

Complete Angular Interview Guide

1. What is Angular?

Angular is a TypeScript-based open-source front-end web application framework developed by Google. It helps build single-page applications (SPAs) using HTML, CSS, and TypeScript. It follows a component-based architecture.

2. Angular Architecture

Angular applications are built using modules, components, templates, services, and directives. It uses dependency injection and has powerful routing and form management systems.

3. Angular CLI

Angular CLI is a command-line interface tool used for initializing, developing, scaffolding, and maintaining Angular applications. Common commands include 'ng new', 'ng generate component', and 'ng serve'.

4. Component Lifecycle

Angular provides lifecycle hooks like `ngOnInit`, `ngOnChanges`, `ngDoCheck`, `ngAfterViewInit`, and `ngOnDestroy` to handle different stages of a component's existence.

5. Data Binding

Angular supports one-way and two-way data binding: interpolation `{{ value }}`, property binding `[src]`, event binding (click), and two-way binding `[(ngModel)]`.

6. Routing and Navigation

Routing is configured using `RouterModule` and `routes` array. It supports route guards, lazy loading, and parameterized routes.

7. Angular Forms

Two types: Template-driven forms and Reactive forms. Template-driven forms use `ngModel`; reactive forms use `FormControl`, `FormGroup`, and `FormBuilder` for more flexibility.

8. Services and Dependency Injection

Services are used for business logic and shared data. Provided using `@Injectable` and injected via constructors. Angular's DI system supports hierarchical injectors.

9. RxJS and Observables

Angular uses RxJS to handle async operations. Key concepts: `Observable`, `Subject`, `BehaviorSubject`, and operators like `map`, `switchMap`, `debounceTime`.

10. Project Structure

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Recommended folders: core (singleton services), shared (reusable components), features (feature modules), assets, environments. AppModule imports routing and feature modules.

11. Latest Angular Features

Includes Standalone Components (no need for NgModules), Signals API for reactive state, new `@if/@for` syntax, `inject()` function in services/components.

12. Testing in Angular

Unit testing with Jasmine and Karma; use TestBed for setup. E2E testing with tools like Cypress. Services are mocked using `spyOn` and `HttpTestingController`.

13. Angular Universal (SSR)

Used for server-side rendering to improve SEO and performance. Uses `@nguniversal/express-engine` to render Angular apps on the server.

14. Security Best Practices

Use Angular's DomSanitizer to prevent XSS, avoid inline styles/scripts, use JWT for secure authentication, and handle CORS at backend.