

SHAPING UP  
WITH  
ANGULAR.JS



# Shaping Up with Angular

Level 1: Getting Started

SHAPING UP  
WITH  
ANGULAR.JS



# What you need to know

## Must know

HTML & CSS  
JavaScript

## Nice to know

Automated Testing  
BDD – Behavior Driven Development  
TDD – Test Driven Development  
etc

## Not so important

jQuery  
Ruby on Rails  
Python, PHP, etc  
Databases



# Why Angular?

---

If you're using JavaScript to create a dynamic website,  
Angular is a good choice.

- Angular helps you organize your JavaScript
- Angular helps create responsive (as in fast) websites.
- Angular plays well with jQuery
- Angular is easy to test

SHAPING UP  
WITH  
ANGULAR.JS



# Traditional Page-Refresh

The screenshot shows a web browser displaying the Code School website at <https://www.codeschool.com/courses>. The page features the Code School logo and navigation links for COURSES, SCREENCASTS, DISCUSS, SUPPORT, MY ACCOUNT, and SIGN OUT. A main message encourages users to "Make your way down a **Path** and build specific skills, or wander through [\*\*All Courses\*\*](#)". Below this, there are two course cards: "Ruby" and "JavaScript".

**Ruby**  
Master your Ruby skills and increase your Rails street cred by learning to build dynamic, sustainable applications for the web.

Topics covered:

RUBY BASICS   RUBY ONLY   RUBY ON RAILS  
STARTING RAILS   ADVANCED RUBY   TESTING

**JavaScript**  
Spend some time with this powerful scripting language and learn to build lightweight applications with enhanced user interfaces.

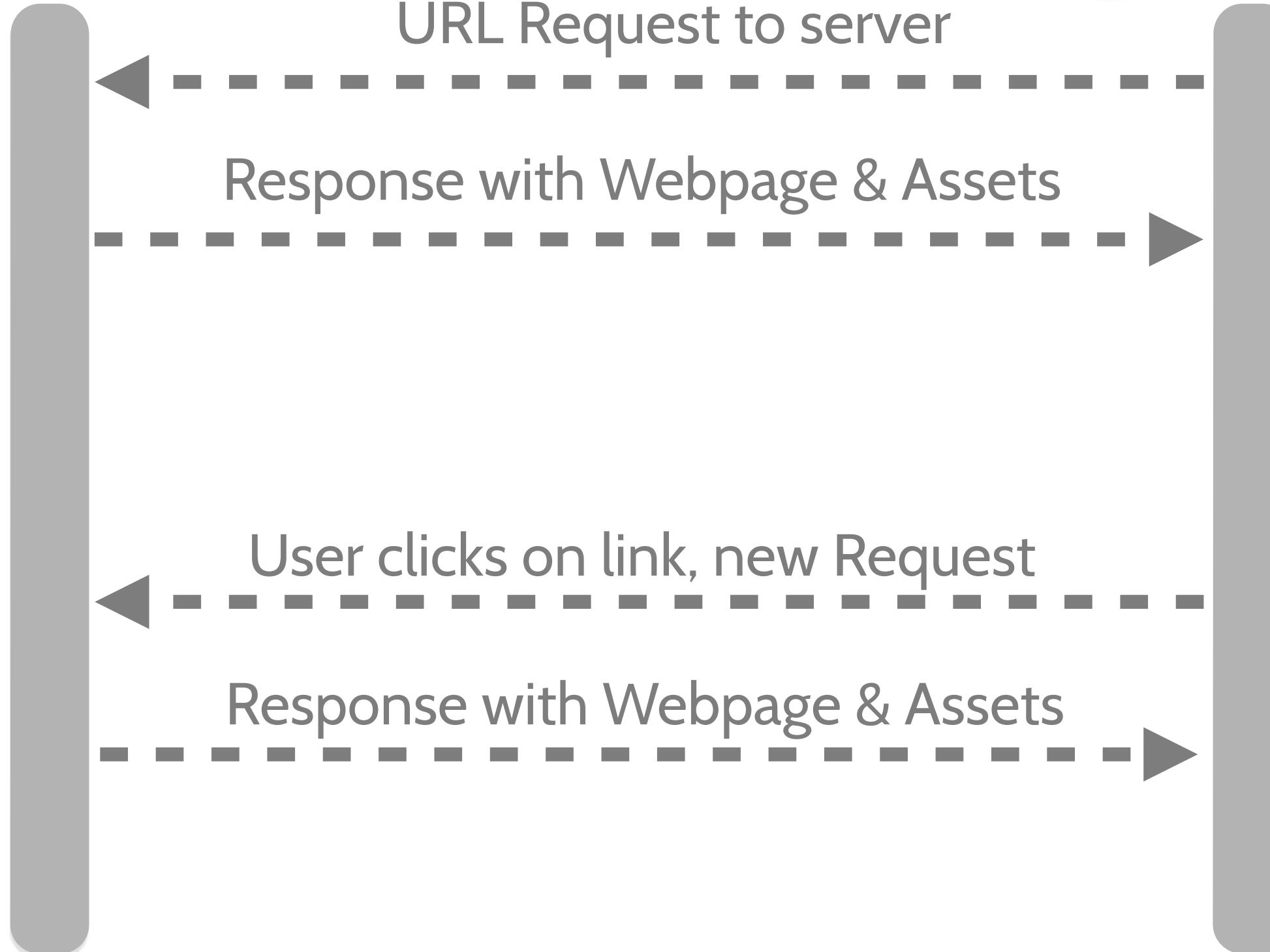
Topics covered:

JAVASCRIPT   JQUERY   BACKBONE.JS  
NODE.JS   COFFEESCRIPT   EMBER.JS

## *Web Server*



## *Web Browser*



HTML    JavaScript



Browser loads up  
entire webpage.

HTML    JavaScript



Browser loads up  
entire webpage.



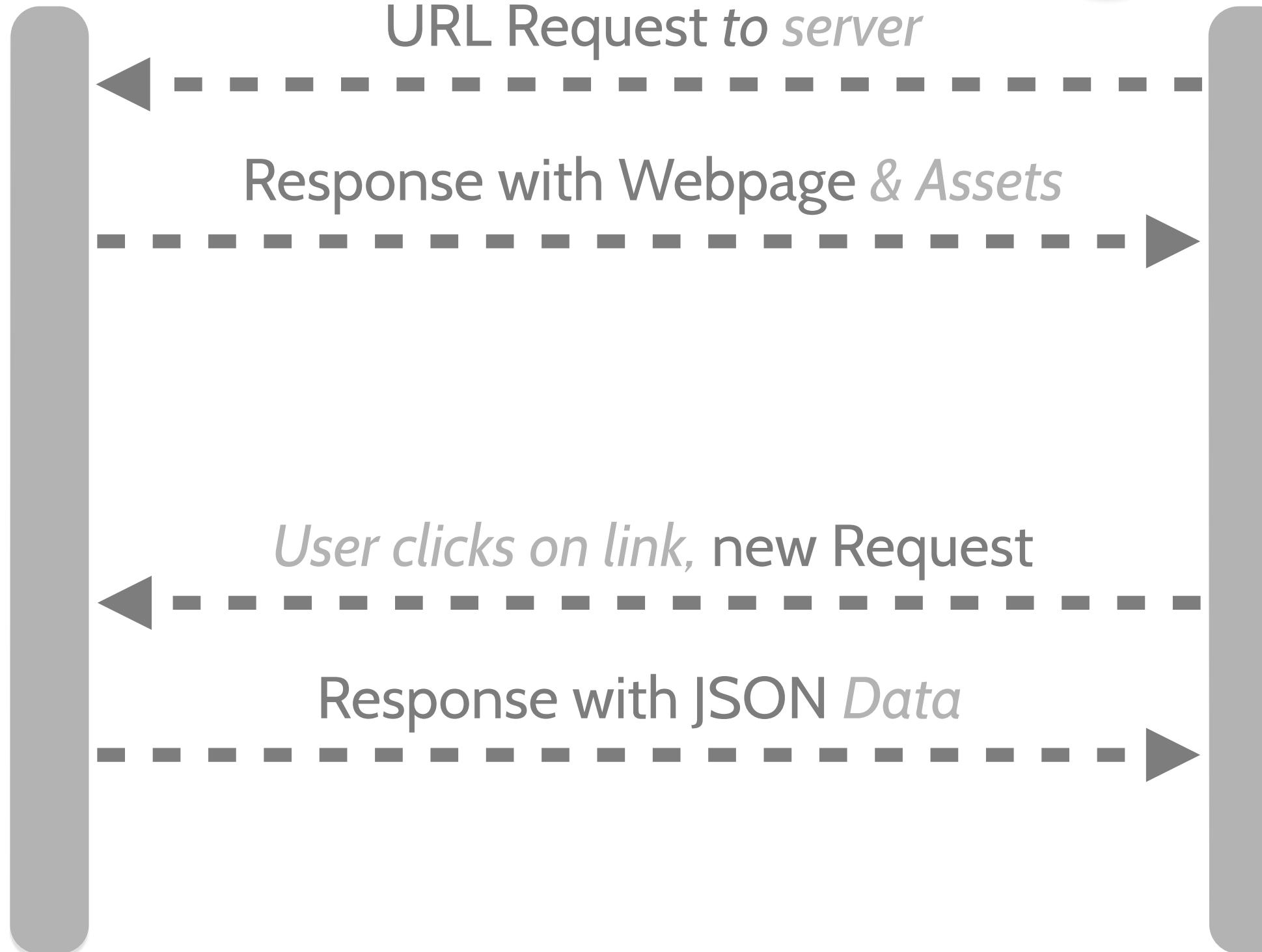
# A “responsive” website using Angular

The screenshot shows a web browser window displaying a responsive Angular application. The URL in the address bar is [campus.codeschool.com/courses/discover-drive/level/1/video/1](http://campus.codeschool.com/courses/discover-drive/level/1/video/1). The page title is "Discover Drive". On the right side, there is a user profile for "c>de school" with a small profile picture. The main content area features the Google Drive logo and the text "Discover Drive". At the bottom, there is a navigation menu icon and a blue button labeled "START CHALLENGES". The browser interface includes standard elements like back/forward buttons, a search bar, and a menu icon.

