



**Learn.**Modern Developer

# Introduction to JavaScript and Modern Web Development

(A Five-Week *Learn.Modern Developer* Pre-Career Path Study Guide)

<https://learn.modern-developer.com/>

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# Introduction

You have enrolled in Learn.Modern Developer because you want to graduate as a proficient, accomplished, and ready-to-succeed modern web developer.

We are honored and grateful that you have chosen our program, and we are confident we can help you realize your goals. To do that, we have created a pioneering, comprehensive, and well-researched program. As you likely know, our program takes the best features from programming bootcamps, online universities, and MOOCs; excludes the worst parts of each; and adds new features that revolutionize the way people obtain an education online.

Below is our overall plan, and the first item on the list is this very study guide, a prerequisite that you must complete to learn the fundamentals of web programming and web development before your career path begins in the fall.

**Notice:** This study guide and all the resources it links to are free—no books, paid subscriptions, or paid content of any kind is necessary to complete it.

## Study Group

If you would like to join our semiofficial study group to get help as you work through this study guide, please email [enrollment@modern-developer.com](mailto:enrollment@modern-developer.com). The subject of your email must be “Join Study Group.”

## Assignment 1: Important Note for Every Student

During the first week of your career path, **you must answer five questions**. Your answers must be detailed, accurate, and clear, and the length of each answer should be between a

third of a page to a page. We will consult the material in this study guide and the resources to which the guide links, to formulate the questions. Each student will be given a set of five unique questions; that is, no two students will get the same **set** of questions.

# What You Need to Know Before You Start Your Career Path

## Career Path 5 Prerequisite

This study guide is for every career path except for Career Path 5 (Modern Fullstack Developer). If you are enrolled in Career Path 5 **as your first career path**, we will contact you to determine whether you meet the technical requirement. You must have at least three years of experience developing professional-grade JavaScript web applications for companies, to take Career Path 5 as your first career path. Remember, Career Path 1 covers mostly intermediate to advanced JavaScript and modern web development concepts, not just fundamental concepts.

## 1. HTML

### Know:

- HTML basic syntax and how to create a web page (links and images) with hand-coded HTML
- Basic HTML forms
- How to use the new HTML5 syntaxes (header, section, footer, article, etc.)
- How to add jQuery and JavaScript to your HTML page
- How to build a complete html web page with forms, links, CSS, jQuery, JavaScript, and images

## 2. CSS

### Know:

- How to comfortably write CSS rules on your own, without help from editors or frameworks
- Know selectors, including pseudo classes and attributes well
- Know the common units, including *em*, *rem*, *percentage*, and *px*
- How to modify font and lettering properties
- CSS Browser prefixes
- Floats and Box Model
- Positioning for elements (relative, absolute, and fixed)
- Borders, background, background image

**Note:** You need not know Bootstrap or any other similar HTML/CSS framework at this point. We will cover HTML/CSS frameworks in depth.

### 3. JavaScript

#### Know

- Operators (||, &&, +, -, =, ===, etc.), including unary, conditional, and inequality operators
- Data Types (Strings, Boolean, Numbers, Arrays, etc.) and Variables
- Conditionals, including *if*, *else*, *switch*
- Loops (*for* and *while*)
- String Manipulation (search, split, replace, etc.); reverse a string, convert string to array, search parts of a string
- Essential JavaScript Objects (create objects, edit objects, use objects, delete objects, etc.)
- Function definition and function expressions
- Basic regular expression (search and replace with regular expression)
- More objects (properties, methods, removing properties, serialization, etc.) and the global object
- How to get value from form fields
- Basic mouse events (click, mouse over, etc.)
- How to convert to the various types (e.g., string to number, string to boolean, number to string)
- Variable scope
- JavaScript *this*
- How to show the dates and time in different format (Tuesday, April 2, 2015; Wednesday at 5:00 pm, etc.)
- How to work with the entire DOM without jQuery (i.e., use only JavaScript methods and functions); for example `querySelector()`, `querySelectorAll()`, `matchesSelector()`, `element.parentNode`, etc.

### 4. jQuery

#### Know:

- How to add different versions of jQuery to the page
- Search, find, remove, update DOM elements
- Basic animation with `.show()`, `.hide()`, `.toggle()` etc.
- Retrieve and set form field values
- Submit form: AJAX
- Loading content via AJAX
- Basic mouse events (click, mouseover, etc.), trigger events, etc.

### 5. Practice Some Logic-Based Programming Projects

**Know:**

- Manipulate strings with JavaScript string methods
- How to logically execute a function to perform simple tasks (see week 4 exercises for more)

## 6. The Command Line

**Know:**

- How to use the command line to work with files and folders
- How the command line works on Windows, Mac, and Linux
- How to change file permission, issue command, and the like
- Install NVM (Node Version Manager) and Node.js
- How to work comfortably with the command line

## Study Guide: The Tutorials, Tracks, Lessons, and Reading Assignments

To learn the concepts and technologies we outlined above, you must complete the following.

