

❖ Grammar Version 1:

START -> StmtList | id Expression | \$

StmtList -> IfStmt | WhileStmt | Forstmt | Funcstmt | Callfunc

IfStmt -> CON | Condition | THEN: { START }; | CON | Condition | THEN: { START };
ElseStmt | CON | Condition | THEN: { START }; START

ElseStmt -> NOTOK { START }; | NOTOK { START }; START

WhileStmt -> GO | UNTIL Condition | { START }; | GO | UNTIL Condition | { START };
START

Forstmt -> GOCON | WITH Condition UNTIL Condition NEXT Condition | { START }; |
GOCON | WITH Condition UNTIL Condition NEXT Condition | { START }; START

Funcstmt -> SUB(IDENTIFIER,PARAMETER) { START }; | SUB(IDENTIFIER,PARAMETER) {
START }; START

Callfunc -> SAYSUBTO(IDENTIFIER,PARAMETER) |
SAYSUBTO(IDENTIFIER,PARAMETER) START

Condition -> TERM ASSIGN TERM

Expression -> ∈ TERM OP TERM START

TERM -> id | integer | float

PARAMETER -> id | id, PARAMETER

ASSIGN -> <=> | <<> | <>> | <≠>

OP -> <v> | <-> | <^> | <:=>

❖ FIRST/FIRST:

1. IfStmt: has 3 part that all start with <CON_TK>
2. ElseStmt : has 3 part that all start with <NOTOK_TK>
3. WhileStmt: has 3 part that all start with <GO_TK>
4. Forstmt: has 3 part that all start with <GOCON_TK>
5. Funcstmt: has 3 part that all start with <SUB_TK>
6. Callfunc: has 3 part that all start with <SAYSUBTO_TK>
7. PARAMETER: has 2 part that start with <id,number>

❖ After Solve First/First:

START -> StmtList | id Expression | λ

StmtList -> IfStmt | WhileStmt | Forstmt | Funcstmt | Callfunc

IfStmt -> CON | Condition | THEN: { START }; X

X -> ElseStmt | START | λ

ElseStmt -> NOTOK { START }; Y

Y -> START | λ

WhileStmt -> GO | UNTIL Condition | { START }; Y

Forstmt -> GOCON | WITH Condition UNTIL Condition NEXT Condition | { START }; Y

Funcstmt -> SUB(id ,PARAMETER) { START }; Y

Callfunc -> SAYSUBTO(id ,PARAMETER) Y

Condition -> TERM ASSIGN TERM

Expression -> \in TERM OP TERM

TERM -> id | integer | float

PARAMETER -> id Q

Q -> , PARAMETER Q | λ

ASSIGN -> $\leq =$ | $\leq <$ | $< >$ | $\leq \neq$

OP -> $< v >$ | $< - >$ | $< \wedge >$ | $< : = >$

START():

- Firsts:
 - First StmtList: <CON_TK>, <GO_TK>, <GOCON_TK>, <SUB_TK>, <SAYSUBTO_TK>
 - First id Expression: <id,number> For example: <id,3>
 - First λ : λ
- Follows:
 - Follow START: <}> , \$

StmtList():

- Firsts:
 - First IfStmt: <CON_TK>
 - First WhileStmt: <GO_TK>
 - First Forstmt: <GOCON_TK>
 - First Funcstmt: <SUB_TK>
 - First Callfunc: <SAYSUBTO_TK>
- Follows:
 - Follow StmtList: <}> , \$

IfStmat():

- Firsts:
 - First CON: <CON_TK>
- Follows:
 - Follow IfStmat: <}> , \$

WhileStmt():

- Firsts:
 - First GO: <GO_TK>
- Follows:
 - Follow IfStmat: <}> , \$

Forstmt():

- Firsts:
 - First GOCON: <GOCON_TK>
- Follows:
 - Follow Forstmt: <}> , \$

Funcstmt():

- Firsts:
 - First SUB: <SUB_TK>
- Follows:
 - Follow Funcstmt: <}> , \$

Callfunc():

- Firsts:
 - First SAYSUBTO: <SAYSUBTO_TK>
- Follows:
 - Follow Callfunc: <> , \$

X():

- Firsts:
 - First ElseStmt: <NOTOK_TK>
 - First START: <CON_TK>, <GO_TK>, <GOCON_TK>, <SUB_TK>, <SAYSUBTO_TK>, <id,number> For example: <id,3>, λ
 - First λ : λ
- Follows:
 - Follow X: <> , \$

ElseStmt():

- Firsts:
 - First NOTOK: <NOTOK_TK>
- Follows:
 - Follow NOTOK: <> , \$

Y():

- Firsts:
 - First START: <CON_TK>, <GO_TK>, <GOCON_TK>, <SUB_TK>, <SAYSUBTO_TK>, <id,number> For example: <id,3>, λ
 - First λ : λ
- Follows:
 - Follow Y: <> , \$

Condition():

- Firsts:
 - First TERM ASSIGN TERM: <id,number> For example: <id,3> , <54>
- Follows:
 - Follow Condition: UNTIL, NEXT, |

Expression():

- Firsts:
 - First \in TERM OP TERM: \in
- Follows:
 - Follow Expression: <> , \$

TERM():

- Firsts:
 - First id: <id,number> For example: <id,3>, <integer> OR <float>
- Follows:
 - Follow Expression: <}>, \$
 - First OP: <V>, <->, <^>, <:=>

PARAMETER():

- Firsts:
 - First id: <id,number> For example: <id,3>,
- Follows:
 - Follow PARAMETER: <)>

Q():

- Firsts:
 - First ,id: <,>
- Follows:
 - Follow PARAMETER: <)>

ASSIGN():

- Firsts:
 - First ASSIGN: <=>, <<>, <>>, <≠>
- Follows:
 - First TERM: <id,number> For example: <id,3>, <integer> OR <float>

OP():

- Firsts:
 - First OP: <V>, <->, <^>, <:=>
- Follows:
 - First TERM: <id,number> For example: <id,3>, <integer> OR <float>

❖ It doesn't have First/Follow