Learning and Knowledge Management

Angular Directives

Directives

Module Objectives

At the end of this module, you should be able to:

- Understand what are directives in Angular
- Understand the different types of directives
- Understand on Structural directives
- Understand on Attribute directives
- Understand Built-in directives – ngFor, ngIf, ngSwitch, ngClass, ngStyle
- Understand Custom directives

Topic List

#No	Module Topics
1	Directives Overview
2	Types of Directives
3	Using Custom directives
4	Activity on Directives

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Directives Overview

Directives in Angular

What are Directives?

- Custom HTML attribute or element used to extend the HTML features
- Angular provides several built-in directives
- Supports in creating Custom directives
- There are three kinds of directives in Angular

Components	Structural Directives	Attribute Directives
• directives with a template.	• change the DOM layout by adding and removing DOM elements. • Eg: ngFor, ngIf	• change the appearance or behavior of an element. • Eg: ngStyle, ngClass

Topic List

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2	Types of Directives
3	Using Custom directives
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Types of Directives

Types of Directives

Component Directives

- Components are the most common of the three types of Directives
- The Component defines a template through template or templateUrl property and the selector property is used to name the directive
- When the directive name is used in the Html , the component's template is rendered

Types of Directives

Structural Directives

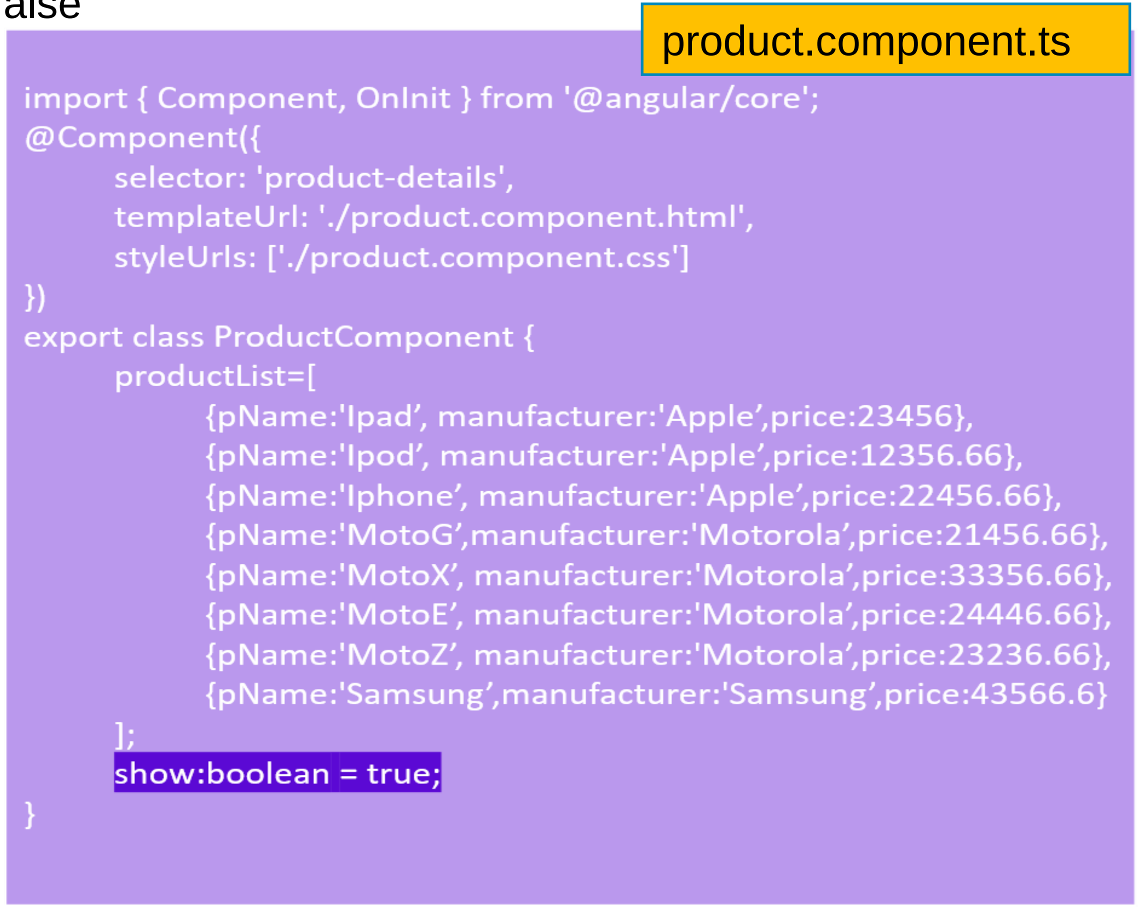
- One Structural directives are responsible for HTML layout.
- They shape or reshape the DOM's structure, typically by adding, removing, or manipulating elements.
- They are applied to a host element. It does whatever it's supposed to do with that host element and its descendants.
- An asterisk (*) precedes the directive attribute name
- Popular structural directives
  - *ngIf
  - *ngSwitch
  - *ngFor

