Angular

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Introduction

- Angular is an open-source, **JavaScript framework** written in TypeScript. Google maintains it, and its primary purpose is to develop single-page applications.

- A framework in programming is a tool that provides ready-made components or solutions that are customized in order to speed up development. A framework can include support programs, compilers, code libraries, toolsets, and APIs to develop software and create systems.

- A single-page application is defined as an application (web app or website) that loads only a single page and then rewrites the page with new content fetched from a web server as the user interacts with it instead of loading a new page for every interaction.

Why use angular

1 1) Code consistency and reusability

Angular has a component-based structure which makes the components highly reusable and simplifies the development process. You can build the UI (User Interface) with moving components, while also ensuring a stable development process for developers.

2 Easy to learn, use, and test

AngularJS can be easily learned by people with knowledge of JavaScript, HTML, and CSS. Learning AngularJS initiates more opportunities for developers in the Web Development trade.

3 Google support and excellent community support

It is recognized as one of the most reliable frameworks by the app development team members. Web toolkits by Google enable developers to develop a unique and user-friendly application.

4 SPA-oriented features

AngularJS and SPAs simply belong together, AngularJS supports the development of Single Page Applications. The primary purpose of developing single-page applications is faster website transition.

5 Two-way data binding

Utilizing the two-way data binding, the application will simplify its presentation layer. This enables a more simplistic and less intrusive approach to DOM display to build the UI.

6 Declarative UI

The angular framework makes use of the HTML source to describe the UI of the application because it is an intuitive, declarative, and less complicated language.

7 Seamless integration and high-end productivity

When implemented for web development projects, AngularJS smoothly integrates with other libraries. Integration of AngularJS is pre-built with various frameworks like Wijmo, Ionic, and Telerik's Kendo UI.

Understanding Angular Versioning

- All major releases are typically supported for 18 months. This includes 6 months of active support (updates and patches), and 12 months of LTS support (critical fixes and security patches). Only newly identified security vulnerabilities and regression fixes are considered for LTS versions.

Version Table

Version	Released Date
Angular Js	October, 2010
Version 2	Sep 14, 2016
Version 3	
Version 4	March 23, 2017
Version 5	November 1, 2017
Version 6	May 4, 2018
Version 7	October 18, 2018
Version 8	May 28, 2019
Version 9	February 6, 2020
Version 10	June 24, 2020
Version 11	November 11, 2020

Installation and Setup

- Download Node JS from nodejs.org, and Install
  - NodeJS takes part in loading the AngularJS application with all the dependencies, such as CSS files and JS files in the browser. For loading all the assets of Angular and accepting all the API calls from the Angular applications, NodeJS is generally used as a web server.

- Go to Command Prompt and run the command : **npm install g @angular/cli**
- Create a folder and access it using command prompt
- Run the command **ng new ApplicationName** (Application name should not be **test** and it should not have any white space)
- Finally run the command **ng serve**. It is a command to use when developing your application locally. It starts up a local development server, which will serve your application while you are developing it. It is not meant to be used for a production environment.

How Does angular application works?

