

## FIRST AND FOLLOW SETS

\*\*\*\*\*program\*\*\*\*\*

FIRST SET: TK\_DECLARE, TK\_DEF, TK\_DRIVERDEF

FOLLOW SET: TK\_EOF

\*\*\*\*\*moduleDeclarations\*\*\*\*\*

FIRST SET: TK\_DECLARE, EPS

FOLLOW SET: TK\_DEF, TK\_DRIVERDEF

\*\*\*\*\*otherModules\*\*\*\*\*

FIRST SET: TK\_DEF, EPS

FOLLOW SET: TK\_DRIVERDEF, TK\_EOF

\*\*\*\*\*driverModule\*\*\*\*\*

FIRST SET: TK\_DRIVERDEF

FOLLOW SET: TK\_DEF, TK\_EOF

\*\*\*\*\*moduleDeclaration\*\*\*\*\*

FIRST SET: TK\_DECLARE

FOLLOW SET: TK\_DECLARE, TK\_DEF, TK\_DRIVERDEF

\*\*\*\*\*module\*\*\*\*\*

FIRST SET: TK\_DEF

FOLLOW SET: TK\_DEF, TK\_DRIVERDEF, TK\_EOF

\*\*\*\*\*moduleDef\*\*\*\*\*

FIRST SET: TK\_START

FOLLOW SET: TK\_DEF, TK\_EOF, TK\_DRIVERDEF

\*\*\*\*\*input\_plist\*\*\*\*\*

FIRST SET: TK\_ID

FOLLOW SET: TK\_SQBC

\*\*\*\*\*ret\*\*\*\*\*

FIRST SET: TK\_RETURNS, EPS

FOLLOW SET: TK\_START

\*\*\*\*\*output\_plist\*\*\*\*\*

FIRST SET: TK\_ID

FOLLOW SET: TK\_SQBC

\*\*\*\*\*dataType\*\*\*\*\*

FIRST SET: TK\_INTEGER, TK\_REAL, TK\_BOOLEAN, TK\_ARRAY

FOLLOW SET: TK\_COMMA, TK\_SQBC, TK\_SEMICOLON

\*\*\*\*\*\_input\_plist\*\*\*\*\*

FIRST SET: TK\_COMMA, EPS

FOLLOW SET: TK\_SQBC

\*\*\*\*\*\_type\*\*\*\*\*

FIRST SET: TK\_INTEGER, TK\_REAL, TK\_BOOLEAN

FOLLOW SET: TK\_COMMA, TK\_SQBC, TK\_SEMICOLON

\*\*\*\*\*\_output\_plist\*\*\*\*\*

FIRST SET: TK\_COMMA, EPS

FOLLOW SET: TK\_SQBC

\*\*\*\*\*range\_arrays\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS, TK\_NUM, TK\_ID

FOLLOW SET: TK\_SQBC

\*\*\*\*\*index\_arr\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS, TK\_NUM, TK\_ID

FOLLOW SET: TK\_RANGEOP, TK\_SQBC

\*\*\*\*\*statements\*\*\*\*\*

FIRST SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH, TK\_FOR, TK\_WHILE, EPS

FOLLOW SET: TK\_END, TK\_BREAK

\*\*\*\*\*statement\*\*\*\*\*

FIRST SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH, TK\_FOR, TK\_WHILE

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH, TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*ioStmt\*\*\*\*\*

FIRST SET: TK\_GET\_VALUE, TK\_PRINT

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH, TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*simpleStmt\*\*\*\*\*

FIRST SET: TK\_ID, TK\_SQBO, TK\_USE

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH, TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*declareStmt\*\*\*\*\*

FIRST SET: TK\_DECLARE

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH, TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*conditionalStmt\*\*\*\*\*

FIRST SET: TK\_SWITCH

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH,  
TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*iterativeStmt\*\*\*\*\*

FIRST SET: TK\_FOR, TK\_WHILE

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH,  
TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*var\_print\*\*\*\*\*

FIRST SET: TK\_ID, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE

FOLLOW SET: TK\_BC

\*\*\*\*\*p1\*\*\*\*\*

FIRST SET: TK\_SQBO, EPS

FOLLOW SET: TK\_BC

\*\*\*\*\*boolConstt\*\*\*\*\*

FIRST SET: TK\_TRUE, TK\_FALSE

FOLLOW SET: TK\_BC, TK\_COMMA, TK\_SEMICOLON, TK\_AND, TK\_OR, TK\_MUL, TK\_DIV, TK\_PLUS,  
TK\_MINUS, TK\_LT, TK\_LE, TK\_GT, TK\_GE, TK\_EQ, TK\_NE, TK\_SQBC