Types of Directives

Structural Directives

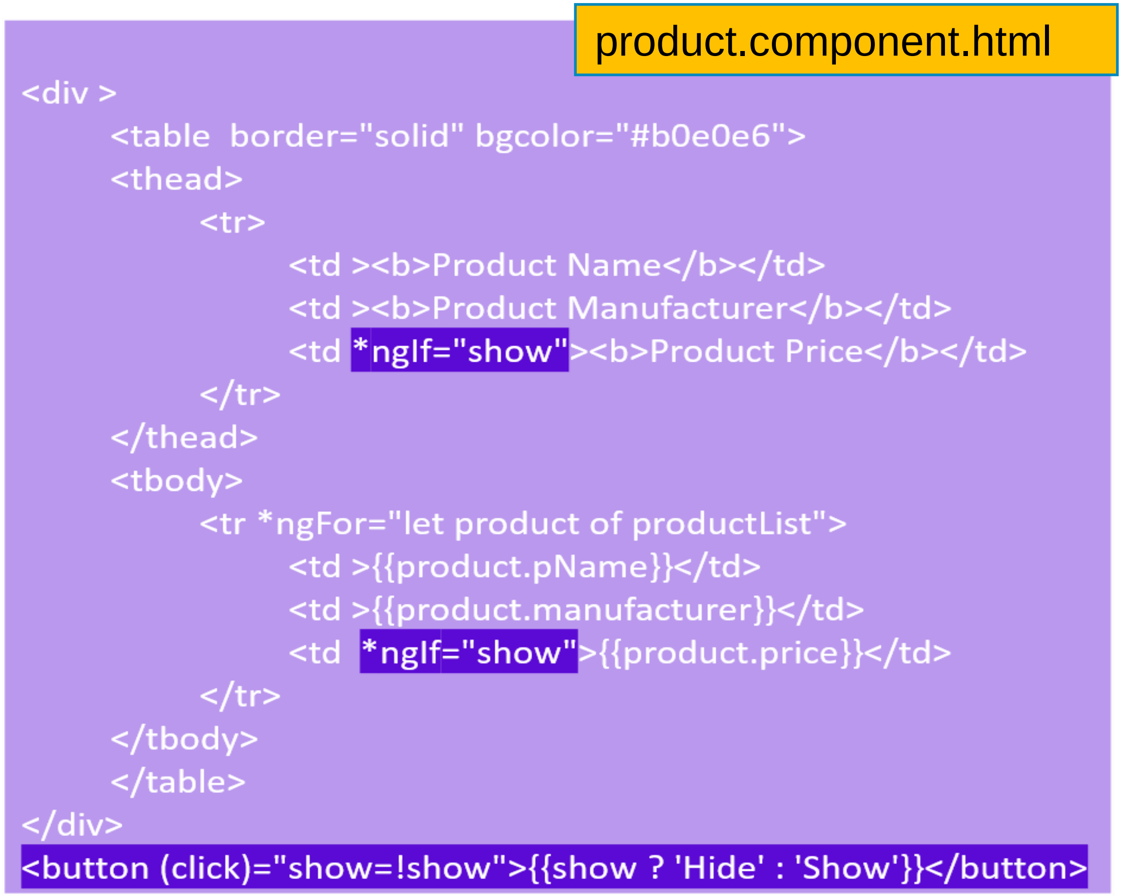
*ngIf Directive

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



product.component.ts

```
import { Component, OnInit } from '@angular/core';
@Component({
        selector: 'product-details',
        templateUrl: './product.component.html',
        styleUrls: ['./product.component.css']
})
export class ProductComponent {
        productList=[
                {pName:'Ipad’, manufacturer:'Apple’,price:23456},
                {pName:'Ipod’, manufacturer:'Apple’,price:12356.66},
                {pName:'Iphone’, manufacturer:'Apple’,price:22456.66},
                {pName:'MotoG’,manufacturer:'Motorola’,price:21456.66},
                {pName:'MotoX’, manufacturer:'Motorola’,price:33356.66},
                {pName:'MotoE’, manufacturer:'Motorola’,price:24446.66},
                {pName:'MotoZ’, manufacturer:'Motorola’,price:23236.66},
                {pName:'Samsung’,manufacturer:'Samsung’,price:43566.6}
        ];
        show:boolean = true;
}
```



product.component.html

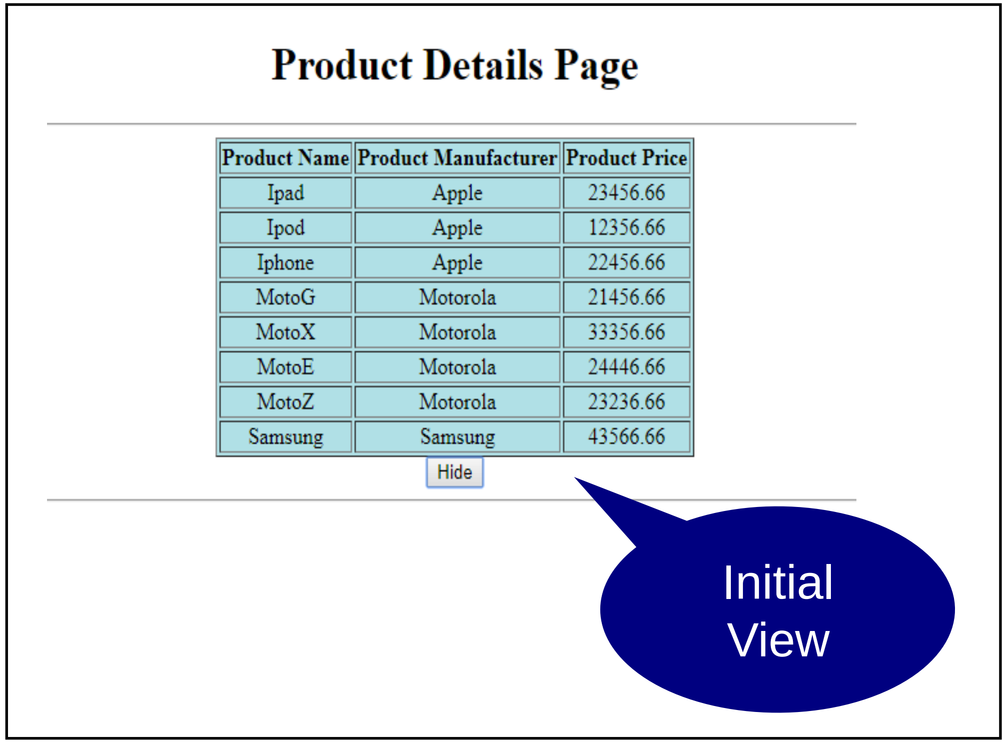
```
<div >
        <table  border="solid" bgcolor="#b0e0e6">
        <thead>
                <tr>
                        <td ><b>Product Name</b></td>
                        <td ><b>Product Manufacturer</b></td>
                        <td *ngIf="show"><b>Product Price</b></td>
                </tr>
        </thead>
        <tbody>
                <tr *ngFor="let product of productList">
                        <td >{{product.pName}}</td>
                        <td >{{product.manufacturer}}</td>
                        <td  *ngIf="show">{{product.price}}</td>
                </tr>
        </tbody>
        </table>
</div>
<button (click)="show=!show">{{show ? 'Hide' : 'Show'}}</button>
```

Types of Directives

Structural Directives

*ngIf Directive

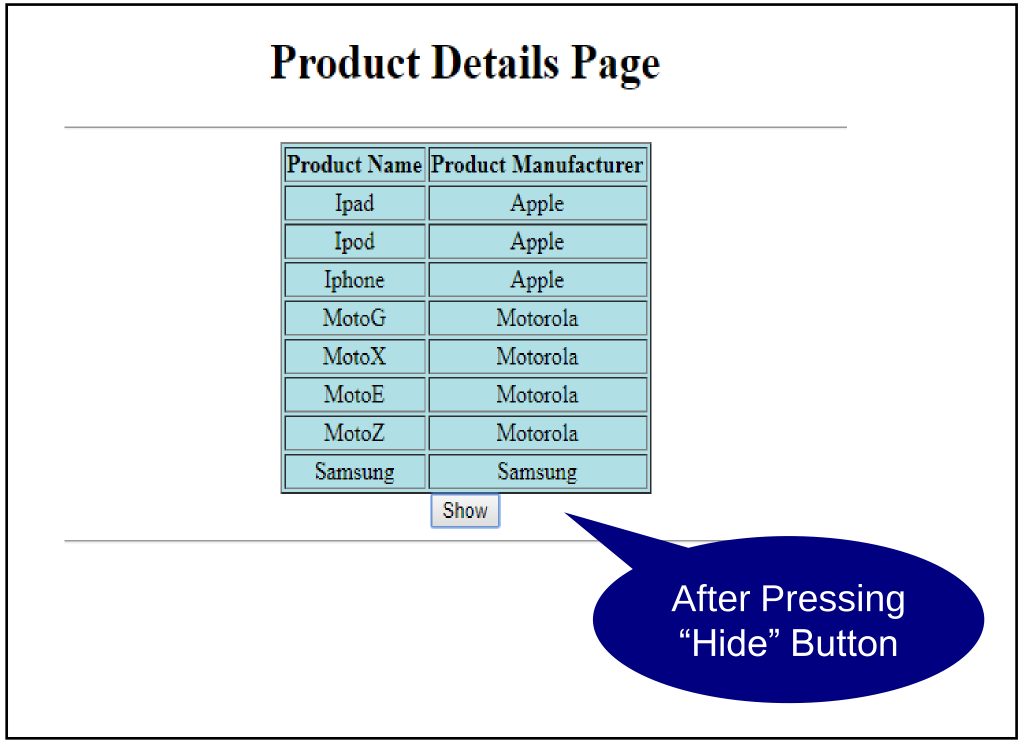
- Output is



Product Details Page

Product Name	Product Manufacturer	Product Price
Ipad	Apple	23456.66
Ipod	Apple	12356.66
Iphone	Apple	22456.66
MotoG	Motorola	21456.66
MotoX	Motorola	33356.66
MotoE	Motorola	24446.66
MotoZ	Motorola	23236.66
Samsung	Samsung	43566.66

