Harmony IT Solution

Angular

Tahaluf Training Center 2022

Objective

The Objective of this lecture

- Find out what is the Data binding in the angular.
- Difference between the type of the data binding.
- understanding the concept of the module and how to create it in the terminal.

Data Binding

Overview of Data Binding

A data binding technique keeps data synchronized between components and views.

Each time the user updates the data in the view, Angular updates the component.

Once Angular gets new data for the component, it updates the view.

Overview of Data Binding

There are many uses of data binding. You can show models to the user and change element styles dynamically as well as respond to user events.

There are two basic types of data binding in Angular:

1. One-way binding.
2. Two-way binding.

One-way data-binding

One-way binding allows for data to flow in one direction only.
Either from the view to the component or from the component to the view.

We use Interpolation & property binding to bind data from component to view.

Interpolation Binding

Using interpolation, we can include expressions as part of any string literal in our HTML. The angular evaluates the expression into a string and replaces it with the original string and then updates the view.

Anywhere in the view that uses a string literal, interpolation can be used.
Angular uses double curly braces ({{ }}) in the template to indicate interpolation.

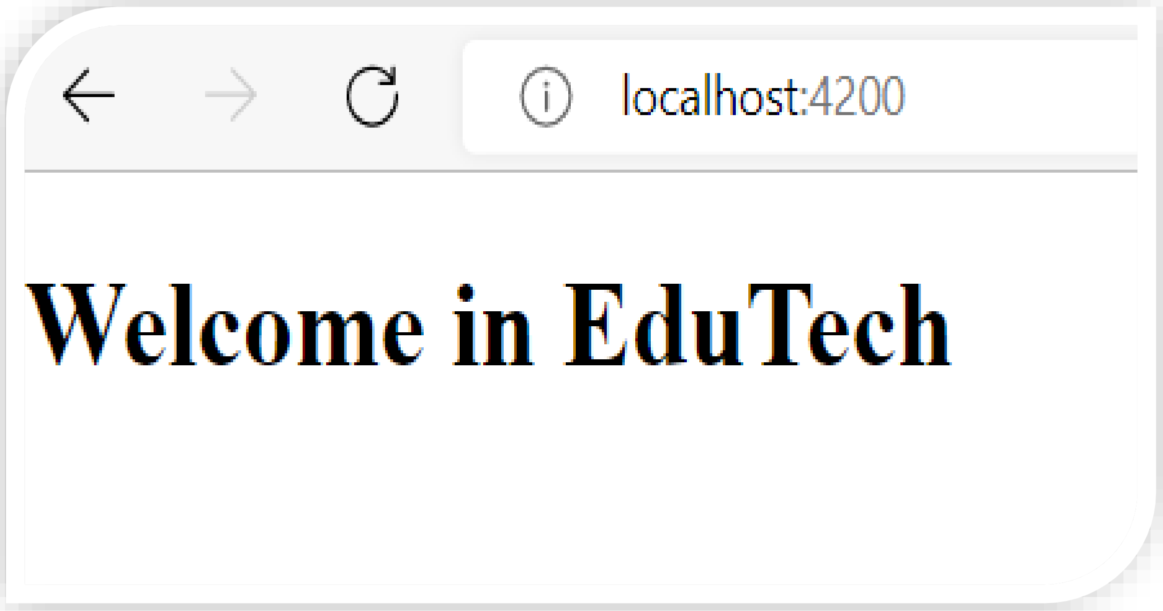
Interpolation Binding Example

In app.component.html

```
<h1>Welcome in {{title}}</h1>
```

Interpolation Binding Example

The Result:



localhost:4200

Welcome in EduTech

Interpolation Binding

When you launch the app, you will see EduTech in the output.
Angular replace {{title}} with the title values of the component.

Also, whenever the values of the title change, Angular updates the view. However, not the other way around.

Property Binding

The binding property of an HTML element's property to a property in the component is called property binding.
Angular updates the element's property when the component's value changes.

