Training Module: Angular

Course length: 3 Months

Section 1: Getting Started

- Course Introduction
- What is Angular?
- Angular vs Angular 2 vs Angular 8
- CLI Deep Dive & Troubleshooting
- Project Setup and First App
- Editing the First App
- What is TypeScript?
- A Basic Project Setup using Bootstrap for Styling

Section 2: The Basics

- How an Angular App gets Loaded and Started
- Creating a New Component
- Understanding the Role of AppModule and Component Declaration
- Using Custom Components
- Creating Components with the CLI & Nesting Components
- Working with Component Templates
- Working with Component Styles
- Fully Understanding the Component Selector
- What is Databinding?
- String Interpolation
- Property Binding
- Property Binding vs String Interpolation
- Event Binding
- Bindable Properties and Events
- Passing and Using Data with Event Binding
- Two-Way-Databinding

- Combining all Forms of Databinding
- Understanding Directives
- Using ngIf to Output Data Conditionally
- Enhancing ngIf with an Else Condition
- Styling Elements Dynamically with ngStyle
- Applying CSS Classes Dynamically with ngClassOutputting Lists with ngFor

Section 3: Debugging

- Understanding Angular Error Messages
- Debugging Code in the Browser Using Sourcemaps
- Using Augury to Dive into Angular Apps

Section 4: Components & Databinding Deep Dive

- Splitting Apps into Components
- Property & Event Binding Overview
- Binding to Custom Properties
- Binding to Custom Events
- Understanding View Encapsulation
- Using Local References in Templates
- Getting Access to the Template & DOM with @ViewChild
- Projecting Content into Components with ng-content
- Understanding the Component Lifecycle
- Lifecycle Hooks and Template Access
- Getting Access to ng-content with @ContentChild
- Recap and Section Assignment

Section 5: Directives Deep Dive

- ngFor, ngClass, ngStyle and ngIf Recap
- Creating a Basic Attribute Directive
- Using the Renderer to build a Better Attribute Directive
- Using HostListener to Listen to Host Events
- Using HostBinding to Bind to Host Properties
- Binding to Directive Properties
- What Happens behind the Scenes on Structural Directives
- Building a Structural Directive
- Understanding ngSwitch

Section 6: Using Services & Dependency Injection

- Why would you Need Services?
- Creating a Logging Service
- Injecting the Logging Service into Components
- Creating a Data Service
- Understanding the Hierarchical Injector
- How many Instances of Service Should It Be?
- Injecting Services into Services
- Using Services for Cross-Component Communication

Section 7: Changing Pages with Routing

- Why do we need a Router?
- Setting up and Loading Routes
- Navigating with Router Links
- Understanding Navigation Paths
- Styling Active Router Links
- Navigating Programmatically
- Using Relative Paths in Programmatic Navigation
- Passing Parameters to Routes
- Fetching Route Parameters
- Fetching Route Parameters Reactively
- Route Observables

- Passing Query Parameters and Fragments
- Retrieving Query Parameters and Fragments
- Setting up Child (Nested) Routes
- Using Query Parameters - Practice
- Configuring the Handling of Query Parameters
- Redirecting and Wildcard Routes
- Outsourcing the Route Configuration
- An Introduction to Guards
- Protecting Routes with canActivate
- Protecting Child (Nested) Routes with canActivateChild
- Using a Fake Auth Service
- Controlling Navigation with canDeactivate
- Passing Static Data to a Route
- Resolving Dynamic Data with the resolve Guard
- Understanding Location Strategies

Section 8: Understanding Observables

- Analyzing Angular Observables
- Getting Closer to the Core of Observables
- Building a Custom Observable
- Errors & Completion
- Understanding Operators
- Subjects

Section 9: Handling Forms in Angular Apps

- Template-Driven (TD) vs Reactive Approach
- TD: Creating the Form and Registering the Controls
- TD: Submitting and Using the Form
- TD: Understanding Form State
- TD: Accessing the Form with @ViewChild
- TD: Adding Validation to check User Input
- Built-in Validators & Using HTML5 Validation
- TD: Using the Form State