Initial View



Product Details Page

Product Name	Product Manufacturer
Ipad	Apple
Ipod	Apple
Iphone	Apple
MotoG	Motorola
MotoX	Motorola
MotoE	Motorola
MotoZ	Motorola
Samsung	Samsung

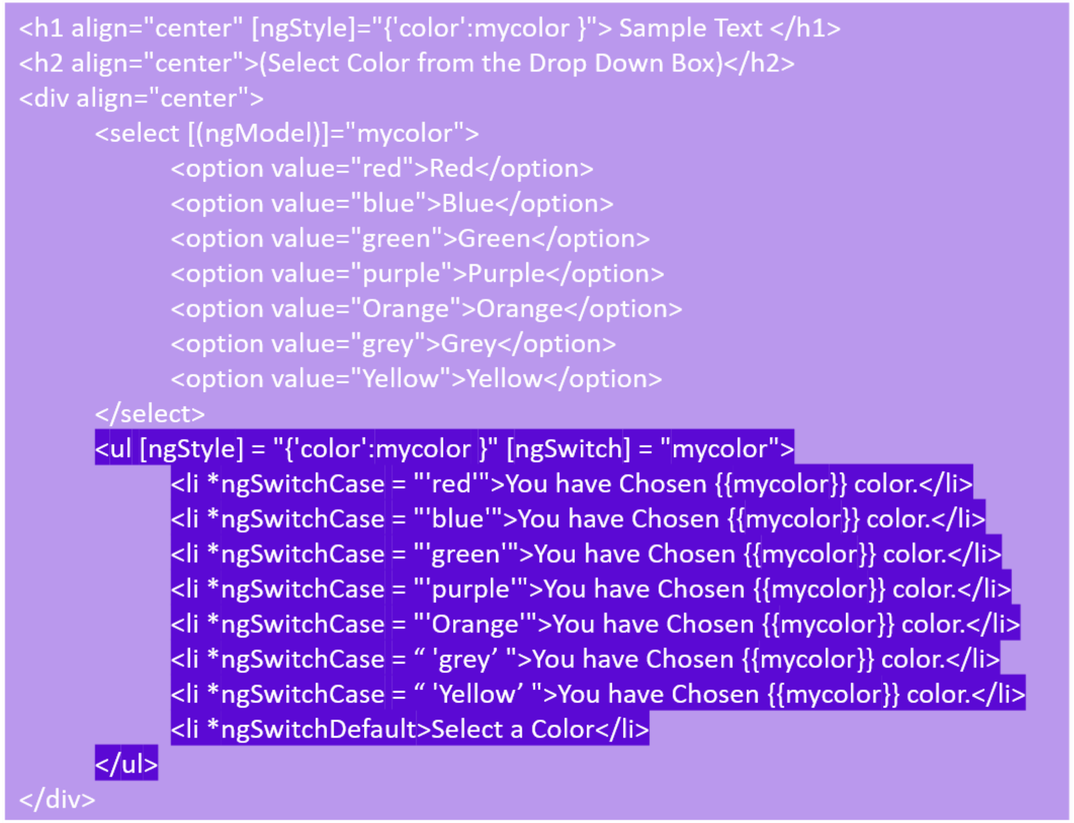
After Pressing "Hide" Button

Types of Directives

Structural Directives

*ngSwitch Directive

- The ngSwitch directive displays one element (and its children) from a set of possible options, based on some condition
- It's very similar to a switch statement in JavaScript



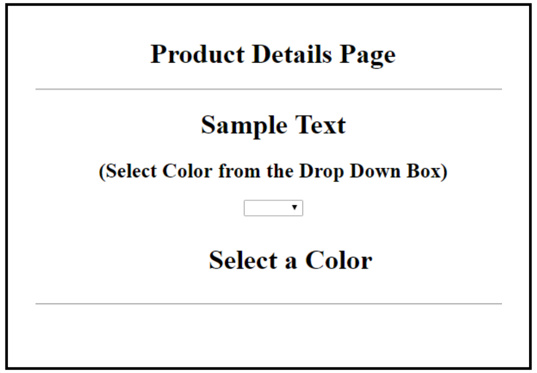
```
<h1 align="center" [ngStyle]="{'color':mycolor }"> Sample Text </h1>
<h2 align="center">(Select Color from the Drop Down Box)</h2>
<div align="center">
        <select [(ngModel)]="mycolor">
                <option value="red">Red</option>
                <option value="blue">Blue</option>
                <option value="green">Green</option>
                <option value="purple">Purple</option>
                <option value="Orange">Orange</option>
                <option value="grey">Grey</option>
                <option value="Yellow">Yellow</option>
        </select>
        <ul [ngStyle] = "{'color':mycolor }" [ngSwitch] = "mycolor">
                <li *ngSwitchCase = "'red'">You have Chosen {{mycolor}} color.</li>
                <li *ngSwitchCase = "'blue'">You have Chosen {{mycolor}} color.</li>
                <li *ngSwitchCase = "'green'">You have Chosen {{mycolor}} color.</li>
                <li *ngSwitchCase = "'purple'">You have Chosen {{mycolor}} color.</li>
                <li *ngSwitchCase = "'Orange'">You have Chosen {{mycolor}} color.</li>
                <li *ngSwitchCase = “ 'grey’ ">You have Chosen {{mycolor}} color.</li>
                <li *ngSwitchCase = “ 'Yellow’ ">You have Chosen {{mycolor}} color.</li>
                <li *ngSwitchDefault>Select a Color</li>
        </ul>
</div>
```

Types of Directives

Structural Directives

*ngSwitch Directive

Output is

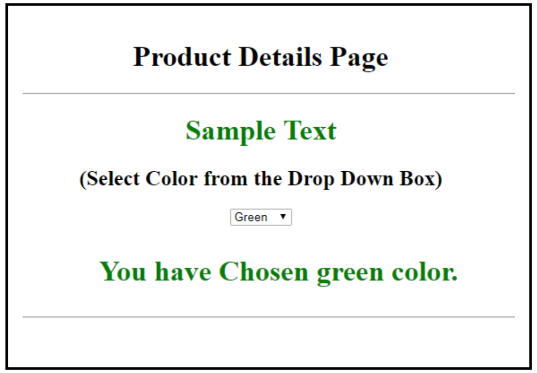


Product Details Page

Sample Text

(Select Color from the Drop Down Box)

Select a Color



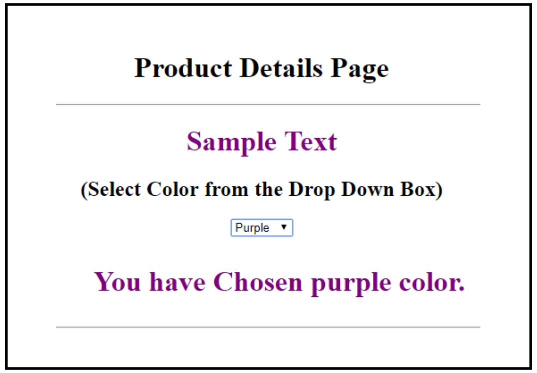
Product Details Page

Sample Text

(Select Color from the Drop Down Box)

Green

You have Chosen green color.



