MEAN Angular Full Stack Developer

Duration: 15 days
Tools: VSCode, Git, Node, Angular CLI, MongoDB Compass, MySQL Workbench
Prerequisites: Knowledge of Web Development and any programming language.

Day 1: Introduction to Full Stack & HTML5 Basics

Topics:

- Full Stack Web Development Overview
- MEAN Stack vs Other Stacks
- Developer Tools: VSCode, Git, Node, Angular CLI, MongoDB Compass, MySQL Workbench
- HTML5 Elements: Forms, Semantic Tags, Multimedia, Accessibility

Labs:

- Create HTML resume with semantic tags
- Design a responsive login form
- Add media (video/audio) elements

Day 2: CSS3 & Responsive Web Design

Topics:

- CSS Fundamentals: Selectors, Box Model, Positioning
- Flexbox & Grid Layout
- Media Queries, CSS Variables
- CSS Transitions, Animations, Pseudo-classes

Labs:

- Layout a responsive product page with Flexbox
- Build a grid-based portfolio site
- Animate menu and image hover states

Day 3: JavaScript Essentials

Topics:

- Variables, Data Types, Operators, Conditions
- Functions, Scope, Closures
- DOM Manipulation
- Event Handling
- Debugging in DevTools

Labs:

- Dynamic form validation
- Build a currency converter

- JavaScript-based tab component

Day 4: Advanced JavaScript & ES6+

Topics:

- let vs const, Arrow Functions, Template Literals
- Destructuring, Spread, Rest
- Promises, Async/Await
- Array methods: map, filter, reduce
- Event Loop, Call Stack

Labs:

- Build a movie search app using Fetch API
- Dynamic table with search/filter using array methods
- Async image gallery loader

Day 5: TypeScript Essentials

Topics:

- Type Annotations, Enums, Interfaces
- Classes, Inheritance
- Generics, Union & Intersection Types
- tsconfig.json & Compilation

Labs:

- Create TypeScript model for a blog post
- Build a contact form with type-safe validation
- Convert a JS app to TypeScript

Day 6: Angular Basics

Topics:

- Angular Architecture, CLI, Project Structure
- Components, Modules, Templates
- Property, Event, Two-way Binding (ngModel)
- Lifecycle Hooks

Labs:

- Create product card with binding
- Build a reusable navbar/footer
- Lifecycle hook console logging demo

Day 7: Angular Forms & Routing

Topics:

- Template-driven vs Reactive Forms
- FormGroup, FormControl, Validation
- Angular Router, Route Parameters, Nested Routes
- Route Redirection & Wildcards

Labs:

- Build login form with reactive form
- Route between home, about, and dashboard
- Validate user input with Angular Validators

Day 8: Angular Services, HTTP & Observables

Topics:

- Angular Services and Dependency Injection
- HttpClient for API Calls
- Observables and RxJS Operators (map, catchError)
- HTTP Interceptors and Error Handling

Labs:

- Service to fetch external product data
- Handle HTTP errors and display toast messages
- Interceptor to inject auth token

Day 9: Advanced Angular – Pipes, Directives & Guards

Topics:

- Built-in Pipes & Custom Pipes
- Structural & Attribute Directives (ngIf, ngFor, ngClass)
- Custom Directives
- Route Guards (AuthGuard, CanActivate)
- Lazy Loading & Feature Modules

Labs:

- Create custom pipe for text formatting
- Build directive for tooltips
- Implement AuthGuard to protect dashboard

Day 10: Node.js & Express.js Essentials

Topics:

- Node.js Architecture, Modules, npm
- Express.js: Routing, Middleware, Body Parsing
- RESTful API Design Principles
- Express Validator & Error Handling

Labs:

- Build Express CRUD APIs for users
- Apply middleware for logging and validation
- Create error handler middleware

Day 11: MongoDB & Mongoose Integration

Topics:

- MongoDB Concepts: Collections, Documents
- Mongoose: Schema, Model, Validation
- CRUD with Mongoose
- Data Population (References)

Labs:

- Create models for users and products
- Build routes for MongoDB-based APIs
- Use population to link user and product data

Day 12: MySQL & Sequelize ORM

Topics:

- SQL vs NoSQL Overview
- MySQL Basics: DDL, DML, Joins, Normalization
- Sequelize Setup and Configuration
- Sequelize Models, Associations
- CRUD Operations with Sequelize

Labs:

- Setup MySQL tables for users and orders
- Build REST API using Express + Sequelize
- Create association (1:M) between users and orders

Day 13: JWT Authentication & Role-based Access

Topics:

- User Auth: Registration, Login
- Hashing Passwords with bcrypt
- JWT Token Generation & Validation

- Securing Routes & Role-based Access

Labs:

- Build login/register APIs with password hashing
- Protect routes using JWT middleware
- Add admin/user access levels to endpoints

Day 14: Angular + Node Integration & Deployment

Topics:

- Connecting Angular to Express APIs
- Angular Environments, Proxy Configs
- CORS Handling
- Deployment:
    - Angular: Vercel/Netlify
    - Node.js: Render/Heroku
    - MongoDB Atlas & MySQL Cloud Setup

Labs:

- Build Angular service to consume Express API
- Configure environments for dev/prod
- Deploy Angular + Node app live

Day 15: Final Capstone Project & Presentation

Capstone Project:
Inventory Management System (Mongo + MySQL)

- Angular Frontend:
    - Auth (JWT-based)
    - Product Dashboard (CRUD)
    - Order List (MySQL-based)
    - Role-based Admin Panel
- Node.js Backend:
    - MongoDB for product catalog (Mongoose)
    - MySQL for user and order management (Sequelize)

Tasks:

- Setup GitHub repo with README & project board
- Implement authentication flow
- Secure and deploy backend & frontend
- Present project to peers/instructors

Labs:

- Complete End-to-End Development