### **Javascript: Text and Functions**

### **Duration: 2 Weeks**

### **Summary**

This lesson teaches the students about functions in Javascript. This is typically one of the more challenging concepts for new programmers, so we have allocated two weeks to allow the lesson to be presented slowly with plenty of examples. The Khan lectures and exercises go through grouping code as functions, parameters, return values, and built-in functions. The connection between code design/modularity and functions is taught. The lesson starts by briefly showing them how to put text on the screen, which is a short topic.

The assignment has the student rewrite previous assignments using functions.

### **Learning Objectives**

* Develop an abstraction when writing a program. [AP CSP P2, 2.2.1]
* Use multi levels of abstraction when writing a program such as expressions, variables, and functions. [AP CSP P3, LO 2.2.2]
* Explain how text is displayed in Javascript.
* Explain the syntax (quotation marks) that delineates text from variables in a Javascript program.
* Explain the properties of text strings: fill, coordinates, size - and how they are set.
* Explain how text strings can be stored in variables.
* Explain what addition of text strings is.
* Program Javascript that puts text on the screen.
* Explain the concept of defining a function and calling a function in Javascript.
* State the syntax for defining a function and calling a function in Javascript.
* Explain how functions can be used to abstract code that you can reuse multiple times in your program.
* Explain how functions are defined with parameters that can be used in its code.
* Explain how to call functions with different parameters.
* Program in Javascript using functions that have parameters.
* Explain what a function *return value* is.
* Write Javascript code that has a function with a return value that is called in the code.
* Explain what a *built-in function* (called "*magic function*" in the videos) is and how it differs from a programmer-defined custom function.
* Explain *mouseMoved* as an example Khan Javascript built-in function.
* Program Khan Javascript using *mouseMoved*.
* Find and use other built-in Khan Javascript functions using documentation.
* Explain the difference between *local variables* and *global variables* including where they *can* be used and where they *should* be used.
* Program in Khan Javascript with local and global variables.
* Use abstraction to manage the complexity in programs. [AP CSP P3, LO 5.3.1]

### **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.

**Text and Strings**

* Watch: [Terrific Text: Part One](https://www.khanacademy.org/computing/computer-programming/programming/text-basics/p/terrific-text-part-one) [4:16]
* Do: [My Favorite Foods](https://www.khanacademy.org/computing/computer-programming/programming/text-basics/p/challenge-my-favorite-foods)
* Watch: [Terrific Text: Part Two](https://www.khanacademy.org/computing/computer-programming/programming/text-basics/p/terrific-text-part-two) [3:54]
* Do: [Challenge: Mouse Tracker](https://www.khanacademy.org/computing/computer-programming/programming/text-basics/p/challenge-mouse-tracker)

**Functions**

* Watch: [Functions](https://www.khanacademy.org/computing/computer-programming/programming/functions/p/functions) [4:55]
* Do: [Challenge: Say Your Name](https://www.khanacademy.org/computing/computer-programming/programming/functions/p/challenge-say-your-name)
* Watch: [Function Parameters](https://www.khanacademy.org/computing/computer-programming/programming/functions/p/function-parameters) [5:03]
* Do: [Challenge: Moles in Holes](https://www.khanacademy.org/computing/computer-programming/programming/functions/p/challenge-moles-in-holes)
* Watch: [Function Return Values](https://www.khanacademy.org/computing/computer-programming/programming/functions/p/function-return-values) [4:31]
* Do: [Challenge: Calculator](https://www.khanacademy.org/computing/computer-programming/programming/functions/p/challenge-calculator)
* Watch: [Local and Global Variables](https://www.khanacademy.org/computing/computer-programming/programming/functions/p/local-and-global-variables) [5:05]
* Watch: [Special ProcessingJS functions](https://www.khanacademy.org/computing/computer-programming/programming/functions/p/special-processingjs-functions) [6:06]
* Read: [Review Functions](https://www.khanacademy.org/computing/computer-programming/programming/functions/a/review-functions)
* **Optional:** [Function Tips](https://www.youtube.com/watch?v=ifnLHV4rYJs&feature=youtu.be)

### **Assessments**

* Conceptual Quiz:
  + [Text and Functions](https://docs.google.com/document/d/16ZXRyf_B7oiCioKqfZ4D7TRbSyCIurqNCWmmQTosWJA/edit?usp=sharing) (requires access)
* Practical Assignment:
  + [Javascript: Functions](https://drive.google.com/open?id=1a5vez48OTdLAJoAW51o5m1sHK_eBmuo2yjwg6LIwj-c) | [Grading Rubric](https://drive.google.com/open?id=1uuOxGDPnVIPUvPZ9nj49q-ahr_8HYuXGbDMzf2ZbDnY) | [Answer Key](https://docs.google.com/a/my.uri.edu/document/d/1w01yH971I3lC_uG8JHm8KmVGghc96T2suw6AsqDBVmk/edit?usp=sharing)