Semantic Rule

|  |  |
| --- | --- |
| S  Program $ |  |
| Program  DeclList |  |
| DeclList  DeclList' DeclList  epsilon |  |
| DeclList'  Type id Decl | 建立symbol entry  scope = DeclList'.scope;  type(型別) = Type.type;  symbol = id.synth;  type2(變數，陣列，函數) = Decl.type |
| Decl  VarDecl'  FunDecl | VarDecl': Decl = VarDecl'.type  FunDecl: FunDecl = VarDecl'.type |
| VarDecl'  ;  [ num ] ; 綜合屬性 陣列 | ; type = 1(變數)  [ num ] ; type = 2 (陣列) |
| FunDecl  ( ParamDeclList ) Block |  |
| VarDeclList  VarDecl VarDeclList  Epsilon |  |
| VarDecl 建立symbol entry  Type id VarDecl' |  |
| ParamDeclList  ParamDeclListTail  epsilon |  |
| ParamDeclListTail  ParamDecl ParamDeclListTail' |  |
| ParamDeclListTail'  , ParamDeclListTail  epsilon |  |
| ParamDecl  Type id ParamDecl' |  |
| ParamDecl'  [ ]  epsilon |  |
| Block  { VarDeclList StmtList } |  |
| Type  int  char |  |
| StmtList  Stmt StmtList' |  |
| StmtList'  StmtList  epsilon |  |
| Stmt  ;  Expr ;  return Expr ;  break ;  if ( Expr ) Stmt else Stmt  while ( Expr ) Stmt  Block |  |
| Expr  UnaryOp Expr 執行:! Expr  num Expr'  ( Expr ) Expr'  id ExprIdTail |  |
| ExprIdTail  Expr'  ( ExprList ) Expr'  [ Expr ] ExprArrayTail  = Expr  &&  || |  |
| ExprArrayTail  Expr'  = Expr |  |
| Expr'  BinOp Expr  epsilon |  |
| ExprList  ExprListTail  epsilon |  |
| ExprListTail  Expr ExprListTail' |  |
| ExprListTail'  , ExprListTail  epsilon |  |
| UnaryOp  -  ! |  |
| BinOp  +  -  \*  /  ==  !=  <  <=  >  >= |  |