

Abstract Syntax Tree – Class Summary (for Project 4)

Body	
lineNumber	
typeDecls	*
procDecls	*
varDecls	*
stmts	*

VarDecl	
lineNumber	
id	
typeName	*
expr	
next	*

TypeDecl	
lineNumber	
id	
compoundType	*
next	*

ProcDecl	
lineNumber	
id	
formals	*
retType	*
body	
next	*

Formal	
lineNumber	
id	
typeName	
next	*

TypeName	
lineNumber	
id	

ArrayType	
lineNumber	
elementType	

RecordType	
lineNumber	
fieldDecls	

FieldDecl	
lineNumber	
id	
typeName	
next	*

AssignStmt	
lineNumber	
next	*
lValue	
expr	

CallStmt	
lineNumber	
next	*
id	
args	*

ReadStmt	
lineNumber	
next	*
readArgs	

ReadArg	
lineNumber	
next	*
lvalue	

WriteStmt	
lineNumber	
next	*
args	

IfStmt	
lineNumber	
next	*
expr	
thenStmts	*
elseStmts	*

WhileStmt	
lineNumber	
next	*
expr	
stmts	*

Note: * means this field may be null

LoopStmt	
lineNumber	
next	*
stmts	*

ForStmt	
lineNumber	
next	*
lValue	
expr1	
expr2	
expr3	*
stmts	*

ExitStmt	
lineNumber	
next	*

ReturnStmt	
lineNumber	
next	*
expr	*

BinaryOp	
lineNumber	
op	
expr1	
expr2	

UnaryOp	
lineNumber	
op	
expr	

FunctionCall	
lineNumber	
id	
args	*

Argument	
lineNumber	
next	*
expr	

ArrayConstructor	
lineNumber	
id	
values	

ArrayValue	
lineNumber	
next	*
countExpr	*
valueExpr	

RecordConstructor	
lineNumber	
id	
fieldInits	

FieldInit	
lineNumber	
next	*
id	
expr	

IntegerConst	
lineNumber	
iValue	

RealConst	
lineNumber	
rValue	

StringConst	
lineNumber	
sValue	

ValueOf	
lineNumber	
lValue	

Variable	
lineNumber	
id	

ArrayDeref	
lineNumber	
lValue	
expr	

RecordDeref	
lineNumber	
lValue	
id	

Note: * means this field may be null

Node

lineNumber: int

Body
*typeDecls: TypeDecl ****
*procDecls: ProcDecl ****
*varDecls: VarDecl ****
*stmts: Stmt ****

VarDecl
id: String
*typeName: TypeName ****
expr: Expr
*next: VarDecl ****

TypeDecl
id: String
compoundType: CompoundType
*next: TypeDecl ****

ProcDecl
id: String
*formals: Formal ****
*refType: TypeName ****
body: Body
*next: ProcDecl ****

Formal
id: String
typeName: TypeName
*next: Formal ****

TypeName
id: String

CompoundType

ArrayType
elementType: TypeName

RecordType
fFieldDecls: FieldDecl

FieldDecl
id: String
typeName: TypeName
*next: FieldDecl ****

Stmt
*next: Stmt ****

AssignStmt
lValue: LValue
expr: Expr

CallStmt
id: String
*args: Argument ****

ReadStmt
readArgs: ReadArg

WriteStmt
args: Argument

IfStmt
expr: Expr
*thenStmts: Stmt ****
*elseStmts: Stmt ****

WhileStmt
expr: Expr
*stmts: Stmt ****

LoopStmt
*stmts: Stmt ****

Node (continued...)

Stmt (continued...)

ForStmt
lValue: LValue
expr1: Expr
expr2: Expr
*expr3: Expr ****
*stmts: Stmt ****

ExitStmt

ReturnStmt
*expr: Expr ****

ReadArg
next: ReadArg
lValue: LValue

Expr

BinaryOp
op: int
expr1: Expr
expr2: Expr

UnaryOp
op: int
expr: Expr

FunctionCall
id: String
*args: Argument ****

ArrayConstructor
id: String
values: ArrayValue

RecordConstructor
id: String
fieldInits: FieldInit

IntegerConst
iValue: int

RealConst
rValue: double

StringConst
sValue: String

ValueOf
lValue: LValue

Argument
*next: Argument ****
expr: Expr

ArrayValue
*next: ArrayValue ****
*countExpr: Expr ****
valueExpr: Expr

FieldInit
*next: FieldInit ****
id: String
expr: Expr

LValue

Variable
id: String

ArrayDeref
lValue: LValue
expr: Expr

RecordDeref
lValue: LValue
id: String

Note: *** means this field may be null