## Web Server



## Web Browser



HTML    JavaScript



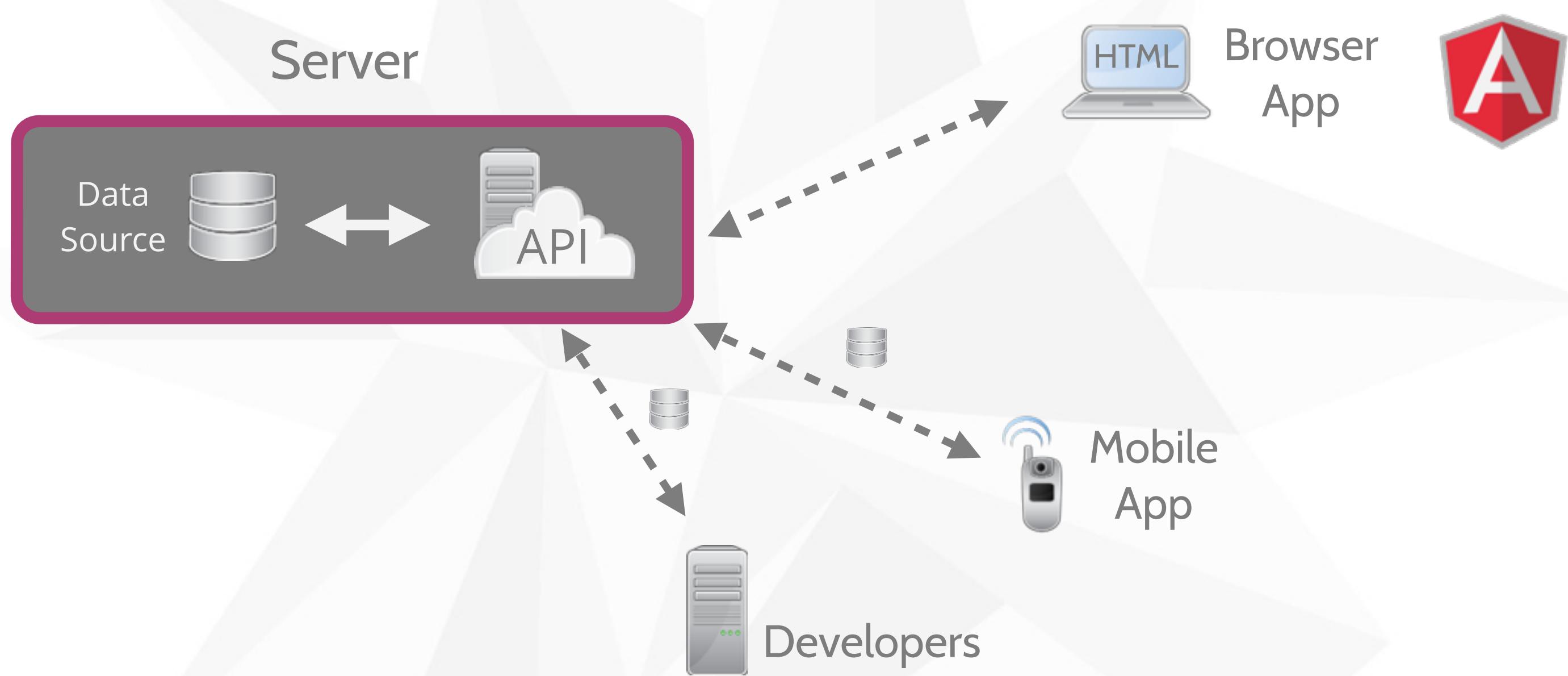
Browser loads up  
entire webpage.



DATA  
Data is loaded into  
existing page.



# Modern API-Driven Application





# What is Angular JS?

A client-side JavaScript Framework for adding interactivity to HTML.

How do we tell our HTML when to trigger our JavaScript?



```
<!DOCTYPE html>
<html>
  <body>
    . . .
  </body>
</html>
```

index.html



```
function Store(){
  alert('Welcome, Gregg!');
}
```

app.js

SHAPING UP  
WITH  
ANGULAR.JS



# Directives

A Directive is a marker on a HTML tag that tells Angular to run or reference some JavaScript code.

```
<!DOCTYPE html>
<html>
  <body ng-controller="StoreController">
    . . .
  </body>
</html>
```

index.html

```
function StoreController(){
  alert('Welcome, Gregg!');
}
```

Name of  
function to call

app.js



The page at <https://www.codeschool.com>  
says:  
Welcome, Gregg!

OK

SHAPING UP  
WITH  
ANGULAR.JS

# Flatlander Crafted Gems

– an Angular store –

Gem #1: Zircon

\$1,100.00



Description

Specs

Reviews

Description



# Downloading the libraries

---

Download AngularJS <http://angularjs.org/>

We'll need angular.min.js

Download Twitter Bootstrap <http://getbootstrap.com/>

We'll need bootstrap.min.css



# Getting Started

```
<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" type="text/css" href="bootstrap.min.css" />
  </head>
  <body>
    <script type="text/javascript" src="angular.min.js"></script>
  </body>
</html>
```

Twitter Bootstrap

AngularJS

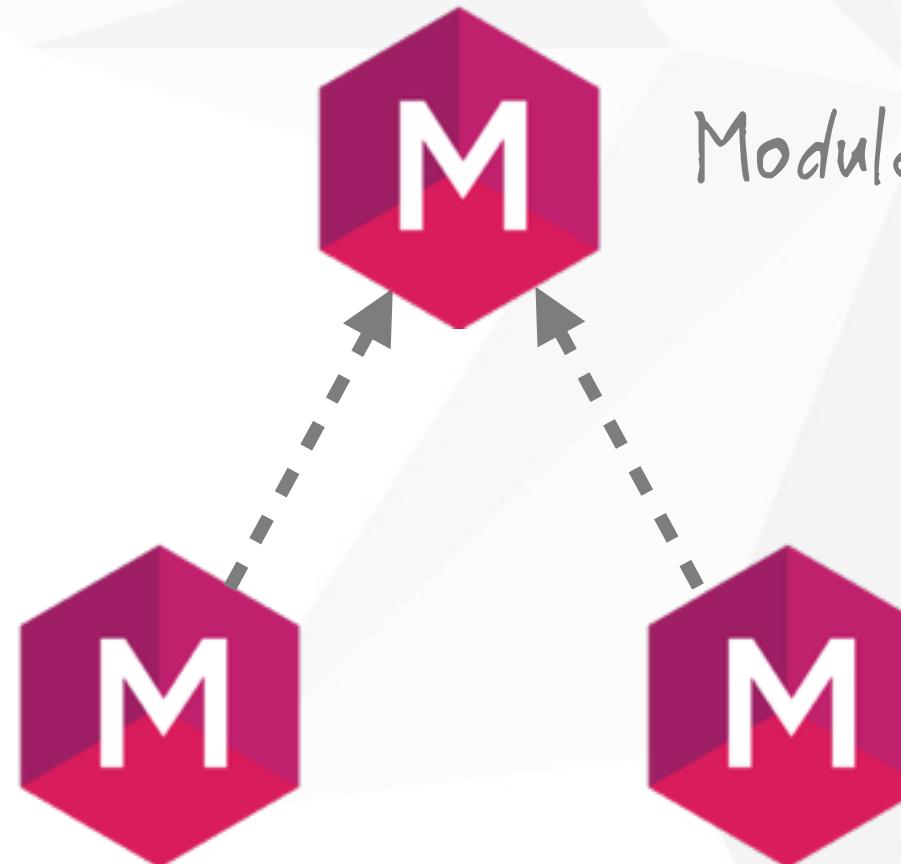
index.html

SHAPING UP  
WITH  
ANGULAR.JS



# Modules

- Where we write pieces of our Angular application.
- Makes our code more maintainable, testable, and readable.
- Where we define dependencies for our app.



Modules can use other Modules...



# Creating Our First Module

```
var app = angular.module('store', [ ]);
```



AngularJS

Application  
Name

Dependencies

*Other libraries we might need.  
We have none... for now...*



# Including Our Module

```
<!DOCTYPE html>
<html>
  <head>
    <link rel="stylesheet" type="text/css" href="bootstrap.min.css" />
  </head>
  <body>
    <script type="text/javascript" src="angular.min.js"></script>
    <script type="text/javascript" src="app.js"></script>
  </body>
</html>
```

index.html

```
var app = angular.module('store', [ ]);
```

app.js



SHAPING UP  
WITH  
ANGULAR.JS



# Including Our Module



```
<!DOCTYPE html>
<html ng-app="store"> ←----- Run this module
  <head> when the document
    <link rel="stylesheet" type="text/css" href="bootstrap.min.css" />
  </head> loads.
  <body>
    <script type="text/javascript" src="angular.min.js"></script>
    <script type="text/javascript" src="app.js"></script>
  </body>
</html>
```

index.html

```
var app = angular.module('store', [ ]);
```



app.js

SHAPING UP  
WITH  
ANGULAR.JS



# Expressions

Allow you to insert dynamic values into your HTML.

## Numerical Operations

```
<p>  
  I am {{4 + 6}}  
</p>
```

*evaluates to*

```
<p>  
  I am 10  
</p>
```

## String Operations

```
<p>  
  {{"hello" + " you"}}  
</p>
```

*evaluates to*

```
<p>  
  hello you  
</p>
```

+ More Operations:

<http://docs.angularjs.org/guide/expression>

SHAPING UP  
WITH  
ANGULAR.JS



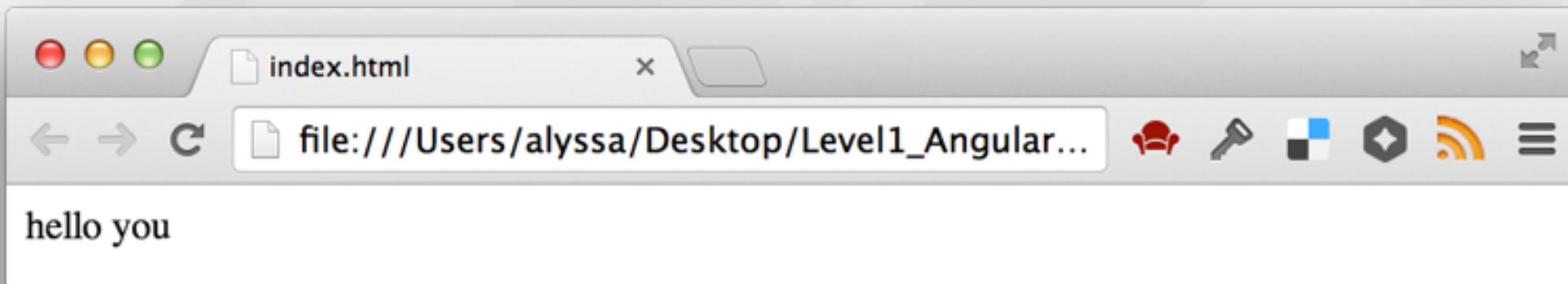
# Including Our Module

```
<!DOCTYPE html>
<html ng-app="store">
  <head>
    <link rel="stylesheet" type="text/css" href="bootstrap.min.css" />
  </head>
  <body>
    <script type="text/javascript" src="angular.min.js"></script>
    <script type="text/javascript" src="app.js"></script>
    <p>{{"hello" + " you"}}</p>
  </body>
</html>
```

index.html

```
var app = angular.module('store', [ ]);
```

app.js



SHAPING UP  
WITH  
ANGULAR.JS



# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



# Working With Data

```
var gem = {  
  name: 'Dodecahedron',  
  price: 2.95,  
  description: '... ',  
}
```

...just a simple  
object we want to  
print to the page.

