

*Program:*

*ProgramDeclaration ClassDeclarations*

*ProgramDeclaration:*

PROGRAM COLON *ClassName* LEFT\_PAREN

*ProgramArguments* RIGHT\_PAREN

*ClassName:*

IDENTIFIER

| IDENTIFIER LEFT\_SQUARE\_BRACKET *ClassName*

RIGHT\_SQUARE\_BRACKET

*ProgramArguments:*

/empty/

| *Literals*

*Literals:*

| *Literal*

| *Literal* COMMA *Literals*

*Literal:*

INTEGER

| REAL

| BOOLEAN

*Arguments:*

/empty/

| *Expressions*

*Expressions:*

| *Expression*

| *Expression* COMMA *Expressions*

*Expression:*

*Literal*

| THIS

| *CompoundExpression*

*CompoundExpression:*

- IDENTIFIER
- | IDENTIFIER LEFT\_PAREN *Arguments* RIGHT\_PAREN
- | IDENTIFIER DOT *CompoundExpression*
- | IDENTIFIER LEFT\_PAREN *Arguments* RIGHT\_PAREN DOT  
*CompoundExpression*
- | IDENTIFIER LEFT\_SQUARE\_BRACKET  
*CompoundExpression* RIGHT\_SQUARE\_BRACKET
- | IDENTIFIER LEFT\_SQUARE\_BRACKET  
*CompoundExpression* RIGHT\_SQUARE\_BRACKET  
LEFT\_PAREN *CompoundExpression* RIGHT\_PAREN
- | THIS DOT *CompoundExpression*

*ClassDeclarations:*

- ClassDeclaration*
- | *ClassDeclaration* *ClassDeclarations*

*ClassDeclaration:*

CLASS *ClassName* *Extension* IS *ClassBody* END

*Extension:*

- /empty/
- | EXTENDS *ClassName*

*ClassBody:*

*MemberDeclarations*

*MemberDeclarations:*

- /empty/
- | *MemberDeclaration*
- | *MemberDeclaration* *MemberDeclarations*

*MemberDeclaration:*

- VariableDeclaration*
- | *MethodDeclaration*
- | *ConstructorDeclaration*

*VariableDeclaration:*

VAR *VariableName* COLON *Expression*

*VariableName:*

IDENTIFIER

*MethodDeclaration:*

METHOD *MethodName* LEFT\_PAREN *Parameters*  
RIGHT\_PAREN *ReturnType* IS *Body* END

*MethodName:*

IDENTIFIER

*Parameters:*

/empty/  
| *Parameter*  
| *Parameter* COMMA *Parameters*

*Parameter:*

IDENTIFIER COLON *ClassName*

*ReturnType:*

| *ClassName*

*ConstructorDeclaration:*

THIS LEFT\_PAREN *Parameters* RIGHT\_PAREN IS *Body* END

*Body:*

*BodyDeclarations*

*BodyDeclarations:*

*BodyDeclaration*  
| *BodyDeclaration* *BodyDeclarations*

*BodyDeclaration:*

*VariableDeclaration*  
| *Statement*

*Statement:*

- Assignment*
- | *WhileLoop*
- | *IfStatement*
- | *ReturnStatement*
- | *CompoundExpression*

*Assignment:*

*VariableName COLON\_EQUAL Expression*

*WhileLoop:*

*WHILE Expression LOOP Body END*

*IfStatement:*

*IF Expression IfBranch ElseBranch END*

*IfBranch:*

*THEN Body*

*ElseBranch:*

- /empty/*
- | *ELSE Body*

*ReturnStatement:*

- RETURN*
- | *RETURN Expression*