

Javascript – Course Outline

1 Duration

3 days

2 Objectives

Web client-side Programming in Javascript with Object oriented programming and ES6 constructs

3 Audience

This course is for Front End developers

4 Pre-requisite

- Prior knowledge on Javascript basics

5 Hardware & Network Requirements

- All participants to have individual desktops/laptop with multi core CPU and 8GB RAM
- All participants' system to be connected to internet with good speed

6 Software Requirements

- Windows / Mac /Linux OS
- Visual Studio Code
- Web browser – Mozilla Firefox with firebug, Google Chrome

7 Outline

Module 1: Javascript Functional Programming Concepts

JavaScript Programming Language Constructs Recap

JavaScript Functions

- Invocation, Overloading, The Arguments Object, Recursion
- Different ways of declaring the functions
- Nested / inner functions
- Named functions
- Anonymous functions
- Function as singleton object
- Assigning functions to variables (named and anonymous)
- Event Driven Programming
- Callbacks and Closures

Functions as Object

- A blank generic object `//var obj = {};`
- Similarities between objects and functions
- Caching return results from function
- Function as an object property
- Global object
- Changing the context of a function
- Different ways of changing the context – call, apply
- Implement looping with a callback

Closures

- Basic Closure
- Callback functions, timers, event listeners using closures
- Private properties
- Self-executing, temporary function
- Closures and looping
- Anonymous wrapper functions for wrapping libraries

Module 2: Javascript Object Oriented Programming Concepts

Instantiating Objects

- Use “new” operator
- Use “this” operator within the object
- Add a new property and method to the object
- Using instanceof
- Using arguments.callee
- Variable arguments – using arguments.length
- Creating (Array().slice) array objects and working with arrays methods
- Modifying Array.prototype, add methods to array (Array.method)
- Exception handling

Function Prototypes and OOPs

- Augmenting Types (Function.prototype)
- Adding prototyped method to a function
- Overriding prototyped properties
- Chainable methods
- Using typeof, instanceof, constructor
- Writing default constructor
- Understand prototypal inheritance
- Modifying built-in prototypes
- Potential pitfalls that occur in extension
- Associate context to the original object
- Enforce context to all functions
- Use .bind method from prototype.js
- Determine function's argument length
- Method overloading
- Declaring private members
- Javascript Object Notation: JSON
- Marshalling and Unmarshalling JSON Data

Module 3: Working with ES6 and Classes

Working with ES6

- Working with Let and Const
- Working with Spread Operators
- Working with Rest Operator
- String Literals
- Working with Arrow Functions
- Cloning Object and Arrays
- Export and Import Modules
- Array Functions

Working with Classes

- Understanding Classes with ES6
- Adding properties to classes
- Adding Functions to Classes
- Inheritance in Classes
- Static Members
- ES6 to JavaScript Prototype
- Using the "super" keyword

Module 4: Working with HTML DOM and BOM

Accessing and manipulating HTML DOM and Browser Object Model (BOM)

- BOM: Windows methods and events
- Window objects – navigator, frames, location, history, document, screen
- Document API
- Accessing nodes hierarchically, by type, name and value
- Attaching and Detaching events
- Event propagation: capturing and bubbling
- Accessing attribute nodes
- Creating, deleting nodes in the DOM
- Identifying the target of an event
- Javascript – cross browser support in a matrix