The screenshot shows a web browser window with the title bar 'AngularJS'. The address bar displays the URL 'angular.rocks/mysocks.com'. The main content area of the browser shows the following text:

**Dodecahedron**

Some gems have hidden qualities beyond their luster, beyond their shine... Dodeca is one of those gems.

**\$2.95**



# Controllers

Controllers are where we define our app's behavior by defining functions and values.

*Wrapping your Javascript  
in a closure is a good habit!*

```
(function(){
  var app = angular.module('store', [ ]);

  app.controller('StoreController', function(){
    });
})();
```

app.js

```
var gem = {
  name: 'Dodecahedron',
  price: 2.95,
  description: '... .',
}
```

*Notice that controller is attached to (inside) our app.*

SHAPING UP  
WITH  
ANGULAR.JS



# Storing Data Inside the Controller

```
(function(){
  var app = angular.module('store', [ ]);

  app.controller('StoreController', function(){
    this.product = gem;
  });

  var gem = {
    name: 'Dodecahedron',
    price: 2.95,
    description: '...',
  }
})();
```



app.js

Now how do we  
print out this  
data inside our  
webpage?

SHAPING UP  
WITH  
ANGULAR.JS



# Our Current HTML

```
<!DOCTYPE html>
<html ng-app="store">
  <head>
    <link rel="stylesheet" type="text/css" href="bootstrap.min.css" />
  </head>
  <body>
    <div>
      <h1> Product Name </h1>
      <h2> $Product Price </h2>
      <p> Product Description </p>
    </div>
    <script type="text/javascript" src="angular.min.js"></script>
    <script type="text/javascript" src="app.js"></script>
  </body>
</html>
```

Let's load our data into  
this part of the page.

index.html



# Attaching the Controller

```
<body>
  <div>
    <h1> Product Name </h1>
    <h2> $Product Price </h2>
    <p> Product Description </p>
  </div>
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

index.html

```
(function(){
  var app = angular.module('store', [ ]);

  app.controller('StoreController', function(){
    this.product = gem;
  });
  ...
})();
```

app.js

SHAPING UP  
WITH  
ANGULAR.JS



# Attaching the Controller

Directive      Controller name      Alias

```
<body>
  <div ng-controller="StoreController as store">
    <h1> Product Name </h1>
    <h2> $Product Price </h2>
    <p> Product Description </p>
  </div>
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

index.html

```
(function(){
  var app = angular.module('store', [ ]);

  app.controller('StoreController', function(){
    this.product = gem;
  });
  ...
})();
```

app.js

SHAPING UP  
WITH  
ANGULAR.JS



# Displaying Our First Product

```
<body>
  <div ng-controller="StoreController as store">
    <h1> {{store.product.name}} </h1>
    <h2> ${{store.product.price}} </h2>
    <p> {{store.product.description}} </p>
  </div>
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

index.html

```
(function(){
  var app = angular.module('store', [ ]);

  app.controller('StoreController', function(){
    this.product = gem;
  });
  . . .
})();
```

The screenshot shows a web browser window titled "AngularJS". The address bar contains the URL "angular.rocks/mysocks.com". The main content area displays a product page for a "Dodecahedron". The product name is "Dodecahedron", the price is "\$2.95", and the description is "Some gems have hidden qualities beyond their luster, beyond their shine... Dodeca is one of those gems." A small "UP JS" logo is visible in the bottom right corner of the browser window.

Dodecahedron

Some gems have hidden qualities beyond their luster, beyond their shine... Dodeca is one of those gems.

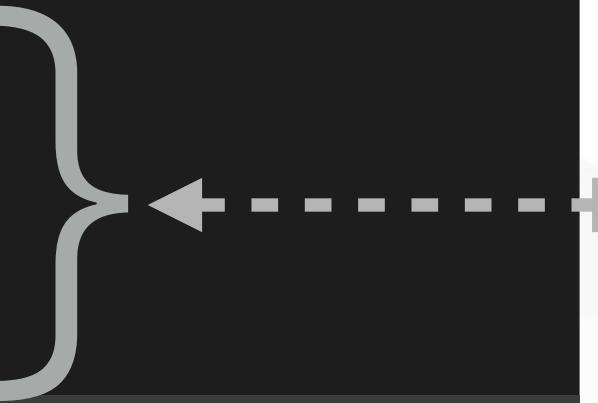
\$2.95



# Understanding Scope

```
<body>
  <div ng-controller="StoreController as store">
    <h1> {{store.product.name}} </h1>
    <h2> ${{store.product.price}} </h2>
    <p> {{store.product.description}} </p>
  </div>
  {{store.product.name}}
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

Would never print a  
value!



The scope of  
the Controller  
is only inside  
here...



# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



# Adding A Button

```
<body ng-controller="StoreController as store">
  <div>
    <h1> {{store.product.name}} </h1>
    <h2> ${{store.product.price}} </h2>
    <p> {{store.product.description}} </p>

  </div>
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

index.html

```
var gem = {
  name: 'Dodecahedron',
  price: 2.95,
  description: '. . .',
}
```

SHAPING UP  
WITH  
ANGULAR.JS



# Adding A Button

```
<body ng-controller="StoreController as store">
  <div>
    <h1> {{store.product.name}} </h1>
    <h2> ${{store.product.price}} </h2>
    <p> {{store.product.description}} </p>
    <button> Add to Cart </button> ← ----- index.html
  </div>
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

*Directives to the rescue!*

How can we only show this button...

```
var gem = {
  name: 'Dodecahedron',
  price: 2.95,
  description: '. . .',
  canPurchase: false ← ...when this is true?
}
```

SHAPING UP  
WITH  
ANGULAR.JS



# NgShow Directive

```
<body ng-controller="StoreController as store">
  <div>
    <h1> {{store.product.name}} </h1>
    <h2> ${{store.product.price}} </h2>
    <p> {{store.product.description}} </p>
    <button ng-show="store.product.canPurchase"> Add to Cart </button>
  </div>
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

index.html

```
var gem = {
  name: 'Dodecahedron',
  price: 2.95,
  description: '... .',
  canPurchase: false
}
```



Will only show the element if the value of the Expression is true.

SHAPING UP  
WITH  
ANGULAR.JS

```
10  <script data-require="angular.js@1.2.x" src="http://code.angularjs.org/1.2.15/angular.js">
11  <script src="app.js"></script>
12 </head>
13
14
15 <body ng-controller="StoreController as store">
16
17  <!-- Products Container -->
18 <div class="list-group">
19  <!-- Product Container -->
20 <div class="list-group-item">
21  <h1>{{store.product.name}}</h1>
22  <h2>${{store.product.price}}</h2>
23  <p>{{store.product.description}}</p>
24  <button ng-show="store.product.canPurchase">Add to Cart</button>
25 </div>
26 </div>
27 </body>
28
29 </html>
```

index.html



# NgHide Directive

```
<body ng-controller="StoreController as store">
  <div>
    <h1> {{store.product.name}} </h1>
    <h2> ${{store.product.price}} </h2>
    <p> {{store.product.description}} </p>
    <button ng-show="store.product.canPurchase"> Add to Cart </button>
  </div>
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

index.html

```
var gem = {
  name: 'Dodecahedron',
  price: 2.95,
  description: '. . .',
  canPurchase: true,
  soldOut: true
}
```

If the product is sold out  
we want to hide it.

SHAPING UP  
WITH  
ANGULAR.JS



# NgHide Directive

```
<body ng-controller="StoreController as store">
  <div ng-show="!store.product.soldOut">
    <h1> {{store.product.name}} </h1>
    <h2> ${{store.product.price}} </h2>
    <p> {{store.product.description}} </p>
    <button ng-show="store.product.canPurchase"> Add to Cart </button>
  </div>
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

index.html

```
var gem = {
  name: 'Dodecahedron',
  price: 2.95,
  description: '. . .',
  canPurchase: true,
  soldOut: true, ←-----}
}
```

If the product is sold out  
we want to hide it.

SHAPING UP  
WITH  
ANGULAR.JS



# NgHide Directive

```
<body ng-controller="StoreController as store">
  <div ng-hide="store.product.soldOut">
    <h1> {{store.product.name}} </h1>
    <h2> ${{store.product.price}} </h2>
    <p> {{store.product.description}} </p>
    <button ng-show="store.product.canPurchase"> Add to Cart </button>
  </div>
  <script type="text/javascript" src="angular.min.js"></script>
  <script type="text/javascript" src="app.js"></script>
</body>
```

index.html

Much better!

```
var gem = {
  name: 'Dodecahedron',
  price: 2.95,
  description: '. . .',
  canPurchase: true,
  soldOut: true, <----->
}
```

If the product is sold out  
we want to hide it.

SHAPING UP  
WITH  
ANGULAR.JS



# Multiple Products

```
app.controller('StoreController', function(){
  this.product = gem;
});
```

```
var gem = {
  name: "Dodecahedron",
  price: 2.95,
  description: "...",
  canPurchase: true,
}
```

app.js

SHAPING UP  
WITH  
ANGULAR.JS



# Multiple Products

```
app.controller('StoreController', function(){  
  this.products = gems;  
});
```

So we have multiple products...

