Angular 11 (part-2)

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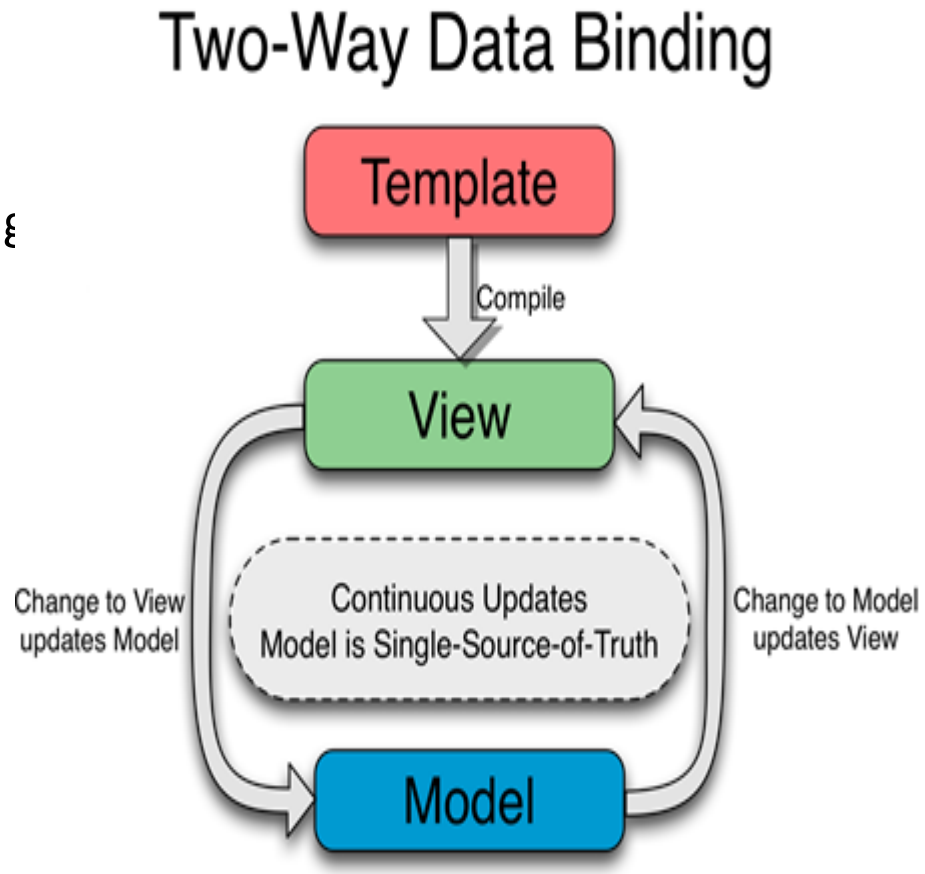
Contents

Two way data binding

- **Two-way binding** means that any **data**-related changes affecting the model are immediately propagated to the matching view(s), and that any changes made in the view(s) (say, by the user) are immediately reflected in the underlying model.



Two way data binding

- Two way data binding is by default disabled in Angular. However, you can use this feature using ngModel.
- Two way data binding is highly optimized in Angular where it applies on particular component, unlike whole $scope in Angular 1.x.
- In order to use ngModel, you need to import FormsModule in app.module.ts.

Two way data binding

//app.module.ts

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

imports: [BrowserModule, FormsModule]

//sample.component.ts

@Component({

template: `<input type="text" *[(ngModel)]="username"*> *{{username}}*`

}) *//ngModel in parenthesis due to event binding & in square brackets due to property binding*

export class SampleComponent { public username: string; }

Directives

- In Angular, Directives allows us to attach behavior to DOM elements.
- There are built-in directives to the framework, such as: **NgFor, NgIf, NgModel, NgClass**… and there's an api for creating custom directives.
- Essentially, a directive is something like a component.
- There are three kinds of directives:
  1) **Component Directive** – using ***@Component()***: Is really a directive with a template.
  2) **Structural Directives** – using ***@Directive***: Can change the DOM layout by adding and removing DOM elements such as **NgFor, NgIf**.
  3) **Attribute Directives** – using ***@Directive***: doesn't change the DOM but can change the appearance or behavior of an element such as **NgStyle**.

