

Step-by-Step Guide to Building an Angular Frontend with Node.js Backend

This document provides a detailed step-by-step process for building the frontend of a web application using Angular, with Node.js + MongoDB as the backend. The guide includes project setup, authentication, CRUD operations, routing, and integration with backend APIs.

Step 1: Install Angular CLI

Run ``npm install -g @angular/cli``. Verify with ``ng version``. This installs the Angular framework globally.

Step 2: Create Angular Project

Use ``ng new frontend-app``. Navigate into the folder and start the dev server with ``ng serve``. Access app at <http://localhost:4200>.

Step 3: Setup Angular Modules & Routing

Enable routing during project creation or manually configure it. Define routes in ``app-routing.module.ts``.

Step 4: Install Angular Material

Run ``ng add @angular/material`` to use Material UI components like forms, tables, and buttons.

Step 5: Create Authentication Module

Generate components: `signup`, `signin`, `signout`. Create an ``AuthService`` to interact with your backend APIs.

Step 6: Token Handling

Use `HttpInterceptor` to attach JWT tokens to each request and manage user authentication state.

Step 7: Create Posts Module

Generate components: `PostList`, `PostDetail`, `PostForm`. Create ``PostService`` to handle CRUD operations with backend.

Step 8: Protect Routes

Use Angular route guards to restrict access to authenticated users only.

Step 9: Build UI

Use Angular Material components (tables, dialogs, forms) to design user-friendly UI for posts and authentication.

Step 10: Run & Test

Run `ng serve`, test authentication flow and CRUD operations with backend APIs.

System Flow Diagram

