The This Keyword

Summary: The keyword `this` is used to refer to an object within itself. Specifically, when writing non-static methods and using non-static fields within a class, the keyword `this` is used within a class's methods to reference the specific instance of the class.

Why we should use it:
When a nonstatic method is called, it has access to the object it is being run by. More specifically, the `method()` method in the function call `object.method()` will have access to the internal data held by the object `object`. The object `object` is accessible as `this` within the code of `method()`. Using `this` as a tool, it is possible to have many objects of the same class have different internal data. Unique objects of the same class are generally called “instances” of the class. (For example, a created object could be called an instance of a declared class.)

Key definitions:

- this - For any given method, the object that is calling that method. For a constructor, it’s the object being constructed.
- Implicit parameter - For all non-static methods, the object that is calling that method and is referenced using `this`. The method has access to all of the fields within the object calling it and the other methods within that object by using the keyword `this`.
- Non-static - Methods that have access to the data stored within one particular instance of a class and non-static are variables that can vary between instances of the defined class.

Use Case 1: A very simple class representing a coordinate pair

```
public class Pair {
	public int x;
	public int y;
	public int max;

	public Pair(int x, int y) {
		this.x = x;
		this.y = y;
		this.max = Math.max(x,y);
	}
}
```

Explanation: This is a simple class with public variables `x`, `y`, and `max` as well as a two-argument constructor. When an object of this class is constructed it stores an `x` variable and a `y` variable. The `x` and `y` variables represent integer points in a plane, and the integer `max` represents the maximum values of `x` and `y`. The constructor above also has a 3rd implicit parameter, `this`, which as an object also has an `x` variable, a `y` variable, and a `max` variable. The constructor sets the `x`, `y`, and `max` fields of the `this` object to the `x`, `y`, and `max` arguments.