```
var gems = [ ←----- Now we have an array...  
{
```

```
  name: "Dodecahedron",  
  price: 2.95,  
  description: "...",  
  canPurchase: true,  
},
```

```
{  
  name: "Pentagonal Gem",  
  price: 5.95,  
  description: "...",  
  canPurchase: false,  
}...
```

```
];
```

Maybe a  
Directive?



How might we display all these  
products in our template?

app.js



# Working with An Array

```
<body ng-controller="StoreController as store">
  <div>
    <h1> {{store.products[0].name}} </h1>
    <h2> ${{store.products[0].price}} </h2>
    <p> {{store.products[0].description}} </p>
    <button ng-show="store.products[0].canPurchase">
      Add to Cart</button>
  </div>
  .
  .
  .
</body>
```

index.html



# Working with An Array

```
<body ng-controller="StoreController as store">
  <div>
    <h1> {{store.products[0].name}} </h1>
    <h2> ${{store.products[0].price}} </h2>
    <p> {{store.products[0].description}} </p>
    <button ng-show="store.products[0].canPurchase">
      Add to Cart</button>
  </div>
  . . .
</body>
```

*Displaying the first product  
is easy enough...*

*index.html*



# Working with An Array

```
<body ng-controller="StoreController as store">
  <div>
    <h1> {{store.products[0].name}} </h1>
    <h2> ${{store.products[0].price}} </h2>
    <p> {{store.products[0].description}} </p>
    <button ng-show="store.products[0].canPurchase">
      Add to Cart</button>
  </div>
  <div>
    <h1> {{store.products[1].name}} </h1>
    <h2> ${{store.products[1].price}} </h2>
    <p> {{store.products[1].description}} </p>
    <button ng-show="store.products[1].canPurchase">
      Add to Cart</button>
  </div>
  ...
</body>
```

That works...

Dodecahedron

Some gems have hidden qualities beyond their luster, beyond their shine... Dodeca is one of those \$2.95

Add to Cart

Pentagonal Gem

Origin of the Pentagonal Gem is unknown, hence its low value. It has a very high shine and 12 sides, \$5.95

Why... You get it.

index.html



# Working with An Array

```
<body ng-controller="StoreController as store">
  <div ng-repeat="product in store.products">
    <h1> {{product.name}} </h1>
    <h2> ${{product.price}} </h2>
    <p> {{product.description}} </p>
    <button ng-show="product.canPurchase">
      Add to Cart</button>
  </div>
  .
  .
</body>
```

Repeat this section for each product.



index.html

The screenshot shows a web browser window titled "AngularJS" with the URL "run.plnkr.co/nsIRASW7RSFzW3EH/". The page displays two product cards:

- Dodecahedron**  
Some gems have hidden qualities beyond their luster, beyond their shine... Dodeca is one of those **\$2.95**  
**Add to Cart**
- Pentagonal Gem**  
Origin of the Pentagonal Gem is unknown, hence its low value. It has a very high shine and 12 sides, **\$5.95**



# What We Have Learned So Far

---



**D** Directives – HTML annotations that trigger Javascript behaviors



**M** Modules – Where our application components live



**C** Controllers – Where we add application behavior

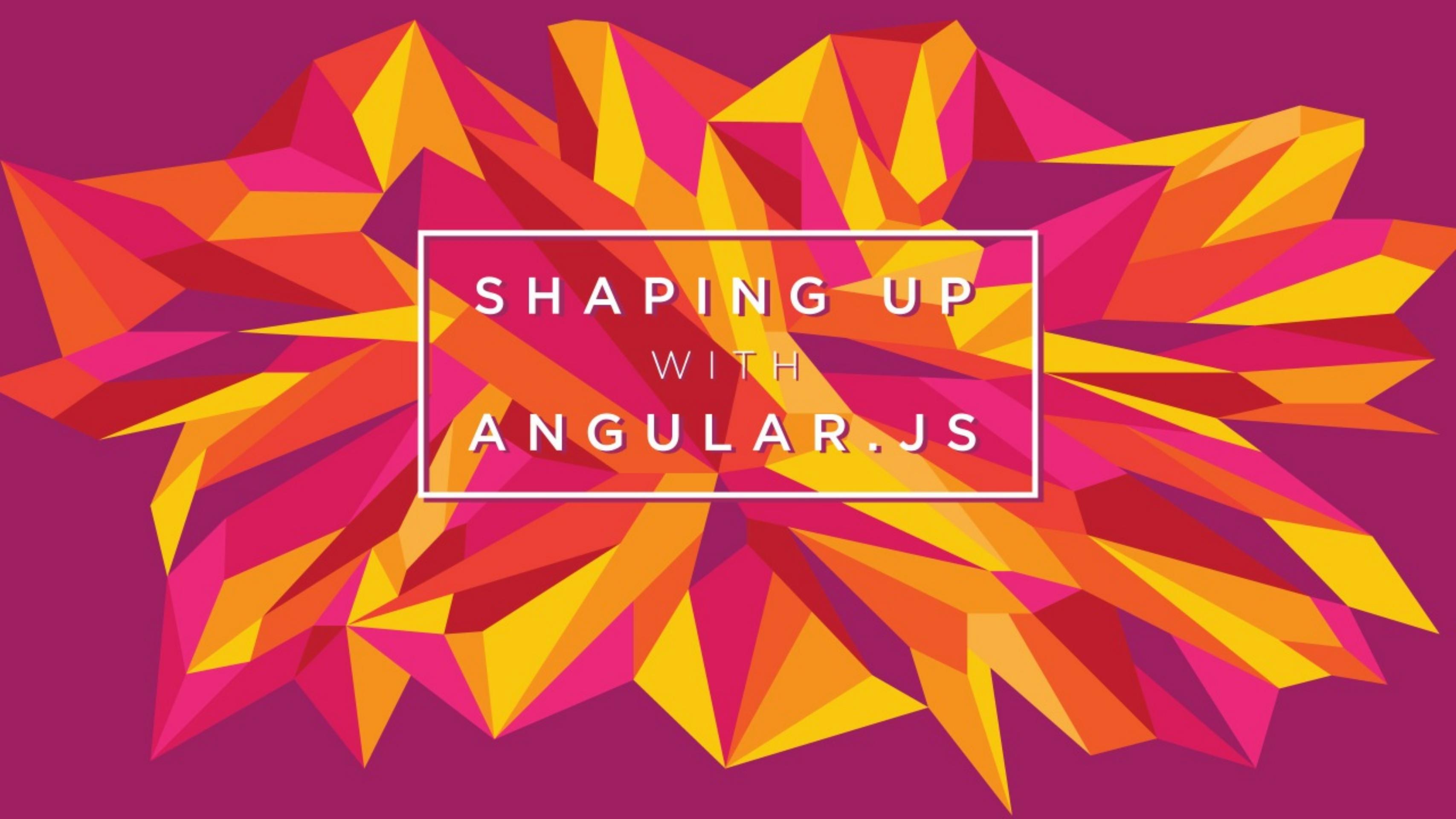


**E** Expressions – How values get displayed within the page

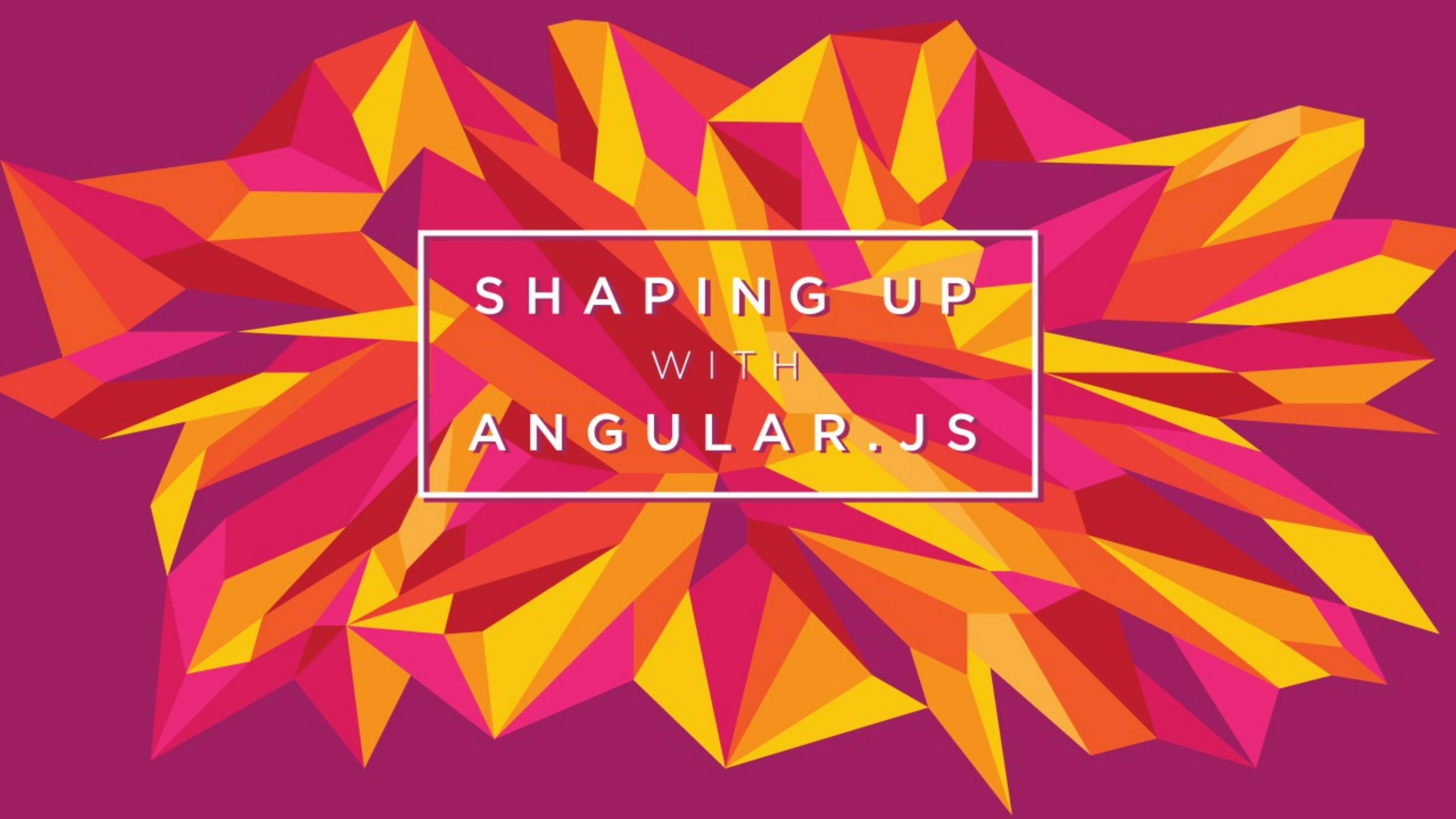


# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



SHAPING UP  
WITH  
ANGULAR.JS



SHAPING UP  
WITH  
ANGULAR.JS



# Shaping Up with Angular.JS

Level 2: Filters, Directives, and Cleaner Code

SHAPING UP  
WITH  
ANGULAR.JS



# Directives We Know & Love

**ng-app** – attach the Application Module to the page

