

## G++

G++ is a language being developed for teaching purposes at Gebze Technical University. This language has the following “vision”:

- Lisp like syntax
- Interpreted
- Imperative, non-object oriented
- Static scope, static binding, strongly typed, ...
- A few built-in types to promote exact arithmetic for various domains such as computational geometry

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## G++ Interpreter

- Starting G++ without an input file...

```
$ g++
```

```
> _ \\READ-EVAL-PRINT loop starts here...
```

- Starting G++ with an input file...

```
$ g++ myhelloworld.g++
```

```
\\READ-EVAL-PRINT everything in the file...
```

```
> _ \\READ-EVAL-PRINT loop starts here...
```

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## G++ – Lexical Syntax

- Keywords: *and, or, not, equal, less, nil, list, append, concat, set, deffun, for, if, exit, load, disp, true, false*
- Operators: *+ - / \* ( ) \*\* “ ” ,*
- Comment: Line or part of the line starting with *;*
- Terminals:
  - *Keywords*
  - *Operators*
  - *Literals: There are two types of values in this language.*
    - *Unsigned integers – any combination of digits with no leading zeros on the left. 0 is considered an instance.*
    - *Unsigned fractions – two unsigned integers separated by the character “f”.  
E.g., 123f12 is the fraction  $\frac{123}{12}$*
  - *Identifier: Any combination of alphabetical characters, digits and “\_” with no leading digit.*

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## G++ Lexer Tokens

*KW\_AND, KW\_OR, KW\_NOT, KW\_EQUAL, KW\_LESS, KW\_NIL, KW\_LIST,  
KW\_APPEND, KW\_CONCAT, KW\_SET, KW\_DEFFUN, KW\_FOR, KW\_IF,  
KW\_EXIT, KW\_LOAD, KW\_DISP, KW\_TRUE, KW\_FALSE*

*OP\_PLUS, OP\_MINUS, OP\_DIV, OP\_DIV2, OP\_MULT, OP\_OP, OP\_CP,  
OP\_DBLMULT, OP\_OC, OP\_CC, OP\_COMMA*

*COMMENT*

*VALUEI, VALUEF*

*IDENTIFIER*

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