C++ VS. JAVA

A Review of Object-Oriented Programming

Delroy A. Brinkerhoff

TERMINOLOGY: JAVA VS. C++

JAVA

- Object-Oriented Only
- Class
- Object, instance
- Instance variable / field
- Method

C++

- Hybrid: Object-Oriented and Procedural
- Class
- Object, instance
- Data member / member variable
- Member function
- Outside of a class: function, variable

CLASSES AND OBJECTS

- Object-oriented programs define classes

- Classes are instantiated to make objects

- Think of a class as a cookie cutter and objects as the cookies

- Classes specify data and operations, objects provide storage or memory for data

- Classes and objects *encapsulate* data and the operations that use the data

- A constructor is a method/function that builds an object (initializes data object data)

- Both Java and C++ use the dot operator to access class features

- C++ also use the arrow operator to access class features

EXAMPLES

- `Foo myFoo1 = new Foo(5);` `// Java`
- `Foo* myFoo2 = new Foo(5);` `// C++`
- `Foo myFoo3(5);` `// C++`

- `myFoo1.doSomthing();` `// Java`
- `myfoo2->doSomthing();` `// C++`
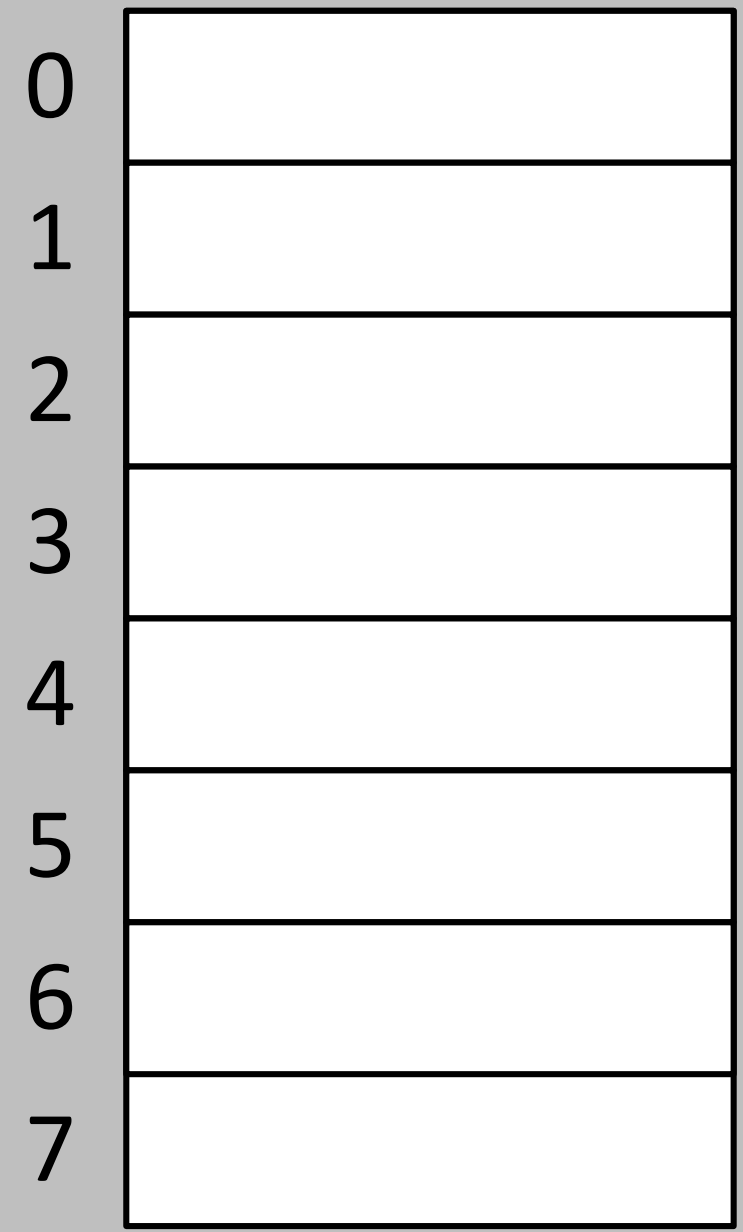- `myFoo3.doSomthing();` `// C++, looks like Java`

ARRAYS

```
double[] scores = new double[8];


        double scores[8];

double* scores = new double[8];
```

0

1

2

3

4

5

6

7

scores

JAVA ARRAYS VS C++ ARRAYS

- An array in Java is an instance of an unnamed class

  - It has a `length` attribute or instance field

  - `scores.length`

- An array in C++ is a primitive type (it is NOT an object)

  - ~~`scores.length`~~