

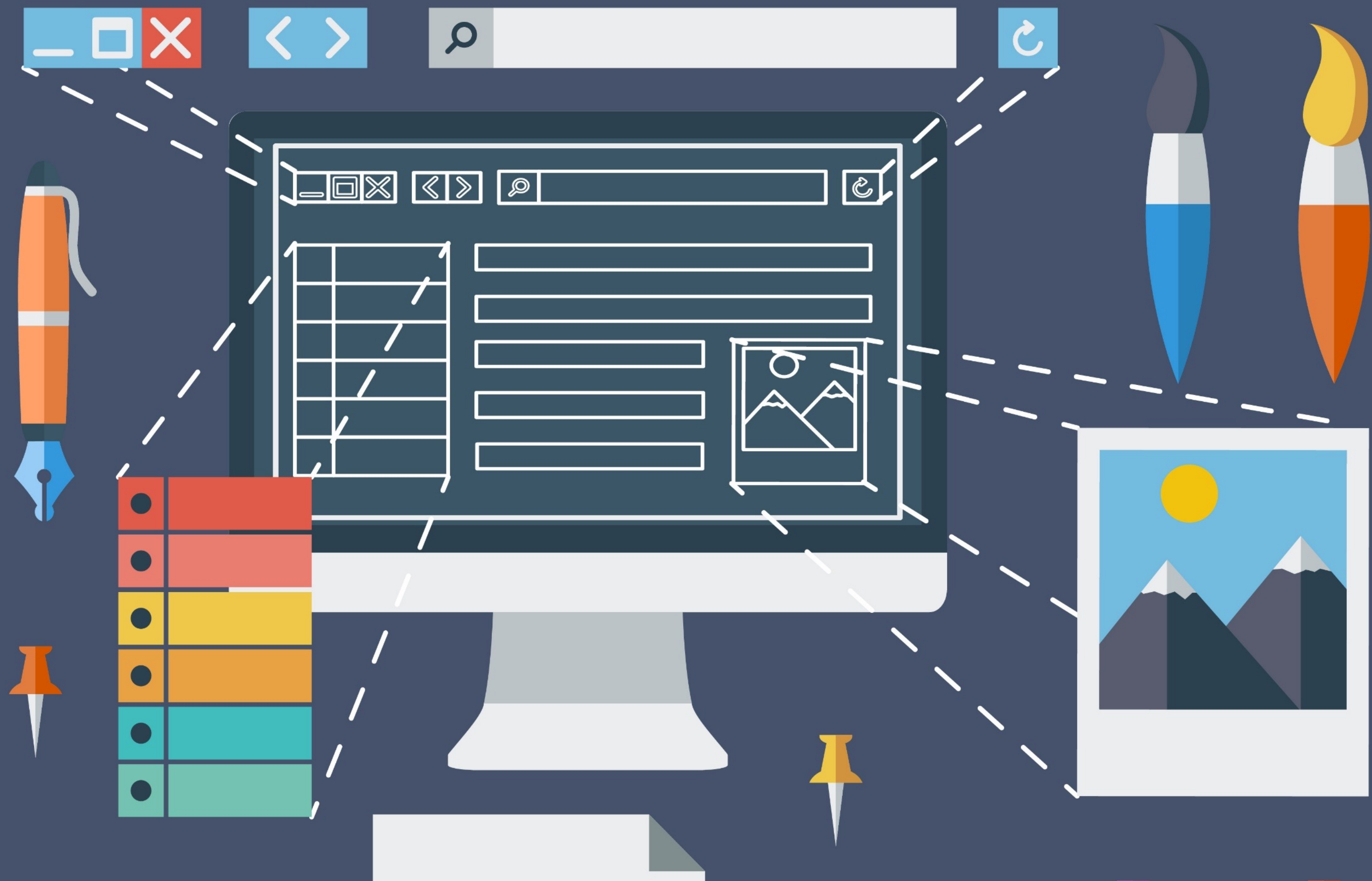
Templates, Interpolation, and Directives



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Consultant | Speaker | Author | MVP | GDE