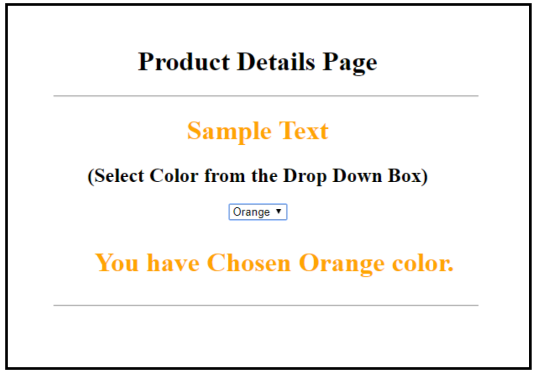
Product Details Page

Sample Text

(Select Color from the Drop Down Box)

Purple

You have Chosen purple color.



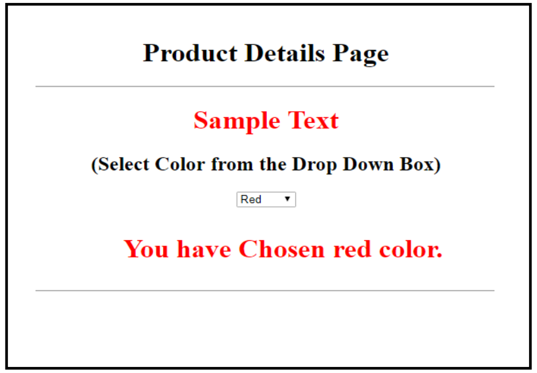
Product Details Page

Sample Text

(Select Color from the Drop Down Box)

Orange

You have Chosen Orange color.



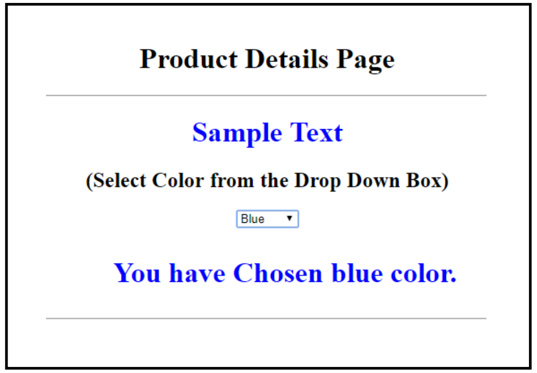
Product Details Page

Sample Text

(Select Color from the Drop Down Box)

Red

You have Chosen red color.



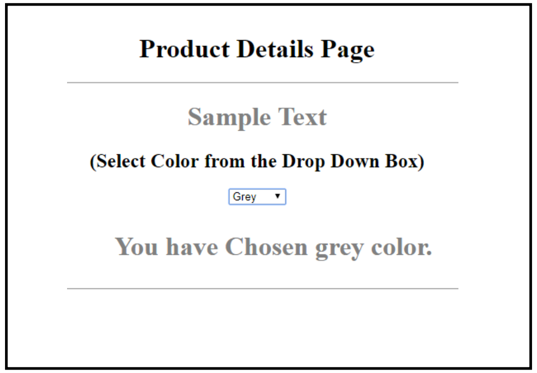
Product Details Page

Sample Text

(Select Color from the Drop Down Box)

Blue

You have Chosen blue color.



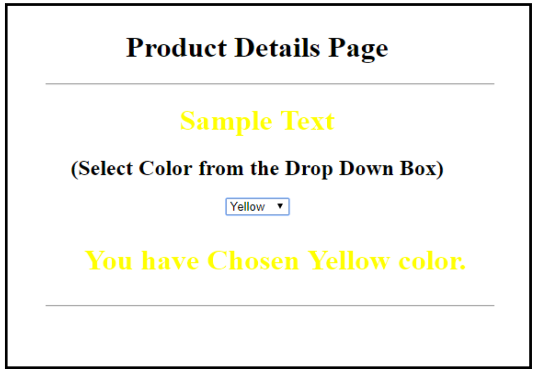
Product Details Page

Sample Text

(Select Color from the Drop Down Box)

Grey

You have Chosen grey color.



Product Details Page

Sample Text

(Select Color from the Drop Down Box)

Yellow

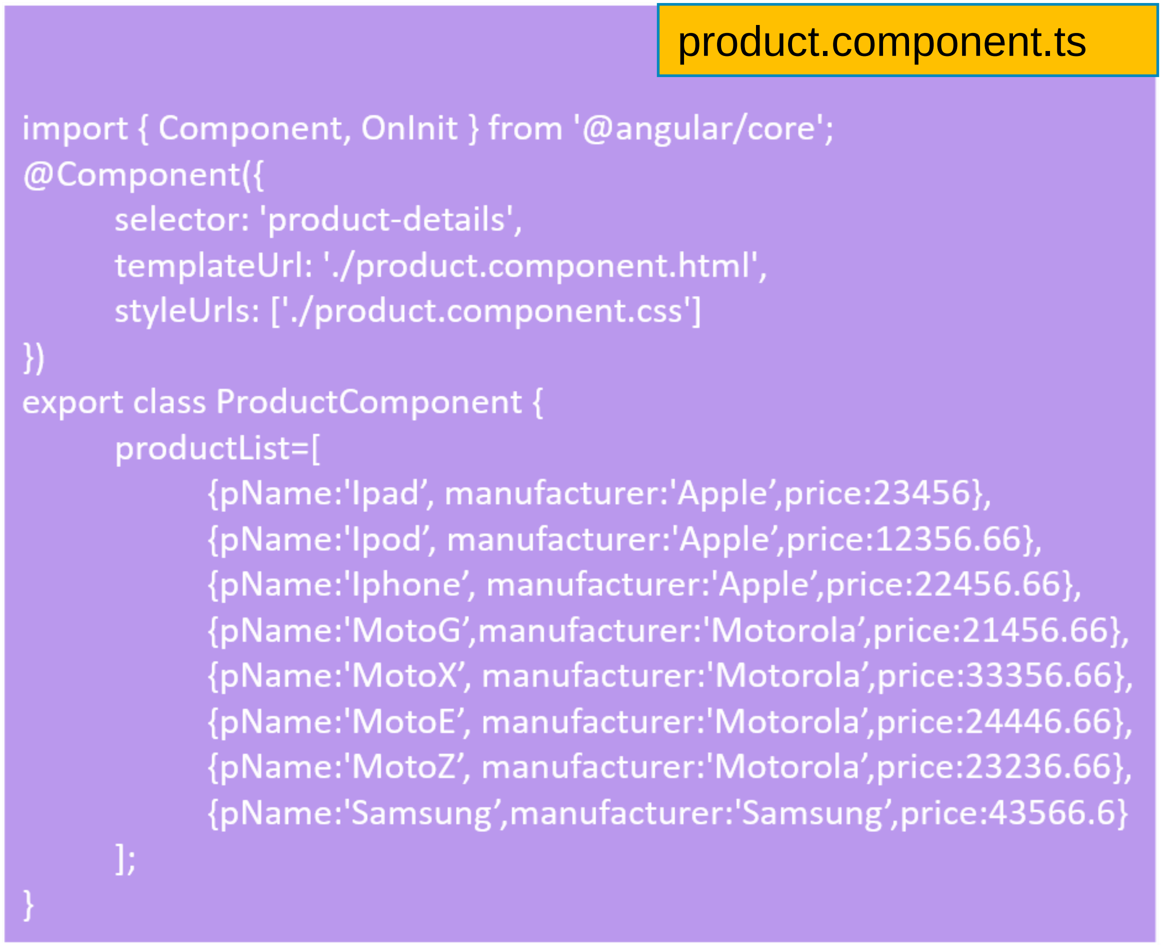
You have Chosen Yellow color.