# Week 1

## (Introduction to HTML and CSS )

1. **Basic HTML and CSS** ([codecademy.com](http://www.codecademy.com)):  
<http://www.codecademy.com/tracks/web>
2. **Essentials of a Building a Web Page** ([codecademy.com](http://www.codecademy.com)):  
<http://www.codecademy.com/skills/make-a-website>

## Week 2

### (Intro to JavaScript)

1. **JavaScript Basics** ([codecademy.com](https://www.codecademy.com)):  
[www.codecademy.com/tracks/javascript](https://www.codecademy.com/tracks/javascript)
2. **JavaScript/HTML/jQuery Interactive Website** ([codecademy.com](https://www.codecademy.com)):  
<http://www.codecademy.com/skills/make-an-interactive-website>
3. **Function Declarations and Expressions** ([JavaScript.info](https://javascript.info)):  
<http://javascript.info/tutorial/functions-declarations-and-expressions>
4. **Working with JavaScript Dates and Times** ([javascript.info](https://javascript.info)):  
<http://javascript.info/tutorial/datetime-functions>
5. **JavaScript Prototype** ([javascriptissexy.com](https://javascriptissexy.com)):  
<http://javascriptissexy.com/javascript-prototype-in-plain-detailed-language/>
6. **JavaScript *this*** ([javascriptissexy.com](https://javascriptissexy.com)):  
<http://javascriptissexy.com/understand-javascripts-this-with-clarity-and-master-it>
7. **JavaScript Objects** ([javascriptissexy.com](https://javascriptissexy.com)):  
<http://javascriptissexy.com/javascript-objects-in-detail/>

## Week 3

### (Intro to jQuery)

1. **Intro to jQuery** ([codecademy.com](http://codecademy.com)):  
<http://www.codecademy.com/tracks/jquery>
2. **Some Important jQuery Methods** ([code.tutsplus.com](http://code.tutsplus.com)):  
<http://code.tutsplus.com/tutorials/20-helpful-jquery-methods-you-should-be-using--net-10521>



## Week 4

### (Logic: JavaScript Programming Exercises)

The following programming exercises are just to get you familiar with solving logic problems and programming problems. Don't worry yourself too much if you find the problems too difficult. You will likely need help with many of them. Fortunately, **our study group leaders are well prepared and waiting to help you with them.**

Complete the following JavaScript exercises.

1. **Ling.gu.se:** Write a function *findLongestWord()* that takes an array of words and returns the length of the longest word.
2. **Ling.gu.se:** Define a function *sum()* and a function *multiply()* that sums and multiplies (respectively) all the numbers in an array of numbers. For example, *sum([1,2,3,4])* should return 10, and *multiply([1,2,3,4])* should return 24.
3. **Ling.gu.se:** Create an expression using both *Math.random* and *Math.floor* to generate a random integer between two variables, high and low, where high is greater than low.
4. **Ling.gu.se:** Write a function named *evaluateExpression()*, that takes three arguments: two operands and an operator, and returns the number that results from applying the operator to the operands. For example: *evaluateExpression(5, 7, '+')*.
5. **W3Resource.com:** Write a JavaScript program that accepts a number as input and insert dashes (-) between each two even numbers. For example if you accept 025468 the output should be 0-254-6-8.  
[Solution](#)
6. **W3Resource.com:** Write a JavaScript program that accepts a string as input and swap the case of each character. For example if you input 'The Quick Brown Fox' the output should be 'tHE qUICK bROWN fOX'.  
[Solution](#).
7. **W3Resource.com:** Write a JavaScript program to convert temperatures to and from celsius, fahrenheit.[ Formula :  $c/5 = f-32/9$  [ where c = temperature in celsius and f = temperature in fahrenheit ] Expected Output : 60°C is 140 °F 45°F is 7.222222222222222°C

[Solution.](#)

8. **W3Resource.com:** Write a JavaScript program to find the most frequent item of an array. *Sample array* : `var arr1=[3, 'a', 'a', 'a', 2, 3, 'a', 3, 'a', 2, 4, 9, 3];` *Sample Output* : a ( 5 times ).

[Solution](#)

9. **W3Resource.com:** Write a JavaScript function to remove specified number of characters from a string. Test Data : `console.log(truncate_string("Robin Singh",4));` "Robi"

[Solution.](#)

10. **Complete the first thirteen programing challenges at the link below:**

<http://coderbyte.com/CodingArea/Challenges/>

## Week 5

### (Getting Started with the Command Line)

1. **Command Line Basics Part 1** ([techspot.com](http://techspot.com)):  
<http://www.techspot.com/guides/835-linux-command-line-basics/>
2. **Command Line Basics Part 2:**  
<http://www.techspot.com/guides/844-linux-command-line-part-ii/>
3. **More Command Line Basics:**  
<http://cli.learncodethehardway.org/book/>
4. **Bonus. Install NVM (Node Version Manager) and Node.js** ([keymetrics.io](http://keymetrics.io)):  
<https://keymetrics.io/2015/02/03/installing-node-js-and-io-js-with-nvm/>
5. **Bonus 2.** Sign up for a cheap or free web hosting account and use an FTP app to upload files to your account.

That's it.