Introduction to Responsive Web Development with AngularJS and Bootstrap (3 Days)

This training course introduces the student to the AngularJS framework, and to modern concepts of the Responsive Design using CSS, media queries and the Bootstrap framework.

AngularJS makes applications easier to develop and test, but students often find that AngularJS is quite different from traditional web applications. The training course boils down the differences and provides a quick and efficient introduction to the AngularJS framework. Starting with an overview of the advanced JavaScript underpinnings of AngularJS, we use labs and examples to train the student to use AngularJS in modern responsive web applications.

Course Objectives: In this training, attendees will learn how to:

- Create single page web applications using the MVC pattern of AngularJS
- Understand the programming model provided by the AngularJS framework
- Define Angular controllers and directives
- Control Angular data bindings
- Implement Responsive Web Applications with AngularJS

Prerequisites: Attendees should have some prior understanding of web development, HTML, AJAX, and JavaScript.

Course Outline

Chapter 1. Advanced Objects and Functionality in JavaScript

- Basic Objects
- Constructor Function
- More on the Constructor Function
- Object Properties
- Deleting a Property
- The instanceof Operator
- Object Properties
- Constructor and Instance Objects
- Constructor Level Properties
- Namespace
- Functions are First-Class Objects
- Closures
- Private Variables with Closures
- Immediately Invoked Function Expression (IIFE)
- Prototype
- Inheritance in JavaScript
- The Prototype Chain
- Traversing Prototype Property Hierarchy
- Prototype Chain
- Inheritance Using Prototype
- Extending Inherited Behavior
- Enhancing Constructors
- Improving Constructor Performance
- Inheritance with Object.create

- The hasOwnProperty Method

Chapter 2. Introduction to AngularJS

- What is AngularJS?
- Why AngularJS?
- Scope and Goal of AngularJS
- Using AngularJS
- A Very Simple AngularJS Application
- Building Blocks of an AngularJS Application
- Use of Model View Controller (MVC) Pattern
- A Simple MVC Application
- The View
- The Controller
- Data Binding
- Basics of Dependency Injection (DI)
- Other Client Side MVC Frameworks

Chapter 3. AngularJS Module

- What is a Module?
- Benefits of Having Modules
- Life Cycle of a Module
- The Configuration Phase
- The Run Phase
- Module Wide Data Using Value
- Module Wide Data Using Constant
- Module Dependency
- Using Multiple Modules in a Page

Chapter 4. AngularJS Controllers

- Controller Main Responsibilities
- About Constructor and Factory Functions
- Defining a Controller
- Using the Controller
- Controller Constructor Function
- More About Scope
- Example Scope Hierarchy
- Using Scope Hierarchy
- Modifying Objects in Parent Scope
- Modified Parent Scope in DOM
- Handling Events
- Another Example for Event Handling
- Storing Model in Instance Property

Chapter 5. AngularJS Expressions

- Expressions
- Operations Supported in Expressions
- AngularJS Expressions vs JavaScript Expressions
- AngularJS Expressions are Safe to Use!
- What is Missing in Expressions
- Considerations for Using src and href Attributes in Angular
- Examples of ng-src and ng-href Directives

Chapter 6. Basic View Directives

- Introduction to AngularJS Directives
- Controlling Element Visibility
- Adding and Removing an Element
- Dynamically Changing Style Class
- The ng-class Directive
- Example Use of ng-class
- Setting Image Source
- Setting Hyperlink Dynamically
- Preventing Initial Flash

Chapter 7. Advanced View Directives

- The ng-repeat Directive
- Example Use of ng-repeat
- Dynamically Adding Items
- Special Properties
- Example: Using the $index Property
- Scope and Iteration
- Event Handling in Iterated Elements
- The ng-switch Directive
- Example Use of ng-switch
- Inserting External Template using ng-include

Chapter 8. Working with Forms

- Forms and AngularJS
- Scope and Data Binding
- Role of a Form
- Using Input Text Box
- Using Radio Buttons
- Using Checkbox
- Using Checkbox - Advanced
- Using Select
- Using Select – Advanced
- Disabling an Input
- Reacting to Model Changes in a Declarative Way
- Example of Using the ng-change Directive

Chapter 9. Formatting Data with Filters in AngularJS

- What are AngularJS Filters?
- The Filter Syntax
- Angular Filters
- More Angular Filters
- Using Filters in JavaScript
- Using Filters
- A More Complex Example
- The date Filter
- The date's format Parameter
- Examples of Using the date Filter
- The limitTo Filter
- Using limitTo Filter
- Filter Performance Considerations
- Summary

Chapter 10. AngularJS $watch Scope Function

- The $watch Function
- The $watch Function Signature
- The $watch Function Details
- Canceling the Watch Action
- Example of Using $watch
- Things to be Aware Of
- More Things to Be Aware Of
- Performance Considerations
- Speeding Things Up

