

Summary of Grammar

1. `func` -> **KW_FUNC** `ID()` `paramlist` **ARROW_R** `ID()` `block_nest`
2. `paramlist` -> **PAREN_L** `PAREN_R` | **PAREN_L** `parameters` **PAREN_R**
3. `parameters` -> **ID()** **COLON** `dataType` | **ID()** **COLON** `dataType` **COMMA** `parameters`
4. `block_nest` -> **BRACKET_L** **BRACKET_R** | **BRACKET_L** {`block_list`, `statements`} **BRACKET_R**
5. `block_list` -> `block_nest` | `block_nest` `block_list`
6. `varDecl` -> **LET** **ID()** **COLON** `dataType` `assignStmt`

7. `statements` -> [`assign`, `selectStmt`, `printStmt`, `whileStmt`, `returnStmt`]
8. `stmtBlk` -> **BRACKET_L** `statements` **BRACKET_R**
9. `selectStmt` -> **IF** `expression` `stmtBlk` [**ELSE** [`selectStmt`] `stmtBlk`]
10. `whileStmt` -> **WHILE** **LIT_BOOL()** `stmtBlk`
11. `printStmt` -> **PRINT** **PAREN_L** `expression` **PAREN_R** **SEMICOLON**
12. `returnStmt` -> **RETURN** [`expression`] **SEMICOLON**
13. `assignStmt` -> `mutable` **OP_ASSIGN** `expression` **SEMICOLON**

14. `expression` -> `expression` **OP_OR** `andExp` | `andExp`
15. `andExp` -> `andExp` **OP_AND** `notExp` | `notRelExp`
16. `notExp` -> **OP_NOT** `notExp` | `relExp`
17. `relExp` -> `relExp` `relOp` `mathExp` | `mathExp`
18. `relOp` -> **OP_EQ** | **OP_LT** | **OP_GT** | **OP_NEQ** | **OP_NLT** | **OP_NGT**
19. `mathExp` -> `mathExp` `mathOp` `unaryExp`
20. `mathOp` -> **ADD_OP** | **SUB_OP** | **MUL_OP** | **DIV_OP**
21. `unaryExp` -> `mutable` | `constant`
22. `mutable` -> **ID()**
23. `data_type` -> **TYPE_I32** | **TYPE_F32** | **TYPE_CHAR**
24. `constant` -> **LIT_I32** | **LIT_F32** | **LIT_CHAR** | **LIT_STRING** | **LIT_BOOL**

References

- Document formatting derived from the *GNU C Reference Manual* and *PL_F23_Final.pdf*