- TD: Outputting Validation Error Messages
- TD: Set Default Values with ngModel Property Binding
- TD: Using ngModel with Two-Way-Binding
- TD: Grouping Form Controls
- TD: Handling Radio Buttons
- TD: Setting and Patching Form Values
- TD: Using Form Data
- TD: Resetting Forms
- Introduction to the Reactive Approach
- Reactive: Setup
- Reactive: Creating a Form in Code
- Reactive: Syncing HTML and Form
- Reactive: Submitting the Form
- Reactive: Adding Validation
- Reactive: Getting Access to Controls
- Reactive: Grouping Controls
- Reactive: Arrays of Form Controls (FormArray)
- Reactive: Creating Custom Validators
- Reactive: Using Error Codes
- Reactive: Creating a Custom Async Validator
- Reactive: Reacting to Status or Value Changes
- Reactive: Setting and Patching Values

Section 10: Using Pipes to Transform Output

- Introduction & Why Pipes are Useful
- Using Pipes
- Parametrizing Pipes
- Where to learn more about Pipes
- Chaining Multiple Pipes
- Creating a Custom Pipe
- Parametrizing a Custom Pipe
- Example: Creating a Filter Pipe
- Pure and Impure Pipes (or: How to "fix" the Filter Pipe)
- Understanding the "async" Pipe

11: Making Http Requests

- How Does Angular Interact With Backends?
- The Anatomy of a Http Request
- Backend (Firebase) Setup
- Sending a POST Request
- GETting Data
- Using RxJS Operators to Transform Response Data
- Using Types with the HttpClient
- Outputting Posts
- Showing a Loading Indicator
- Using a Service for Http Requests
- Services & Components Working Together
- Sending a DELETE Request
- Handling Errors
- Using Subjects for Error Handling
- Using the catchError Operator
- Error Handling & UX
- Setting Headers
- Adding Query Params
- Observing Different Types of Responses
- Changing the Response Body Type
- Introducing Interceptors
- Manipulating Request Objects
- Response Interceptors
- Multiple Interceptors

Section 12: Authentication & Route Protection in Angular

- How Authentication Works
- Adding the Auth Page
- Switching Between Auth Modes
- Handling Form Input
- Preparing the Backend

- Make sure you got Recipes in your backend!
- Preparing the Signup Request
- Sending the Signup Request
- Adding a Loading Spinner & Error Handling Logic
- Improving Error Handling
- Sending Login Requests
- Login Error Handling
- Creating & Storing the User Data
- Reflecting the Auth State in the UI
- Adding the Token to Outgoing Requests
- Attaching the Token with an Interceptor
- Adding Logout
- Adding Auto-Login
- Adding Auto-Logout
- Adding an Auth Guard

Section 13: Dynamic Components

- Adding an Alert Modal Component
- Understanding the Different Approaches
- Using ngIf
- Preparing Programmatic Creation
- Creating a Component Programmatically
- Understanding entryComponents
- Data Binding & Event Binding

Section 14: Angular Modules & Optimizing Angular Apps

- What are Modules?
- Analyzing the AppModuleGetting Started with Feature Modules
- Splitting Modules Correctly
- Adding Routes to Feature Modules
- Component Declarations
- Understanding Shared Modules
- Understanding the Core Module
- Adding an Auth Feature Module

- Understanding Lazy Loading
- Implementing Lazy Loading
- Alternative Lazy Loading Syntax
- More Lazy Loading
- Preloading Lazy-Loaded Code
- Modules & Services
- Loading Services Differently
- Ahead-of-Time Compilation

Section 15: Deploying an Angular App

- Deployment Preparation & Steps
- Using Environment Variables
- Deployment Example: Firebase Hosting
- Server Routing vs Browser Routing

Section 16: Angular Changes & New Features

- What's New with Angular Current Version?
- A First Look At Angular Elements
- What's New & How to Update