

$V_N = \{ \text{function, type, name, body, alpha, var, instructions, instruction, var_declaration, var_init, assignment, expression, term, factor, primary, number, digit, string, char, parameter parameters, if_statement, condition, operator} \}$

$V_T = \{a, b, \dots, z, A, B, \dots, Z, \text{int, string, float, array, map, !=, ==, >, >=, <, <=, } \}$

$S = \{ \langle \text{functions} \rangle \}$

$P = \{$

$\langle \text{functions} \rangle \rightarrow \langle \text{function} \rangle \langle \text{functions} \rangle \mid \langle \text{function} \rangle$

$\langle \text{function} \rangle \rightarrow \langle \text{type} \rangle \langle \text{name} \rangle \{ \langle \text{body} \rangle \}$

$\langle \text{type} \rangle \rightarrow \text{int, string, float, array, map, void}$

$\langle \text{name} \rangle \rightarrow \langle \text{alpha} \rangle \langle \text{name} \rangle \mid$

$\langle \text{alpha} \rangle \rightarrow \langle \text{alpha} \rangle a, b, \dots, z, A, B, \dots, Z$

$\langle \text{vars} \rangle \rightarrow \langle \text{var} \rangle, \langle \text{vars} \rangle \mid \langle \text{var} \rangle \mid$

$\langle \text{var} \rangle \rightarrow \langle \text{type} \rangle \langle \text{name} \rangle$

$\langle \text{body} \rangle \rightarrow \langle \text{instructions} \rangle$

$\langle \text{instructions} \rangle \rightarrow \langle \text{instruction} \rangle \langle \text{instructions} \rangle \mid \langle \text{instruction} \rangle \mid$

$\langle \text{instruction} \rangle \rightarrow \langle \text{var_declaration} \rangle \mid \langle \text{var_init} \rangle \mid \langle \text{assignment} \rangle \mid \langle \text{if_statement} \rangle \mid$

$\langle \text{var_declaration} \rangle \langle \text{var} \rangle;$

$\langle \text{var_init} \rangle \rightarrow \langle \text{var} \rangle = \langle \text{expression} \rangle; \mid \langle \text{var} \rangle = \langle \text{string} \rangle;$

$\langle \text{expression} \rangle \rightarrow \langle \text{term} \rangle \mid \langle \text{expression} \rangle + \langle \text{term} \rangle \mid \langle \text{expression} \rangle - \langle \text{term} \rangle$

$\langle \text{term} \rangle \rightarrow \langle \text{factor} \rangle \mid \langle \text{term} \rangle * \langle \text{factor} \rangle \mid \langle \text{term} \rangle / \langle \text{factor} \rangle$

$\langle \text{factor} \rangle \rightarrow \langle \text{primary} \rangle \mid - \langle \text{factor} \rangle \mid + \langle \text{factor} \rangle$

$\langle \text{primary} \rangle \rightarrow (\langle \text{expression} \rangle) \mid \langle \text{name} \rangle \mid \langle \text{number} \rangle \mid \langle \text{float_number} \rangle \mid$

$\langle \text{assignment} \rangle \rightarrow \langle \text{name} \rangle = \langle \text{expression} \rangle; \mid \langle \text{name} \rangle = \langle \text{string} \rangle; \mid \text{E};$

$\langle \text{if_statement} \rangle \rightarrow \text{if}(\langle \text{condition} \rangle) \{ \langle \text{body} \rangle \} \mid \text{if}(\langle \text{condition} \rangle) \{ \langle \text{body} \rangle \} \text{ else } (\langle \text{condition} \rangle) \{ \langle \text{body} \rangle \}$

$\langle \text{condition} \rangle \rightarrow \langle \text{expression} \rangle \mid \langle \text{expression} \rangle \langle \text{operator} \rangle \langle \text{expression} \rangle \mid \text{true} \mid \text{false}$

$\langle \text{number} \rangle \rightarrow \langle \text{digit} \rangle \langle \text{number} \rangle \mid \langle \text{digit} \rangle$

$\langle \text{digit} \rangle \rightarrow 0, 1, \dots, 9$

$\langle \text{float_number} \rangle \rightarrow \langle \text{number} \rangle . \langle \text{number} \rangle$

$\langle \text{string} \rangle \rightarrow " \langle \text{char} \rangle \langle \text{string} \rangle " \mid \langle \text{char} \rangle \mid ""$

$\langle \text{char} \rangle \rightarrow \langle \text{alpha} \rangle \mid \langle \text{digit} \rangle \mid ' _ ' \mid ' ' \mid \dots$

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