JavaScript Programming for Programmers

Audience

This is a serious programming course for those who want to gain a full understanding of the powerful programming language of JavaScript. You should have a strong understanding of programming, and have a basic familiarity with HTML and JavaScript. If you are comfortable creating web pages by writing HTML code, proficient with both Internet Explorer and Navigator, and have at least tried to use other people's scripts in your web pages, then you are well matched to the prerequisites for this course. Programming experience in another language is required.

Description

The course uses a combination of lecture, hands-on practice, and independent exercises to teach students to write JavaScript programs that use the latest language techniques (version 1.5). Students will also learn how to write programs that are compatible with previous versions of the language and are cross-platform compatible.

Objectives

Upon completion of the course, students should be able to:

- Apply fundamental JavaScript scripting techniques by creating simple JavaScript scripts, interacting with browser error-handling features, testing JavaScript syntax, detecting the use of different language components, and evaluating coding best-practices guidelines.
- Interact with JavaScript variables and operators by examining data types and variable types supported by JavaScript; testing rules governing the creation, use, and manipulation of data types and variables; and testing the operators that manipulate data.
- Control the logical flow of your programs by writing scripts that use control structures.
- Create and use functions, examine object characteristics, use objects, instantiate objects, and create custom objects.
- Interact with the Window object by displaying and manipulating status bar messages, and manipulating browser windows (including opening and closing them).
- Interact with the Document object by entering code to write text to a document loaded in the browser window, creating dynamic documents, and examining incompatibility issues.
- Apply techniques for creating frameset documents, and access frames and the objects contained in them.
- Interact with the Form object by reading data from and writing data to form elements.

- Interact with the String and RegExp objects by using String object methods to correct common data entry errors, creating dynamic text effects by using substring methods, and building RegExp expressions to test and validate string values.
- Craft functionality that validates form data by building the main architecture for the form validation process, creating code that tests individual form elements, creating functions that prepare data for validation and display a dynamic validation report, and creating code that validates radio, checkbox, and select list objects.
- Use and manipulate instances of the Date object, and perform mathematical calculations with Math object methods.

Recognize potential coding problems in a cross-browser environment by examining the compatibility landscape and techniques for dealing with incompatibilities, and by using browser detection to create code that works around platform incompatibilities.

Length 3 days

I. Getting Started

A. JavaScript Overview

B. JavaScript Programming Basics

II. Variables and Operators

A. Variables and Data Types

B. Using Variables and Literals

C. Operators

III. Control Statements

A. Controlling the Flow: JavaScript Control Statements

IV. Functions and Objects

A. Functions

B. Objects

V. The Window Object

A. The Window Object

B. Dialog Boxes

C. Status Bar Messages

D. Window Manipulations

VI. The Document Object

A. The Document Object

B. Writing to Documents

C. Dynamic Documents

VII. Frames

A. HTML Frames Review

B. Scripting for Frames

VIII. Forms and Forms-based Data

A. The Form Object

B. Working With Form Elements and Their Properties

IX. The String and RegExp Objects

A. The String Object

B. Using String Object Methods to Correct Data Entry Errors

C. Creating Dynamic Effects With Substring Methods

D. The RegExp Object

X. Form Validation

- A. Form Validation: A Process
- B. Testing Data
- C. Preparing Data for Validation and Reporting Results
- D. Validating Non-text Form Objects

XI. Dates and Math

- A. The Date Object
- B. Using and Manipulating Dates
- C. The Math Object
- D. Doing Math With JavaScript

XII. Cross-browser Compatibility

- A. Examining the Compatibility Landscape
- B. Detecting Browsers and Platforms

Appendix A: Browser-specific Dynamic Documents

- A. The Document Object Model

Appendix B: Other Form Validation Techniques

- A. A Non-RegExp Object Approach