



Complete Grammar (Natural Form)

1. **<mainFunction>** ==> MAIN SQO SQC <stmtsAndFunctionDefs> END
2. **<stmtsAndFunctionDefs>** ==> <stmtOrFunctionDef><stmtAndFunctionDefs>|<stmtOrFunctionDef>
3. <stmtOrFunctionDef> ==> <stmt> | <functionDef>
4. <stmt> ==> <declarationStmt> | <assignmentStmt_type1> | **<assignmentStmt_type2>** | <ifStmt> | <ioStmt> | <funCallStmt>
SEMICOLON
5. <functionDef> ==> FUNCTION SQO <parameter_list> **SQC** ASSIGNOP FUNID SQO <parameter_list> SQC
<stmtsAndFunctionDefs> END **SEMICOLON**
6. <parameter_list> ==> <type> ID <remainingList>
7. <type> ==> INT | REAL | STRING | MATRIX
8. <remainingList> ==> COMMA <parameter_list> | ∈
9. <declarationStmt> ==> <type> <var_list> SEMICOLON
10. <var_list> ==> ID <more_ids>
11. <more_ids> ==> COMMA <var_list> | ∈
12. <assignmentStmt_type1> ==> <leftHandSide_singleVar> ASSIGNOP <rightHandSide_type1> SEMICOLON
13. **<assignmentStmt_type2>** ==> <leftHandSide_listVar> **ASSIGNOP** <rightHandSide_type2> **SEMICOLON**
14. <leftHandSide_singleVar> ==> ID
15. **<leftHandSide_listVar>** ==> SQO <var_list> SQC
16. <rightHandSide_type1> ==> <arithmeticExpression> | **<sizeExpression>** | **<funCallStmt>**
17. **<rightHandSide_type2>** ==> **<sizeExpression>** | **<funCallStmt>**
18. **<sizeExpression>** ==> **SIZE ID**

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- (1) Changes and updates in Red color
 (2) Added Missing Semicolons (Rules 5 and 20)
 (3) Operator Precedence imposed

19. **<ifStmt>**====> IF OP <booleanExpression> CL <stmt><otherStmts> ELSE <stmt><otherStmts> ENDIF SEMICOLON
20. <ifStmt>====> IF OP <booleanExpression> CL <stmt><otherStmts> ENDIF SEMICOLON 
21. <otherStmts>====><stmt><otherStmts> | ∈
22. <ioStmt>====> READ OP ID CL SEMICOLON | PRINT OP ID CL SEMICOLON
23. <funCallStmt>====>FUNID OP <inputParameterList> CL
24. **<inputParameterList>**====> <var> <listVar> | ∈ 
25. <listVar>==> COMMA <inputParameterList> | ∈
26. <arithmeticExpression>====><arithmeticTerm> <operator_lowPrecedence> <arithmeticExpression> | <arithmeticTerm>
27. <arithmeticTerm>====> <factor> <operator_highPrecedence> <arithmeticTerm> | <factor>
28. **<factor>**====> OP <arithmeticExpression> CL | <var>
~~<arithmeticExpression>====> OP <arithmeticExpression> CL | <var>~~
29. <operator_lowPrecedence>====> PLUS | MINUS
30. <operator_highPrecedence>====> MUL | DIV
31. <booleanExpression>====> OP <booleanExpression> CL <logicalOp> OP <booleanExpression> CL
32. <booleanExpression>====> <constrainedVars> <relationalOp> <constrainedVars>
33. <constrainedVars>====> ID | NUM | RNUM
34. <var>====> ID | NUM | RNUM | <matrixElement> | STR | <matrix>
35. <matrix>====>SQO <rows> SQC
36. <rows>====> <row> SEMICOLON <rows> | <row>
37. <row>====> NUM <remainingColElements> | NUM
38. <remainingColElements>====> COMMA NUM <remainingColElements> | ∈

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39. <matrixElement>====>ID SQO NUM COMMA NUM SQC 

40. <logicalOp>====> AND | OR

41. <booleanExpression>====> NOT OP <booleanExpression> CL

42. <relationalOp>====> LT | LE | EQ | GT | GE | NE