```
<html ng-app="store">
```

**ng-controller** – attach a Controller function to the page

```
<body ng-controller="StoreController as store">
```

**ng-show / ng-hide** – display a section based on an Expression

```
<h1 ng-show="name"> Hello, {{name}}! </h1>
```

**ng-repeat** – repeat a section for each item in an Array

```
<li ng-repeat="product in store.products"> {{product.name}} </li>
```



# Our Current Code

```
<body ng-controller="StoreController as store">
  <ul class="list-group">
    <li class="list-group-item" ng-repeat="product in store.products">
      <h3>
        {{product.name}}
        <em class="pull-right">${{product.price}}</em>
      </h3>
    </li>
  </ul>
</body>
```

index.html

A screenshot of a web browser window titled "AngularJS". The address bar shows "angular.rocks/mysocks.com". The page displays a list of products:

Product Name	Price
Dodecahedron	\$2
Pentagonal Gem	\$5.95

There's a better way  
to print out prices.



# Our First Filter

```
<body ng-controller="StoreController as store">
  <ul class="list-group">
    <li class="list-group-item" ng-repeat="product in store.products">
      <h3>
        {{product.name}}
        <em class="pull-right">{{product.price | currency }}</em>
      </h3>
    </li>
  </ul>
</body>
```

Product	Price
Dodecahedron	\$2.00
Pentagonal Gem	\$5.95

index.html

| Format this into currency

Pipe - "send the output into"

Notice it gives the dollar sign (localized)

Specifies number of decimals



# Formatting with Filters

\*Our Recipe

```
 {{ data* | filter:options* }}
```

date

```
 {'1388123412323' | date:'MM/dd/yyyy @ h:mma'}
```

12/27/2013 @ 12:50AM

uppercase & lowercase

```
'octagon gem' | uppercase}}
```

OCTAGON GEM

limitTo

```
'My Description' | limitTo:8}
```

My Descr

```
<li ng-repeat="product in store.products | limitTo:3">
```

orderBy

```
<li ng-repeat="product in store.products | orderBy:'-price'">
```

Will list products by descending price.

Without the - products would list in ascending order.



# Adding an Image Array to our Product Array

```
var gems = [
  { name: 'Dodecahedron Gem',
    price: 2.95,
    description: '... .',
    images: [ ←-----+ Our New Array
      {←-----+ Image Object
        full: 'dodecahedron-01-full.jpg',
        thumb: 'dodecahedron-01-thumb.jpg'
      },
      {
        full: "dodecahedron-02-full.jpg",
        ...
      }
    ]
  }
]
```

app.js

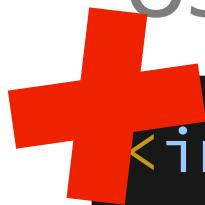
To display the first image in a product:

```
{{product.images[0].full}}
```



# Using ng-src for Images

Using Angular Expressions inside a **src** attribute causes an error!



```

```

...the browser tries to load the image  
before the Expression evaluates.

```
<body ng-controller="StoreController as store">
  <ul class="list-group">
    <li class="list-group-item" ng-repeat="product in store.products">
      <h3>
        {{product.name}}
        <em class="pull-right">{{product.price | currency}}</em>
        
      </h3>
    </li>
  </ul>
</body>
```



NG-SOURCE  
to the rescue!  
index.html



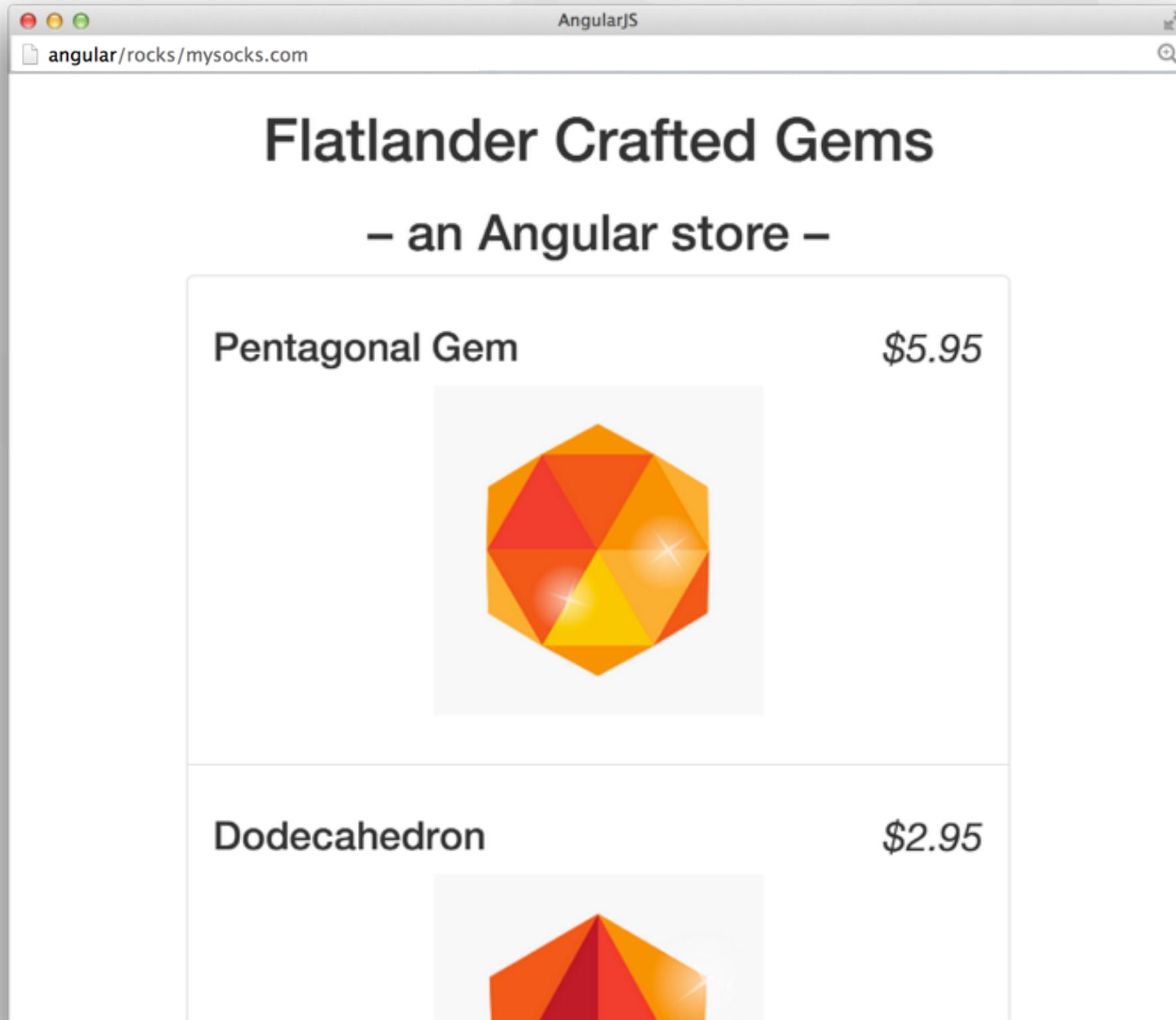
# Our Products with Images

Screenshot of a web browser displaying a product catalog for "Flatlander Crafted Gems". The browser window title is "AngularJS" and the address bar shows "angular.rocks/mysocks.com".

The page header reads "Flatlander Crafted Gems" and "– an Angular store –".

Product	Price
Pentagonal Gem	\$5.95
Dodecahedron	\$2.95

Each product listing includes a small image of the gemstone.





# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



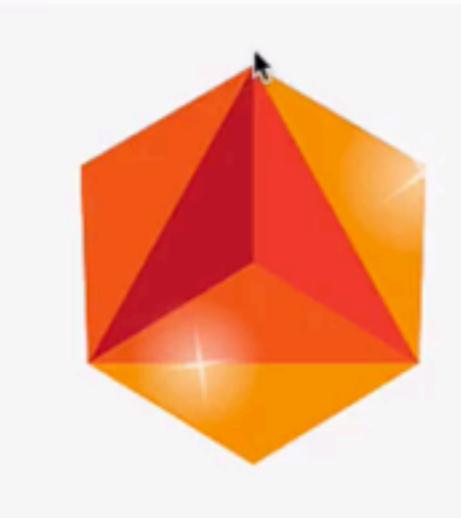
# More With Directives



## Flatlander Crafted Gems – an Angular store –

Dodecahedron

\$2.9



Description

Specifications

Reviews

### Description

Some gems have hidden qualities beyond their luster, beyond their shine... Dodeca is one of those gems.

How can I make my application more interactive?



# A Simple Set of Tabs

```
<section>
  <ul class="nav nav-pills">
    <li> <a href>Description</a> </li>
    <li> <a href>Specifications</a> </li>
    <li> <a href>Reviews</a> </li>
  </ul>
</section>
```

index.html

Description

Specifications

Reviews

Description

Some gems have hidden qualities beyond their luster,  
beyond their shine... Dodeca is one of those gems.

SHAPING UP  
WITH  
ANGULAR.JS



# Introducing a new Directive!



```
<section>
  <ul class="nav nav-pills">
    <li> <a href ng-click="tab = 1">Description</a> </li>
    <li> <a href ng-click="tab = 2">Specifications</a> </li>
    <li> <a href ng-click="tab = 3">Reviews</a> </li>
  </ul>
  {{tab}}
</section>
```

index.html

Assigning a value to tab.

For now just print this value to the screen.

# Introducing a new Directive!

**Flatlander Crafted Gems**

– an Angular store –

Pentagonal Gem \$5.95



Description Specifications Reviews

1

Dodecahedron \$2.95



# Whoa, it's dynamic and stuff...

---

When `ng-click` changes the value of `tab` ...

... the `{{tab}}` expression automatically gets updated!

Expressions define a 2-way Data Binding ...

this means Expressions are re-evaluated when a property changes.



# Let's add the tab content panels

----- tabs are up here...

