

Project Demo: Parser & AST

CSE 401/M501

Adapted from Spring 2021

MiniJava BNF with AST Nodes

Program	Goal ::= MainClass (ClassDeclaration)* <EOF>	
MainClass	MainClass ::= "class" Identifier "{ " "public" "static" "void" "main" "(" "String" "[" "]" Identifier ")" "{ " Statement "}" "}"	
ClassDecl	ClassDeclaration ::= "class" Identifier ("extends" Identifier)? "{ " (VarDeclaration)* (MethodDeclaration)* "}"	ClassDeclSimple ClassDeclExtends (if there is "extends")
VarDecl	VarDeclaration ::= Type Identifier ";"	Formal
MethodDecl	MethodDeclaration ::= "public" Type Identifier "(" { Type Identifier } ("," Type Identifier)*)? ")" "{ " (VarDeclaration)* (Statement)* "return" Expression ";" "}"	
Type	Type ::= "int" "[" "]" "boolean" "int" Identifier	IntArrayType BooleanType IntegerType IdentifierType
Statement	Statement ::= "{ " (Statement)* "}" "if" "(" Expression ")" Statement "else" Statement "while" "(" Expression ")" Statement "System.out.println" "(" Expression ")" ";" Identifier "=" Expression ";" Identifier "[" Expression "]" "=" Expression ";"	Block If While Print Assign ArrayAssign
Exp	Expression ::= Expression ("&&" "<" "+" "-" "*") Expression Expression "[" Expression "]" Expression "." "length" Expression "." Identifier "(" (Expression ("," Expression)*)? ")" <INTEGER_LITERAL> "true" "false" Identifier "this" "new" "int" "[" Expression "]" "new" Identifier "(" " "!" Expression "(" Expression ")"	And LessThan Plus Minus Times ArrayLookup ArrayLength Call IntegerLiteral True False IdentifierExpression This NewArray NewObject Not
Identifier	Identifier ::= <IDENTIFIER>	

Abstract Syntax Tree Class Hierarchy

