

CS152 Parser Language Rules

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Program \Rightarrow Function Program $| \epsilon$

Function \Rightarrow FUNCTION IDENTIFIER SEMICOLON BEGIN_PARAMS Declaration_blk END_PARAMS BEGIN_LOCALS Declaration END_LOCALS BEGIN_BODY Statement_blk END_BODY $| \epsilon$

Declaration_blk \Rightarrow Declaration SEMICOLON Declaration_blk $| \epsilon$

Declaration \Rightarrow IDENTIFIER Identifier_blk COLON Array_declaration INTEGER

Identifier_blk \Rightarrow COMMA IDENTIFIER Identifier_blk $| \epsilon$

Array_declaration \Rightarrow ARRAY L_SQUARE_BRACKET NUMBER R_SQUARE_BRACKET OF $| \epsilon$

Statement_blk \Rightarrow Statement SEMICOLON Statement_blk $| \epsilon$

Statement \Rightarrow Var SEMICOLON EQ Expression $|$ IF Bool_exp BEGINLOOP Statement SEMICOLON Statement_blk ELSE $|$ WHILE Bool_exp BEGINLOOP Statement SEMICOLON Statement_blk ENDLOOP $|$ DO BEGINLOOP Statement SEMICOLON Statement_blk ENDLOOP WHILE Bool_exp $|$ READ Var Var_blk $|$ WRITE Var Var_blk $|$ CONTINUE $|$ RETURN Expression

Else_blk \Rightarrow ELSE Statement SEMICOLON Statement_blk $| \epsilon$

Bool_exp \Rightarrow Relation_and_exp Or

Or \Rightarrow OR Relation_and_exp Or $| \epsilon$

Relation_and_exp \Rightarrow Relation_exp And

And \Rightarrow AND Relation_exp And $| \epsilon$

Relation_exp \Rightarrow Not Expression Comp Expression $|$ Not TRUE $|$ Not FALSE $|$ Not L_PAREN Bool_exp R_PAREN

Not \Rightarrow NOT $| \epsilon$

Comp \Rightarrow EQ $|$ LT $|$ GT $|$ NEQ $|$ LTE $|$ GTE

Expression \Rightarrow Multiplicative_exp Multiplicative_exp_blk

Multiplicative_exp_blk \Rightarrow Multiplicative_exp_add Multiplicative_exp_blk $|$ Multiplicative_exp_sub Multiplicative_exp_blk $| \epsilon$

Multiplicative_exp_add \Rightarrow ADD Multiplicative_exp

Multiplicative_exp_sub \Rightarrow SUB Multiplicative_exp

Multiplicative_exp \Rightarrow Term Term_blk $|$ Term

Term_blk \Rightarrow MULT Term Term_blk $|$ DIV Term Term_blk $|$ MOD Term Term_blk $| \epsilon$

Var \Rightarrow IDENTIFIER $|$ IDENTIFIER L_SQUARE_BRACKET Expression R_SQUARE_BRACKET

Var_blk \Rightarrow COMMA Var Var_blk $| \epsilon$

Term \Rightarrow SUB Var | Var | SUB NUMBER | NUMBER | SUB L_PAREN Expression R_PAREN | SUB L_PAREN Expression R_PAREN | IDENTIFIER L_PAREN Expression Expression_blk R_PAREN | IDENTIFIER L_PAREN R_PAREN

Expression_blk \Rightarrow COMMA Expression Expression_blk | ϵ