Types of Directives

Structural Directives

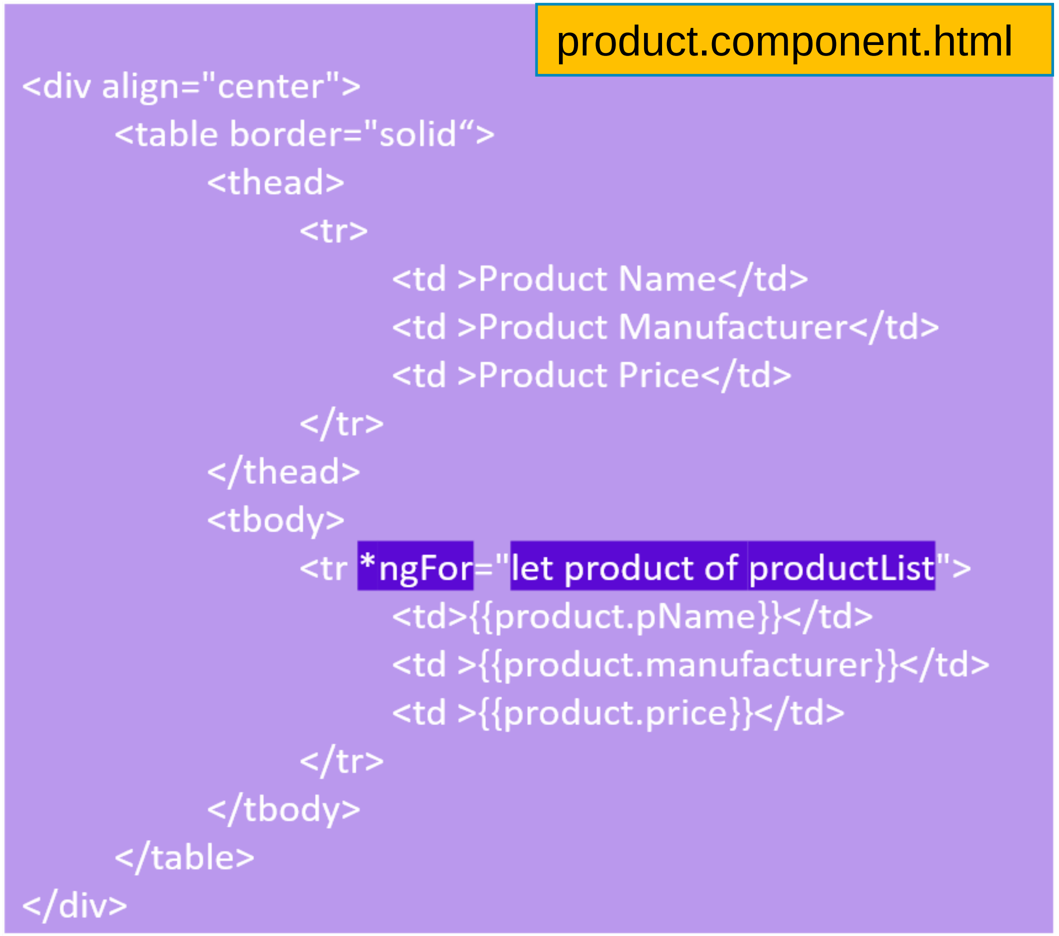
*ngFor Directive

- ngFor is a repeater directive which outputs a list of elements by iterating over an array



product.component.ts

```
import { Component, OnInit } from '@angular/core';
@Component({
        selector: 'product-details',
        templateUrl: './product.component.html',
        styleUrls: ['./product.component.css']
})
export class ProductComponent {
        productList=[
                {pName:'Ipad’, manufacturer:'Apple’,price:23456},
                {pName:'Ipod’, manufacturer:'Apple’,price:12356.66},
                {pName:'Iphone’, manufacturer:'Apple’,price:22456.66},
                {pName:'MotoG’,manufacturer:'Motorola’,price:21456.66},
                {pName:'MotoX’, manufacturer:'Motorola’,price:33356.66},
                {pName:'MotoE’, manufacturer:'Motorola’,price:24446.66},
                {pName:'MotoZ’, manufacturer:'Motorola’,price:23236.66},
                {pName:'Samsung’,manufacturer:'Samsung’,price:43566.6}
        ];
}
```



