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jminusminus

Class JArrayExpression

- [java.lang.Object](#)
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```
class JArrayExpression
extends JExpression
implements JLhs
```

The AST for an array indexing operation. It has an expression denoting an array object and an expression denoting an integer index.

- **Field Summary**
- **Fields inherited from class [jminusminus.JExpression](#)**
 - [isStatementExpression](#), [type](#)
- **Fields inherited from class [jminusminus.JAST](#)**
 - [compilationUnit](#), [line](#)
- **Constructor Summary**

Constructors

Constructor and Description

```
JArrayExpression(int line, JExpression theArray,
JExpression indexExpr)
```

Construct an AST node for an array indexing operation.

- **Method Summary**

Methods	
Modifier and Type	Method and Description
JExpression	analyze (Context context) Perform semantic analysis on an array indexing expression such as A[i].
JExpression	analyzeLhs (Context context) Analyzing the array expression as an Lvalue is like analyzing it for its Rvalue.
void	codegen (CLEmitter output) Perform code generation from the JArrayExpression using the specified code emitter.
void	codegenDuplicateRvalue (CLEmitter output) Generate the code required for duplicating the Rvalue that is on the stack because it is to be used in a surrounding expression, as in a[i] = x = or x = y--.
void	codegenLoadLhsLvalue (CLEmitter output) Generate the code required for setting up an Lvalue, eg for use in an assignment.
void	codegenLoadRvalue (CLEmitter output) Generate the code required for loading an Rvalue for this variable, eg for use in a +=.
void	codegenStore (CLEmitter output) Generate the code required for doing the actual assignment.
void	writeToStdOut (PrettyPrinter p) Write the information pertaining to this AST to STDOUT.

- **Methods inherited from class jminusminus.JExpression**

codegen, isStatementExpression, type

- **Methods inherited from class jminusminus.JAST**

line, partialCodegen

- **Methods inherited from class java.lang.Object**

clone, equals, finalize, getClass, hashCode, notify, notifyAll, toString, wait, wait, wait

- **Constructor Detail**

- **JArrayExpression**

```
public JArrayExpression(int line,  
                        JExpression theArray,  
                        JExpression indexExpr)
```

Construct an AST node for an array indexing operation.

Parameters:

line - line in which the operation occurs in the source file.

theArray - the array we're indexing.

indexExpr - the index expression.

- **Method Detail**

- **analyze**

```
public JExpression analyze(Context context)
```

Perform semantic analysis on an array indexing expression such as A[i].

Specified by:

analyze in class JExpression

Parameters:

context - context in which names are resolved.

Returns:

the analyzed (and possibly rewritten) AST subtree.

- **analyzeLhs**

```
public JExpression analyzeLhs(Context context)
```

Analyzing the array expression as an Lvalue is like analyzing it for its Rvalue.

Specified by:

analyzeLhs in interface JLhs

Parameters:

context - context in which names are resolved.

Returns:

the analyzed (and possibly rewritten) AST subtree.

- **codegen**

```
public void codegen(CLEmitter output)
```

Perform code generation from the JArrayExpression using the specified code emitter. Generate the code necessary for loading the Rvalue.

Specified by:

codegen in class JAST

Parameters:

output - the code emitter (basically an abstraction for producing the .class file).

- **codegenLoadLhsLvalue**

```
public void codegenLoadLhsLvalue(CLEmitter output)
```

Generate the code required for setting up an Lvalue, eg for use in an assignment. Here, this requires loading the array and the index.

Specified by:

codegenLoadLhsLvalue in interface JLhs

Parameters:

output - the code emitter (basically an abstraction for producing the .class file).

- **codegenLoadLhsRvalue**

```
public void codegenLoadLhsRvalue(CLEmitter output)
```

Generate the code required for loading an Rvalue for this variable, eg for

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use in a +=. Here, this requires duplicating the array and the index on the stack and doing an array load.

Specified by:

`codegenLoadLhsRvalue` in interface `JLhs`

Parameters:

output - the code emitter (basically an abstraction for producing the .class file).

- `codegenDuplicateRvalue`

```
public void codegenDuplicateRvalue(CLEmitter output)
```

Generate the code required for duplicating the Rvalue that is on the stack because it is to be used in a surrounding expression, as in `a[i] = x =` or `x = y--`. Here this means copying it down two locations (beneath the array and index).

Specified by:

`codegenDuplicateRvalue` in interface `JLhs`

Parameters:

output - the code emitter (basically an abstraction for producing the .class file).

- `codegenStore`

```
public void codegenStore(CLEmitter output)
```

Generate the code required for doing the actual assignment. Here, this requires an array store.

Specified by:

`codegenStore` in interface `JLhs`

Parameters:

output - the code emitter (basically an abstraction for producing the class file)

- `writeToStdOut`

```
public void writeToStdOut(PrettyPrinter p)
```

Description copied from class: `JAST`

Write the information pertaining to this AST to STDOUT.

Specified by:

`writeToStdOut` in class `JAST`

Parameters:

p - for pretty printing with indentation.

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