Structural Directives

Structural directives are responsible for HTML layout. They shape or reshape the DOM's structure, typically by adding, removing, or manipulating elements.

There are three built-in structural directives:

- ngIf
- ngSwitch
- ngFor

ngIf Directive

The ngIf directive conditionally adds or removes content from the DOM based on whether or not an expression is true or false.

```
@Component({
  selector: 'app-root',
  template: `<p *ngIf="exists"> Hello </p>`
})
export class AppComponent {
  exists = true;
}
```

ngSwitch Directive

- ngSwitch is comprised of two directives, an attribute directive and structural directive.
- It's very similar to a switch statement in JavaScript and other programming languages.

```
@Component({
   selector: 'my-sample',
   template: `<div [ngSwitch]="color">
            <p *ngSwitchCase="'red'">RED</p>
            <p *ngSwitchCase="'green'">GREEN</p>
                <p *ngSwitchDefault>Invalid color</p>
        </div>` })
export class SampleComponent {  public color = 'green';   }
```

ngFor Directive

The NgFor directive is a way of repeating a template by using each item of an iterable as that template's context.

```
@Component({
   selector: 'my-sample',
   template: `<ul>
                <li *ngFor="let color of colors">{{color}}</li>
              </ul>`
export class SampleComponent {
  public colors = ['RED', 'GREEN', 'BLUE'];
}
```

Attribute Directives

Attribute directive changes the appearance or behavior of a HTML DOM element.

Here are the built-in attribute directives:

- *ngClass:*
- *ngStyle:*

ngClass Attribute Directive

ngClass attribute directive is used to apply dynamic classes to HTML elements.

```
@Component({
   selector: 'my-sample',
   template: `<div [ngClass]="{myClass: class_one}">  This is my division
</div>`,
   styles: ['h4 { color: red }', '.myClass { color: blue; }']
})
export class SampleComponent {
  public class_one = true;
}
```

ngStyle Attribute Directive

- ngStyle directive updates an HTML element styles.
- If you have an inline style instead of css class then you can use ngStyle directive.

```
@Component({
    selector: 'my-sample',
    template: `<p [ngStyle]="{'font-style': style, 'background-color': background_color}">This is my ngStyle...</p>`
})
export class SampleComponent {
  public background_color = 'cyan';
  public style = 'italic';
}
```

Custom Directive

- Angular allows developers to define their own directive, also known as ‘custom directive’.
- Custom directive can be both structural or attribute directive.
- Custom directive implementation needs 3 classes from angular core module Directive, ElementRef & Renderer.
- ‘Directive’ class is used as decorator for custom directive class definition.
- ‘ElementRef’ class represents the HTML element on which you wish to apply your custom directive.
- ‘Renderer’ class helps us to render the customized view in HTML DOM.

Custom Directive Example

```
import { Directive, ElementRef } from '@angular/core';

@Directive({
        selector: '[myHidden]'
})
export class HiddenDirective {

        constructor(private element: ElementRef) {
                element.nativeElement.style.visibility = 'hidden‘;
        }
}
```

Usage:

```
<div myHidden>This is my div</div>
```

Inter-Component data transfer

- So far we have seen how to read component property into view & vice versa. Now we are going to discuss how to establish communication between two Angular components & transfer data in between.
- There are two modes to transfer your data across components:
  1) Parent to child component
  2) Child to parent component

Parent to child communication

```
//Parent component
import { SampleComponent } from '….';
@Component({
  selector: 'my-app',
  template: `<div class='container'>
<input type="text" #parentTextBox
(keyup)="0" >
<my-sample
[appTextBox]="parentTextBox.value"></my-
sample>
</div>`
})
export class AppComponent  { }
```

```
//Child component
@Component({
   selector: 'my-sample',
   template: `<div>This is child text box
            <input type="text"
[value]="appTextBox">
            </div>`,
   inputs: ['appTextBox']
})
export class SampleComponent {
  public appTextBox: string;
}
```

