Grammar

```
program : program ID block '.'

block : '{' declarations subprograms blockstatements '}'

declarations : declare varlist ';'
             | declare varlist ';' declarations
             | ε

varlist : ID
        | ID ',' varlist
        | ε
```

```
subprograms : subprogram
            | ε

subprogram : function ID '(' formalparlist ')' block
           | procedure ID '(' formalparlist ')' block

formalparlist : formalparitem
              | formalparlist ',' formalparitem
              | ε

formalparitem : 'in' ID
              | 'inout' ID

Statements : statement ';'
           | '{' statement blockstatements '}'
```

blockstatements : statement

| blockstatements ';' statement

statement : assignStat

| ifStat

| whileStat

| switchcaseStat

| forcaseStat

| incaseStat

| callStat

| returnStat

| inputStat

| printStat

| ε

assignStat : ID ':=' expression

ifStat : 'if' '(' condition ')' statements elsepart

elsepart : 'else' statements
| ε

whileStat : 'while' '(' condition ')' statements

switchcaseStat : 'switchcase' caselist 'default' statements

caselist : caseStat
| caseStat caselist

caseStat : 'case' '(' condition ')' statements

forcaseStat : 'forcase' caselist 'default' statements

incaseStat : 'incase' caselist

returnStat : 'return' '(' expression ')'

callStat : 'call' ID '(' actualparlist ')'

printStat : 'print' '(' expression ')'

inputStat: 'input' '(' ID ')'

actualparlist : actualparitem
| actualparlist ',' actualparitem
| ε

actualparitem : 'in' expression
| 'inout' ID

condition : boolterm
| condition 'or' boolterm

boolterm : boolfactor
| boolterm 'and' boolfactor

boolfactor : 'not' '[' condition ']'

| '[' condition ']'

| expression REL_OP expression

expression : optionalSign term addtermlist

addtermlist : ADD_OP term

| addtermlist ADD_OP term

| ε

term : factor multermlist

multermlist : MUL_OP factor

| multermlist MUL_OP factor

| ε

factor : INTEGER

| '(' expression ')'

| ID idtail

actualparalist : (actualparalist)

| ε

optionalSign : ADD_OP

| ε

REL_OP : '=' | '<=' | '>=' | '>' | '<' | '<>'

ADD_OP : '+' | '-'

MUL_OP : '*' | '/'

INTEGER : [0-9]+

ID : [a-zA-Z][a-zA-Z0-9]*