

//the set of all productions of the grammar, following the BNF syntax

$S \rightarrow \text{stmtList}$

$\text{stmtList} \rightarrow \text{stmtList} \mid \text{stmt}$

$\text{stmt} \rightarrow \text{simpleStmt} \mid \text{cmpStmt}$

$\text{simpleStmt} \rightarrow \text{assignStmt} \mid \text{argsStmt}$

$\text{assignStmt} \rightarrow \text{type identifier} = \text{expression}$

$\text{type} \rightarrow \text{boolean} \mid \text{char} \mid \text{Integer} \mid \text{Float}$

$\text{identifier} \rightarrow \text{letter identifier} \mid \text{letter identifier number} \mid _ \text{identifier}$

$\text{letter} \rightarrow a \mid \dots \mid z \mid A \mid \dots \mid Z$

$\text{number} \rightarrow \text{number noZeroDigit} \mid \text{digit}$

$\text{digit} \rightarrow 0 \mid \text{noZeroDigit}$

$\text{noZeroDigit} \rightarrow 1 \mid \dots \mid 9$

$\text{expression} \rightarrow \text{expression operator term} \mid \text{term}$

$\text{operator} \rightarrow < \mid > \mid >= \mid <= \mid != \mid == \mid + \mid - \mid / \mid *$

$\text{separator} \rightarrow (\mid) \mid [\mid] \mid \{ \mid \}$

$\text{term} \rightarrow \text{identifier} \mid \text{number}$

$\text{argsStmt} \rightarrow \text{keyword} (\text{expression})$

$\text{keyword} \rightarrow \text{read} \mid \text{write} \mid \text{main} \mid \text{if} \mid \text{else} \mid \text{while} \mid \text{for} \mid \text{print} \mid \text{var} \mid \text{begin} \mid \text{end}$

$\text{cmpStmt} \rightarrow \text{keyword} (\text{expression}) \{ \text{stmtList} \} \mid \text{keyword} \{ \text{stmtList} \}$

$G = \{N, \Sigma, P, S\}$

//the set of all nonterminals of the grammar G

$N = \{\text{stmtList}, \text{stmt}, \text{simpleStmt}, \text{assignStmt}, \text{argsStmt}, \text{type}, \text{identifier}, \text{expression}, \text{letter}, \text{number}, \text{noZeroDigit}, \text{digit}, \text{operator}, \text{separator}, \text{term}, \text{keyword}, \text{cmdStmt}\}$

//the set of all terminals used by the grammar G

$\Sigma = \{ _ , 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, <, >, >=, <=, !=, ==, +, -, /, *, (,), [,], \{, \}, \text{read, write, main, if, else, while, for, print, var, begin, end, boolean, char, Integer, Float} \}$

//the starting symbol is S