product.component.html

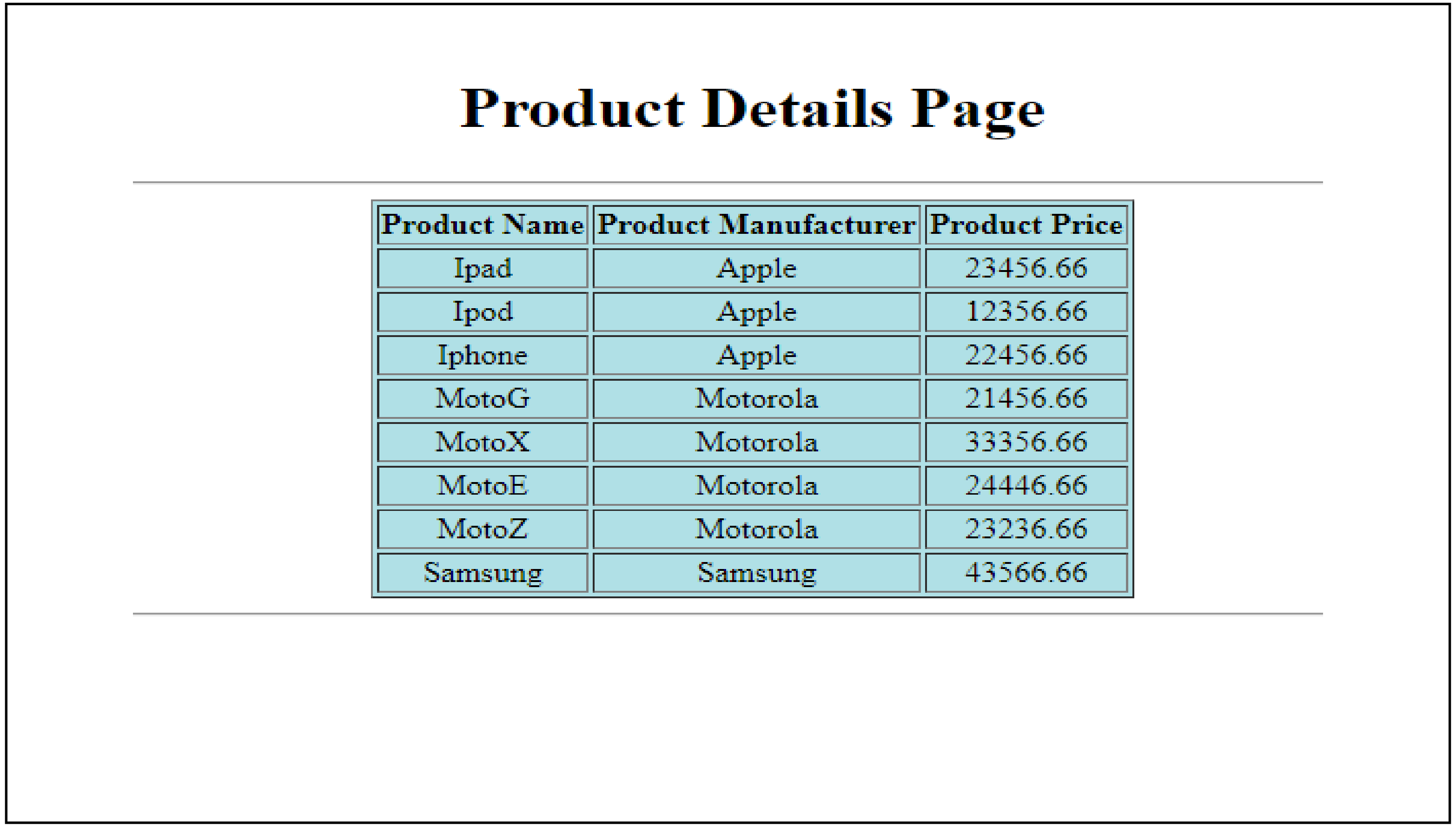
```
<div align="center">
        <table border="solid“>
                <thead>
                        <tr>
                                <td >Product Name</td>
                                <td >Product Manufacturer</td>
                                <td >Product Price</td>
                        </tr>
                </thead>
                <tbody>
                        <tr *ngFor="let product of productList">
                                <td>{{product.pName}}</td>
                                <td >{{product.manufacturer}}</td>
                                <td >{{product.price}}</td>
                        </tr>
                </tbody>
        </table>
</div>
```

Types of Directives

Structural Directives

*ngFor Directive

Output is



Product Details Page

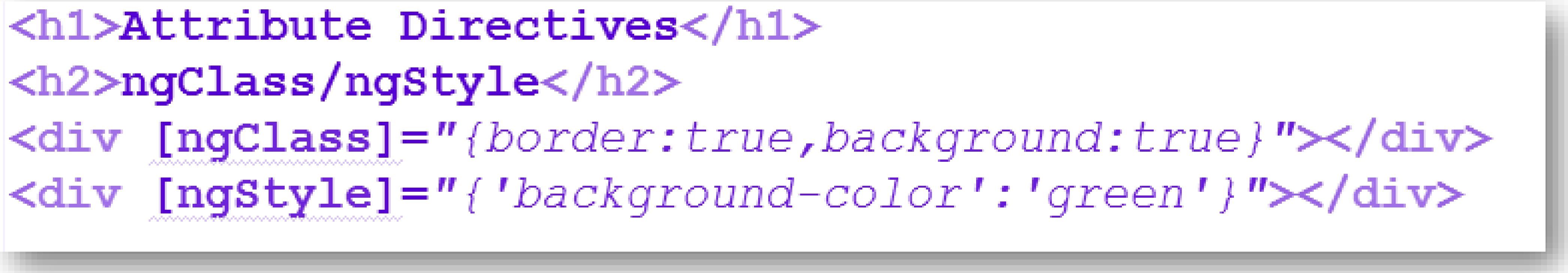
Product Name	Product Manufacturer	Product Price
Ipad	Apple	23456.66
Ipod	Apple	12356.66
Iphone	Apple	22456.66
MotoG	Motorola	21456.66
MotoX	Motorola	33356.66
MotoE	Motorola	24446.66
MotoZ	Motorola	23236.66
Samsung	Samsung	43566.66

Types of Directives

Attribute Directives

- An Attribute directive changes the appearance or behavior of a DOM element.
- Popular attribute directives
  - ngStyle
  - ngClass

Code Snippet looks like below



```
<h1>Attribute Directives</h1>
<h2>ngClass/ngStyle</h2>
<div [ngClass]="{border:true,background:true}"></div>
<div [ngStyle]="{'background-color':'green'}"></div>
```

Types of Directives

Attribute Directives

ngClass - DEMO

product.component.html

```
<h1  [ngClass]="{class1:true}">{{title}}</h1>
<table border=2px solid [ngClass]="{class2:true}">
        <thead>
                <td colspan="2" >{{productName}}</td>
        </thead>
        <tbody>
                <tr>
                        <td>Product ID</td>
                        <td >{{productId}} </td>
                </tr>
                <tr>
                        <td>Product Price</td>
                        <td >{{productPrice}}</td>
                </tr>
        </tbody>
</table>
<button (click)="toggle()">Toggle Styles</button>
```