Child to parent communication

```
//Child component
@Component({    selector: 'my-sample',
   template: `<div>This is child text box
<input type="text" #childText
(keyup)="onChange(childText.value)">
</div>`,
   outputs: ['childEvent']
})
export class SampleComponent {
  public childEvent = new
EventEmitter<string>();
  onChange(value: string) {
            this.childEvent.emit(value);  }}
```

```
//Parent component
@Component({
  selector: 'my-app',
  template: `<div class='container'>
 {{childData}}    <my-sample
(childEvent)="childData=$event"></my-
sample>
          </div>`
})
export class AppComponent  {
  public childData: string;
}
```

Pipes

- Pipes are used to transform expressions into desired format.
- Angular pipes is same as Angular 1 filters.
- Angular provides several built-in pipes & also you can create your own custom pipes.
- Built-in pipes include:

Async	Currency	Date
Decimal	Json	Percent
Slice	LowerCase	UpperCase

Async & Currency pipes

- **Async**

The Async pipe automatically subscribes to an Observable or a Promise and returns the emitted values as they come in.

```
<ul>
    <li *ngFor="let item of data | async"> {{ item.name }}
    </li>
</ul>
```

- **Currency**

The Currency pipe allows to format numbers in different currencies.

```
{{ 21.45 | currency:'CAD' }}                    // CAD 21.45
{{21.45 | currency:'USD':true }}          // $21.45
{{21.45 | currency:'EUR':false:'2.3-4' }}  // EUR 21.450
```

Date & Decimal pipes

- **Date**

The Date pipe formats the supplied date.

{{ someDate | date:'medium' }} // May 23, 2017, 9:57:09 AM

{{ someDate | date:'fullDate' }} // Tuesday, May 23, 2017

{{ someDate | date:'yy' }} // 17

{{ someDate | date:'Hm' }} // 0957

For more info, refer:

https://angular.io/docs/ts/latest/api/common/index/DatePipe-pipe.html

- **Decimal**

The Decimal pipe formats decimal values.

{{ 21.45 | number:'4.3-5' }} // 0,021.450

In the above example (‘4.3-5’), 4 is for the minimum number of integer digits, 3 is for the minimum number of fraction digits and 5 is for the maximum number of fraction digits.

Json & Lowercase/Uppercase pipes

- **Json**

  The Json pipe is useful for debugging and displays an object as a Json string. It uses JSON.stringify behind the scenes.

  {{ someObject | json }} // { "id": 111, "title": "Welcome to Anglar" }

- **LowerCase & UpperCase**

  Covert text to either lower case or upper case with the respective pipe.

  {{ 'Angular' | uppercase }} // ANGULAR

  {{ 'Angular' | lowercase }} // *angular*

Percent & Slice pipes

- **Percent**

  The Percent pipe transforms a number into it's percentage value.

  {{ 0.01 | percent }} // 1%

  {{ 0.01 | percent:'3.2-3' }} // 001.00%

- **Slice**

  Slice pipe creates a subset list or string.

  {{ 'Angular' | slice:3:6 }} // ula

```
<ul>
        <li *ngFor="let item of [12, 44, 2, 61] | slice:2:4"> {{ item }}
    // 2, 61
        </li>
</ul>
```

Custom Pipe

- Angular allows us to create our own Pipes. It is called as 'custom pipe'.
- Custom pipe is a class which uses decorator @Pipe.
- Custom pipe class must implements an interface 'PipeTransform' which has a single method 'transform':

```
export interface PipeTransform {
        transform(value: any, ...args: any[]): any;
}
```

- You can pass multiple arguments to a pipe using following syntax:
- {{ data | customPipe*:arg1:arg2:arg3* }}

Custom Pipe example

Program to create a custom pipe ‘even’ that filters only even numbers from an array.

```
import { Pipe, PipeTransform } from '@angular/core';

@Pipe({name: 'even'})
export class EvenNumberPipe implements PipeTransform {
        transform(value: Array<number>): Array<number> {
                let evenArray = [];
                for(let item of value) {
                        if (item % 2 === 0) {          evenArray.push(item);       }
                }
                return evenArray;
        }
}
```

Usage:

{{ [12, 55, 81, 34, 522] | *even* }} *//12, 34, 522*

Thank you!!