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CS152

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Phase 2 Parser

Program:

Program -> Function | Function Program | epsilon

Function:

Function -> FUNCTION ident SEMICOLON BEGIN_PARAMS Declaration_Block END_PARAMS BEGIN_LOCALS Declaration_Block END_LOCALS BEGIN_BODY Statement_Block END_BODY

Declaration_Block:

Declaration_Block -> Declaration SEMICOLON | Declaration SEMICOLON Declaration_Block | epsilon

Statement_Block:

Statement_Block -> Statement SEMICOLON | Statement SEMICOLON Statement_Block

Declaration:

Declaration -> ident COMMA Declaration | ident COLON Array_Block INTEGER

Array_Block:

Array_Block -> ARRAY L_SQUARE_BRACKET number R_SQUARE_BRACKET OF | epsilon

Statement:

Statement -> Statement_Var | Statement_If | Statement_While | Statement_Do | Statement_For | Statement_Read | Statement_Write | Statement_Continue | Statement_Return

Statement_Var:

Statement_Var -> Var ASSIGN Expression

Statement_If:

Statement_If -> IF Bool_Exp THEN If_Statement_Block ENDIF

If_Statement_Block:

If_Statement_Block -> Statement SEMICOLON | Statement SEMICOLON If_Statement_Block | Statement SEMICOLON ELSE Statement_Block

Statement_While:

Statement_While -> WHILE Bool_Exp BEGINLOOP Statement_Block ENDLOOP

Statement_Do:

Statement_Do -> DO BEGINLOOP Statement_Block ENDLOOP WHILE Bool_Exp

Statement_For:

Statement_For -> FOR Var ASSIGN number SEMICOLON Bool_Exp SEMICOLON Var ASSIGN Expression BEGINLOOP Statement_Block ENDLOOP

Statement_Read:

Statement_Read -> READ Var_Block

Var_Block:

Var_Block -> Var COMMA | Var

Statement_Write:

Statement_Write -> WRITE Var_Block

Statement_Continue:

Statement_Continue -> CONTINUE

Statement_Return:

Statement_Return -> RETURN Expression

Bool_Exp:

Bool_Exp -> Relation_And_Exp Or_Relation_And_Exp_Block

Or_Relation_And_Exp_Block:

Or_Relation_And_Exp_Block -> OR Relation_And_Exp Or_Relation_And_Exp_Block | epsilon

Relation_And_Exp:

Relation_And_Exp -> Relation_Exp And_Relation_Block

And_Relation_Block:

And_Relation_Block -> AND Relation_Exp And_Relation_Block | epsilon

Relation_Exp:

Relation_Exp -> NOT Relation_Cases | Relation_Cases

Relation_Cases:

Expression Comp Expression | TRUE | FALSE | L_PAREN Bool_Exp R_PAREN

Comp:

Comp -> EQ | NEQ | LT | GT | LTE | GTE

Expression:

Expression -> Multiplicative_Exp Multiplicative_Exp_Block

Multiplicative_Exp_Block:

Multiplicative_Exp_Block -> ADD Multiplicative_Exp Multiplicative_Exp_Block | SUB Multiplicative_Exp Multiplicative_Exp_Block | epsilon

Multiplicative_Exp:

Multiplicative_Exp -> Term Term_Block

Term_Block:

Term_Block -> MULT Term Term_Block | DIV Term Term_Block | MOD Term Term_Block | epsilon

Term:

Term -> SUB Term_Cases | Term_Cases | ident L_PAREN Expression_Block R_PAREN

Expression_Block:

Expression_Block -> Expression | Expression COMMA Expression_Block | epsilon

Term_Cases:

Term_Cases -> Var | number | L_PAREN Expression R_PAREN

Var:

Var -> ident | ident L_SQUARE_BRACKET Expression R_SQUARE_BRACKET