

# ANGULAR DEVELOPER ROADMAP

A complete **beginner-to-advanced** roadmap designed especially for college students who want to become industry-ready Angular developers.

## PHASE 0: WEB FUNDAMENTALS (MANDATORY – DO NOT SKIP)

### HTML (BEGINNER)

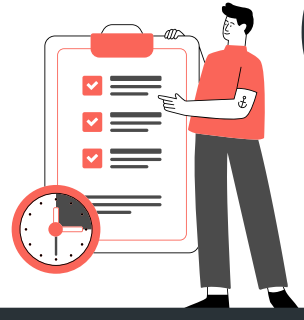
- What is HTML & how websites work
- Basic tags (div, span, p, a, img)
- Forms & inputs
- Semantic HTML (header, footer, section, article)
- Accessibility basics

### CSS (BEGINNER → INTERMEDIATE)

- CSS syntax & selectors
- Box model
- Flexbox (IMPORTANT)
- CSS Grid (IMPORTANT)
- Responsive design
- Media queries
- Basic animations & transitions

### ADVANCED (OPTIONAL)

- CSS architecture (BEM)
- SCSS
- CSS variables



## PHASE 1: JAVASCRIPT FUNDAMENTALS (VERY IMPORTANT)

### CORE JS (BEGINNER)

- Variables (var, let, const)
- Data types
- Operators
- Conditions & loops
- Functions



### MODERN JS (INTERMEDIATE)

- Arrow functions
- Template literals
- Destructuring
- Spread & rest operators
- Array methods (map, filter, reduce)
- DOM manipulation
- Events
- Callbacks
- Promises
- async / await
- Fetch API

### ADVANCED JS

- Event loop
- Closures
- Memory management

## PHASE 2: TYPESCRIPT ESSENTIALS (ANGULAR BACKBONE)

### TYPESCRIPT BASIC

- Why TypeScript?
- Types (string, number, boolean, any)
- Arrays & objects
- Functions with types

### OOPS WITH TYPESCRIPT

- Classes & constructors
- Access modifiers (public, private, protected)
- Interfaces
- Enums



### ADVANCED

- Generics
- Utility types
- Decorators (deep understanding later)

## PHASE 3: ANGULAR FUNDAMENTALS (CORE PHASE)

### ANGULAR BASICS

- What is Angular & how it works
- Angular CLI
- Project structure
- Modules
- Components
- DOM

### TEMPLATES, DIRECTIVES & PIPES

- Bindings
- Built-in directives
- Custom directives
- Decorators
- Pipes
- Guards

### ADVANCED

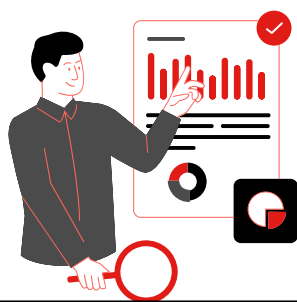
- Standalone components
- View encapsulation
- Singleton Services
- Dependency Injection



## PHASE 4: FORMS IN ANGULAR (VERY IMPORTANT)

### TEMPLATE-DRIVEN FORMS

- ngModel
- Form validation
- Error handling



### TEMPLATE-DRIVEN FORMS

- FormGroup, FormControl
- FormBuilder
- Synchronous & async validators
- Dynamic forms

### TEMPLATE-DRIVEN FORMS

- Custom form controls
- ControlValueAccessor

## PHASE 5: ROUTING & NAVIGATION

### ANGULAR ROUTING

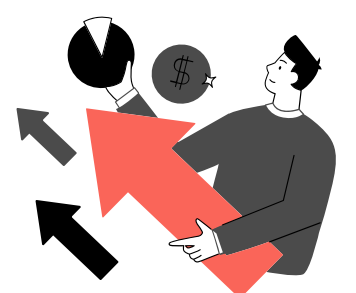
- Router module
- Route parameters
- Query parameters
- Nested routes

### APP PROTECTION

- Route guards
- Lazy loading modules
- Lazy loading components (New)

### ADVANCED

- Preloading strategies
- Resolver services
- Lazy Load Images



## PHASE 6: BACKEND COMMUNICATION & APIS

### HTTP & APIS

- REST API basics
- HttpClient
- GET / POST / PUT / DELETE
- Error handling

### SECURITY

- Authentication basics
- JWT concept
- HTTP interceptors

### ADVANCED

- Refresh tokens
- OAuth concepts



## PHASE 7: STATE MANAGEMENT & RXJS

### RXJS (IMPORTANT)

- Observables vs Promises
- subscribe
- Operators
- Subjects & BehaviorSubject



### ADVANCED

- State management (NgRx)
- Signals (new Angular feature)
- Advanced RxJS patterns



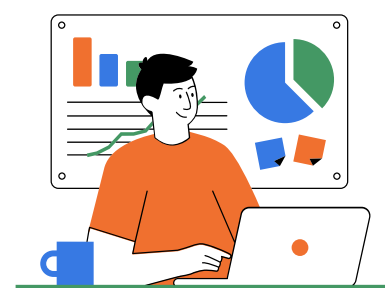
## PHASE 8: PERFORMANCE & OPTIMIZATION

- Change detection
- OnPush strategy
- Lazy loading
- TrackBy
- Code splitting



### ADVANCED

- Zone.js internals
- Custom change detection



## PHASE 9: TESTING

- Unit testing basics
- Jasmine
- Karma
- Component testing
- Jest



### ADVANCED

- E2E testing
- Cypress / Playwright



## PHASE 10: DEPLOYMENT & BUILD

- Production builds
- Environment files
- Deployment on:
  - Netlify
  - Firebase
  - Vercel



### ADVANCED

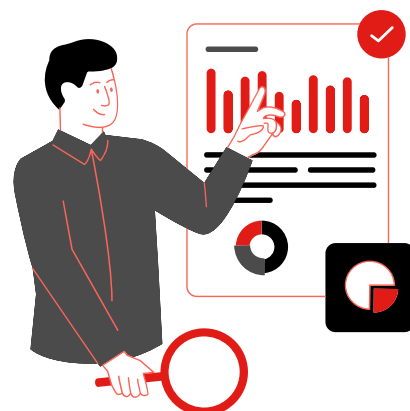
- CI/CD pipelines
- Docker (Optional)



## PHASE 11: PROJECTS (MOST IMPORTANT)

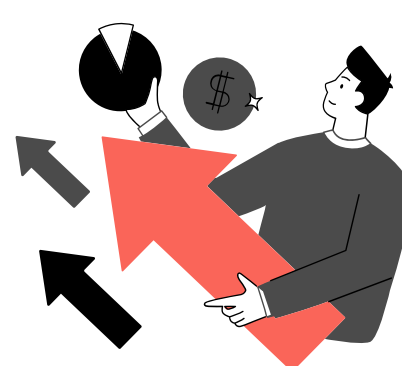
### BASIC

- Beginner Projects
- To-Do App
- Form-based app



### MEDIUM & ADVANCED

- Authentication app
- Dashboard with APIs
- Role-based access app
- Large-scale Angular app
- Full-stack integration



## FINAL ADVICE FOR STUDENTS

- If you are a beginner topics highlighted with light green background are must.
- Don't rush advanced topics.
- Build projects after every phase.
- Focus on concept clarity.
- Angular is powerful but needs patience.

This roadmap is designed to guide you from fundamentals to industry-ready Angular skills. Follow it step by step, focus on practice, and build real projects along the way.

Consistency and hands-on learning will determine your success.