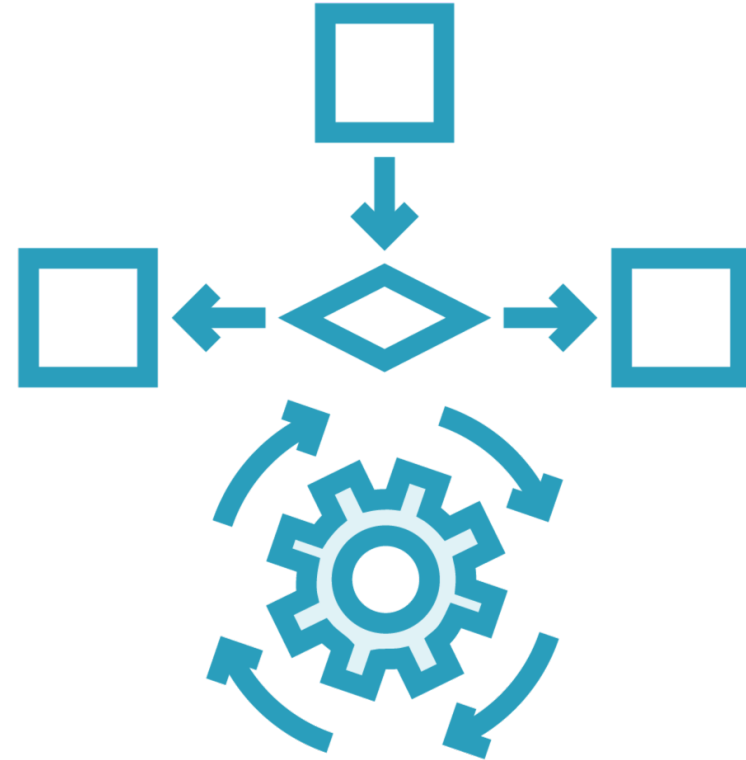
@deborahkurata



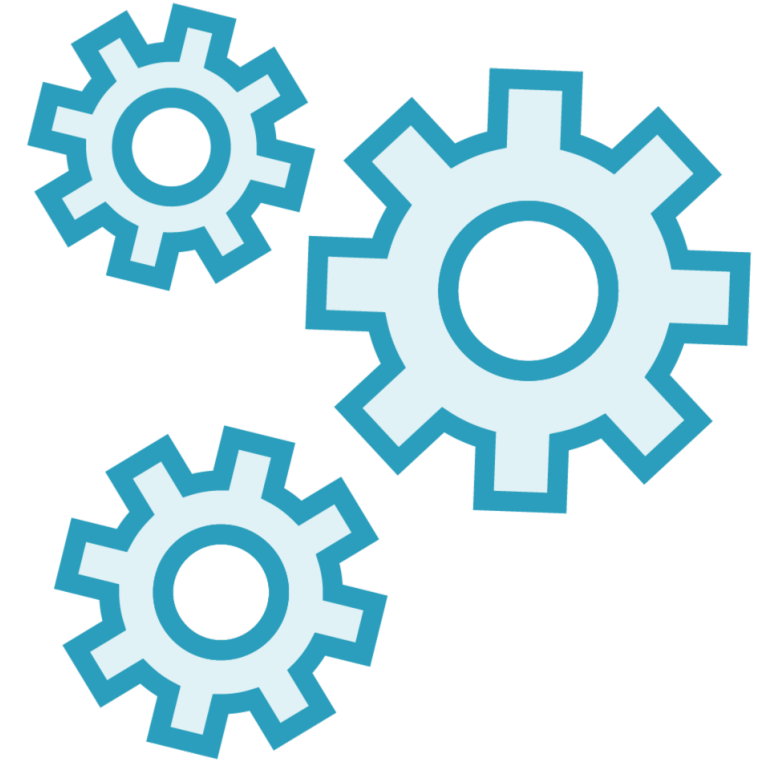
Power up HTML



Data binding

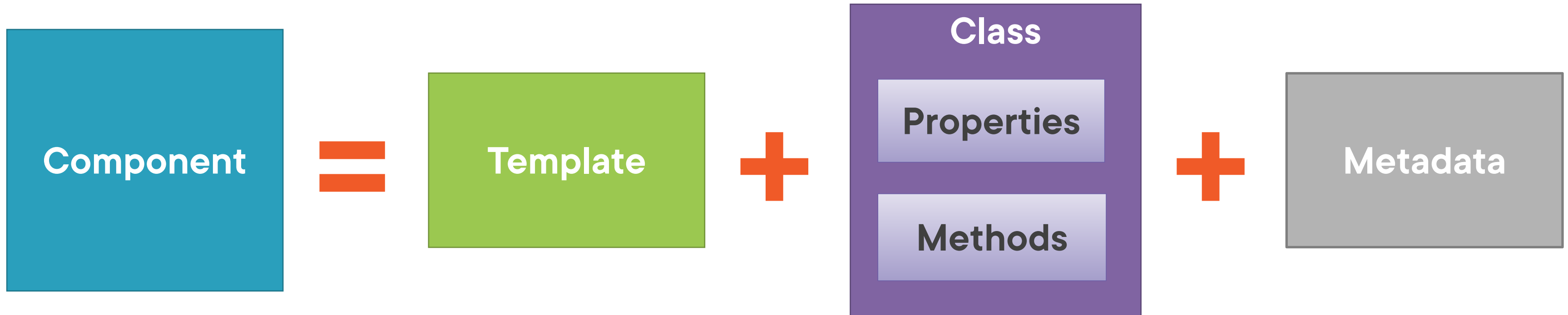


**Angular directives
(Custom HTML
syntax)**



**Angular components
(Custom Directives)**

Component



Module Overview



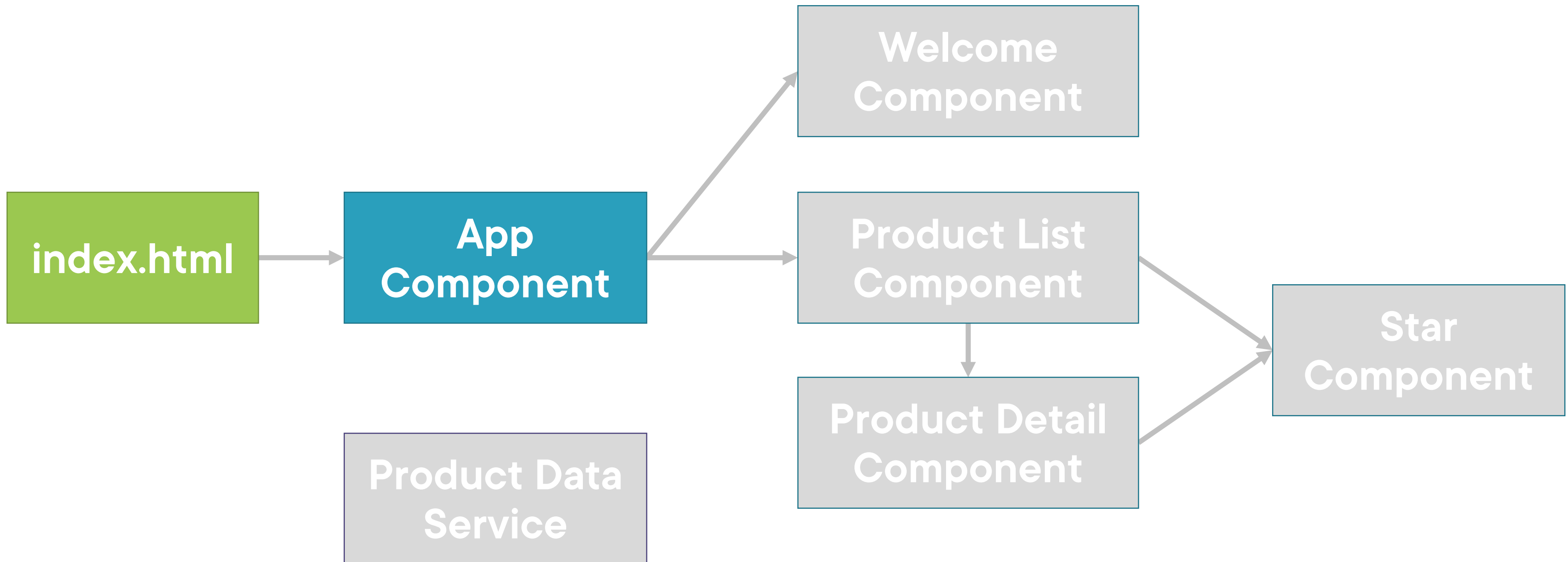
Building a template

Using a component as a directive

Binding with interpolation

Adding logic with directives

Application Architecture



Component

app.component.ts

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

@Component({
  selector: 'pm-root',
  template: `
    <div><h1>{{pageTitle}}</h1>
      <div>My First Component</div>
    </div>
  `
})
export class AppComponent {
  pageTitle: string = 'Acme Product Management';
}
```

Defining a Template in a Component

Inline Template

```
template:  
"<h1>{{pageTitle}}</h1>"
```

Inline Template

```
template: `  
<div>  
  <h1>{{pageTitle}}</h1>  
  <div>  
    My First Component  
  </div>  
</div>  
`
```

ES 2015
Back Ticks

Linked Template