```
...  
<div class="panel">  
  <h4>Description</h4>  
  <p>{{product.description}}</p>  
</div>  
<div class="panel">  
  <h4>Specifications</h4>  
  <blockquote>None yet</blockquote>  
</div>  
<div class="panel">  
  <h4>Reviews</h4>  
  <blockquote>None yet</blockquote>  
</div>
```

How do we make the tabs trigger the panel to show?



# Let's add the tab content panels

```
<div class="panel" ng-show="tab === 1">
  <h4>Description</h4>
  <p>{{product.description}}</p>
</div>
<div class="panel" ng-show="tab === 2">
  <h4>Specifications</h4>
  <blockquote>None yet</blockquote>
</div>
<div class="panel" ng-show="tab === 3">
  <h4>Reviews</h4>
  <blockquote>None yet</blockquote>
</div>
```

show the panel  
if tab is the  
right number

Now when a tab is selected it will show the appropriate panel!

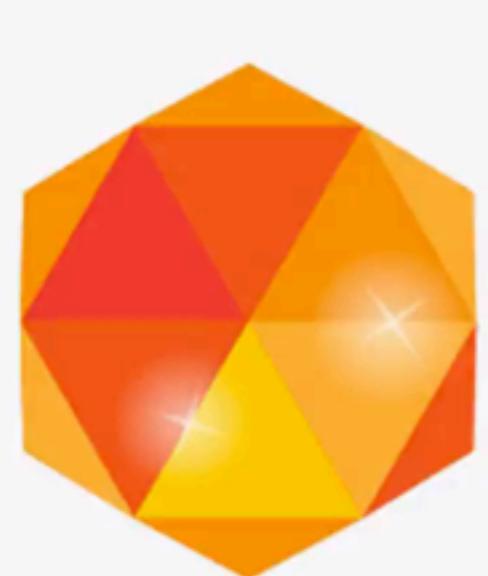


# Flatlander Crafted Gems

– an Angular store –

Pentagonal Gem

\$5.95



Description

Specifications

Reviews

Dodecahedron

\$2.95

But how do we set an initial value for a tab?



# Setting the Initial Value

ng-init allows us to evaluate an expression in the current scope.

```
<section ng-init="tab = 1">
  <ul class="nav nav-pills">
    <li> <a href ng-click="tab = 1">Description</a> </li>
    <li> <a href ng-click="tab = 2">Specifications</a> </li>
    <li> <a href ng-click="tab = 3">Reviews</a> </li>
  </ul>
  . . .

```

index.html



# Now with the Initial Tab

## Flatlander Crafted Gems

– an Angular store –

Pentagonal Gem

\$5.95



[Description](#)

[Specifications](#)

[Reviews](#)

### Description

Origin of the Pentagonal Gem is unknown, hence its low value. It has a very high shine and 12 sides,



# Setting the Active Class

We need to set the `class` to `active` if current `tab` is selected ...

```
<section ng-init="tab = 1">
  <ul class="nav nav-pills">
    <li> <a href ng-click="tab = 1">Description</a> </li>
    <li> <a href ng-click="tab = 2">Specifications</a> </li>
    <li> <a href ng-click="tab = 3">Reviews</a></li>
  </ul>
```

index.html



# The ng-class directive

```
<section ng-init="tab = 1">
  <ul class="nav nav-pills">
    <li ng-class="{ active:tab === 1 }">
      <a href ng-click="tab = 1">Description</a>
    </li>
    <li ng-class="{ active:tab === 2 }">
      <a href ng-click="tab = 2">Specifications</a>
    </li>
    <li ng-class="{ active:tab === 3 }">
      <a href ng-click="tab = 3">Reviews</a>
    </li>
  </ul>
  . . .

```

Expression to evaluate  
If true, set class to "active",  
otherwise nothing.

index.html

Name of the class to set.

SHAPING UP  
WITH  
ANGULAR.JS

# Flatlander Crafted Gems

– an Angular store –

## Pentagonal Gem

\$5.95



Description

Specifications

Reviews

### Description

Origin of the Pentagonal Gem is unknown, hence its low value. It has a very high shine and 12 sides,



# Feels dirty, doesn't it?

All our application's logic is inside our HTML.

```
<section ng-init="tab = 1">
  <ul class="nav nav-pills">
    <li ng-class="{ active:tab === 1 }">
      <a href ng-click="tab = 1">Description</a>
    </li>
    <li ng-class="{ active:tab === 2 }">
      <a href ng-click="tab = 2">Specifications</a>
    </li>
    <li ng-class="{ active:tab === 3 }">
      <a href ng-click="tab = 3">Reviews</a>
    </li>
  </ul>
  <div class="panel" ng-show="tab === 1">
    <h4>Description </h4>
    <p>{{product.description}}</p>
  </div>
```

How might we pull this logic into a Controller?

...

index.html



# Creating our Panel Controller

```
<section ng-init="tab = 1" ng-controller="PanelController as panel">
  <ul class="nav nav-pills">
    <li ng-class="{ active:tab === 1 }">
      <a href ng-click="tab = 1">Description</a>
    </li>
    <li ng-class="{ active:tab === 2 }">
      <a href ng-click="tab = 2">Specifications</a>
    </li>
    <li ng-class="{ active:tab === 3 }">
      <a href ng-click="tab = 3">Reviews</a>
    </li>
  </ul>
  <div class="panel" ng-show="tab === 1">
    <h4>Description </h4>
    <p>{{product.description}}</p>
  </div>
  ...

```

```
app.controller("PanelController", function(){
});
```



# Moving our tab initializer

```
<section ng-controller="PanelController as panel">
  <ul class="nav nav-pills">
    <li ng-class="{ active:tab === 1 }">
      <a href ng-click="tab = 1">Description</a>
    </li>
    <li ng-class="{ active:tab === 2 }">
      <a href ng-click="tab = 2">Specifications</a>
    </li>
    <li ng-class="{ active:tab === 3 }">
      <a href ng-click="tab = 3">Reviews</a>
    </li>
  </ul>
  <div class="panel" ng-show="tab === 1">
    <h4>Description </h4>
    <p>{{product.description}}</p>
  </div>
  ...

```

```
app.controller("PanelController", function(){
  this.tab = 1;
});
```

app.js



# Creating our selectTab function

```
<section ng-controller="PanelController as panel">
  <ul class="nav nav-pills">
    <li ng-class="{ active:tab === 1 }">
      <a href ng-click="panel.selectTab(1)">Description</a>
    </li>
    <li ng-class="{ active:tab === 2 }">
      <a href ng-click="panel.selectTab(2)">Specifications</a>
    </li>
    <li ng-class="{ active:tab === 3 }">
      <a href ng-click="panel.selectTab(3)">Reviews</a>
    </li>
  </ul>
  <div class="panel" ng-show="tab === 1">
    <h4>Description </h4>
    <p>{{product.description}}</p>
  </div>
  ...

```

```
app.controller("PanelController", function(){
  this.tab = 1;

  this.selectTab = function(setTab) {
    this.tab = setTab;
  };
})
```



# Creating our isSelected function

```
<section ng-controller="PanelController as panel">
  <ul class="nav nav-pills">
    <li ng-class="{ active: panel.isSelected(1) }">
      <a href ng-click="panel.selectTab(1)">Description</a>
    </li>
    <li ng-class="{ active: panel.isSelected(2)}">
      <a href ng-click="panel.selectTab(2)">Specifications</a>
    </li>
    <li ng-class="{ active: panel.isSelected(3)}">
      <a href ng-click="panel.selectTab(3)">Reviews</a>
    </li>
  </ul>
  <div class="panel" ng-show="panel.isSelected(1)">
    <h4>Description </h4>
    <p>{{product.description}}</p>
  </div>
  ...

```

```
app.controller("PanelController", function(){
  this.tab = 1;