\*\*\*\*\*new\_index\*\*\*\*\*

FIRST SET: TK\_NUM, TK\_ID

FOLLOW SET: TK\_RANGEOP, TK\_SQBC

\*\*\*\*\*assignmentStmt\*\*\*\*\*

FIRST SET: TK\_ID

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH,  
TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*moduleReuseStmt\*\*\*\*\*

FIRST SET: TK\_SQBO, TK\_USE

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH,  
TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*whichStmt\*\*\*\*\*

FIRST SET: TK\_ASSIGNOP, TK\_SQBO

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH,  
TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*lvalueIDStmt\*\*\*\*\*

FIRST SET: TK\_ASSIGNOP

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH,  
TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*lvalueARRStmt\*\*\*\*\*

FIRST SET: TK\_SQBO

FOLLOW SET: TK\_GET\_VALUE, TK\_PRINT, TK\_ID, TK\_SQBO, TK\_USE, TK\_DECLARE, TK\_SWITCH,  
TK\_FOR, TK\_WHILE, TK\_END, TK\_BREAK

\*\*\*\*\*expression\*\*\*\*\*

FIRST SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID, TK\_TRUE, TK\_FALSE, TK\_PLUS,  
TK\_MINUS

FOLLOW SET: TK\_SEMICOLON

\*\*\*\*\*element\_index\_with\_expressions\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS, TK\_ID, TK\_BO, TK\_TRUE, TK\_FALSE, TK\_NUM

FOLLOW SET: TK\_SQBC

\*\*\*\*\*sign\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS, EPS

FOLLOW SET: TK\_NUM, TK\_ID, TK\_RNUM, TK\_TRUE, TK\_FALSE

\*\*\*\*\*optional\*\*\*\*\*

FIRST SET: TK\_SQBO, EPS

FOLLOW SET: TK\_USE

\*\*\*\*\*actual\_para\_list\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID

FOLLOW SET: TK\_SEMICOLON

\*\*\*\*\*K\*\*\*\*\*

FIRST SET: TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID

FOLLOW SET: TK\_COMMA, TK\_SEMICOLON

\*\*\*\*\*N\_12\*\*\*\*\*

FIRST SET: TK\_COMMA, EPS

FOLLOW SET: TK\_SEMICOLON

\*\*\*\*\*N\_11\*\*\*\*\*

FIRST SET: TK\_SQBO, EPS

FOLLOW SET: TK\_COMMA, TK\_SEMICOLON, TK\_MUL, TK\_DIV, TK\_PLUS, TK\_MINUS, TK\_BC, TK\_LT, TK\_LE, TK\_GT, TK\_GE, TK\_EQ, TK\_NE, TK\_AND, TK\_OR

\*\*\*\*\*idList\*\*\*\*\*

FIRST SET: TK\_ID

FOLLOW SET: TK\_SQBC, TK\_COLON

\*\*\*\*\*N3\*\*\*\*\*

FIRST SET: TK\_COMMA, EPS

FOLLOW SET: TK\_SQBC, TK\_COLON

\*\*\*\*\*arithmeticOrBooleanExpr\*\*\*\*\*

FIRST SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID, TK\_TRUE, TK\_FALSE

FOLLOW SET: TK\_SEMICOLON, TK\_BC

\*\*\*\*\*J\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS

FOLLOW SET: TK\_SEMICOLON

\*\*\*\*\*unary\_op\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS

FOLLOW SET: TK\_BO, TK\_ID, TK\_NUM, TK\_RNUM

\*\*\*\*\*new\_NT\*\*\*\*\*

FIRST SET: TK\_BO, TK\_ID, TK\_NUM, TK\_RNUM

FOLLOW SET: TK\_SEMICOLON

\*\*\*\*\*arithmeticExpr\*\*\*\*\*

FIRST SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID

FOLLOW SET: TK\_BC, TK\_LT, TK\_LE, TK\_GT, TK\_GE, TK\_EQ, TK\_NE, TK\_AND, TK\_OR, TK\_SEMICOLON

\*\*\*\*\*var\_id\_num\*\*\*\*\*

FIRST SET: TK\_ID, TK\_NUM, TK\_RNUM

FOLLOW SET: TK\_SEMICOLON

\*\*\*\*\*AnyTerm\*\*\*\*\*

FIRST SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID, TK\_TRUE, TK\_FALSE