```
templateUrl:  
'./product-list.component.html'
```


Product List View

Product List					
Filter by:	<input type="text"/>				
Show Image	Product	Code	Available	Price	5 Star Rating
	Leaf Rake	gdn 0011	March 19, 2021	\$19.95	★★★★
	Garden Cart	gdn 0023	March 18, 2021	\$32.99	★★★★★
	Hammer	tbx 0048	May 21, 2021	\$8.90	★★★★★
	Saw	tbx 0022	May 15, 2021	\$11.55	★★★★
	Video Game Controller	gmg 0042	October 15, 2020	\$35.95	★★★★★

Product List View

Product List

Filter by:

Filtered by: am

Show Image

Product

Code

Available

Price

5 Star Rating

Hammer

tbx 0048

May 21, 2021

\$8.90

★★★★★

Video Game Controller

gmg 0042

October 15, 2020

\$35.95

★★★★★

Product List View

Product List

Filter by:

Filtered by: am

Hide Image

Product

Code

Available

Price

5 Star Rating



Hammer

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May 21, 2021

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Product List View

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	Video Game Controller	gmg 0042	October 15, 2020	\$35.95	★★★★★

<https://getbootstrap.com/>

<https://fontawesome.com>

Building the Component

product-list.component.ts

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

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

Using a Component as a Directive

app.component.ts

```
@Component({
  selector: 'pm-root',
  template: `
    <div><h1>{{pageTitle}}</h1>
    <div>My First Component</div>
    </div>`
})
export class AppComponent { }
```

product-list.component.ts

```
@Component({
  selector: 'pm-products',
  templateUrl:
    './product-list.component.html'
})
export class ProductListComponent { }
```

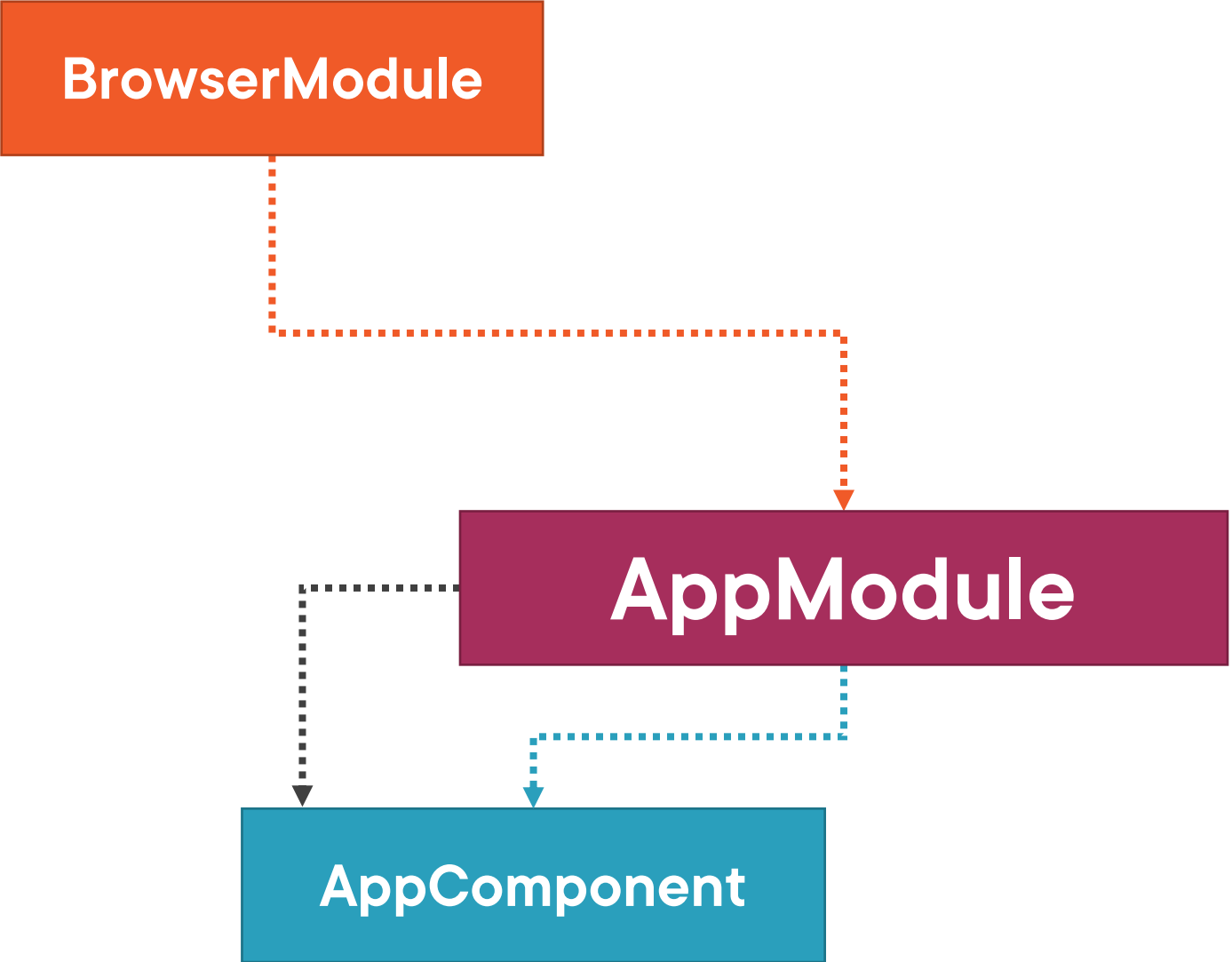
Using a Component as a Directive

app.component.ts

