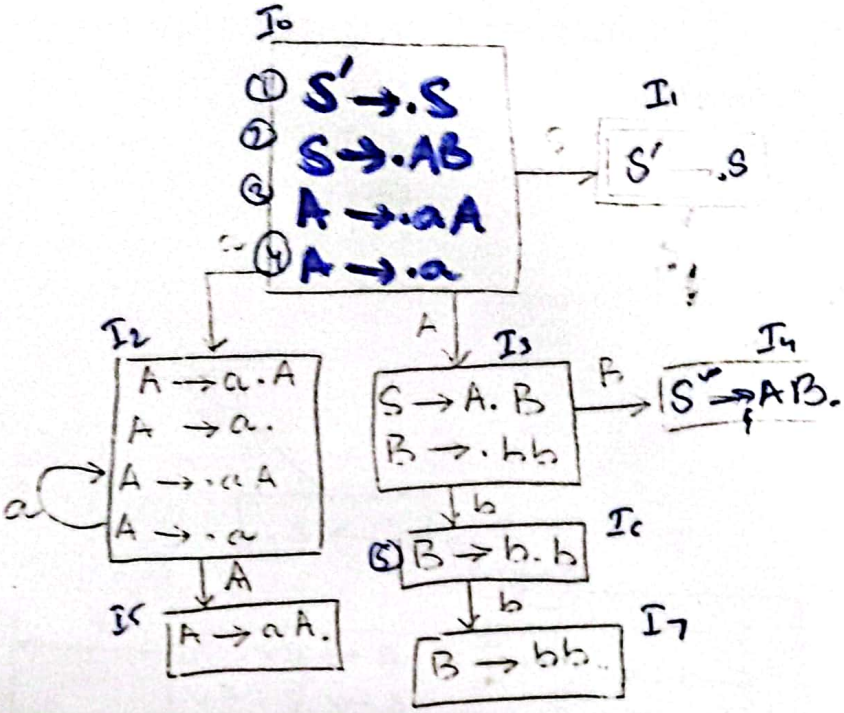


Figure 1: LR(0) automaton

2. Given the above LR(0) automaton and CFG

$S' \to S$
$S \to AB$
$A \to aA$
$A \to a$
$B \to bb$

- Identify the state(s) in the LR(0) automaton where a conflict arises and specify the type of each conflict. [3 Marks]
- Explain how you can resolve the conflict in SRL(1). After resolution of conflicts specify which actions to be taken on specific input symbols.[4 Marks]

Please write your text clearly in bulleted fashion which is easier to check and has complete information. [3+4=7 Marks]

3. Create parse tree using the grammar of the last question for string *aabb*. Must clearly show SLR(1) stack's creation and manipulation otherwise no marks will be given. [7 Marks]

State	Input	Stack	Action
0			
02	a	aabb$	Shift 2
022	a	abb$	Shift 2
0225	b	bb$	Shift 5
02	A	abb$	Reduce A→a
024	a	bb$	Shift 2
02	A	bb$	Reduce A→a
025	a	b$	Shift 5
02A	b	b$	Reduce 3
03	A	$	Shift 3
036	b	$	Shift 6
03	A	$	Reduce B→bb
01	S	$	Reduce S→AB.
			ACCEPT