X0 语言文法定义

一、说明

该语言变量有整型、整型一维数组、字符型、字符型一维数组。字符型在计算时当作整数处理，但输入输出时以字符形式进行。注释用“/*”和“*/”括起来，但不能嵌套。

标识符:字母打头，后接字母或数字，识别出的标识符用 ID 标记

无符号整数:由数字组成，用 NUM 标记

注释符：用/*…*/括起

词法分析程序并不输出注释，在词法分析阶段，注释的内容将被删掉。为了从源程序字符流中正确识别出各类单词符号，相邻的标识符、整数或保留字之间至少要用一个空格分开。

二、语法规则(采用 EBNF 描述)

```
program = "main" "{" declaration_list statement_list "}".
declaration_list    =    [declaration_list    declaration_stat    |
    declaration_stat]  .
declaration_stat = type ID ";" | type ID "[" NUM "]" ";".
type = "int" | "char".
var = ID | ID "[" expression "]".
statement_list = statement_list statement.
statement = if_stat | while_stat | read_stat | write_stat | compound_stat
    | expression_stat.
if_stat = "if" "(" expression ")" statement [ "else" statement].
while_stat = "while" "(" expression ")" statement .
write_stat = "write" expression ";" .
read_stat = "read" var ";".
compound_stat = "{" statement_list "}".
expression_stat = expression ";" | ";".
expression = var "=" expression | simple_expr.
simple_expr = additive_expr | additive_expr (">" | "<" | ">=" | "<=" |
    "==" | "!=" ) additive_expr.
additive_expr = term {("+"|"-") term }.
term = factor {("*"|"/") factor }.
factor = "(" expression ")"| var | NUM.
```