

Zef Context Free Grammar

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1 Order of operator Precedence

The order of operator precedence is as follows, informed by the C++ precedence (cite). Lower numbers indicate higher precedence

1. ID, BOOL_LITERAL, STR_LITERAL, function_call, array_subscript, CONST, ++ (postfix), -- (postfix)
2. ISNOT, !, ++ (prefix), -- (prefix), -(unary), +(unary)
3. //, *, %, ^
4. -, +
5. >=, <=, >, <
6. !=, ?=
7. AND, &&
8. OR, ||

2 Variable Declaration

```
0           Or -> or
1           | ||
2           And -> and
3           | &&
4           Not -> isnot
5           | !
6           Extra_parameters -> , Expr Extra_parameters
7           | EPSILON
8           Parameters -> Expr Extra_parameters
9           | EPSILON
10          Function_call -> id ( Parameters )
11          Array_subscript -> id [ Parameters ]
12          Variable_declaration -> id Assignment
13          Assignment -> = Expr ;
14          | ;
15          Expr -> Expr1 Expr_a
16          Expr_a -> -= Expr
17          | += Expr
18          | /= Expr
19          | *= Expr
20          | ^= Expr
21          | EPSILON
22          Expr1 -> Expr2 Expr_b
23          Expr_b -> Or Expr1
24          | EPSILON
25          Expr2 -> Expr3 Expr_c
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26      Expr_c -> And Expr2
27          | EPSILON
28      Expr3 -> Expr4 Expr_d
29      Expr_d -> != Expr3
30          | ?= Expr3
31          | EPSILON
32      Expr4 -> Expr5 Expr_e
33      Expr_e -> <= Expr4
34          | >= Expr4
35          | > Expr4
36          | < Expr4
37          | EPSILON
38      Expr5 -> Expr6 Expr_f
39      Expr_f -> - Expr5
40          | + Expr5
41          | EPSILON
42      Expr6 -> Expr7 Expr_g
43      Expr_g -> * Expr6
44          | % Expr6
45          | ^ Expr6
46          | / Expr6
47          | EPSILON
48      Expr7 -> ++ Expr8
49          | -- Expr8
50          | + Expr8
51          | - Expr8
52          | Not Expr8
53          | Expr8
54      Expr8 -> Expr9 ++
55          | Expr9 --
56          | Expr9
57      Expr9 -> (Expr)
58          | id
59          | true
60          | false
61          | const
62          | str_lit
63          | Array_subscript
64          | Function_call

```

2.1 Predictive Parsing Table

2.2 First and Follow Sets

2.3 Parsing Table

Table 1: First Set

x	first(x)
Three	Four
Five	Six