Property Binding

property binding allows you to set properties such as class, href, src, textContent, etc.

It can also be used to set properties of components or custom directives (properties decorated with Input).

Property Binding Syntax

The syntax for property binding :

[binding-target]=”binding-source”.

Within the square brackets [] there is the property binding target (or property target). The property name should match the property name of the enclosing element.

Property Binding Syntax

The binding source is enclosed in quotation marks and assigned to the binding target.

The Binding source must be a template expression.

The expression can be a property in the component, a method in the component, a template reference variable, or a combination of all three.

Property Binding Example

In app.component.html.

```
<input type ="text" placeholder="your name" [value]="name" />

<img [src]="imagepath" alt="imagehere">
```

Property Binding Example

where the name and image path must be defined in the typescript file.
In app.component.ts :

```
name:string ='Dana Kanaan';
imagepath:string='https://miro.medium.com/max/
512/1*FKD2Uy_Q6r6AviZA2VD4RQ.png’;
```

Property Binding Example

In app.component.html

```
<input type="text" placeholder="your name" [value]="name“
(change)="handleNameInputChange()" />
```

In app.component.ts

```
handleNameInputChange() {
  alert('The value is changed!');   }
```

Handling events

The most common way to handle events is to pass the event object, $event, to the method that handles it.

A $event object contains information needed by the method, such as the name of the user, or the URL of an image.

Handling events

Target events determine the shape of $event objects. When the target event is a native DOM element event, $event is a DOM event object that has properties such as target and target. value.

Handling Events Example

In app.componemts.html

```
<input type="text" placeholder="your name“
[value]="name"(change)="handleNameInputChange($event)  "/>
```

In app.componemts.ts

```
   handleNameInputChange = (inputevent:any) =>
  {console.log(inputevent.target.value);
   this.name = inputevent.target.value; }
```

Two-way data-binding

By using two-way binding, any changes we make to our model in the component are propagated to the view, and updates to the view are immediately propagated to the underlying component.

Two-way data-binding Syntax

The syntax for tow-way data-binding :

<Element [(ngModel)]=“property"></Element>.

ngModel

For Angular, the ngModel directive is used to achieve the two-way binding on HTML Form elements. ngModel binds to form elements like input, select, and select area.

The ngModel directive is not part of the Angular Core library; instead, it is part of **@angular/forms**.

The **FormsModule** package should be imported into your Angular module.

How to use ngModel

In app.module.ts

```
import { FormsModule } from '@angular/forms';
```

In the import section.

```
imports: [
    BrowserModule,
    AppRoutingModule,
    FormsModule],
```

Two-way data-binding Example

Creates a simple form using two-way data binding which contains :

Name
Email
Salary
And then calculate the annual salary.

Two-way data-binding Example

In app. component.ts

```
export class AppComponent {
title = 'EduTech';
name: string = '';
email: string = '';
salary: number = 0;
}
```

Two-way data-binding Example

In app. component.html

```
<input type="text" placeholder="your name“
 [(ngModel)]="name" />

<input type="text" placeholder="your email"
[(ngModel)]="email" />

<input type="number"  placeholder="your Salary"
[(ngModel)]="salary" />
```

Two-way data-binding Example

And this code reads the value from the typescript file.

```
<h1>Current name is : {{name}}</h1>
<h1>Current email is : {{email}}</h1>
<h1>Current salary is : {{salary}}</h1>
<h1>Current annual salary is : {{salary*12}}</h1>
```

Two-way data-binding Example

In app.component.css

```
input {
        display:  block;
        width:  300px;
        padding:  10px;
        font-size:  1em;
        margin-top:  10px;
    }
```

Two-way data-binding Example

In app.component.html

```
<input type="text"placeholder="your name“
[(ngModel)]="name“
(ngModelChange)="handlechange($event)"/>
```

Exercises

Add to the form a button called clear to clear all data on the HTML page.

Directives

Overview of Directives

Angular directives allow us to manipulate the DOM.