```
@Component({  
  selector: 'pm-root',  
  template: `  
1    <div><h1>{{pageTitle}}</h1>  
      <pm-products></pm-products>  
    </div>`  
})  
export class AppComponent { }
```

product-list.component.ts

```
@Component({  
  selector: 'pm-products',  
  templateUrl:  
    './product-list.component.html'  
})  
export class ProductListComponent { }
```



- Imports
- Exports
- Declarations
- Bootstrap

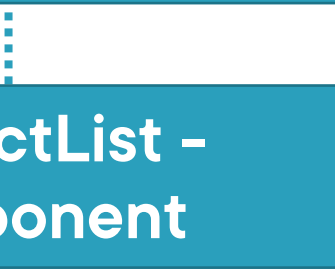
BrowserModule



AppModule



AppComponent



2 ProductList - Component

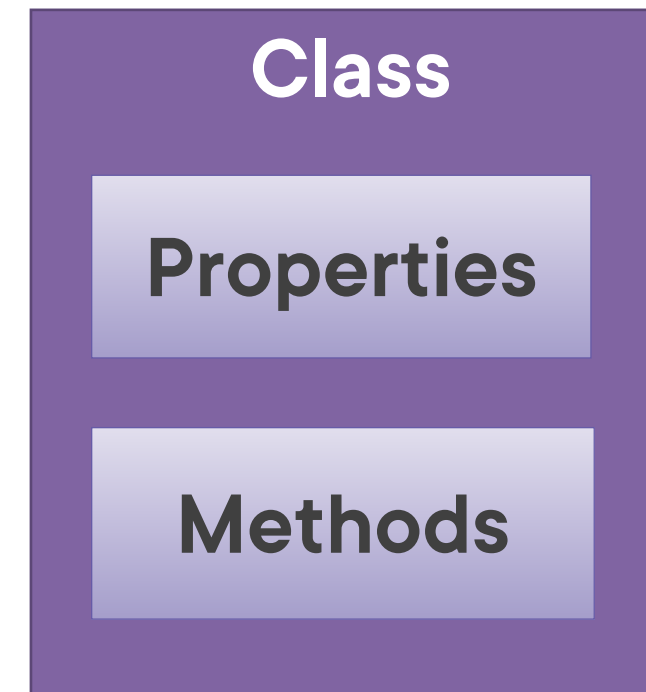
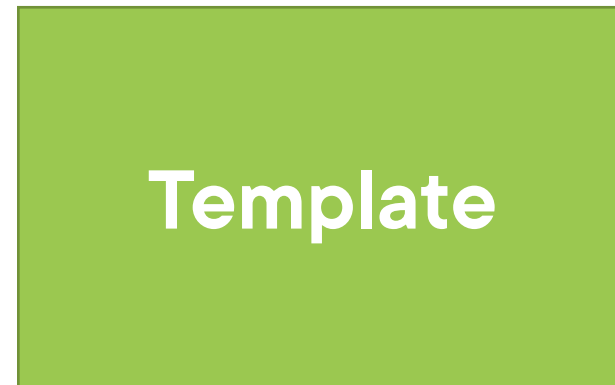
```
@Component({
  selector: 'pm-root',
  template: `
    <div><h1>{{pageTitle}}</h1>
    <pm-products></pm-products>
  </div>`
})
export class AppComponent { }
```

```
@Component({
  selector: 'pm-products',
  templateUrl:
    './product-list.component.html'
})
export class ProductListComponent { }
```

- Imports
- Exports
- Declarations
- Bootstrap

Binding

Coordinates communication between the component's class and its template and often involves passing data.



Interpolation

Template

```
<h1>{{pageTitle}}</h1>
{{ 'Title: ' + pageTitle }}
{{2*20+1}}
<h1 innerText={{pageTitle}}></h1>
```

Class

```
export class AppComponent {
  pageTitle: string =
    'Acme Product Management';
}
```

Directive

Custom HTML element or attribute used to power up and extend our HTML.

- **Custom**
- **Built-In**

Custom Directives

app.component.ts

```
@Component({
  selector: 'pm-root',
  template: `
    <div><h1>{{pageTitle}}</h1>
      <pm-products></pm-products>
    </div>
  `
})
export class AppComponent { }
```

product-list.component.ts

