

Java Programming

Key Terms

What is Java?

- Java is a general-purpose, object-oriented language that is easy to use and lets you create more robust programs.
- Java's object-oriented focus lets developers work on adapting Java to solve a problem

Objects

- The principal code building block of Java programs.
- Each object in a program consists of both variables (data) and methods (functionality).

Objects

- The best way to understand objects is to compare objects in programming to objects you may find in the real world.
- A good example is a car. A car is an object that has two distinct characteristics. It has a state and it has behavior.
 - The state of a car would include properties such as its color, make and model.
 - The car also has specific behaviors such as accelerating, changing gears, braking, and turning.

Class

- A class describes a particular kind of object. It can contain related methods and (variables).
- A class must have the same name as the file it is contained in.

Class

- If an object is a specific car (i.e. Honda Civic), then the word “car” is actually a class reference.
- In other words, your Civic is an instance of the class of objects known as Cars.
- All cars have four wheels, a gas pedal, a brake pedal, and a variety of other components.
- Most components are standard among all cars

Method

- A method is a function or collection of code found within a class.
- Methods are actions that do something. A simple example of a method might be to test to see if one object is equal to another.
- In Java we write a statement like: " `if (a.equals(b)) ...`
- The word `equals` is a method that will test object **a** to see if it has the same value as object **b**.

Instance

- A class is just a description of something, but it isn't an actual thing.
- The word dog describes a type of animal, but by itself it does not describe or name a particular dog.
- **Buster** is the name given to a particular dog and is how we refer to the actual living breathing dog.
- The dog named **Buster** would be the instance of the class dog.
- **Buster** is the name given to that instance.

Variable

- A variable is just like in math. It is a name used to hold a value that is expected to change.
- In the expression $a = b + c$, a , b , and c are variables.
- Variables don't have to be numbers.

Constant

- A constant is something that will never change.
- In the expression $3 = 2 + 1$, all the numbers are constants.
- In the expression $a = 3 + 7$, a is a variable 3 and 7 are constants.
- Constants can be things other than numbers as well.

Public

- Indicates that a variable, class, or method can be used by any other Java code.

Private

- Indicates that a variable or method can be used only within a certain class.

Void

- Indicates that a method doesn't return a value.

Declaration

- A declaration is a statement that creates a variable, method, or class.

Package

- A package is simply a namespace that organizes a set of related classes in a single place.
- You can think of a package kind of like the a different folders on your computer.
- You may have a picture folder, a video folder, a music folder, etc.
- The point is that items with in that folder are related.

Inheritance

- Inheritance is another key component of object oriented programming.
- Java allows you to create instances of a class (objects) that inherits specific states and behaviors from the class(es) above it.
- Inheritance not only does saves time, but it also makes modifying existing code much easier.