

Introductory Java 4

J4

Arrays, Operators, Expressions
Statements, Blocks, Random

Java Arrays

- Arrays hold a fixed number of values of a given type (or sub-type) that can be accessed by an index

- Declaring:

```
int[] values;
```

- Initializing:

```
values = new int[8]; // 8 element array
```

- Accessing:

```
int x = values[3]; // the 4th element
```

- Copying:

```
System.arraycopy(x, 0, y, 0, 8);
```

Java Operators

- Assignment

=

- Arithmetic

+ - * / %

- Unary

+ - ++ -- !

- Equality, relational, conditional and `instanceof`

== != > >= < <= && || `instanceof`

- Bitwise

~ & ^ | << >> >>>

Expressions

- A construct that evaluates to a **single value**.
- Made up of
 - variables
 - operators
 - method invocations
- Compound expressions follow precedence rules
 - Use parentheses (clarity, disambiguation)

Statements

- A complete unit of execution.
- **Expression** statements (expressions made into statements by terminating with ‘;’):
 - Assignment expressions
 - Use of ++ or --
 - Method invocations
 - Object creation expressions
- **Declaration** statements
- **Control flow** statements

Blocks

- Zero or more statements between balanced braces ('{' and '}')
- Can be used anywhere a single statement can

The Random Class

The `Random` class provides a pseudo-random number generator:

```
Random rand = new Random();
```

You can optionally provide a seed (for determinism):

```
Random rand = new Random(12345);
```

You can then generate random numbers of different types:

```
int i = rand.nextInt(10); // number in 0-9
```