More on Components

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Improving Our Components

- Strong typing & interfaces
- Encapsulating styles
- Lifecycle hooks
- Custom pipes
- Relative Paths with Module Id

Module Overview

Defining an Interface

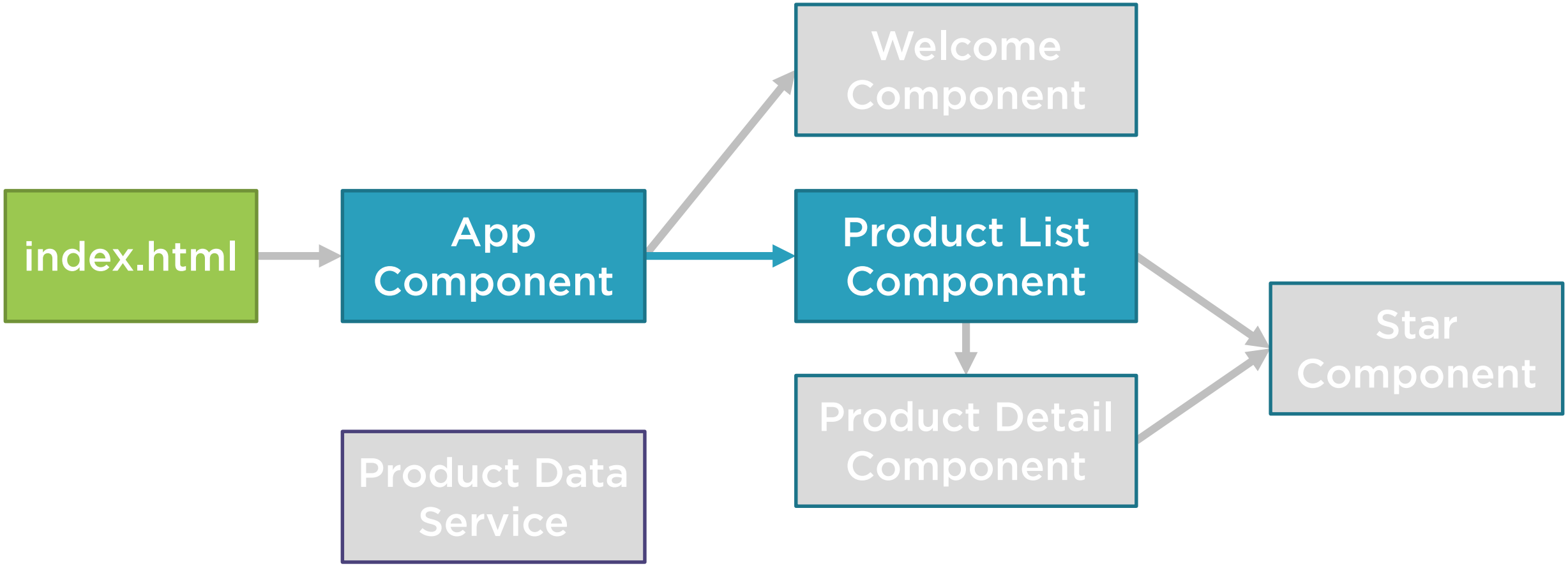
Encapsulating Component Styles

Using Lifecycle Hooks

Building a Custom Pipe

Defining Relative Paths with Module Id

Application Architecture



Strong Typing

```
export class ProductListComponent {
    pageTitle: string = 'Product List';
    showImage: boolean = false;
    listFilter: string = 'cart';
    message: string;

    products: any[] = […];

    toggleImage(): void {
        this.showImage = !this.showImage;
    }

    onRatingClicked(message: string): void {
         this.message = message;
    }
```

Interface

A specification identifying a related set of properties and methods.

