

TypeScript and Angular (44 hours)

1. Introduction to TypeScript

- Overview of TypeScript and its benefits over JavaScript.
- Installation and setup of TypeScript.
- Configuring TypeScript with tsconfig.json.

2. Basic Syntax and Types

- Variables, constants, and data types in TypeScript (string, number, boolean, array, tuple).
- Type inference vs. explicit typing.

3. TypeScript Functions

- Defining functions and understanding return types.
- Function overloading and default parameters.
- Arrow functions and anonymous functions.

4. Classes and Objects

- Classes, constructors, properties, and methods.
- Access modifiers (public, private, protected).
- Inheritance and method overriding.
- Static members and getter/setter.

5. Interfaces and Types

- Defining and using interfaces in TypeScript.
- Optional properties, read-only properties, and method signatures in interfaces.
- Type aliases and differences with interfaces.

6. Overview of Angular

- What is Angular? Why use it?
- Key features of Angular (dependency injection, modularity, directives, etc.).
- Installing Angular CLI and creating your first Angular project.

7. Angular Architecture and Structure

- Understanding Angular application structure (modules, components, services).

- Bootstrapping Angular apps with main.ts and app.module.ts.
- Angular Lifecycle hooks.

8. Components in Angular

- Creating components using ng generate component.
- Understanding the component lifecycle.
- ngOnInit, ngOnChanges , ngOnDestroy

9.Data Binding in Angular

- Introduction to Data Binding
- Definition and Importance
- Types of Data Binding in Angular
- Interpolation Binding
- Property Binding
- Event Binding
- Two-way Binding

10.Directives in Angular

- Introduction to Directives
- Definition and Purpose
- Types of Directives
- Structural Directives
- ngIf
- ngFor
- ngSwitch
- ngContainer
- Attribute Directives
- ngClass
- ngStyle
- Custom Attribute Directives

- Creating Custom Directives
- Directive Definition and Lifecycle

- ng-template

12. Creating and Communicating Between Components

- Creating your first data-bound component.
- Using external templates.
- Communicating with child components using @Input.
- Communicating with parent components using @Output.
- Using template variables to interact with child components.

13. Styling Components

- Exploring Angular's CSS encapsulation.
- ng-bootstrap (add bootstrap in angular)
- Angular material

14. Pipes

- Built-in pipes: date, currency, json, uppercase, etc.
- Creating custom pipes.
- Pipe chaining and pure vs impure pipes.

15. Angular Forms

- Creating template-driven forms in Angular.
- Handling user input with form controls.
- Form validation using built-in validators (required, minlength, etc.).
- Introduction to reactive forms (model-driven forms).
- Creating forms using FormGroup, FormControl, and FormArray.
- Form validation with reactive forms.

16. Routing in Angular

- Introduction to Angular Routing.
- Setting up routing in Angular apps.
- Defining routes using RouterModule and app-routing.module.ts.
- Route parameters and handling dynamic routes.

17. Creating and Using Services with HttpClientModule

- Creating Angular services with ng generate service.
- Injecting services in components and other services.
- Singleton services and scope of services.
- HTTP Client in Angular.
- Making GET, POST, PUT, DELETE requests.
- Handling HTTP responses and errors.

18. Communicating with the Server Using HTTP, Observables, and RxJS

- Moving data storage to the server.
- Listening to resolved data changes.
- Using query string parameters.

Saving user data to the server.