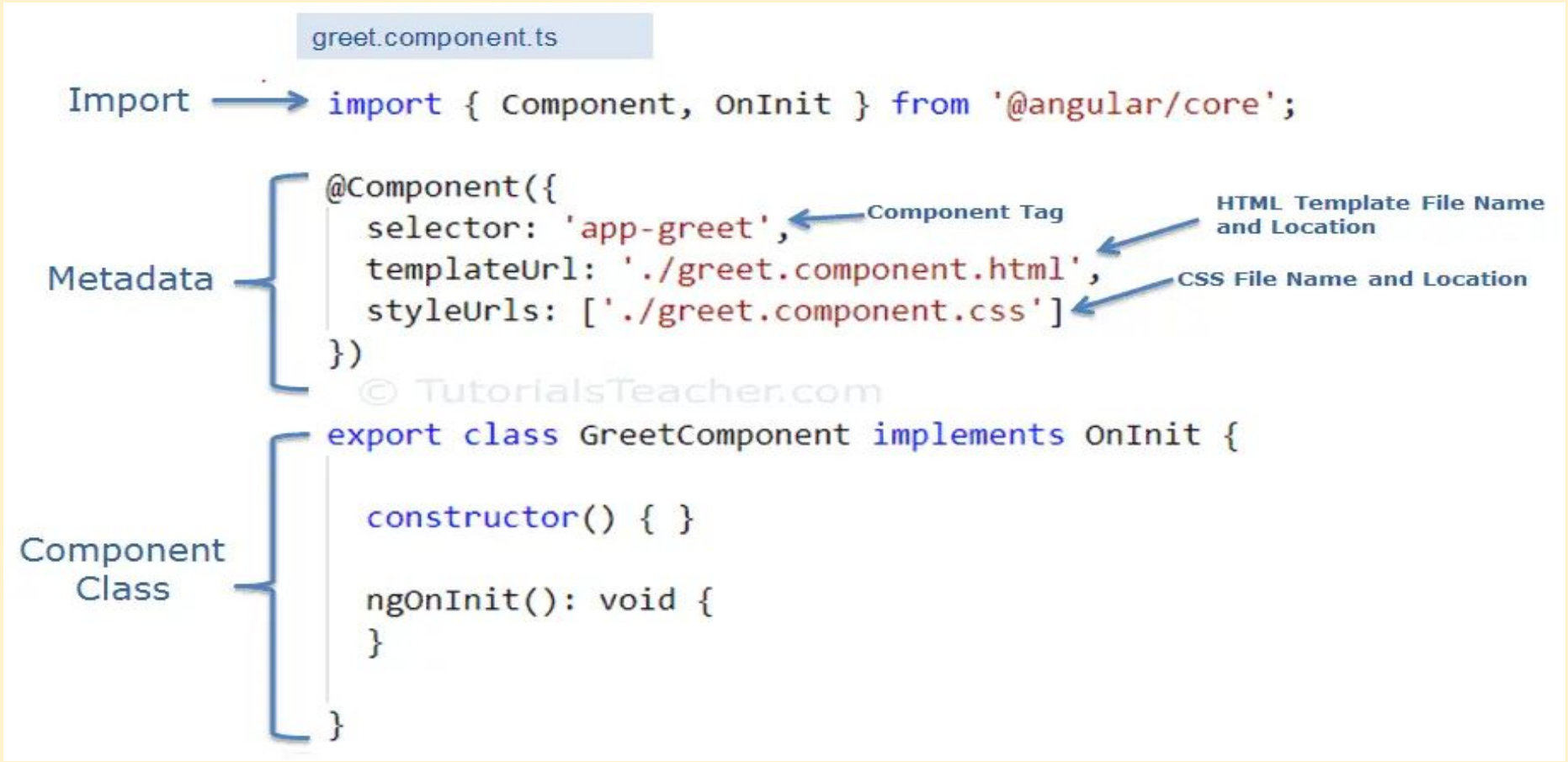
- When we run Angular app, index.html file is rendered in the browser. This is the only file that gets rendered and its contents are changed as we work around the application.

- Angular application is made up of components. When we create Angular application, the default component ‘App’ is provided by Angular CLI.

- Each components has following four files:
  - componentName.component.ts
  - componentName.component.html
  - componentName.component.css
  - componentName.component.spec.ts

- Use **ng generate component componentname** or **ng g c component name** command to create a component.

How Does angular application works?



Data Binding

- **Data binding** is a communication between typescript code (Business Logic) of component and template (User Interface) which user sees. It makes easy to define interactive applications without worrying about pushing and pulling data.
- **One Way Data Binding :** One way data binding is a simple one way communication where HTML template is changed when we make changes in TypeScript code. In one-way data binding, the value of the Model is used in the View (HTML page). Angular Interpolation / String Interpolation, Property Binding, and Event Binding are the example of one-way data binding.
- **Two Way Data Binding :** In two-way data binding, automatic synchronization of data happens between the Model and the View. Here, change is reflected in both components. Whenever you make changes in the Model, it will be reflected in the View and when you make changes in View, it will be reflected in Model. This happens immediately and automatically, ensures that the HTML template and the TypeScript code are updated at all times.