Directives can be used to change the appearance, behavior, or layout of DOM elements.

The directives in Angular are divided into three types :

1. Component Directive.
2. Structural directives.
3. Attribute directives.

Component Directives

Component directives are used for specifying the template/HTML for the Dom Layout.

Component directives are simple classes decorated with the @component decorator.

Structural Directives

A structural directive can change the layout of the DOM by adding or removing elements.

There are three common structural directives:

1. ngFor
2. ngIf
3. ngSwitch

ngFor Structural Directives

ngFor is a Angular directive that repeats a portion of the HTML template once per iteration of an IEnumerableList (collection).

Syntax:

```
ngFor=“let obj of collection”
```

ngFor Example

In app.component.html

```
<tr *ngFor="let customer of customers;">
        <td>{{customer.customerNo}}</td>
        <td>{{customer.name}}</td>
        <td>{{customer.address}}</td>
        <td>{{customer.city}}</td>
        <td>{{customer.state}}</td>
 </tr>
```

ngFor Example

In app.component.ts

```
customers:any=[{
    customerNo:1,
    name:'Ahmad',
    address:'Jordan',
    city:'Irbid',    },
  {  customerNo:2,
    name:'Amal',
    address:'Jordan',
    city:'Amman'} ,]
```

ngIf

By using the ngIf Directive, HTML elements can be added or removed based on an expression.

Boolean values must be returned from the expression.

The element is removed if the expression is false, otherwise, the element is inserted.

ngIf Example

In app.component.html

```
<div *ngIf="toggle">
        This is shown if condition is true
 </div>
```

In app.component.ts

```
toggle:boolean=true;
```

ngSwitch

By using the ngSwitch directive, you can add or remove HTML elements based on match expressions.

ngSwitch directive used with ngSwitchCase and ngSwitchDefault.

Attribute Directives

By using a style directive or attribute, we can change how an element appears or behaves.

There are three common Attribute directives

1. ngModel
2. ngClass
3. ngStyle

Attribute Directives

1. ngModel

In order to achieve the two-way data binding, the ngModel directive is used.

2. ngClass

CSS classes are added or removed from HTML elements using the ngClass property.

ngClass Example

In app.component.css

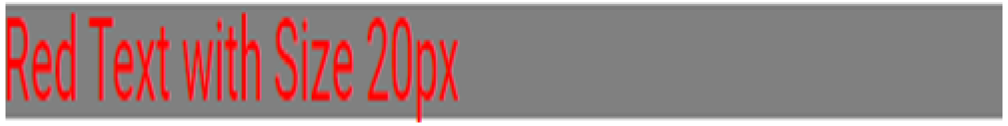
```
.red { color: red;
background-color: gray; }
.size20 { font-size: 20px; }
```

ngClass Example

In app.component.html

```
<div [ngClass]="'red size20'"> Red Text with Size 20px </div>
```

The Result


Red Text with Size 20px

Module In Angular

Overview of Module

It is a deployment subset within your full Angular application.

Using it, you can divide an application into smaller parts and load each one separately, as well as create libraries of components that can be imported directly into other applications.

Overview of Module

An NgModule is defined by a class decorated with @NgModule().

This decorator is a function that takes an object that describes a module as its single metadata property.

properties for NgModule

The most important properties for NgModule :

declarations: The components, directives, and pipes of this module.

imports: The subset of NgModule declarations that must be visible and useable in other NgModule templates.

properties for NgModule

exports : This NgModule depends on other modules whose exported classes are needed by this component template.

providers: Services created by this NgModule become accessible in all parts of the application since this NgModule contributes to the global collection of services. (It is also possible to specify providers at the component level.)

properties for NgModule

bootstrap: The main view of the application, called the root component, is where all other views reside. It's only the root NgModule that needs to set the bootstrap property.

Normal Loading

More than one component, but to call these components it must be in the same module. Like navbar and footer.

Lazy Loading

NGModules are eagerly loaded by default, so as soon as an application loads, all of its NgModules load too, regardless of whether they are required or not.

