c\_subset

**lexer and parser**

(1)Identifier

|  |  |
| --- | --- |
| ID | Starts with an alphabet, followed by any number of alphabets, numbers, or \_ |

(2)Data type:

int 、char、void、float

(3) Comment:(skip)

|  |  |
| --- | --- |
| single line comment | Starts with //, ends with \n |
| multiple line comment | Starts with /\*, ends with \*/ |

(4) Operators

* 比較運算: < > <= >= != ==
* 算術運算子: + - \* / % ++ --
* 賦值 =

(5) Punctuations

, : ; ( ) [ ] { }

(6) Statements

* Support if-then, if-then-else , for-loop, while-loop, continue, break
* Support basic arithmetic operations (serial addition, subtraction, multiplication ,division, and modulo).
* Support comparison between two basic arithmetic operations.
* Support local variable declarations , both with and without initial value.
* printf () and scanf() can take any numbers of arguments, and take “...”as literal.

**Static type Checker**

**rules**

(1) Each identifier should be defined before it is used, including variables call by main function and printf and scanf.

(2) Each identifier can only be declared once.

(3) The types of the operands of an arithmetic operator: “+”, “-”, “\*”, “/”, “%”, and comparison operator : “>”, “<”, “>=”, “<=”, “==”, “!=” must be the same.

(4) The result of comparison operation must be Boolean.

(5) The conditional expression in while-loop, for-loop, and if-else statement must be Boolean.