

| | |
|------------------|---|
| PROGRAM | STATEMENT ; (STATEMENT 😊)* |
| STATEMENT | 'var' IDENTIFIER : TYPE (:= EXPRESSION) ; |
| | IDENTIFIER := EXPRESSION ; |
| | for IDENTIFIER in EXPRESSION .. EXPRESSION do STATEMENT ;+ end for |
| | read IDENTIFIER |
| | print EXPRESSION |
| | assert '(' EXPRESSION ')' |
| EXPRESSION | OPERAND OPERATOR OPERAND |
| | UNARY_OPERAND? OPERAND |
| OPERAND | INTEGER |
| | STRING |
| | IDENTIFIER |
| | '(' EXPRESSION ')' |
| TYPE | INTEGER |
| | STRING |
| | BOOLEAN |
| IDENTIFIER | 'some identifier user has defined' |
| RESERVED_KEYWORD | VAR |
| | FOR |
| | END |
| | IN |
| | DO |
| | READ |
| | PRINT |
| | INT |
| | STRING |
| | BOOL |
| | ASSERT |
| OPERATOR | + |

| |
|---|
| - |
| * |
| / |
| < |
| = |
| & |
| ! |

Limited grammar for calculations:

| | |
|------------|--------------------------------|
| EXPRESSION | BINARY |
| | UNARY |
| | LITERAL |
| | GROUPING |
| LITERAL | NUMBER |
| | STRING |
| | TRUE |
| | FALSE |
| GROUPING | '(' EXPRESSION ')' |
| UNARY | - EXPRESSION |
| | ! EXPRESSION |
| BINARY | EXPRESSION OPERATOR EXPRESSION |
| OPERATOR | + |
| | - |
| | * |
| | / |
| | < |
| | = |
| | & |
| | ! |

Unambiguous grammar:

| | |
|------------|--|
| expression | equality ; |
| equality | comparison (("!=" "=") comparison)* ; |
| comparison | term ((">" ">=" "<" "<=") term)* ; |
| term | factor (("-" "+") factor)* ; |
| factor | unary (("/" "") unary) ; |
| unary | ("!" "-") unary |
| | primary ; |
| primary | NUMBER STRING "true" "false" "null" |
| | (" expression ") IDENTIFIER ; |

Grammar to enable statements:

| | |
|---------------------|--------------------------|
| program | statement* EOF ; |
| statement | expressionStatement ; |
| | printStatement ; |
| expressionStatement | expression ";" ; |
| printStatement | "print" expression ";" ; |

Grammar to enable name declarations:

| | |
|---------------------|---|
| program | declaration* EOF ; |
| declaration | variableDeclaration ; |
| | statement ; |
| statement | expressionStatement ; |
| | printStatement ; |
| variableDeclaration | "var" IDENTIFIER ("!=" expression)? ";" ; |

Assignment:

| | |
|------------|----------------------------|
| expression | assignment |
| assignment | IDENTIFIER "!=" assignment |
| | equality |