

Full Stack Web Development Training with Angular, ASP.NET Core 8 & PostgreSQL

Duration: 7 days (56 hours)

Target Audience: Intermediate Developers

Prerequisite: Working knowledge of HTML, CSS, JS, TypeScript, .NET programming, and an overview of API

Day 1: Angular Fundamentals & Architecture

Topics

- Angular Architecture Overview (Modules, Components, Services)
- TypeScript Deep Dive (interfaces, generics, decorators)
- Angular CLI & Project Structure
- Component Lifecycle Hooks (ngOnInit, ngOnDestroy)
- Data Binding (Interpolation, Property, Event, Two-way)
- Directives (Structural & Attribute)
- Angular Styling & Best Practices

Labs

- Setup Angular project using CLI
 - Create **modular component-based UI (Dashboard + Header + Sidebar)**
 - Implement **data binding examples (form + dynamic UI)**
 - Build **custom directive for highlighting elements**
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Day 2: Routing, Forms & Advanced UI

Topics

- Angular Routing:
 - Lazy loading modules
 - Route guards (AuthGuard)
- Reactive Forms:
 - FormGroup, FormControl
 - Custom validators
- HTTP Client (GET, POST, interceptors)
- Error handling strategies
- UI integration (Angular Material / Bootstrap)

Labs

- Build **multi-module application with lazy loading**
- Create **login + registration form (Reactive Forms + validation)**
- Implement **HTTP interceptor for API calls**

- Add **route guard for protected routes**
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Day 3: Advanced Angular (NgRx + Performance + Monorepo)

Topics

- State Management:
 - NgRx Store, Actions, Reducers, Effects
- Performance Optimization:
 - Change detection strategy (OnPush)
 - TrackBy & memoization
- Angular Monorepo (Nx):
 - Structure & benefits
 - Shared libraries
- Code organization & scalability

Labs

- Implement **NgRx store for authentication & products**
 - Create **shared library in Nx monorepo**
 - Optimize large list rendering using TrackBy
 - Implement **lazy loaded feature modules**
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Day 4: Progressive Web App (PWA) + Security (Frontend)

Topics

- PWA Concepts:
 - Service Workers
 - Caching strategies
 - Offline support
- Angular PWA setup
- Frontend Security:
 - XSS, CSRF basics
 - Secure token handling
- Environment configuration

Labs

- Convert Angular app into **PWA**
 - Enable **offline caching**
 - Implement **secure token storage**
 - Test application in offline mode
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Day 5: ASP.NET Core 8 Web API Development

Topics

- ASP.NET Core 8 overview
- Minimal APIs vs Controller-based APIs
- Dependency Injection (DI) in .NET 8
- Middleware pipeline
- Logging & configuration
- API versioning

Labs

- Create **ASP.NET Core 8 Web API project**
 - Implement **CRUD APIs (Product module)**
 - Add **custom middleware for logging**
 - Configure **DI services**
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Day 6: Entity Framework Core + PostgreSQL

Topics

- EF Core:
 - DbContext, migrations
 - LINQ queries
 - Repository pattern
- PostgreSQL (Latest):
 - Schema design
 - Indexing strategies
 - Query optimization
- PostgreSQL Functions:
 - Stored functions & procedures
 - Performance tuning

Labs

- Setup **PostgreSQL database**
 - Implement **EF Core models + migrations**
 - Write **optimized queries using indexes**
 - Create **PostgreSQL function for business logic**
 - Integrate API with PostgreSQL
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Day 7: Security, Integration & Deployment

Topics

- Authentication & Authorization:
 - JWT authentication
 - Role-based access control
- API Security:
 - CORS, rate limiting
 - Input validation

- Angular + .NET Integration
- Deployment:
 - Angular build & hosting
 - .NET API deployment
- Best practices & production readiness

Labs

- Implement **JWT-based authentication system**
- Secure APIs with **role-based authorization**
- Integrate Angular frontend with .NET APIs
- Deploy **full stack application (local/cloud simulation)**
- Final mini-project: **Full Stack Product Management System**