JavaScript Programming

Duration: 5 Days *(Face-to-Face & Remote-Live)*, or 35 Hours *(On-Demand)*

Price: $2495 *(Face-to-Face & Remote-Live)*, or $1495 *(On-Demand)*

Discounts: We offer multiple discount options. Click here for more information.

Delivery Options: Attend face-to-face in the classroom, remote-live or on-demand training.

Students Will Learn

- Creating and using variables
- Working with primitive data types
- Creating custom objects
- Using event handlers to handle user-triggered events
- Defining and invoking functions
- Using conditional constructs and loops
- Debugging JavaScript code
- Using arrow functions
- Including JavaScript in a Web page
- Using the Document Object Model (DOM) to access the HTML elements on the page dynamically
- Using JavaScript objects effectively, including the `window` object and the `navigator` object
- Performing pattern matching with regular expressions
- Validating a form
- Using Geolocation and Web Storage JavaScript APIs
- Working with JSON objects
- Using Ajax to make asynchronous calls to a Web server

Course Description

JavaScript is a scripting language that is commonly used to create and control dynamic Website content along with its use in the Node.js runtime. This hands on JavaScript training course provides the fundamental knowledge necessary to design and develop dynamic Web pages using JavaScript and to be able to grasp JavaScript libraries and frameworks such as jQuery, React and Angular. Students will learn the syntax of the JavaScript language and how to use JavaScript in a Web browser.

Topics include ways to declare variables, use of intrinsic JavaScript objects such as Math, Date and Array, declaring and calling functions, defining custom objects, error handling, working with arrow functions, and using conditional logic. Students will learn how to include JavaScript in a Web page and how to use browser-based APIs such as the Document Object Model (DOM), Geolocation and Web Storage. Upon completion students will be able to utilize event handling, form validation, JSON and Ajax.

Comprehensive hands on exercises are integrated throughout to reinforce learning and develop real competency.

Course Prerequisites

Basic computer skills and knowledge of HTML fundamentals including use of Cascading Style Sheets is recommended, but not required. The Website Development with HTML5, CSS and Bootstrap course provides a thorough introduction into the creation of a Website using HTML and CSS.

Course Overview

Overview of the JavaScript Language

- Typical Uses of JavaScript
- Evolution of the JavaScript Language
- ECMAScript Version Support
- What is Core JavaScript?
- What are JavaScript APIs?
- Writing JavaScript in Visual Studio Code

JavaScript Fundamentals

- Using Strict Mode
- JavaScript and Whitespace
- Adding Comments
- Declaring Variables
  - `var`, `let` and `const` Keywords
  - Local vs. Global Variables
  - Declaring Block-Scoped Variables
- JavaScript DataTypes
  - Primitive Types
  - Objects
- Performing Data Conversions
- Working with JavaScript Operators
  - Assignment Operators
  - Type Operators
  - Bitwise Operators
  - Conditional Operator
- Working with Dates

Working with Numeric Data

- Solving Precision Problems with Numbers
- Rounding Numbers
- Creating Random Numbers
- Arithmetic Operation
- Working with Exponents
- Converting to Numbers
  - `parseInt`, `parseFloat` and `Number` Functions

Dealing with Errors

- Types of JavaScript Errors
- Error Handling
  - `try`
  - `catch`
  - `finally`
- Throwing Custom Errors with `throw`

Controlling Flow

- Creating Boolean Expressions
  - Using Standard and Strict Equality Operators
  - Using Logical and Comparison Operators

Working with Arrays

- Creating Arrays
  - Using the Array Constructor
  - Using Literal Notation
  - `String.split()`
  - `Array.of()`

- Conditional Constructs
  - `if else`
  - `switch`
- Looping Constructs
  - `do while`
  - `while`
  - `for`
  - `for in`
  - `for…of`
- Branching Statements
  - `break`
  - `continue`
  - Using Labels

