JavaScript Programming

In this hands-on JavaScript training course, students will learn the basics of JavaScript syntax from variables and arrays to conditionals and loops. They will also learn how to use built-in objects and functions as well as how to create their own functions. Form validation is covered both at an introductory level as well as using Regular Expressions. Finally, students will learn to use JavaScript to manipulate CSS styles on the fly in response to user interaction.

Course Objectives:

- Effectively use JavaScript syntax to create dynamic web pages.
- Manipulate and retrieve information from objects in the HTML DOM.
- Use event handlers to call JavaScript code to react to user input.
- Create variables and arrays to hold your program data.
- Create functions to modularize your JavaScript programs.
- Use the built-in String, Math, and Data JavaScript objects.
- Control the flow of your programs with loops and conditionals.
- Create roll-over images with JavaScript.
- Use Regular Expressions to validate forms.
- Create dynamic forms.
- Dynamically manipulate the DOM tree.

Audience: Students wishing to learn JavaScript to create dynamic websites.

Prerequisites: HTML experience is required. Programming experience in a high-level language is required. Basic CSS knowledge is helpful.

Number of Days: 4 days

1 JavaScript Basics
The Name "JavaScript"
The HTML DOM
JavaScript Syntax
Dot Notations
Square Bracket Notation
Where Is JavaScript Code Written?
Methods
Properties
The Implicit window Object
The getElementsById() Method
Event Handlers

2 Variables, Arrays and Operators
JavaScript Variables
A Loosely-Typed Language
Storing User-Entered Data
Arrays
Associative Arrays
Array Properties and Methods
JavaScript Operators

3 JavaScript Functions
Number(object)
String(object)
isNaN(object)
parseFloat() and parseInt()
Built-in Functions vs. Methods
Function Syntax
Passing Values to Functions
Returning Values from Functions

4 Built-In JavaScript Objects
String
Math
Date
typeof Operator

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5 Conditionals and Loops
if - else if - else Conditions
Switch / Case
while Loop Syntax
do...while Loop Syntax
for Loop Syntax
for...in Loop Syntax

6 JavaScript Form Validation
Accessing Form Data
Basics of Form Validation
The this Object
Cleaner Validation
Validating Radio Buttons
Validating Checkboxes
Validating Select Menus
Focus, Blur, and Change Events
Validating Textareas

7 Images, Windows, and Timers
Image Rollovers
Preloading Images
Creating a Slide Show
Windows
Timers
Popup Timed Slide Show

8 Navigator, History, and Location Objects
The navigator Object
Feature Detection
The history Object
The location Object
Creating a Simple Quiz

9 Advanced Techniques
Optional Function Arguments
Truthy and Falsy
Default Operator
Functions Passed as Arguments
Anonymous Functions
Inner Functions
Observing and Capturing Events
The eval() Function
Variable Scope
Error Handling
The delete Operator

10 Regular Expressions
Getting Started
JavaScript's Regular Expression Methods
Flags
String Methods
Regular Expression Syntax
Start and End (^$)
Number of Occurrences (.\d \D \w \W \s \S)
Grouping ([])
Negation (^)
Subpatterns (( ))
Alternatives (|)
Escape Character (\ )
Backreferences
Form Validation with Regular Expressions
Cleaning Up Form Entries

11 The HTML Document Object Model
innerHTML
Accessing Element Nodes
getElementByld()
getElementsByTagName()
getElementsByClassName()
querySelectorAll()
querySelector()
Accessing Element and Text Nodes Hierarchically
Attaching Events
Accessing Attribute Nodes
Accessing Nodes by Type, Name or Value
Removing Nodes from the DOM
Creating New Nodes
Identifying the Target of an Event

12 Dynamic Forms
Jump Menus
Adding Options to a Select Menu
Cascading Select Menus
Creating a JavaScript Timer

13 Dynamic HTML
Introduction
Accessing and Modifying Styles

JavaScript style Properties
Hiding and Showing Elements
Manipulating Tables
Dynamically Changing Dimensions
Creating a Timed Slider
Positioning Elements Dynamically
Creating a Different Timed Slider
Changing the Z-Index
A Note on JavaScript Frameworks

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