Chapter 11. Communicating with Web Servers

- The $http AngularJS Service
- The Promise Interface
- The $http Service
- $http Function Invocation
- Callback Parameters
- Request Configuration Properties
- Shortcut Methods
- Complete List of Shortcut Methods
- Using $http.get()
- Working with JSON Response
- Using $http.post()
- Combining $http POST Request Data with URL Parameters
- The then() Method of the Promise Object
- The Response Object
- Making Parallel Web Service Calls
- Combining Multiple Promises into One
- Wait for the Combined Promise
- Setting Up HTTP Request Headers
- Caching Responses
- Disabling Caching in IE9
- Setting the Request Timeout
- Unit Testing with ngMock
- Writing Unit Tests

Chapter 12. Custom Directives

- What are Directives?
- Directive Usage Types
- Directive Naming Convention
- Defining a Custom Directive
- Using the Directive
- Scope of a Directive
- Isolating Scope
- Example Scope Isolation
- Using External Template File
- Manipulating a DOM Element
- The Link Function
- Event Handling from a Link Function
- Wrapping Other Elements
- Accepting a Callback Function
- Supplying Callback Function

Chapter 13. AngularJS Services

- Introduction to Services
- Defining a Service
- The factory() Method Approach
- The service() Method Approach
- The provider() Method Approach
- Using a Service
- Configuring a Service using its Provider

Chapter 14. Introduction to CSS3

- What is a Style?
- What are Cascading Style Sheets?
- CSS and the Evolution of Web Development
- The CSS Standardization Process
- CSS and HTML
- CSS Compatibility
- CSS Rules
- New in CSS3

Chapter 15. Applying CSS Styles

- Inline Styles
- Embedded Styles
- External Styles
- Selectors
- Combinator Selectors
- Universal Selector
- Style Classes
- Pseudo-Classes
- Inheriting From a Parent
- Declaring !important Styles
- CSS Cascade Order

Chapter 16. Box Model and Effects

- Element Box Model
- Parts of the Box Model
- Setting Width and Height
- IE Box Size Bug
- Controlling Flow in Position
- Hiding Content
- Overflowing Content
- Floating Elements
- Using Float for Multiple Columns
- Margins
- Padding
- Border
- Outline
- CSS 3 - Rounding Border Corners
- CSS 3 - Using a Border Image
- Border Image Example

Chapter 17. Introduction to Responsive Web Design

- What is Responsive Web Design?
- Mobile Browsers Quirks
- Other Mobile Web Considerations
- Primary Responsive Design Techniques
- Elements of Responsive Design
- Example of Responsive Design
- Responsive Page Design Schematic
- Alternatives to Responsive Design

Chapter 18. CSS 3 and Responsive Web Design

- Progressive Enhancement
- Implementing Progressive Enhancement
- Media Types
- CSS Style "Reset"
- Conditional Styles for Internet Explorer
- What is the Viewport?
- Adapting the Viewport
- Specifying the Viewport
- Media Queries
- Media Features Used in Media Queries
- Combining Responsive Design Techniques
- Testing Responsive Design

Chapter 19. Responsive Web Page Layout

- The Main Layout Types
- Responsive Layouts
- Popular Layout Patterns
- The 'Mostly Fluid' Layout Pattern
- The 'Column Drop' Layout Pattern
- The 'Layout Shifter' Pattern
- Other Layout Techniques
- Getting Content Fillers
- The Float CSS Property
- Combining CSS Styles
- The Simple Fluid Layout Example
- The Simple Fluid Layout Technique
- The Results
- Font Size Units
- Pixel-Sized vs Em-Sized
- Font Size Unit Relationships
- Pixels to Em Conversion Formula
- Other Considerations
- Looking into the Future

Chapter 20. Responsive Images

- Responsive Images
- Performance Considerations
- Shrinking Images
- Traditional Image Handling Techniques
- Media Queries Don't Always Help With Performance
- A "Fluid" Pixel
- The Device Viewports
- CSS Pixels
- The Power of Simplicity
- Sencha.io Src Images Cloud Service
- Sencha.io Src Diagram
- How it Works
- Sencha.io Src API
- Sencha.io Src API Details
- Sencha.io Src API Details Cont'd
- Examples of Sencha.io Src API
- Rolling Out Your Own Cloud Image Manipulation Service
- The Picture Element
- The srcset Attribute
- More on the srcset Attribute
- Examples of the srcset Attribute
- What is Picturefill?
- Using Picturefill

Chapter 21. Bootstrap Overview

- Bootstrap History
- Current Status
- Responsive Web Development
- Responsiveness
- Why it Matters
- Download Bootstrap
- Contents
- How it works
- Bootstrap Content Development Network
- Using Bootstrap
- Mobile First
- Features
- LESS
- Responsive Grid Layout
- Reusable GUI Components
- JavaScript

Chapter 22. Using Bootstrap

- Including Bootstrap CSS Files
- Including Bootstrap JavaScript Files
- Viewport Meta Tags
- Example
- Layouts
- Grid
- Grid Source
- Grid Explained
- Navigation
- Navigation (Desktop)
- Navigation (Mobile)
- Navigation Source
- Navigation Explained
- Navigation Elements and Styles
- Glyphicons