FOLLOW SET: TK\_AND, TK\_OR, TK\_SEMICOLON, TK\_BC

\*\*\*\*\*N7\*\*\*\*\*

FIRST SET: TK\_AND, TK\_OR, EPS

FOLLOW SET: TK\_SEMICOLON, TK\_BC

\*\*\*\*\*logicalOp\*\*\*\*\*

FIRST SET: TK\_AND, TK\_OR

FOLLOW SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID

\*\*\*\*\*N8\*\*\*\*\*

FIRST SET: TK\_LT, TK\_LE, TK\_GT, TK\_GE, TK\_EQ, TK\_NE, EPS

FOLLOW SET: TK\_AND, TK\_OR, TK\_SEMICOLON, TK\_BC

\*\*\*\*\*relationalOp\*\*\*\*\*

FIRST SET: TK\_LT, TK\_LE, TK\_GT, TK\_GE, TK\_EQ, TK\_NE

FOLLOW SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID

\*\*\*\*\*term\*\*\*\*\*

FIRST SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID

FOLLOW SET: TK\_PLUS, TK\_MINUS, TK\_BC, TK\_LT, TK\_LE, TK\_GT, TK\_GE, TK\_EQ, TK\_NE, TK\_AND, TK\_OR, TK\_SEMICOLON

\*\*\*\*\*N4\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS, EPS

FOLLOW SET: TK\_BC, TK\_LT, TK\_LE, TK\_GT, TK\_GE, TK\_EQ, TK\_NE, TK\_AND, TK\_OR, TK\_SEMICOLON

\*\*\*\*\*op1\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS

FOLLOW SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID

\*\*\*\*\*factor\*\*\*\*\*

FIRST SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID

FOLLOW SET: TK\_MUL, TK\_DIV, TK\_PLUS, TK\_MINUS, TK\_BC, TK\_LT, TK\_LE, TK\_GT, TK\_GE, TK\_EQ, TK\_NE, TK\_AND, TK\_OR, TK\_SEMICOLON

\*\*\*\*\*N5\*\*\*\*\*

FIRST SET: TK\_MUL, TK\_DIV, EPS

FOLLOW SET: TK\_PLUS, TK\_MINUS, TK\_BC, TK\_LT, TK\_LE, TK\_GT, TK\_GE, TK\_EQ, TK\_NE, TK\_AND, TK\_OR, TK\_SEMICOLON



\*\*\*\*\*op2\*\*\*\*\*

FIRST SET: TK\_MUL, TK\_DIV

FOLLOW SET: TK\_BO, TK\_NUM, TK\_RNUM, TK\_TRUE, TK\_FALSE, TK\_ID

\*\*\*\*\*N\_10\*\*\*\*\*

FIRST SET: TK\_NUM, TK\_ID, TK\_BO

FOLLOW SET: TK\_SQBC

\*\*\*\*\*arrExpr\*\*\*\*\*

FIRST SET: TK\_ID, TK\_BO, TK\_TRUE, TK\_FALSE, TK\_NUM

FOLLOW SET: TK\_SQBC, TK\_BC

\*\*\*\*\*arrTerm\*\*\*\*\*

FIRST SET: TK\_ID, TK\_BO, TK\_TRUE, TK\_FALSE, TK\_NUM

FOLLOW SET: TK\_PLUS, TK\_MINUS, TK\_SQBC, TK\_BC

\*\*\*\*\*arr\_N4\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS, EPS

FOLLOW SET: TK\_SQBC, TK\_BC

\*\*\*\*\*arr\_N5\*\*\*\*\*

FIRST SET: TK\_MUL, TK\_DIV, EPS

FOLLOW SET: TK\_PLUS, TK\_MINUS, TK\_SQBC, TK\_BC

\*\*\*\*\*arrFactor\*\*\*\*\*

FIRST SET: TK\_ID, TK\_BO, TK\_TRUE, TK\_FALSE, TK\_NUM

FOLLOW SET: TK\_MUL, TK\_DIV, TK\_PLUS, TK\_MINUS, TK\_SQBC, TK\_BC

\*\*\*\*\*caseStmts\*\*\*\*\*

FIRST SET: TK\_CASE

FOLLOW SET: TK\_DEFAULT, TK\_END

\*\*\*\*\*\_default\*\*\*\*\*

FIRST SET: TK\_DEFAULT, EPS

FOLLOW SET: TK\_END

\*\*\*\*\*value\*\*\*\*\*

FIRST SET: TK\_NUM, TK\_TRUE, TK\_FALSE

FOLLOW SET: TK\_COLON

\*\*\*\*\*NG\*\*\*\*\*

FIRST SET: TK\_CASE, EPS

FOLLOW SET: TK\_DEFAULT, TK\_END

\*\*\*\*\*range\_for\_loop\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS, TK\_NUM

FOLLOW SET: TK\_BC

\*\*\*\*\*index\_for\_loop\*\*\*\*\*

FIRST SET: TK\_PLUS, TK\_MINUS, TK\_NUM

FOLLOW SET: TK\_RANGEOP, TK\_BC