product.component.css

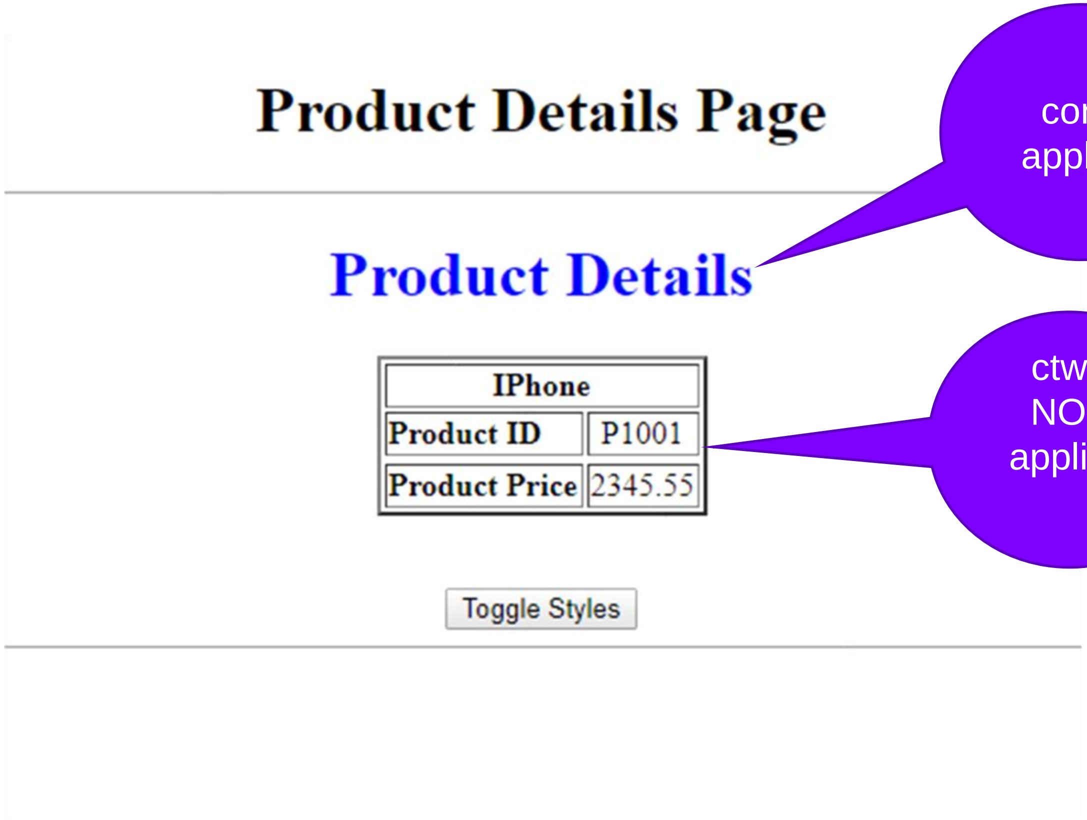
```
.class1{color:blue}

.class2{background-
color:red}
```

Types of Directives

Attribute Directives

ngClass - Output

Before Pressing Button



Product Details Page

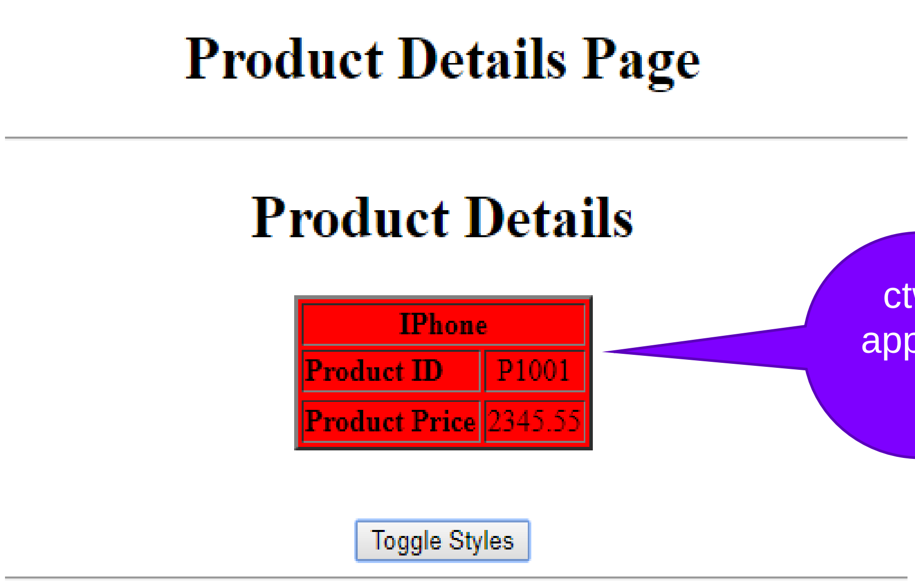
Product Details

IPhone	
Product ID	P1001
Product Price	2345.55

cone applied

ctwo NOT applied

After Pressing Button



Product Details Page

Product Details

IPhone	
Product ID	P1001
Product Price	2345.55

ctwo applied

Types of Directives

Attribute Directives

ngStyle - DEMO

- The ngStyle directive allows you to set CSS style on an HTML element conditionally.

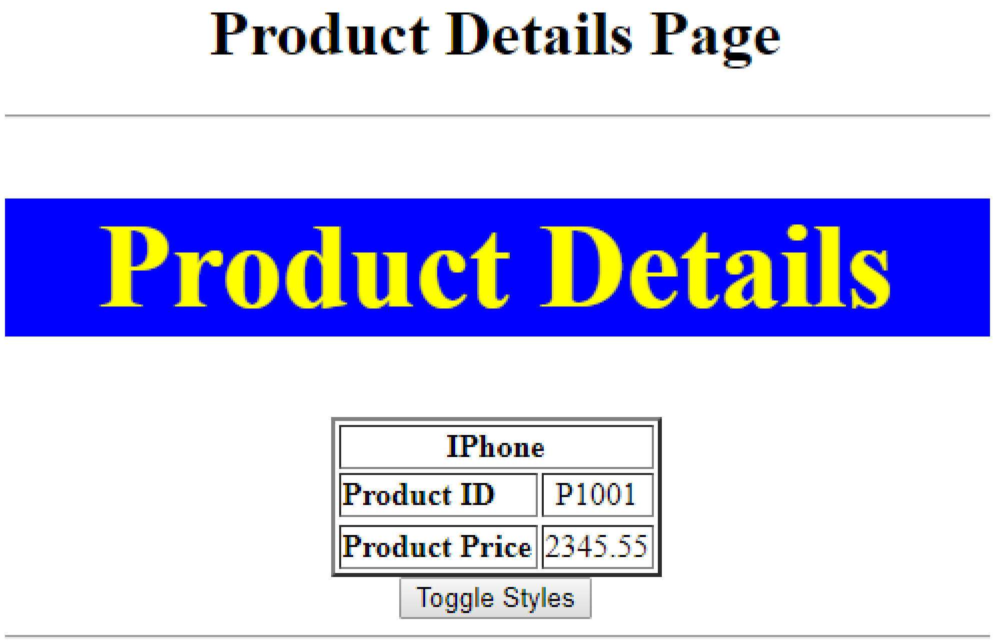
```
import { Component, OnInit } from '@angular/core';
@Component({
        selector: 'product-details',
        templateUrl: './product.component.html',
        styleUrls: ['./product.component.css']
})
export class ProductComponent  {
        title : string = "Product Details";
        productid : string = "P1001";
        productName : string  = "IPhone";
        productPrice : number  =  2345.55;
        mysize : string = '60px';
        mycolor : string = 'Yellow';
        mybgcolor : string = 'blue';
        cone : boolean = true;ctwo : boolean = false;
        toggle(){
                this.cone = !this.cone;
                this.ctwo = !this.ctwo;
        } }
```

```
<h1 [ngStyle]  = "{'font-size' : mysize, 'background-
color' : mybgcolor, 'color' : mycolor }"> {{title}}</h1>
<table border=2px solid [ngClass]="{class2:ctwo}">
        <thead>
                <td colspan="2" >{{productName}}</td>
        </thead>
        <tbody>
                <tr>
                        <td>Product ID</td>
                        <td >{{productId}}</td>
                </tr>
                <tr>
                        <td>Product Price</td>
                        <td >{{productPrice}}</td>
                </tr>
        </tbody>
</table><button (click)="toggle()">Toggle
Styles</button>
```