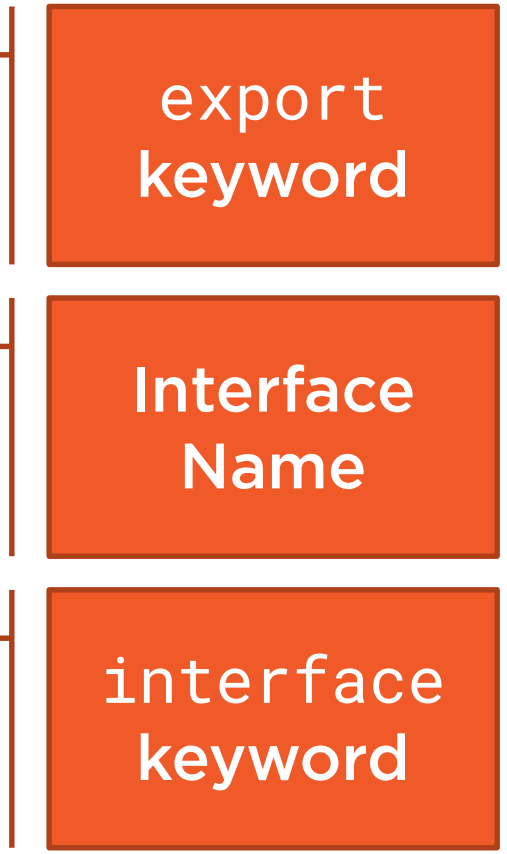
A class commits to supporting the specification by implementing the interface.

Use the interface as a data type.

Development time only!

Interface Is a Specification

```
export interface IProduct {
    productId: number;
    productName: string;
    productCode: string;
    releaseDate: Date;
    price: number;
    description: string;
    starRating: number;
    imageUrl: string;
    calculateDiscount(percent: number): number;
}
```



Using an Interface as a Data Type

```
import { IProduct } from './product';

export class ProductListComponent {
  pageTitle: string = 'Product List';
  showImage: boolean = false;
  listFilter: string = 'cart';

  products: IProduct[] = […];

  toggleImage(): void {
      this.showImage = !this.showImage;
   }
}
```

Handling Unique Component Styles

Templates sometimes require unique styles

We can inline the styles directly into the HTML

We can build an external stylesheet and link it in index.html

There is a better way!

Encapsulating Component Styles

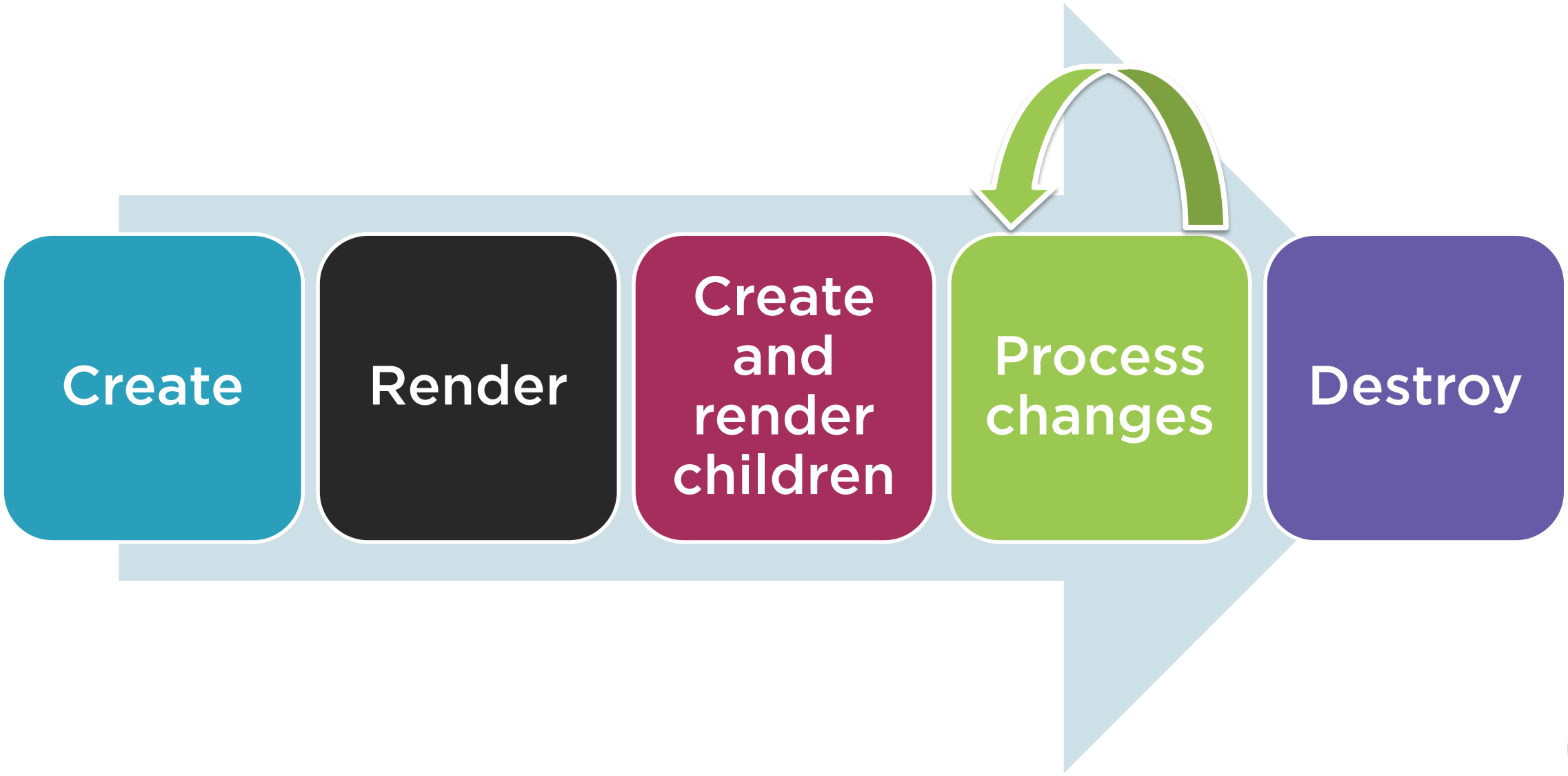
styles

```
@Component({
    selector: 'pm-products',
    templateUrl: 'app/products/product-list.component.html',
    styles: ['thead {color: #337AB7;}']})
```