It’s a design pattern that loads NgModules as needed.

Lazy loading helps keep initial bundle sizes smaller, which in turn helps decrease load times.

Generate a New Module in Angular

How to create a new module in angular

Use this command in the terminal to generate a new module.

ng generate module module _name **- -routing**

OR

ng g m module _name **- -routing**

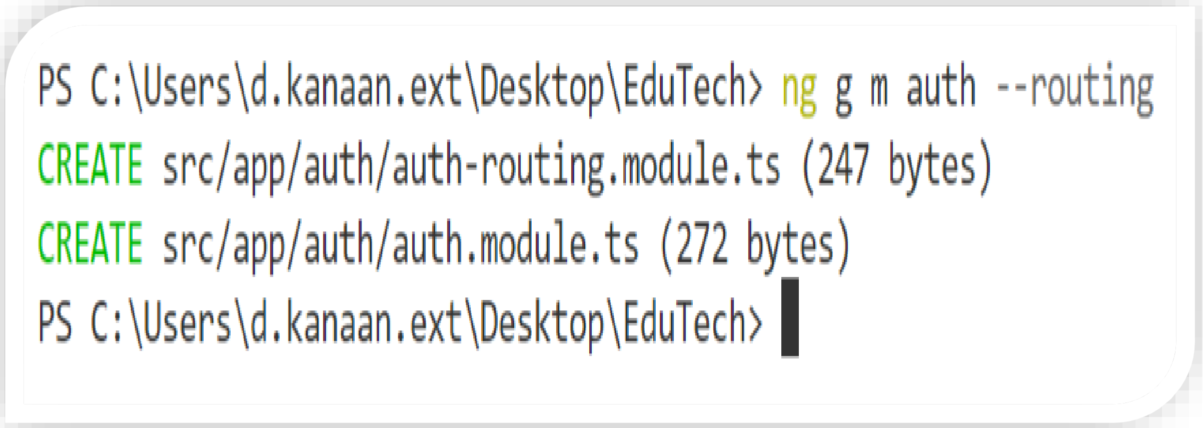
Generate a new module Example

In our project **(EduTech)**, create a new module called **auth,** and for this module generate two components:

login and **register**.

Generate a new module Example

Generate auth module:

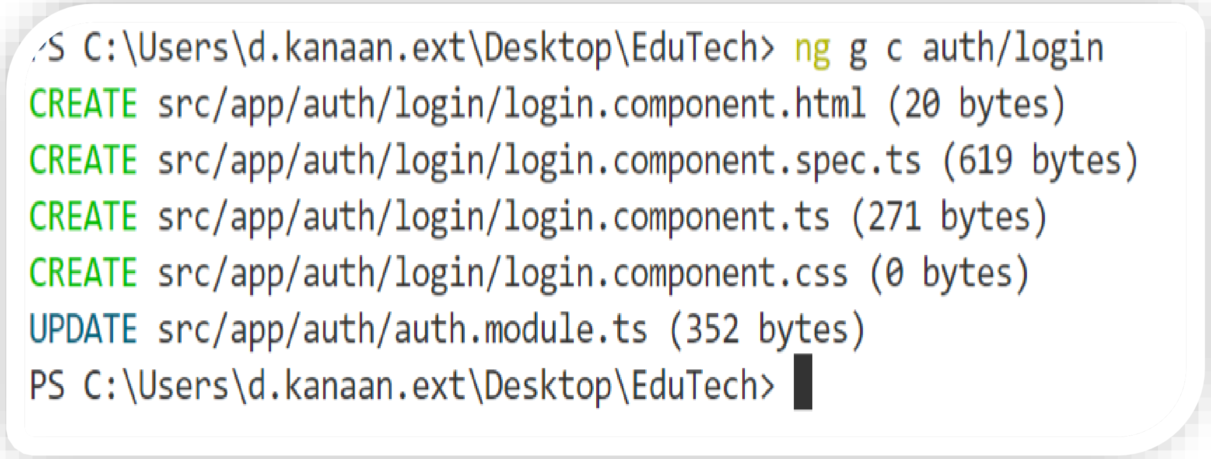


```
PS C:\Users\d.kanaan.ext\Desktop\EduTech> ng g m auth --routing
CREATE src/app/auth/auth-routing.module.ts (247 bytes)
CREATE src/app/auth/auth.module.ts (272 bytes)
PS C:\Users\d.kanaan.ext\Desktop\EduTech>
```

Generate a new module Example

Generate a login component in auth module.