  this.selectTab = function(setTab) {
    this.tab = setTab;
  };
  this.isSelected = function(checkTab){
    return this.tab === checkTab;
  };
});
```

# Flatlander Crafted Gems

– an Angular store –

## Pentagonal Gem

\$5.95



Description

Specifications

Reviews

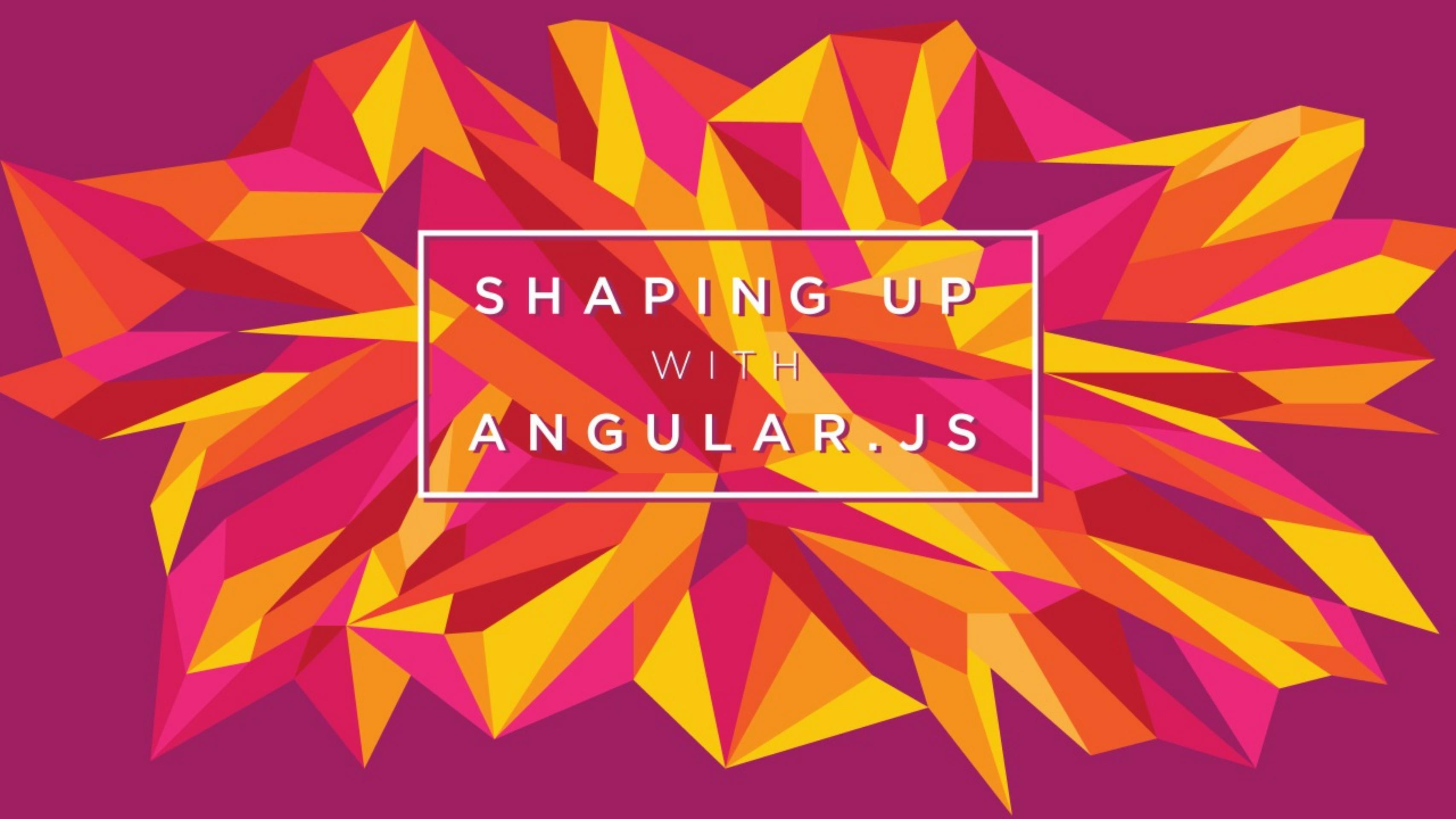
### Description

Origin of the Pentagonal Gem is unknown, hence its low value. It has a very high shine and 12 sides,

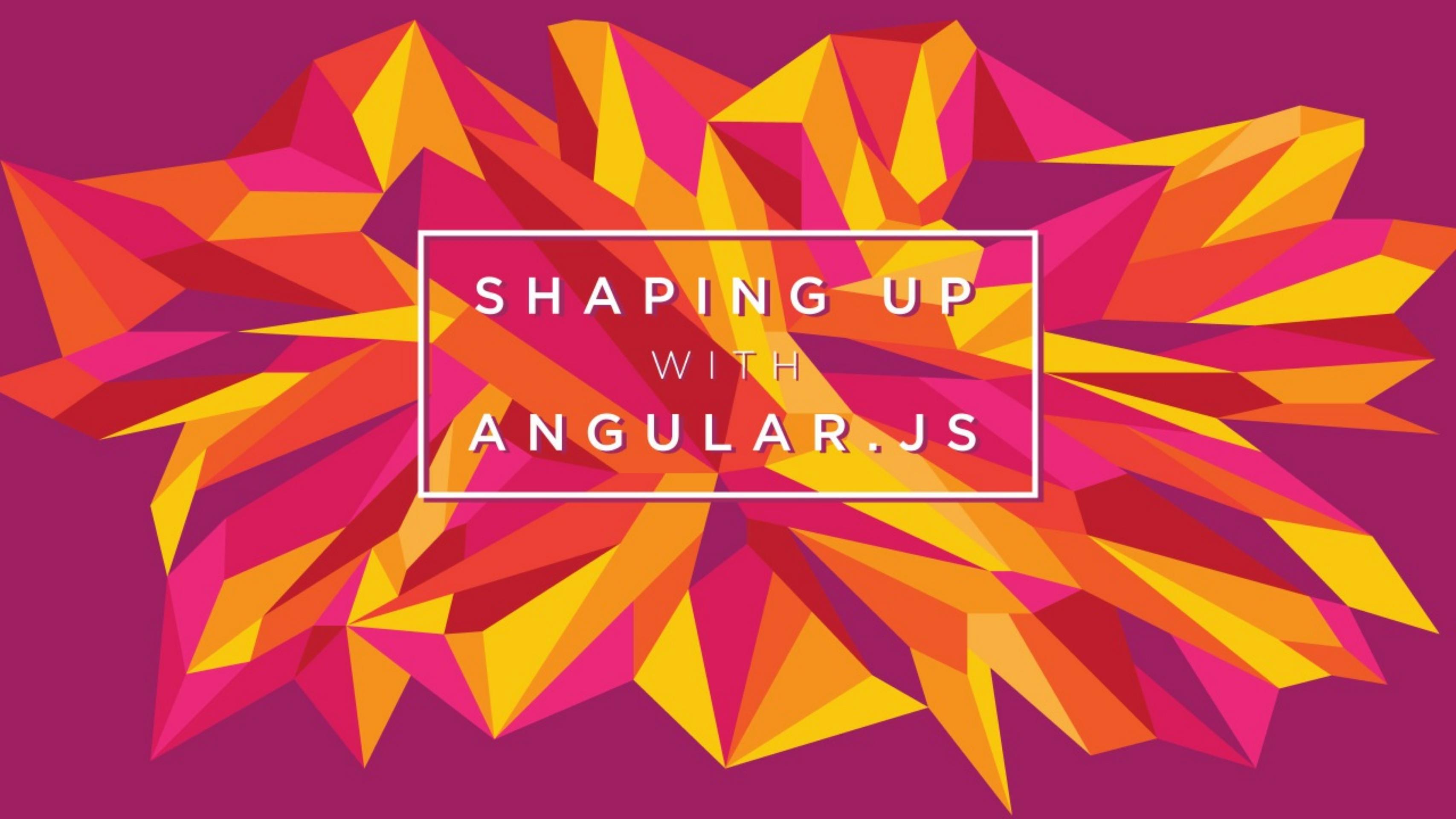


# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



SHAPING UP  
WITH  
ANGULAR.JS



SHAPING UP  
WITH  
ANGULAR.JS



# Shaping Up with Angular

Level 3: Forms, Models, and Validations

SHAPING UP  
WITH  
ANGULAR.JS



# More Directives: Forms & Models

## Flatlander Crafted Gems – an Angular store –

Pentagonal Gem \$5.95



Description   Specifications   Review ↗

**Description**

Origin of the Pentagonal Gem is unknown, hence its low value. It has a very high shine and 12 sides,

[r.co/KY0xXbvJXKzsIPYI/](http://r.co/KY0xXbvJXKzsIPYI/)

How can I let my users add content?



# Adding reviews to our products

```
app.controller("StoreController", function(){
  this.products = [
    {
      name: 'Awesome Multi-touch Keyboard',
      price: 250.00,
      description: "...",
      images: [...],
      reviews: [
        {
          stars: 5,
          body: "I love this product!",
          author: "joe@thomas.com"
        },
        {
          stars: 1,
          body: "This product sucks",
          author: "tim@hater.com"
        }
      ...
    }
  ]
})
```



# Looping Over Reviews in our Tab

```
<li class="list-group-item" ng-repeat="product in store.products">
  . . .
  <div class="panel" ng-show="panel.isSelected(3)">
    <h4> Reviews </h4>

    <blockquote ng-repeat="review in product.reviews">
      <b>Stars: {{review.stars}}</b>
      {{review.body}}
      <cite>by: {{review.author}}</cite>
    </blockquote>
  </div>
```

index.html

SHAPING UP  
WITH  
ANGULAR.JS



# We're displaying Reviews!

## Reviews

**3 Stars** I think this gem was just OK,  
could honestly use more shine, IMO.

—JimmyDean@sausage.com

**4 Stars** Any gem with 12 faces is for me!

—gemsRock@alyssaNicoll.com

Nothing new here, but how do we start to implement forms?



# Writing out our Review Form

```
<h4> Reviews </h4>

<blockquote ng-repeat="review in product.reviews">...</blockquote>

<form name="reviewForm">
  <select>
    <option value="1">1 star</option>
    <option value="2">2 stars</option>
    ...
  </select>
  <textarea></textarea>
  <label>by:</label>
  <input type="email" />
  <input type="submit" value="Submit" />
</form>
```

**Reviews**  
**Submit a Review**

Rate the Product

Write a short review of the product...

jimmyDean@sausage.com

**Submit Review**

index.html



# With Live Preview

```
<form name="reviewForm">
  <blockquote>
    <b>Stars: {{review.stars}}</b>
    {{review.body}}
    <cite>by: {{review.author}}</cite>
  </blockquote>
  <select>
    <option value="1">1 star</option>
    <option value="2">2 stars</option>
    . . .
  </select>
  <textarea></textarea>
  <label>by:</label>
  <input type="email" />
  <input type="submit" value="Submit" />
</form>
```

How do we bind this review object to the form?

index.html



# Introducing ng-model

```
<form name="reviewForm">
  <blockquote>
    <b>Stars: {{review.stars}}</b>
    {{review.body}}
    <cite>by: {{review.author}}</cite>
  </blockquote>
  <select ng-model="review.stars">
    <option value="1">1 star</option>
    <option value="2">2 stars</option>
    . . .
  </select>
  <textarea ng-model="review.body"></textarea>
  <label>by:</label>
  <input ng-model="review.author" type="email" />
  <input type="submit" value="Submit" />
</form>
```



ng-model binds the form element value to the property

index.html



# Live Preview In Action

**5 Stars** This gem is SO

—

**Submit a Review**

5

This gem is SO|

jimmyDean@sausage.com

Submit Review

But how do we actually add the new review?



# Two More Binding Examples

## With a Checkbox

```
<input ng-model="review.terms" type="checkbox" /> I agree to the terms
```

Sets value to true or false

## With Radio Buttons

What color would you like?

```
<input ng-model="review.color" type="radio" value="red" /> Red  
<input ng-model="review.color" type="radio" value="blue" /> Blue  
<input ng-model="review.color" type="radio" value="green" /> Green
```

Sets the proper value based on which is selected



# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



# We need to Initialize the Review

```
<form name="reviewForm">
  <blockquote>
    <b>Stars: {{review.stars}}</b>
    {{review.body}}
    <cite>by: {{review.author}}</cite>
  </blockquote>

  <select ng-model="review.stars">
    <option value="1">1 star</option>
    <option value="2">2 stars</option>
    .
    .
    .
  </select>
  <textarea ng-model="review.body"></textarea>
  <label>by:</label>
  <input ng-model="review.author" type="email" />
  <input type="submit" value="Submit" />
</form>
```

*We could do ng-init, but  
we're better off  
creating a controller.*

index.html



# Creating the Review Controller



```
app.controller("ReviewController", function(){
  this.review = {};
});
```

app.js

```
<form name="reviewForm" ng-controller="ReviewController as reviewCtrl">
  <blockquote>
    <b>Stars: {{review.stars}}</b>
    {{review.body}}
    <cite>by: {{review.author}}</cite>
  </blockquote>

  <select ng-model="review.stars">
    <option value="1">1 star</option>
    <option value="2">2 stars</option>
    ...
  </select>
  <textarea ng-model="review.body"></textarea>
```

*Now we need to update  
all the Expressions to use  
this controller alias.*

index.html



# Using the reviewCtrl.review

```
app.controller("ReviewController", function(){
  this.review = {};
});
```

app.js

```
<form name="reviewForm" ng-controller="ReviewController as reviewCtrl">
  <blockquote>
    <b>Stars: {{reviewCtrl.review.stars}}</b>
    {{reviewCtrl.review.body}}
    <cite>by: {{reviewCtrl.review.author}}</cite>
  </blockquote>

  <select ng-model="reviewCtrl.review.stars">
    <option value="1">1 star</option>
    <option value="2">2 stars</option>
    .
    .
    .
  </select>
  <textarea ng-model="reviewCtrl.review.body"></textarea>
```

index.html



# Using ng-submit to make the Form Work

```
app.controller("ReviewController", function(){
  this.review = {};
});
```

app.js

ng-submit allows us to call a function when the form is submitted.

