

Phase 2 Grammar (*Non-terminals are underlined)

1) Var \rightarrow "identifier" | "identifier" "[" Expression "]"

1-b) Vars \rightarrow ~~Vars~~ Var, Vars | Var

2) Term \rightarrow "identifier" "(" Expressions ")" | "(" Expression ")" |
 - "(" Expression ")" | "number" | - "number" |
Var | - Var

3) Multiplicative-Expr \rightarrow Term % Multiplicative-Expr |
Term / Multiplicative-Expr |
Term * Multiplicative-Expr | Term

4) Expression \rightarrow Multiplicative-Expr - Expression |
Multiplicative-Expr + Expression |
Multiplicative-Expr

4-b) Expressions \rightarrow Expression, Expressions | Expression | ϵ

5) Comp \rightarrow ">=" | "<=" | ">" | "<" | "<>" | "=="

6) Relation-Expr \rightarrow Relation-Expr ~~and~~ | not Relation-Expr

~~6-b) Relation-Expr~~

6-b) Relation-Expr \rightarrow "(" Bool-Expr ")" | False | True |
Expression Comp Expression

7) Relation-And-Expr \rightarrow Relation-Expr and Relation-And-Expr |
Relation-Expr

8) Bool-Expr \rightarrow Relation-And-Expr or Bool-Expr |
Relation-And-Expr

9) Statement \rightarrow "Return" Expression | "Continue" |
"Write" Vars | "Read" Vars | "Foreach"
"identifier" "in" "identifier" "beginloop" Statements
"endloop" | "Do" "beginloop" Statements "endloop"
"while" Bool-Expr | "While" Bool-Expr
"beginloop" Statements "endloop" | "If" Bool-Expr
"then" Statements ElseStatement "endif" |
Var " := " Expression

9-b) Statements \rightarrow Statement ; | Statement ; Statements

9-c) ElseStatement \rightarrow "else" Statements | ϵ

10) Declaration \rightarrow Identifiers : array ["number"] of ints |
Identifiers : integer

10-b) Declarations \rightarrow Declaration ";" Declarations | ϵ

10-c) Identifiers \rightarrow "identifier", Identifiers | "identifier"

11) Function \rightarrow "function" "identifier" ";" "beginparams"
Declarations "endparams" "beginlocals"
Declarations "endlocals" "beginbody"
Statement "endbody"

12) Program \rightarrow Function Program | ϵ