

Given the following grammars:

- Calculate the FIRST and FOLLOW sets
- Determine whether the grammar is LL(1) or not. Apply the corresponding corrections in case they are needed.
- Construct the corresponding LL(1) parsing table.

**Exercise 1**

$S ::= BB$   
 $B ::= aB \mid b$

**Exercise 2**

$S ::= BA$   
 $A ::= 0BA \mid \lambda$   
 $B ::= DC$   
 $C ::= 1DC \mid \lambda$   
 $D ::= 3S4 \mid 2$

**Exercise 3**

$S ::= v < A$   
 $A ::= DB$   
 $B ::= CA \mid \lambda$   
 $C ::= 2 \mid 4 \mid 5$   
 $D ::= 3D \mid v \mid E$   
 $E ::= 6F \mid 1F$   
 $F ::= \mid 6F \mid 1F$

**Exercise 4**

$S ::= E \mid F$   
 $E ::= 0E \mid 1$   
 $F ::= 0F \mid 2$

**Exercise 5**

$S ::= AB$   
 $A ::= a \mid b \mid d$   
 $B ::= aB \mid c$

**Exercise 6**

$S ::= id = X$   
 $X ::= X' X \mid X'$   
 $X' ::= O \mid N \mid id$   
 $N ::= ( num , num )$   
 $O ::= op X \mid fun ( X )$

**Exercise 7**

$S ::= 1 A \mid 2 B \mid 3 C$   
 $A ::= 2 B \mid 3 C \mid \lambda$   
 $B ::= 1 A \mid 3 C \mid \lambda$   
 $C ::= 1 A \mid 2 B \mid \lambda$