

Question 1

Consider the following grammar G:

$$S \rightarrow aAd$$

$$S \rightarrow bAe$$

$$A \rightarrow c$$

- a. Develop an LR(0) parser for the grammar

We augment G, to G', by adding the following three rules:

$$S \rightarrow bBd$$

$$S \rightarrow aBe$$

$$B \rightarrow c$$

- b. Explain whether G' is in:

1. LR(0)
2. SLR(1)
3. LALR(1)
4. LR(1)

- c. Construct the simplest LR parser for your grammar

- d. Run the parser you wrote for G' on the inputs "bcd" and "abcd"

Question 2

Consider the following grammar G:

$$S \rightarrow B$$

$$B \rightarrow B \& B$$

$$B \rightarrow B | B$$

$$B \rightarrow B \wedge B$$

$$B \rightarrow \sim B$$

$$B \rightarrow t$$

$$B \rightarrow f$$

- a. Try to construct an LR(0) parser for G. Can you make it? explain what is the problem
- b. Write a non ambiguous grammar that accepts the same language and define the operator's precedence and associativity using the table below. Note that priority 1 is the highest, and priority 4 is the lowest.

Priority	Operator	Associativity
1	\sim	left
2	$\&$	left
3	\wedge	left
4	$ $	left

- c. Explain whether the new grammar is in:
1. LR(0)
 2. SLR(1)
 3. LALR(1)
 4. LR(1)
- d. Construct the simplest LR parser for your grammar
- e. Run your new parser on the inputs " $t&f|f^{\wedge}$ " and " $t|t&f^{\wedge}t$ "

GOOD LUCK