```
@Component({
  selector: 'pm-products',
  templateUrl:
    './product-list.component.html'
})
export class ProductListComponent { }
```

Angular Built-in Directives

Structural Directives

***ngIf: If logic**

***ngFor: For loops**

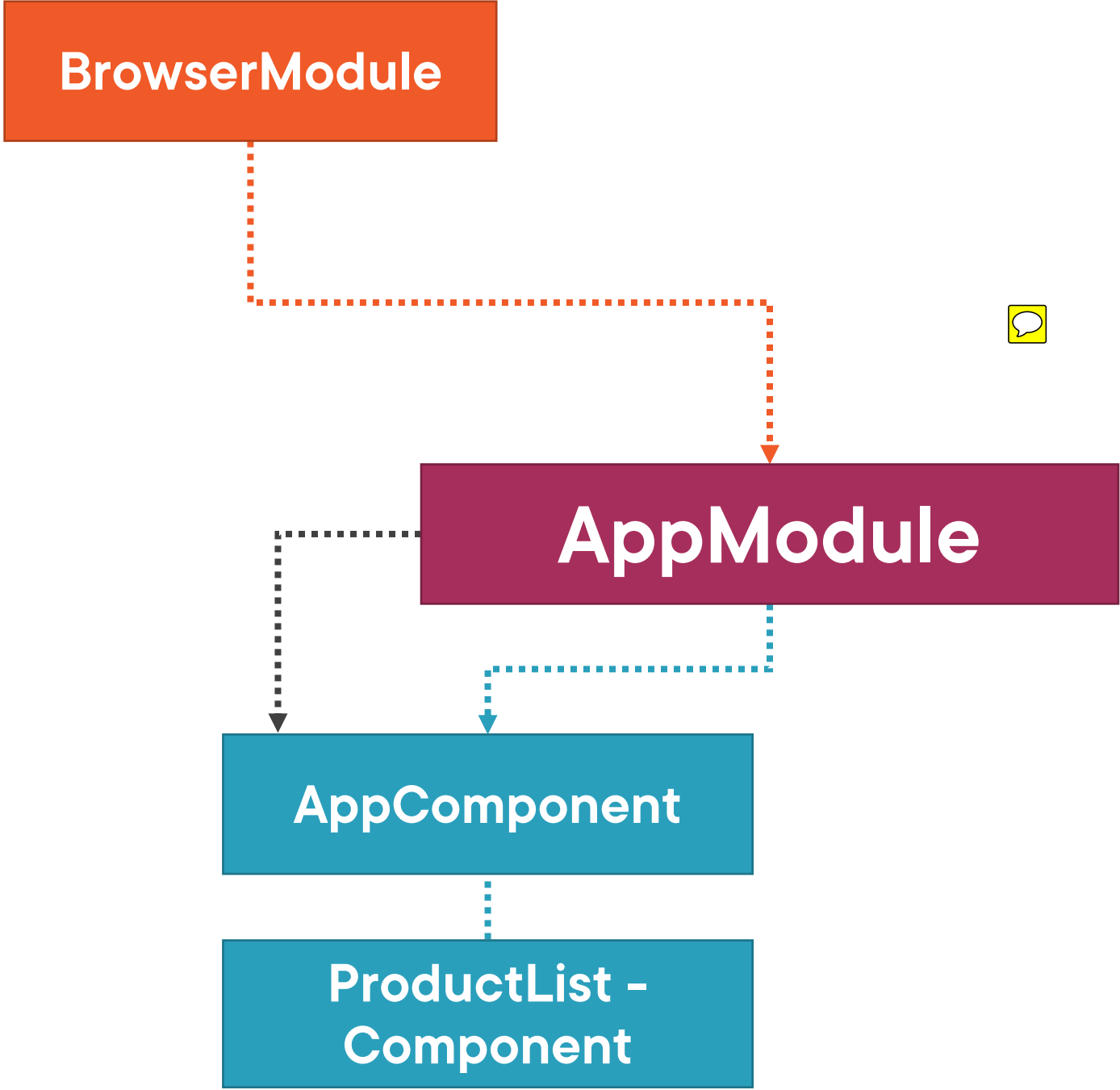
*ngIf Built-In Directive

