Angular 19

Target Audience: Beginner to Intermediate

Training Mode: Lecture + Hands-on Labs

Prerequisites: Basic understanding of HTML, CSS, JavaScript, and TypeScript

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Prerequisites Topics (Self-study or Pre-training Session/ On Request)

Before diving into Angular, attendees should be familiar with the following:

1. HTML & CSS (2-3 Hours)

- Semantic HTML
- Forms and Input elements
- CSS basics (Selectors, Flexbox, Grid)
- Responsive design basics

2. JavaScript Essentials (4-5 Hours)

- Variables (let, const, var)
- Functions and Arrow Functions
- ES6+ features (Destructuring, Spread, Rest)
- Promises and Async/Await
- DOM Manipulation
- Event Handling

3. TypeScript Basics (4-5 Hours)

- Installing and setting up TypeScript
- Variables and Data Types
- Functions and Interfaces
- Classes and Inheritance
- Modules and Imports
- Generics
- Decorators

Angular 19 - 5-Day Training Plan

Day 1: Introduction to Angular & Setting Up the Environment (8 Hours)

Morning Session (4 Hours)

- **Introduction to Angular**
    - What is Angular?
    - Evolution of Angular (AngularJS to Angular 19)
    - Advantages of Angular
    - Real-world applications
- **Setting Up the Development Environment**
    - Installing **Node.js**, **Angular CLI**
    - Creating the first Angular application
    - Understanding project structure
    - Running an Angular application
- **Understanding Angular Core Concepts**
    - Modules (NgModule)
    - Components (@Component)
    - Templates and Views
    - Directives (*ngIf, *ngFor, [ngClass], [ngStyle])

Afternoon Session (4 Hours) - Hands-on Labs

- **Lab 1: Setting Up Angular Project**
    - Install Angular CLI and create a new Angular 19 project
    - Explore project structure and run the app
    - Modify app.component.ts and app.component.html
- **Lab 2: Creating Components & Using Directives**
    - Create new components using CLI
    - Implement *ngIf and *ngFor
    - Apply ngClass and ngStyle

Day 2: Components, Data Binding & Services (8 Hours)

Morning Session (4 Hours)

- **Component Communication**
    - @Input and @Output
    - Parent-child communication
    - Event binding and property binding

- **Data Binding in Angular**
    - Interpolation ({{ }})
    - One-way and two-way binding (ngModel)
    - Property binding
    - Event binding
- **Angular Services & Dependency Injection (DI)**
    - Creating services with @Injectable
    - Understanding Dependency Injection
    - Using HttpClientModule for API calls

Afternoon Session (4 Hours) - Hands-on Labs

- **Lab 3: Component Communication**
    - Create parent and child components
    - Implement @Input and @Output
- **Lab 4: Services & API Calls**
    - Create an Angular service
    - Fetch and display data using HttpClient

Day 3: Routing, Forms & State Management (8 Hours)

Morning Session (4 Hours)

- **Routing & Navigation**
    - Configuring routes with RouterModule
    - Lazy loading & route guards
    - Handling route parameters
- **Forms in Angular**
    - Template-driven forms
    - Reactive forms (FormGroup, FormControl, Validators)

Afternoon Session (4 Hours) - Hands-on Labs

- **Lab 5: Implementing Routing**
    - Create routes and use RouterModule
    - Implement route guards
- **Lab 6: Forms Handling**

- Build a form using Reactive Forms
- Implement form validation

Day 4: Advanced Topics (8 Hours)

Morning Session (4 Hours)

- **State Management with NgRx (Redux Pattern)**
  - Introduction to NgRx Store
  - Actions, Reducers, Selectors, Effects
- **Directives & Pipes**
  - Built-in and custom pipes
  - Custom directives

Afternoon Session (4 Hours) - Hands-on Labs

- **Lab 7: State Management with NgRx**
  - Set up NgRx store
  - Manage state with actions and reducers
- **Lab 8: Creating Custom Directives & Pipes**
  - Implement a custom directive
  - Create a custom pipe

Day 5: Testing, Optimization & Deployment (8 Hours)

Morning Session (4 Hours)

- **Unit Testing in Angular**
  - Writing tests using Jasmine & Karma
  - Testing services, components, and directives
- **Performance Optimization**
  - Lazy loading modules
  - Change Detection Strategy
  - Best practices for production apps
- **Deployment of Angular Apps**
  - Building & optimizing the production version
  - Hosting on Firebase, Netlify, or Vercel

Afternoon Session (4 Hours) - Hands-on Labs

- **Lab 9: Writing Unit Tests**
    - Write test cases for components & services
- **Lab 10: Deploying Angular App**
    - Deploy an Angular app to Firebase or Netlify