Types of Directives

Attribute Directives

ngStyle - OUTPUT



Product Details Page

Product Details

IPhone	
Product ID	P1001
Product Price	2345.55

mysize ,mycolor,
mybgcolor Applied

Topic List

#No	Module Topics
1	Directives Overview
2	Types of Directives
3	Using Custom directives
4	Activity on Directives

Using Custom Directives

Using Custom Directives

Custom Attribute Directive

- To generate a new custom attribute directive using Angular-CLI use,

```
ng g directive <directive-name>

Example: ng g directive myhighlighter
```

Using Custom Directives

Custom Attribute Directive - DEMO

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

@Directive({
      selector: ‘[my-highlighter]'
})
export class MyhighlighterDirective {

      constructor(eleRef:ElementRef) {
            eleRef.nativeElement.style.background='red';
      }
}
```

```
<div align="center">
      <h1 my-highlighter> {{PageHeader}} </h1>
</div>
<div>
      <product-details> </product-details>
</div>
```

Using Custom Directives

Custom Attribute Directive - DEMO

```
<h1 [ngStyle]="{'color':mycolor }"> Sample Text </h1>
<h2 >(Select Color from the Drop Down Box)</h2>
<div >
<select [(ngModel)]="mycolor">
        <option value="red">Red</option>
        <option value="blue">Blue</option>
        <option value="green">Green</option>
        <option value="purple">Purple</option>
        <option value="Orange">Orange</option>
        <option value="grey">Grey</option>
        <option value="Yellow">Yellow</option>
</select>
<ul [ngStyle]="{'color':mycolor }" [ngSwitch]="mycolor">
        <li *ngSwitchCase="'red'">You have Chosen {{mycolor}} color.</li>
        <li *ngSwitchCase="'blue'">You have Chosen {{mycolor}} color.</li>
        <li *ngSwitchCase="'green'">You have Chosen {{mycolor}} color.</li>
        <li *ngSwitchCase="'purple'">You have Chosen {{mycolor}} color.</li>
        <li *ngSwitchCase="'Orange'">You have Chosen {{mycolor}} color.</li>
        <li *ngSwitchCase="'grey'">You have Chosen {{mycolor}} color.</li>
        <li *ngSwitchCase="'Yellow'">You have Chosen {{mycolor}} color.</li>
        <li *ngSwitchDefault my-highlighter>Select a Color</li>
</ul>
</div>
```

Using Custom Directives

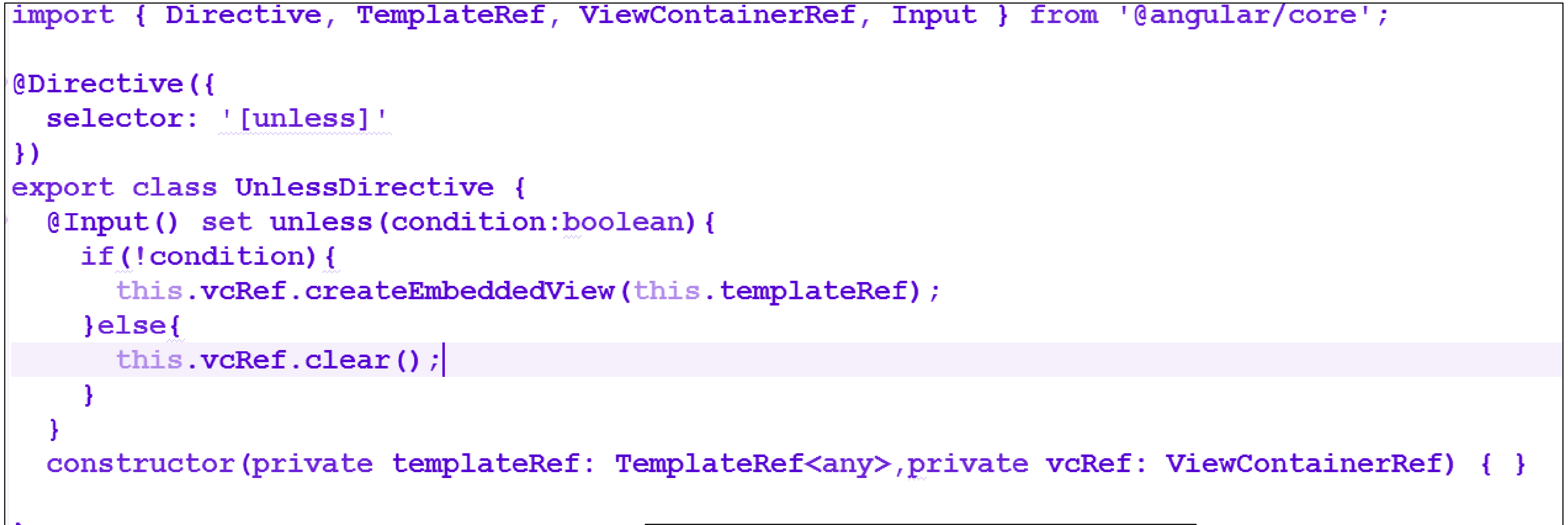
Custom Structural Directive

- To generate a new custom structural directive using Angular-CLI use,

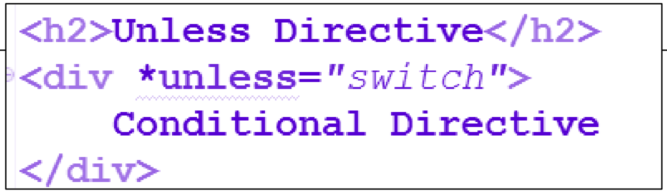
```
ng g directive <directive-name>

Example: ng g directive myhighlighter
```

Using Custom Directives

Custom Structural Directive - DEMO



```
import { Directive, TemplateRef, ViewContainerRef, Input } from '@angular/core';

@Directive({
  selector: '[unless]'
})
export class UnlessDirective {
  @Input() set unless(condition:boolean){
    if(!condition){
      this.vcRef.createEmbeddedView(this.templateRef);
    }else{
      this.vcRef.clear();
    }
  }
  constructor(private templateRef: TemplateRef<any>,private vcRef: ViewContainerRef) { }

}
```



```
<h2>Unless Directive</h2>
<div *unless="switch">
    Conditional Directive
</div>
```

Topic List

#No	Module Topics
1	Directives Overview
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3	Using Custom directives
4	Activity on Directives

Activity on Directives

Activity

Complete an activity on Directives

Refer the Hands On Workbook :
LKM_MEAN_Angular_Directives_HONWorkbook.docx

Module Summary

Now, you should be able to:

- Understand what are Directives
- Understand the different types of Directives
- Understand what are Component directives
- Understand what are Structural directives
- Understand what are Attribute directives
- Understand Built-in directives – ngFor, ngIf, ngSwitch, ngClass, ngStyle
- Understand Custom directives

Reference

Heading	Description
Directives	Link

Thank You