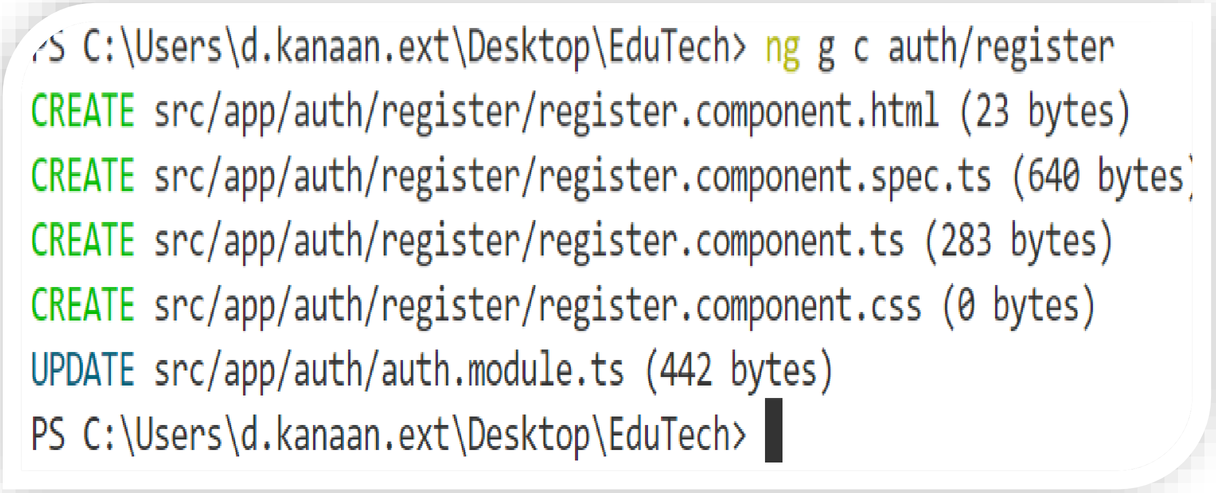
To determent, these components related to this module, write moduleName/componentsName.



```
PS C:\Users\d.kanaan.ext\Desktop\EduTech> ng g c auth/login
CREATE src/app/auth/login/login.component.html (20 bytes)
CREATE src/app/auth/login/login.component.spec.ts (619 bytes)
CREATE src/app/auth/login/login.component.ts (271 bytes)
CREATE src/app/auth/login/login.component.css (0 bytes)
UPDATE src/app/auth/auth.module.ts (352 bytes)
PS C:\Users\d.kanaan.ext\Desktop\EduTech>
```

Generate a new module Example

Generate a Register component in auth module.



```
PS C:\Users\d.kanaan.ext\Desktop\EduTech> ng g c auth/register
CREATE src/app/auth/register/register.component.html (23 bytes)
CREATE src/app/auth/register/register.component.spec.ts (640 bytes)
CREATE src/app/auth/register/register.component.ts (283 bytes)
CREATE src/app/auth/register/register.component.css (0 bytes)
UPDATE src/app/auth/auth.module.ts (442 bytes)
PS C:\Users\d.kanaan.ext\Desktop\EduTech>
```

References

[1] Angular, “Angular,” *Angular.io*, 2019. https://angular.io/

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https://www.tektutorialshub.com/angular-tutorial/

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https://www.simplilearn.com/tutorials/angular-tutorial (accessed Aug. 19, 2022).

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Any Question?