Working with Strings

- Creating String Objects
- Using String Methods
  - Searching within a String
  - Returning a Substring
  - Converting Character Case
- Template Literals
- Escape Sequences

Using JavaScript in the Browser

- Embedding JavaScript in a Page
- Referencing an External Script File
- Using the JavaScript Console
  - Logging Messages in the Console
  - Debugging with Console
- Deferring Script Loading
- Where to Include JavaScript
- `DOMContentLoaded` vs Load Events

Introduction to the Document Object Model (DOM)

- Overview of Common DOM Types
- Selecting DOM Elements

- Accessing Array Elements
- Common Array Methods
  - `forEach()`
  - `includes()`
  - `find()` and `findIndex()`
- Adding and Removing Elements
- Sorting Arrays
  - Creating a Custom Sort Function
- Looping through an Array

Implementing Functions

- Declaring Functions
- Function Parameters
  - Default Parameters
  - Rest Parameters
- Invoking Functions
  - Passing Arguments
  - Spread Operator
- Named and Anonymous Functions
- Local vs. Global Variables
- Returning Values from a Function
- The `this` Keyword
- IIFEs
- Closures
- Callback Functions
- Arrow Functions

Browser Object Model

- Overview of the Browser Object Model
- Using the `window` Object
  - Opening and Closing Windows
  - Using Timers
  - Interacting with the User with Dialogs
- Using the document Object
  - Writing to the Web Page
  - Useful Properties of the Document
- `navigator` Object
- Feature detection
- `location` Object
- `screen` Object

Event Handling in JavaScript

- Overview of JavaScript Events
  - The `event` Object Members
  - Event Capturing and Bubbling

    - Selecting Elements By Id and Name
    - Selecting Elements By Class
    - Using CSS Selectors to Select Elements
- Modifying Page Content with the DOM
    - `innerHTML` and `textContent` Properties
    - `createElement`
    - `createDocumentFragment`
- Accessing Attributes
- Adding Event Handlers
    - Traditional (Inline) Model
    - Registering Events in JavaScript
    - Adding Multiple Handlers with `addEventListener`
- Mouse and Keyboard Events
- Preventing Default Behavior
- Canceling Events

Scripting CSS with JavaScript

- Using the style Property
- `CSSStyleDeclaration` Objects
- `getComputedStyle`
- Modifying Classes with the `classList` API

Working with Forms

- Enhancing Forms with JavaScript
    - Preventing a Double Submission
    - Selecting All Checkboxes
    - Conditionally Showing Fields
- Working with Form Elements

Form Validation

- Client-Side vs Server-Side Validation
- Validating Form Fields
    - Checking Required Fields
    - Checking Length of Input
- Overview of HTML 5 Validation
- Constraint API
- Canceling Form Submission

Using Regular Expressions

- Overview of Regular Expressions
- Using Regular Expressions in JavaScript
    - Creating a RegExp Object
    - Using `i` and `g` Flags
- Pattern Matching with Regular Expressions
- Using Backreferences

Working with JavaScript Objects and JSON

- Understanding Objects
- Defining Custom Objects
    - Object Literal Notation
    - Defining Properties and Methods
    - Creating a Constructor
- Using the `in` and `instanceof` Operators
- Overview of JSON
- Using `JSON.stringify` and `JSON.parse`

Using Ajax

- Overview of Ajax
- The `XMLHttpRequest Object`
- Configuring an Ajax Request
- Processing JSON with Ajax
- Using Ajax to Call a Web Service

HTML5 JavaScript APIs

- Overview of APIs
- Using Modernizr
- Geolocation API
    - Using the `getCurrentPosition()` Method
    - The Position Object
- Using the Google Maps JavaScript API

- Obtaining an API Key
    - Creating a Map
    - Adding Custom Markers to a Map
    - Adding Info Windows to a Map
- Web Storage API
- Local Storage
- Session Storage

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