

Introduction to Angular 7

Course Summary

Description

Use Angular 7 to easily build web applications that interacts with the user by dynamically rewriting the current page rather than loading entire new pages from a server. Learn how to build these applications using the newest JavaScript language features by leveraging ES6, TypeScript, and modern front-end tools including npm and Webpack. Understand application architecture and design best practices in Angular. Get up to speed on how to authenticate, unit test, and manage application state in an Angular application.

Objectives

After taking this course, students will be able to:

- Understand how single-page web application architectures are different than traditional web application architectures
- Use new JavaScript (ES6) language features including Classes, Modules, and Arrow Functions
- Use new TypeScript language features including Types, Decorators, Interfaces, and Generics
- Learn Angular coding and architecture best practices including project layout and using container and presentation components
- Understand and use Angular model-driven forms, observables, dependency injection, and routing
- Communicate with a backend server using Angular's HttpClient to load and save data
- Configure the router and navigate between components
- Unit test all parts of an application including Components, Services, and Pipes
- Understand RxJS and Observables and where they can be used
- Implement Authentication and Authorization in an Angular Application
- Optimize Angular Performance by changing Change Detection Strategies
- Setup new projects from scratch using the Angular CLI
- Scaffold modules, components, services, models, routes, and unit tests in accordance with best practices using the Angular CLI
- Build and deploy an application to production using the Angular CLI
- Write End-to-End Tests (optional; taught only if this applies to your group)
- Upgrade an existing application from AngularJS to Angular 7 (optional; taught only if this applies to your group)

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Course Summary (cont.)

Topics

- Overview
- TypeScript and ECMAScript 6 (ES6) Fundamentals
- Your First Angular Application
- Angular Modules (NgModule)
- Angular CLI
- Data Binding
- Directives
- Pipes
- Components
- Services & Dependency Injection
- Dependency Injection
- Model-driven Forms (Reactive Forms)
- Communicating with the Server using the HttpClient Service
- Router
- Deploying an Angular Application to Production
- Angular 7
- Angular Roadmap for the Future

Prerequisites

All Angular training students must have substantial prior experience developing with JavaScript. If attendees will not have prior JavaScript experience, we would be delighted to precede this class with a one- or two-day intensive JavaScript primer.

Duration

Three Days

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Course Outline

I. Overview

- A. Benefits of Building using Angular
- B. Understanding Angular Versions
- C. Single-page Web Application Architectures vs. Traditional Server-side Web Application Architectures
- D. Angular Style Guide
- E. Angular Architecture
- F. Angular Compared to other JavaScript Libraries and Frameworks (React, VueJS, etc...)

II. TypeScript and ECMAScript 6 (ES6) Fundamentals

- A. TypeScript Installation, Configuration & Compilation
- B. Type Annotations
- C. Classes
- D. Scoping using let, var, and const Keywords
- E. Arrow Functions
- F. ES Modules
- G. Decorators
- H. Template Literals
 - I. Spread Syntax and Rest Parameters
- J. Destructuring

III. Your First Angular Application

- A. Component Basics
- B. Understanding Components
- C. Component Properties & Methods
- D. Templates: Inline, Multi-line, and External with Component-relative Paths

IV. Angular Modules (NgModule)

- A. Angular Modules vs. ES Modules
- B. Organizing your code into Feature Modules

V. Angular CLI

- A. Creating a New Project
- B. Generating Code
- C. Customizing the Angular CLI

VI. Data Binding

- A. Interpolation
- B. Property binding

- C. Event binding
- D. Two-way data binding

VII. Directives

- A. Structural: ngFor, ngIf, ngSwitch
- B. Attribute: ngClass, ngStyle

VIII. Pipes

- A. Built-in Pipes: Using, Passing Parameters, Chaining

IX. Components

- A. Component Communication using @Input, @Output
- B. Component Architecture
- C. Component Styles
- D. Component Lifecycle Hooks
- E. Evaluating UI Component Frameworks & Libraries

X. Services & Dependency Injection

- A. Using a service to access data
- B. Using a service to encapsulate business logic
- C. Understanding the scope of services

XI. Dependency Injection

- A. Understanding Dependency Injection
- B. Angular's Dependency Injection System
- C. Registering
- D. Injecting

XII. Model-driven Forms (Reactive Forms)

- A. Importing the ReactiveFormsModule
- B. FormControl, FormGroup, and AbstractControl
- C. Binding DOM Elements to FormGroups and FormControls
- D. Validation Rules, Messages, and Styles
- E. Refactoring Reactive Forms for Reuse
- F. Custom Validators

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Course Outline (cont.)

XIII. *Communicating with the Server using the HttpClient Service*

- A. Deciding between Promises or Observables (RxJS)
- B. Making an HTTP GET Request
- C. Sending data to the server using Http POST and PUT Requests
- D. Issuing an Http DELETE Request
- E. Intercepting Requests and Responses

XIV. *Router*

- A. Importing the RouterModule
- B. Configuring Routes
- C. Displaying Components using a RouterOutlet
- D. Navigating declaratively with RouterLink
- E. Navigating with code using the Router
- F. Accessing parameters using ActivatedRoute

XV. *Deploying an Angular Application to Production*

- A. Building the application using the Angular CLI
- B. Deploying to a web server

XVI. *Angular 7*

- A. What's New in Angular 7
 - 1. CLI Prompts
 - 2. Angular Material ScrollingModule and DragDropModule
- B. Upgrading to Angular 7 from earlier versions of Angular

XVII. *Angular Roadmap for the Future*

- A. Ivy Renderer
- B. Angular Elements