styleUrls

```
@Component({
    selector: 'pm-products',
    templateUrl: 'app/products/product-list.component.html',
    styleUrls: ['app/products/product-list.component.css']})
```

Component Lifecycle



Component Lifecycle Hooks

OnInit: Perform component initialization, retrieve data

OnChanges: Perform action after change to input properties

OnDestroy: Perform cleanup

Using a Lifecycle Hook

2

1

```
export class ProductListComponent
                    implements OnInit {
  pageTitle: string = 'Product List';
  showImage: boolean = false;
  listFilter: string = 'cart';
  products: IProduct[] = […];
```

3

```
}
```

Transforming Data with Pipes

Transform bound properties before display

Built-in pipes

- date
- number, decimal, percent, currency
- json, slice
- etc

Custom pipes

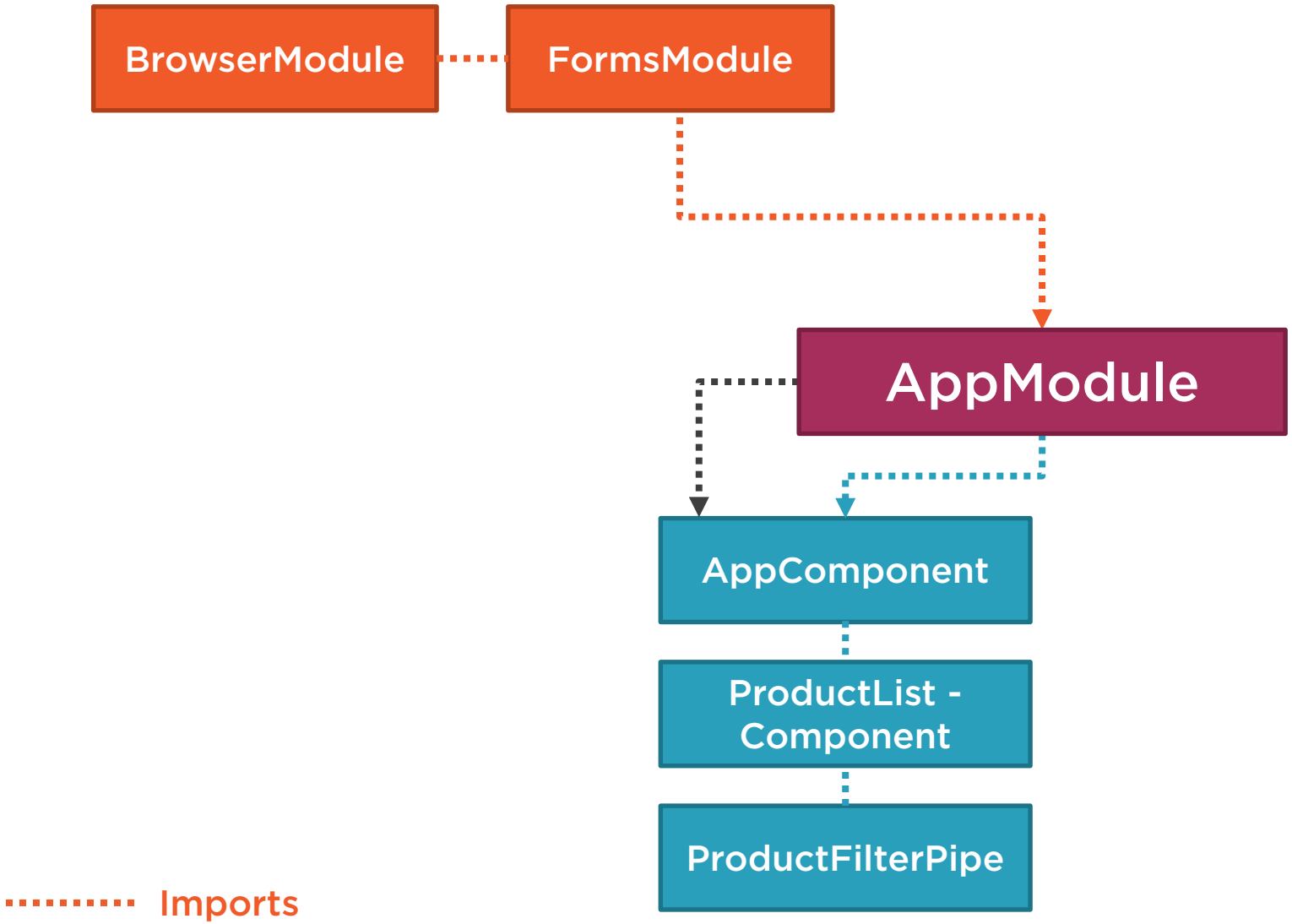
Building a Custom Pipe

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

@Pipe({
     name:'productFilter'
})
export class ProductFilterPipe
                    implements PipeTransform {

  transform(value: IProduct[],
            filterBy: string): IProduct[]{
  }
}
```

Using a Custom Pipe

Template

```
<tr *ngFor ='let product of products | productFilter: listFilter'>
```


BrowserModule
FormsModule
AppModule
AppComponent
ProductList - Component
ProductFilterPipe
Imports
Exports
Declarations
Providers
Bootstrap

Using a Custom Pipe

Template

```
<tr *ngFor ='let product of products | productFilter: listFilter'>
```

Module

```
@NgModule({
  imports: [
      BrowserModule,
      FormsModule ],
  declarations: [
      AppComponent,
      ProductListComponent,
      ProductFilterPipe ],
  bootstrap: [ AppComponent ]
})
export class AppModule { }
```

Relative Paths and Module Id

product-list.component.ts

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

@Component({
    selector: 'pm-products',
    templateUrl: 'app/products/product-list.component.html',
    styleUrls: ['app/products/product-list.component.css']
})
export class ProductListComponent {
