### **Javascript: Object Orientation**

### **Duration: 2 Weeks**

### **Summary**

This lesson continues with the Khan Javascript programming material to teach about objects and object-orientation. It first shows how to group attributes and behavior (methods) into objects. It teaches how to call constructor functions to dynamically create objects. It briefly touches on object class inheritance. This is by no means a full course in object-oriented programming, it is 2 weeks where the concepts are introduced using the Javascript programming environment that they are now familiar with.

The assignment has the student write object-oriented code to create a bookshelf where books are objects. It also has them read and comment more complex object-oriented code (not written by them).

### **Learning Objectives**

* Describe how an *object* groups data (any type of data) about a single thing as *properties* of the object.
* Write Khan Javascript that uses objects.
* Describe how *dot notation* is used to access the data in objects.
* Program Khan Javascript using dot notation.
* Program with arrays of objects in Khan Javascript.
* Explain what an *object constructor* function does (dynamically creates a new instance of the object).
* Explain what the "*this*" reference does in object constructor functions.
* Explain what an *object method* is.
* Explain what *object inheritance* is.
* Explain code where objects are dynamically created and then used in programs (e.g. passed as parameters, put in arrays of objects, etc).
* Identify object-oriented concepts in code and explain how they affect the code.

### **Course Material**

Sign in to Khan Academy before completing the following tutorials.

Complete the following Videos and Exercises, in order. You will earn points for completing the exercises labeled "Do". You must be signed in to Khan Academy to have it show that you completed these modules. The assignment requires that you show this.

* Watch: [Intro to Objects](https://www.khanacademy.org/computing/cs/programming/objects/p/intro-to-objects) [5:24]
* Do: [Recipe Card](https://www.khanacademy.org/computing/cs/programming/objects/p/challenge-recipe-card)
* Watch: [Modifying Objects](https://www.khanacademy.org/computing/cs/programming/objects/p/modifying-objects) [5:24]
* Do: [Picture Painter](https://www.khanacademy.org/computing/cs/programming/objects/p/challenge-picture-painter)
* Watch: [Array of Objects](https://www.khanacademy.org/computing/cs/programming/objects/p/arrays-of-objects) [6:11]
* Do: [Movie Reviews](https://www.khanacademy.org/computing/cs/programming/objects/p/challenge-movie-reviews)
* Watch: [Object Types](https://www.khanacademy.org/computing/cs/programming/object-oriented/p/object-types) [6:50]
* Do: [Double Rainbow](https://www.khanacademy.org/computing/cs/programming/object-oriented/p/challenge-double-rainbow)
* Watch: [Object Methods](https://www.khanacademy.org/computing/cs/programming/object-oriented/p/challenge-double-rainbow) [4:45]
* Do: [Smiley Face](https://www.khanacademy.org/computing/cs/programming/object-oriented/p/challenge-smileyface)
* Watch: [Object Inheritance](https://www.khanacademy.org/computing/cs/programming/object-oriented/p/object-inheritance) [7:15]
* Do: [Flower Grower](https://www.khanacademy.org/computing/cs/programming/object-oriented/p/challenge-flower-grower)

### **Assessments**

* Practical Assignment:
  + [Javascript: Object Orientation](https://drive.google.com/open?id=1Sf8tFNu5CguXyRPibNK4MhcHN2bGaEpqH7X62CdjHxc) | [Grading Rubric](https://drive.google.com/open?id=1AuMUmPrShHULF4_rZQO3TC_735LF022ZzUH2sBIpLd4) | [Answer Key](https://docs.google.com/document/d/1bIZWznIqoeVWjRtrFk77xBgY56bTMbxAa4OlAueHuH8/edit?usp=sharing)