```
<div class='table-responsive'>
  <table class='table' *ngIf='products.length'>
    <thead> ...
  </thead>
  <tbody> ...
</tbody>
</table>
</div>
```

Product List					
Filter by:	<input type="text"/>				
Show Image	Product	Code	Available	Price	5 Star Rating
	Leaf Rake	gdn 0011	March 19, 2016	\$19.95	★★★★
	Garden Cart	gdn 0023	March 18, 2016	\$32.99	★★★★
	Hammer	tbx 0048	May 21, 2016	\$8.90	★★★★★
	Saw	tbx 0022	May 15, 2016	\$11.55	★★★★
	Video Game Controller	gmg 0042	October 15, 2015	\$35.95	★★★★★

Product List

Filter by:



- Imports
- Exports
- Declarations
- Bootstrap

*ngFor Built-In Directive

```
<tr *ngFor='let product of products'>
  <td></td>
  <td>{{ product.productName }}</td>
  <td>{{ product.productCode }}</td>
  <td>{{ product.releaseDate }}</td>
  <td>{{ product.price }}</td>
  <td>{{ product.starRating }}</td>
</tr>
```

for...of vs for...in

for...of

- Iterates over iterable objects, such as an array.
- Result: di, boo, punkeye

```
let nicknames= ['di', 'boo', 'punkeye'];  
  
for (let nickname of nicknames) {  
    console.log(nickname);  
}
```

for...in

- Iterates over the properties of an object.
- Result: 0, 1, 2

```
let nicknames= ['di', 'boo', 'punkeye'];  
  
for (let nickname in nicknames) {  
    console.log(nickname);  
}
```

*ngFor Built-In Directive

```
<tr *ngFor='let product of products'>  
  <td></td>  
  <td>{{ product.productName }}</td>  
  <td>{{ product.productCode }}</td>  
  <td>{{ product.releaseDate }}</td>  
  <td>{{ product.price }}</td>  
  <td>{{ product.starRating }}</td>  
</tr>
```

Template Checklist: Inline Template



For short templates

Specify the `template` property

Use the ES 2015 back ticks for multiple lines

Watch syntax

```
template: `  
  <div><h1>{{pageTitle}}</h1>  
    <div>My First Component</div>  
  </div>`
```

Template Checklist: Linked Template



For longer templates

Specify the `templateUrl` property

Define the path to the HTML file

```
templateUrl: ' ./product-list.component.html '
```

Checklist: Component as a Directive

app.component.ts

```
@Component({
  selector: 'pm-root',
  template: `
1  <div><h1>{{pageTitle}}</h1>
    <pm-products></pm-products>
  </div>`
})
export class AppComponent { }
```

product-list.component.ts

```
@Component({
  selector: 'pm-products',
  templateUrl:
    './product-list.component.html'
})
export class ProductListComponent { }
```

app.module.ts

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

Template Checklist: Interpolation



One way binding

- From component class property to an element property

Defined with double curly braces

- Contains a template expression
- No quote needed

```
<td>{{ product.productName }}</td>
```

Template Checklist: Structural Directives



***ngIf and *ngFor**

- **Prefix with an asterisk**
- **Assign to a quoted string expression**

Template Checklist:

`*ngIf`



Add or remove an element and its children from the DOM

Expression is evaluated:

- true: elements added to the DOM
- false: elements removed from the DOM