Data Binding

Data Binding

.ts file

```
Interpolation Syntax

class AppComponent
{
    propertyName: string;
    object: DomainObject;
}
```

.html file

```
{{ propertyName }}

{{ object.propertyName }}
```

- **String Interpolation**
  - Angular Interpolation technique displays the component property with their view templates. It uses double curly braces to wrap up the content of the code. It refers to the expressions inserted into the text. The double curly braces are referred to as delimiters. In the syntax of the interpolation binding, the displayed property within the view template is covered in the curly braces known as the mustache syntax.
  - The interpolation binding performs various tasks such as displaying properties, evaluating arithmetic expressions, displaying array items, calling methods, and then displaying the results.

Data Binding

- **Property Binding :** Property binding is one of the binding techniques used to set values for different properties of all the HTML directives and other elements. Property binding is a technique to implement different functionalities such as a toggle button, setting paths, and sharing values. It is an exclusive one-way data binding where the properties of any DOM element are bound with different fields. Property binding has the following syntax- [binding-target]=" binding-source."

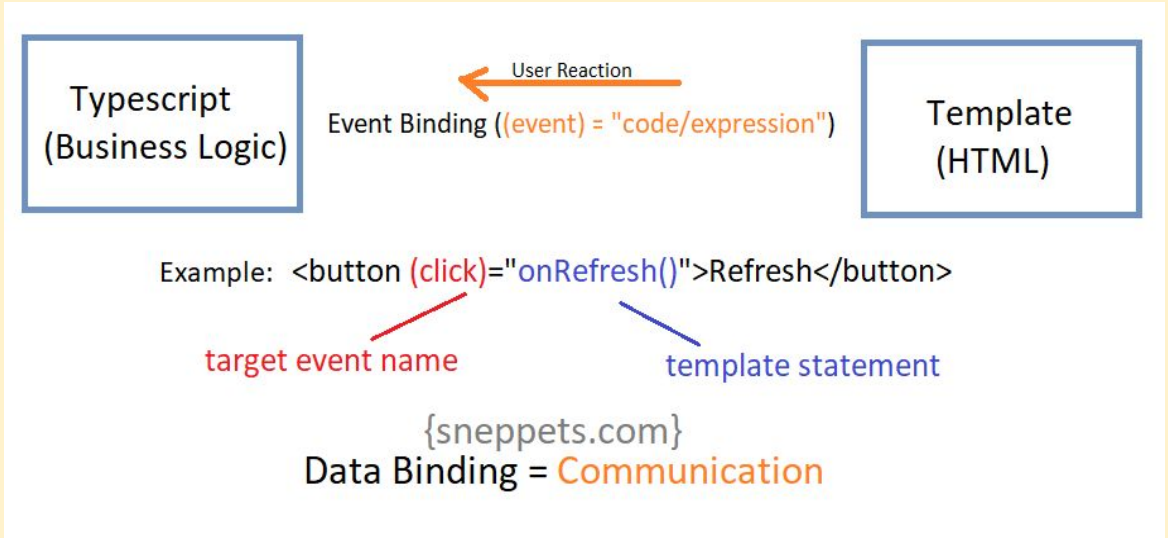
```
<h1 [innerText]="title"></h1>
<h2>Example 1</h2>
<button [disabled]="isDisabled">I am disabled</button>
```

app.component.ts

```
import { Component } from '@angular/core';

@Component({
  selector: 'app-root',
  templateUrl: './app.component.html',
  styleUrls: ['./app.component.css']
})
export class AppComponent {
  title="Angular Property Binding Example"

  //Example 1
  isDisabled= true;

}
```

Data Binding

- **Event Binding :** Event binding in Angular is used to handle events such as keystrokes, mouse movements, clicks and touches. Event binding in Angular consists of target event name within parenthesis on the left hand side of the equal sign, and a quoted template statement on the right.



Data Binding

- **Two Way Binding :** The two-way data binding is basically used in the input type filed or any form element where the user type or provide any value or change any control value on the one side and on the other side, the same automatically updated into the component variables and vice-versa is also true.

- The two-way data binding in Angular is actually a combination of Property Binding and Event Binding. The Syntax is:
  <input [value] = ‘data 1’ (input) = ‘data = $event.target.value’>

- **Two-Way Binding using ngModel Directive:** You can also implement the two-way data binding in Angular Application using the ngModel directive. The ngModel directive combines the square brackets of property binding with the parentheses of event binding in a single notation. The syntax to use ngModel for two-way data binding is:
  <input [(ngModel)] = ‘data’>

Data Binding