 pageTitle: string = 'Product List';
 ...
}
```

Relative Paths and Module Id

product-list.component.ts

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

@Component({
    selector: 'pm-products',
    moduleId: module.id,
    templateUrl: 'product-list.component.html',
    styleUrls: ['product-list.component.css']
})
export class ProductListComponent {
 pageTitle: string = 'Product List';
 ...
}
```

module.id

Variable

- Available when using the CommonJS module format

Contains

- The absolute URL of the component class module file

Requires

- Writing modules in CommonJS format
- Using a module loader, such as SystemJS

Checklist: Interfaces

Defines custom types

Creating interfaces:

- `interface` keyword
- export it

Implementing interfaces:

- `implements` keyword & interface name
- Write code for each property & method

Checklist: Encapsulating Styles

`styles` **property**

- Specify an array of style strings

`styleUrls` **property**

- Specify an array of stylesheet paths

Checklist: Using Lifecycle Hooks

- Import the lifecycle hook interface
- Implement the lifecycle hook interface
- Write code for the hook method

Checklist: Building a Custom Pipe

Import Pipe and PipeTransform

Create a class that implements PipeTransform

- **`export`** the class

Write code for the Transform method

Decorate the class with the Pipe decorator

Checklist: Using a Custom Pipe

Import the custom pipe

Add the pipe to the declarations array of an Angular module

Any template associated with a component that is also declared in that Angular module can use that pipe

Use the Pipe in the template

- Pipe character
- Pipe name
- Pipe arguments (separated with colons)

Checklist: Relative Paths with Module Id

Set the moduleId property of the component decorator to module.id

Change the Url to a component-relative path:

- templateUrl
- styleUrls

Summary

- Defining an Interface
- Encapsulating Component Styles
- Using Lifecycle Hooks
- Building a Custom Pipe
- Defining Relative Paths with Module Id

Application Architecture