

Exercises

Exercise 1. Let G be the grammar whose productions are:

$S ::= Bc \mid b \mid A$

$A ::= aBb$

$B ::= \varepsilon$

- (a1) Is $G \in LL(1)$? (a2) Why?
- (b1) Is $G \in SLR(1)$? (b2) Why?
- (c1) Is $G \in LR(1)$? (c2) Why?
- (d1) Give the LR(1) parsing table;
- (d2) Using table in (d1), show the states of the pushdown automaton, during the analysis of string: abc.
- (e1) Is $G \in LALR(1)$? (e2) Why?
- (f) Compare LR(1) and LALR(1) parsing tables.

Exercise 2. Let G be the grammar whose productions are:

$S ::= Au \mid av$

$A ::= a \mid Av$

- (a1) Is $G \in LL(1)$? (a2) Why?
- (b1) Is $G \in SLR(1)$? (b2) Why?
- (c1) Is $G \in LR(1)$? (c2) Why?
- (d1) Is $G \in LALR(1)$? (d2) Why?
- (e1) Is $L(G) \in SLR(1)$? (e2) Why?
- (f1) Show a set expression for $L(G)$; (f2) and, a LL(1) grammar, if any, for it;
- (f3) and, in the case, the analysis table of the given grammar

Exercise 3. Answer all the questions of exercise 1, in case of a grammar with the following productions:

$S ::= Au \mid av$

$A ::= a \mid bAv$

Exercise 4. Let G be the grammar whose productions are: $S ::= aSS \mid b$

- (a) Compute the n -th approximation of the Traski's sequence;
- (b) Prove the correctness of the answer above given