Day 26 Revisit

TypeScript – Typed Super Set of JavaScript (JavaScript + Additional Features) – It’s open source, strongly typed language developed by Microsoft.

All typescript files will have .ts extension

All typescript file will be transpiled to .js by tsc (typescript compiler)

It supports many Object Oriented programming features. It will run in all the places where java script code can run.

It’s used to create different types of applications (mobile apps, enterprise apps, desktop apps, web apps etc.,)

Let, const, class, interface, export & import, null, any, number, Boolean, string, undefined, type (used to create custom data type)

SPA – Single Page Application (It’s a method of creating web applications using any JS based framework)

Angular – It’s a powerful front end JS based framework used to create component based, super fast dynamic web applications which will have very rich user interface and fast interaction with user.

AngularJS 🡪 Angular2 🡪 Angular 4

<https://angular.io> -- Official Site for Angular Framework.

Angular is a Component based framework. It will have only one page. This single page can have n number of containers.

Based on the URL, different components will be displayed and hidden.

Angular is developed and maintained by google. It also uses typescript which is developed by Microsoft

Angular = (Google + Microsoft)

Once loaded in the client system (browser) it can quickly navigate between the components because all the components will be available in the client side itself. It will make call to the server to get the data only (It calls webservices to get the data in JSON format after that it will update the UI) – Since it uses ajax(background xmlhttprequest) page load will be very fast.

To Create Angular application, the popular IDE is VS Code (Open Source Free IDE) which supports all the files and languages. It has many extensions using which we can extend the features of VS Code.

1. Install Node & NPM (download & install -- <https://nodejs.org/en/> Latest version is 16.5.1 (LTS – Long Term Support)) npm 8.13.1
2. Install Angular CLI using npm [ npm install -g @angular/cli ]
3. ng new <app\_name>
4. cd <app\_name>
5. ng serve -o (localhost:4200)

Angular Application Folder Structure

1. src
2. node\_modules (285Mb)
3. package.json
4. angular.json
5. karma.config.js
6. tsconfig.json

JSON – JavaScript Object Notation

With the help of angular, we can create custom html tags.

In HTML, all tags are pre-defined. <html> <head> <title> </title> </head> <body> <h1> </h1> <br/> <input /> <p> </p> <div> </div> <span> </span> </body> </html>

Creating custom html tags, is possible using js based frameworks (Angular, React, Vue )

To check Angular version

E:\Revature\Batch4\Week8\angular ws\my-app>ng version

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Angular CLI: 14.0.3

Node: 14.16.1

Package Manager: npm 8.5.5

OS: win32 x64

Angular: 14.0.3

... animations, cli, common, compiler, compiler-cli, core, forms

... platform-browser, platform-browser-dynamic, router

Package Version

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@angular-devkit/architect 0.1400.3

@angular-devkit/build-angular 14.0.3

@angular-devkit/core 14.0.3

@angular-devkit/schematics 14.0.3

@schematics/angular 14.0.3

rxjs 7.5.5

typescript 4.7.4

WebPack is the module bundler (which bundles multiple js file into a single js file so that browser can download a single file rather than multiple file)

[Webpack](https://webpack.js.org/) is a powerful static module bundler for JavaScript applications that packages all modules in our application into a bundle and serves it to the browser.

CLI – Command Line Interface

Command – Will do a single task at a time (creating file/folder, renaming file/folder, copying file/folder, deleting file/folder)

CLI - Will create complete application along with all the dependencies (we can directly run the apps immediately after creation)

CLI – Angular CLI (ng new <app\_name>), SpringBoot CLI

Angular

CLI – Command Line Interface (Used to create new app, add components, services, routes, pipes to existing app)

Typescript – programming lang

Webpack – Module bundler

Jasmine & Karma– Unit Test tool for angular app

Protractor – end to end test tool for angular app

Every Angular app will have a Root module (app.module.ts) and a root component (app.component.ts)

Generally angular component will have 4 files (.ts, .spec.ts, .html, .css) 2 files (.ts, .spec.ts – inline style and inline template)

@Component -- Decorator (Similar to Annotations in Java, it starts with @ symbol)

@Component decorator will have few parameters ({ selector: “ “, templateUrl: “ “, “styleUrls: []})

@Component decorator will convert a typescript class to Angular Component class

 ng generate component <component\_name> or ng g c <component-name>

@NgModule – This decorator will convert a typescript class into a Angular module

NgModule is the container for the components. All the components are added to the module.

Directives – Angular Directives will help us to do some programming techniques.

Angular Directive will allow us to manipulation the DOM (Document Object Model)

Manipulating DOM – Adding elements, changing/updating elements, adding attributes/styles to the elements., removing elements

Types of Directives

1. Component Directives -  Component directives alter the details of how the component should be processed, instantiated, and used at runtime.
2. Structural Directives – [Structuring] Structural directives are used to manipulate and change the structure of the DOM elements. Always starts with \* symbol (\*ngIf,\*ngFor,\*ngSwitch)
3. Attribute Directives - Attribute directives are used to change the look and behavior of the DOM elements. (Styling)
4. Custom Directive (User defined Directives) -- @Directive decorator will be added to the class to convert it in to angular directive

Binding (Combining UI code & data together)

Types of Binding

1. One way Binding (property binding & event/method binding) -- Interpolation {{}}, property [], event/method ()
2. Two way Binding (both property & data binding – Banana in a box syntax [()] (combination of property & event binding)

In Binding, data can travel from template (html/view) to code (ts file/component) or from the code (ts/component) to the template (html/view)

View – User Interface (UI) / html file

Model – Data (from API/JSON/Hard coded value)

Ctrl + C == To Break a program or process in windows

Command + Option +Esc (Then force close the application) – Mac Users

Creating an Angular Application from Scratch

1. ng new toh (tour of heroes)
2. cd toh
3. ng serve -o