



**Computer Science Virtual Learning**

# **HS Computer Science A**

**April 6th, 2020**

Lesson: **What is a Class and an Object in Java**

**Objective/Learning Target:**

Understanding the difference between an object and a class  
in java programming  
language



## Bell Ringer Activity

Answer the following questions based on what you've learned about java so far this year:

- a. When saving your program, how would you name your java file. For example, if my program was named "Minecraft," I would save my file as Minecraft.\_\_\_\_\_. What would go in this blank?



## Activity

In Java, a class doesn't mean the same thing as the classes you take in school. A class is used to define a type (classify something). The class defines what objects of the class need to know (data or fields) and do (behaviors or methods).

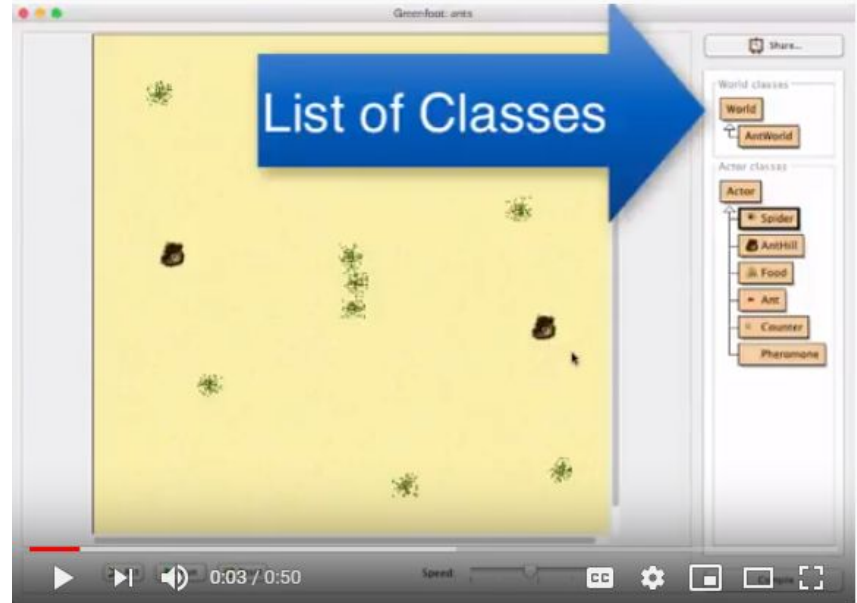
The real power of Java is the ability to create your own classes (define your own types) as shown in the video below. This video was created using the free software Greenfoot which is at <http://greenfoot.org>. Greenfoot makes it easy to create 2d simulations and games in Java. See <http://www.greenfoot.org/doc/tut-2> for a tutorial to get you started in Greenfoot.

## Activity

The following video is also on YouTube at

<https://youtu.be/7G93HDuqXzY>

It shows objects doing actions in Greenfoot.





## Activity

Another free environment, Alice 3, allows you to easily create animations or 3D movies. You can create 3D objects and program them using drag and drop programming that can help you get started in Java.

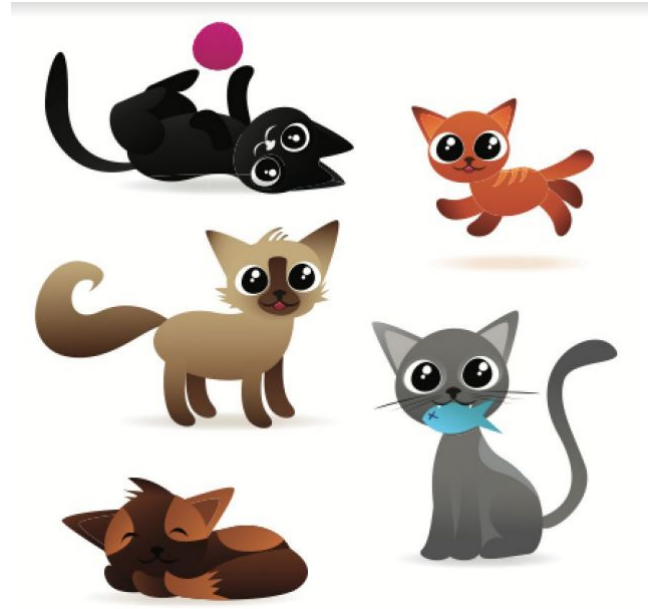
## Activity

Classes create objects, and the objects do the actual work in an object-oriented program. You can think of a class like a cookie cutter. It is used to create the cookies (objects) and can be used to create as many cookies (objects) as you want. A class can also be thought of as a factory that produces objects.



## Activity

You can think of a class as the type or classification. The following picture has lots of cats (objects of the type cat).







## Activity

If you go to a restaurant, you will be seated by the greeter, the waiter will take your order, and the chef will cook your food. What do we mean by a greeter, waiter, and chef? Those are classifications or types of workers in a restaurant. Java has this same concept. When we create a new class we are defining a new type (a new classification) to the computer. Each type can have abilities or behaviors (called methods in Java) and properties (called fields in Java). After you define a type, you can use it to create objects of that type. All objects created from a class will have the properties and abilities/behaviors defined in that class.



# Check Your Understanding

Answer the following questions to check your understanding of the material in the previous slides

1. How many objects can you create from a class in Java?
  - a. 1
  - b. 10
  - c. 1000
  - d. As many as you need
2. What specifies the behavior for objects of a class in Java?
  - a. Fields
  - b. Methods
  - c. Class
  - d. Object
3. What specifies the data or state for an object in Java?
  - a. Fields
  - b. Methods
  - c. Class
  - d. Objects
4. Create an object of MyClass call myObj  
\_\_\_\_\_ = new \_\_\_\_\_ ();



## For More Resources and to Check Answers

Go to: <https://runestone.academy/runestone/books/published/apcsareview/JavaBasics/introClassObject.html>

