



# JavaScript: AngularJS Programming

Course ID#: 1260-705-ZZ-W

Hours: 21

## Course Content

### Course Description:

AngularJS training introduces the AngularJS framework, which has become a popular JavaScript framework for the development of "single page" Rich Internet Applications. The AngularJS framework augments applications with the "model-view-controller" pattern which makes applications easier to develop and test because there is a separation of responsibilities within the code. Although there are many benefits to using the AngularJS framework it is fairly different than the way "typical" web applications involving JavaScript have been designed. This AngularJS training course will provide an introduction to the benefits of AngularJS, so course participants can start to develop responsive applications quickly using the framework.

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.

### Topics:

#### Module 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
- Closure Examples
- 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



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- Inheritance with Object.create
- The hasOwnProperty Method

## Module 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

## Module 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

## Module 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

## Module 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

## Module 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

## Module 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

## Module 8: Working with Forms

- Forms and AngularJS
- Scope and Data Binding
- Role of a Form
- Using Input Text Box



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- 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

## Module 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

## Module 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

## Module 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

## Module 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

## Module 13: AngularJS Services

- Introduction to Services
- Defining a Service



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

## Module 14: Unit Test Using Jasmine

- Introduction to Node.js
- What is Jasmine?
- Running Jasmine
- Jasmine Folder Structure
- Running Tests
- Example Explained
- End-to-End Testing with Protractor
- Writing E2E Test with Protractor New in CSS3

## Module 15: Introduction to Single Page Application

- What is a Single Page Application (SPA)?
- How is it Any Different?
- Why Create SPA?
- It's Not All or Nothing
- Challenges to SPA
- Implementing SPA Using AngularJS
- Simple SPA Using Visibility Control
- Dynamic Templates Using ng-include
- Example of Dynamic Template
- SPA Using the \$route Service

## Module 16: The Route Service

- Introduction to the Route Service
- Downloading the Route Service Code
- Using the Route Service
- Setting up the Route Table
- URL Fragment Identifier
- Showing the Views
- Navigation
- The \$location Service
- Programmatic Navigation
- Controllers for the Views
- Example Controllers for Views

- Passing URL Parameters
- Accessing Query Parameters
- Configuring Route Parameters
- Accessing Route Parameters
- HTML5 Mode
- Using the HTML5 Mode
- Bookmarking HTML5 Mode URL

## Module 17: Advanced Form Handling

- Introduction to Form Validation
- Validation and Model Binding
- Input Type Validation
- Validation Directives
- A Note About "required"
- Detecting Validation State
- Showing Error Message
- Other Status Variables
- Styling Input Fields
- Styling Other Areas

## Module 18: the Promise API

- Introduction
- The Core API
- Waiting for Multiple Ajax Calls
- Changing Result Data
- Promise Chaining
- Caching Ajax Calls in Memory
- Cache Ajax Calls on Disk
- Caveat

## Lab Exercises

- Lab 1. Setting Up the Lab Environment
- Lab 2. Objects in JavaScript
- Lab 3. Getting Started with AngularJS
- Lab 4. MVC with AngularJS
- Lab 5. AngularJS Expressions
- Lab 6. Working with Class and Style Directives
- Lab 7. The ng-repeat Directive
- Lab 8. Working with Form Inputs
- Lab 9. Data Formatting with Filters



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- Lab 10. Using the \$watch Function
- Lab 11. Communicating with Web Servers
- Lab 12. Reading Complex Data Sets From Web Servers
- Lab 13. Custom Directives
- Lab 14. Creating and Using Services
- Lab 15. Testing
- Lab 16. Basic Single Page Application (SPA)
- Lab 17. Using the Route Service
- Lab 18. Form Validation
- Lab 19. Server Side Input Validation
- Lab 20. Ajax Caching