```
<table *ngIf='products'>
```

Template Checklist:

*ngFor



Repeat an element and its children in the DOM

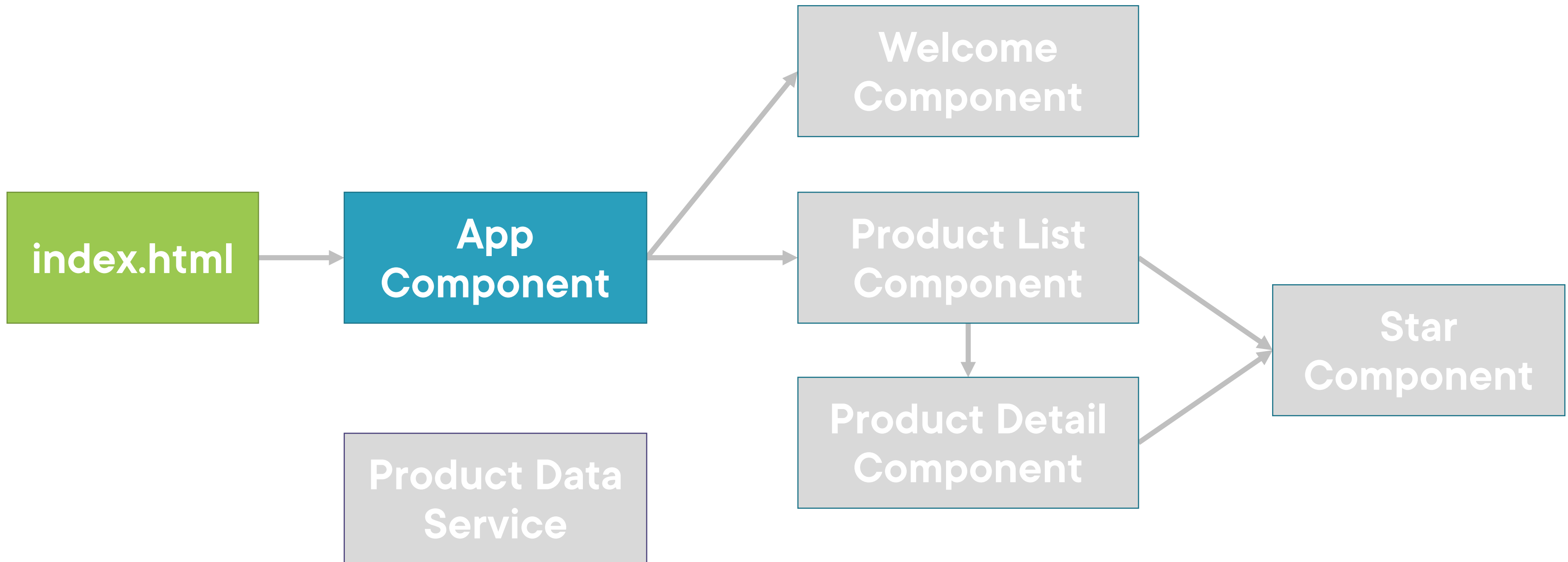
- For each object in an iterable list

Define the local variable with `let`

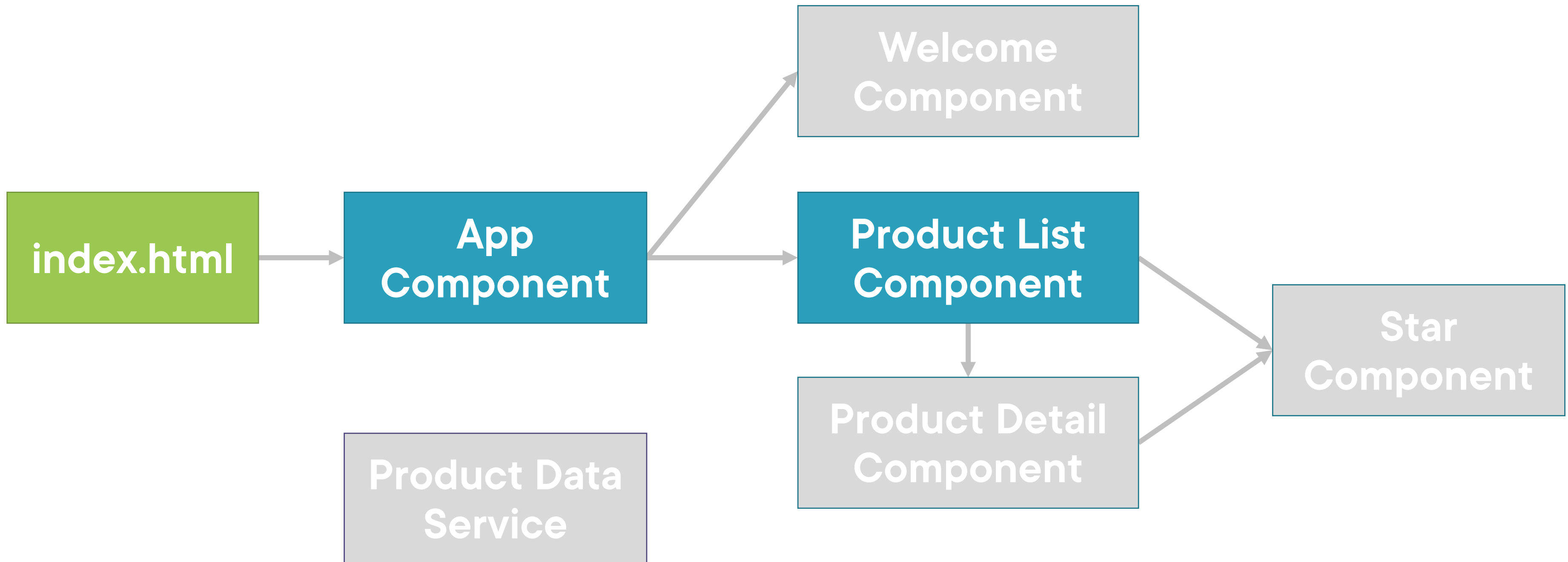
Specify `'of'`

```
<tr *ngFor='let product of products'>  
  ...  
</tr>
```

Application Architecture



Application Architecture



Component

DOM

EVENTS

PROPERTIES

Coming up next ...

Data Binding & Pipes