```
<form name="reviewForm" ng-controller="ReviewController as reviewCtrl"
      ng-submit="reviewCtrl.addReview(product)">
  <blockquote>
    <b>Stars: {{reviewCtrl.review.stars}}</b>
    {{reviewCtrl.review.body}}
    <cite>by: {{reviewCtrl.review.author}}</cite>
  </blockquote>
```

We need to define  
this function.

index.html



# Using ng-submit to make the Form Work

```
app.controller("ReviewController", function(){
  this.review = {};

  this.addReview = function(product) {
    product.reviews.push(this.review);
  };
});
```

Push review onto this  
product's reviews array.

app.js

```
<form name="reviewForm" ng-controller="ReviewController as reviewCtrl"
      ng-submit="reviewCtrl.addReview(product)"
      >
  <blockquote>
    <b>Stars: {{reviewCtrl.review.stars}}</b>
    {{reviewCtrl.review.body}}
    <cite>by: {{reviewCtrl.review.author}}</cite>
  </blockquote>
</form>
```

index.html



# Now with Reviews!

—gemsRock@alyssaNicoll.com

**2 Stars** reviewing products is fun

—

## Submit a Review

2

reviewing products is fun

funreviewer

Submit Review

Dodecahedron

\$2.95

Review gets added,  
but the form still has  
all previous values!



# Resetting the Form on Submit

```
app.controller("ReviewController", function(){
  this.review = {};

  this.addReview = function(product) {
    product.reviews.push(this.review);
    this.review = {};
  };
});
```

Clear out the review, so the form will reset.

app.js

```
<form name="reviewForm" ng-controller="ReviewController as reviewCtrl"
      ng-submit="reviewCtrl.addReview(product)">
  <blockquote>
    <b>Stars: {{reviewCtrl.review.stars}}</b>
    {{reviewCtrl.review.body}}
    <cite>by: {{reviewCtrl.review.author}}</cite>
  </blockquote>
```

index.html



## This Time the Form Resets

5 Stars This gem is SO

—

Submit a Review

5

This gem is SO|

jimmyDean@sausage.com

Submit Review

However, if we refresh,  
the reviews get reset!

We're not saving the  
reviews anywhere yet...



# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



# What about validations?

---

Turns out Angular has some great client side validations we can use with our directives.



# Our Old Form Code

---

```
<form name="reviewForm" ng-controller="ReviewController as reviewCtrl"
      ng-submit="reviewCtrl.addReview(product)">
  <select ng-model="reviewCtrl.review.stars">
    <option value="1">1 star</option>
    ...
  </select>

  <textarea name="body" ng-model="reviewCtrl.review.body"></textarea>
  <label>by:</label>
  <input name="author" ng-model="reviewCtrl.review.author" type="email" />

  <input type="submit" value="Submit" />
</form>
```

index.html



# Now with validation

## Turn Off Default HTML Validation

```
<form name="reviewForm" ng-controller="ReviewController as reviewCtrl"
      ng-submit="reviewCtrl.addReview(product)" novalidate>
  <select ng-model="reviewCtrl.review.stars" required>
    <option value="1">1 star</option>
    ...
  </select>

  <textarea name="body" ng-model="reviewCtrl.review.body" required></textarea>
  <label>by:</label>
  <input name="author" ng-model="reviewCtrl.review.author" type="email" required/>

  <div> reviewForm is {{reviewForm.$valid}} </div> ← - - Print Forms Validity
  <input type="submit" value="Submit" />
</form>
```

Mark Required Fields

index.html



# With validations

**5 Stars**

—alyssa@codeschool.com

**Submit a Review**

5

Write a short review of the product...

alyssa@codeschool.com

Submit Review

reviewForm is false

We don't want the form to submit when it's invalid.



# Preventing the Submit

```
<form name="reviewForm" ng-controller="ReviewController as reviewCtrl"  
      ng-submit="reviewCtrl.addReview(product)" novalidate>
```

index.html

We only want this method to be called  
if `reviewForm.$valid` is true.

SHAPING UP  
WITH  
ANGULAR.JS



# Preventing the Submit

```
<form name="reviewForm" ng-controller="ReviewController as reviewCtrl"  
      ng-submit="reviewForm.$valid && reviewCtrl.addReview(product)" novalidate>
```



index.html

If `valid` is `false`, then `addReview` is never called.



# Doesn't Submit an Invalid Form

**4 Stars** Any gem with 12 faces is for me!  
—gemsRock@alyssaNicoll.com

**5 Stars**  
—alyssa@gmail.com

## Submit a Review

5

Write a short review of the product...

alyssa@gmail.com

Submit Review

reviewForm is false

Dodecahedron

\$2.95

How might we give a hint to the user why their form is invalid?



# The Input Classes

index.html

```
<input name="author" ng-model="reviewCtrl.review.author" type="email" required />
```

Source before typing email

```
<input name="author" . . . class="ng-pristine ng-invalid">
```

Source after typing, with invalid email

```
<input name="author". . . class="ng-dirty ng-invalid">
```

Source after typing, with valid email

```
<input name="author" . . . class="ng-dirty ng-valid">
```

So, let's highlight the form field using classes after we start typing, `ng-dirty` showing if a field is valid or invalid.

`ng-valid`    `ng-invalid`



# The classes

```
<input name="author" ng-model="reviewCtrl.review.author" type="email" required />  
index.html
```

```
.ng-invalid.ng-dirty {  
  border-color: #FA787E;  
}
```

*Red border for invalid*

```
.ng-valid.ng-dirty {  
  border-color: #78FA89;  
}
```

*Green border for valid*

style.css

SHAPING UP  
WITH  
ANGULAR.JS



# Now with red and green borders!

**4 Stars** Any gem with 12 faces is for me!  
—gemsRock@alyssaNicoll.com

## Submit a Review

Rate the Product

Write a short review of the product...

jimmyDean@sausage.com

Submit Review

reviewForm is false

Dodecahedron

\$2.95





# HTML5-based type validations

Web forms usually have rules around valid input:

- Angular JS has built-in validations for common input types:

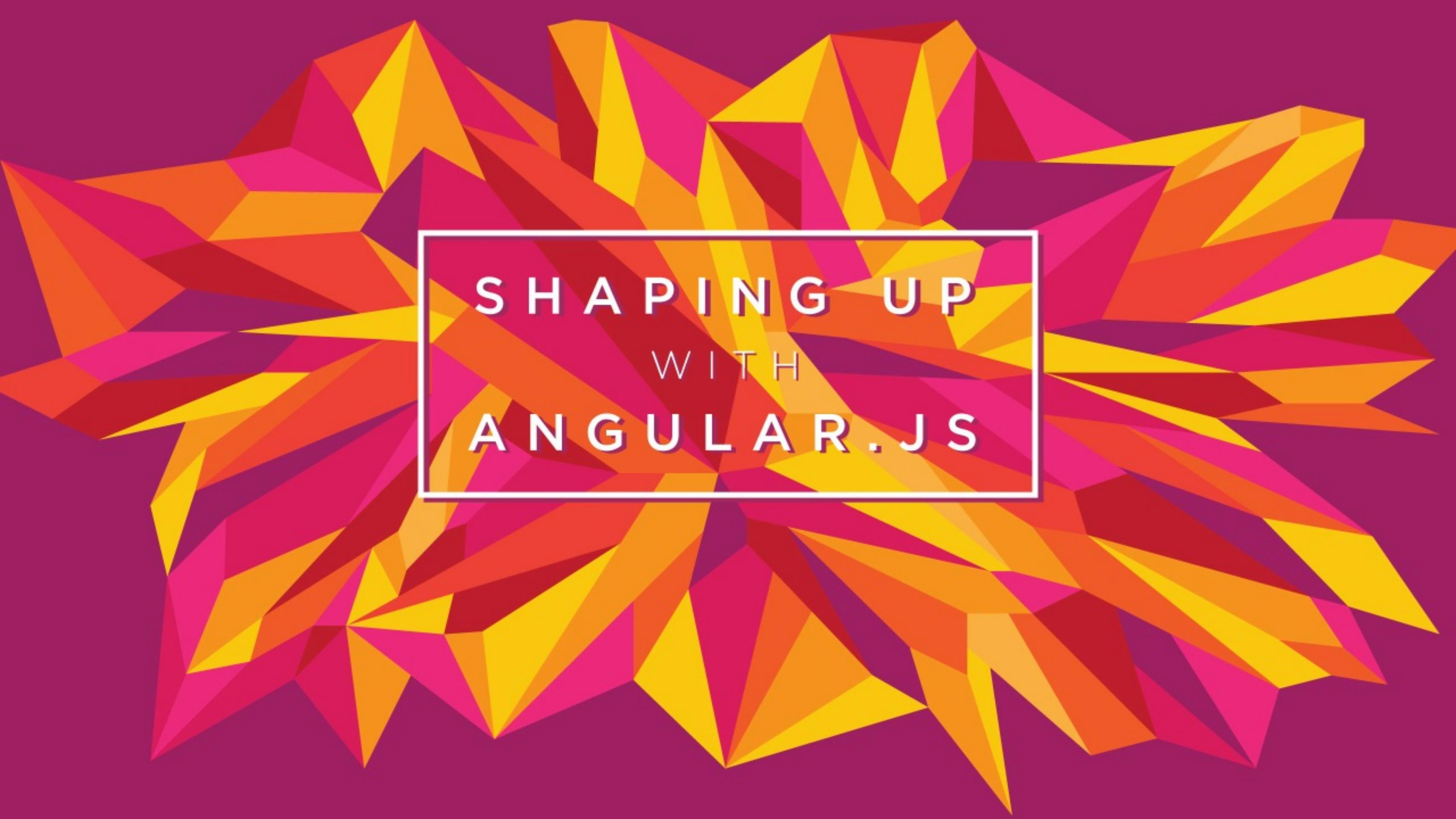
```
<input type="email" name="email">
```

```
<input type="url" name="homepage">
```

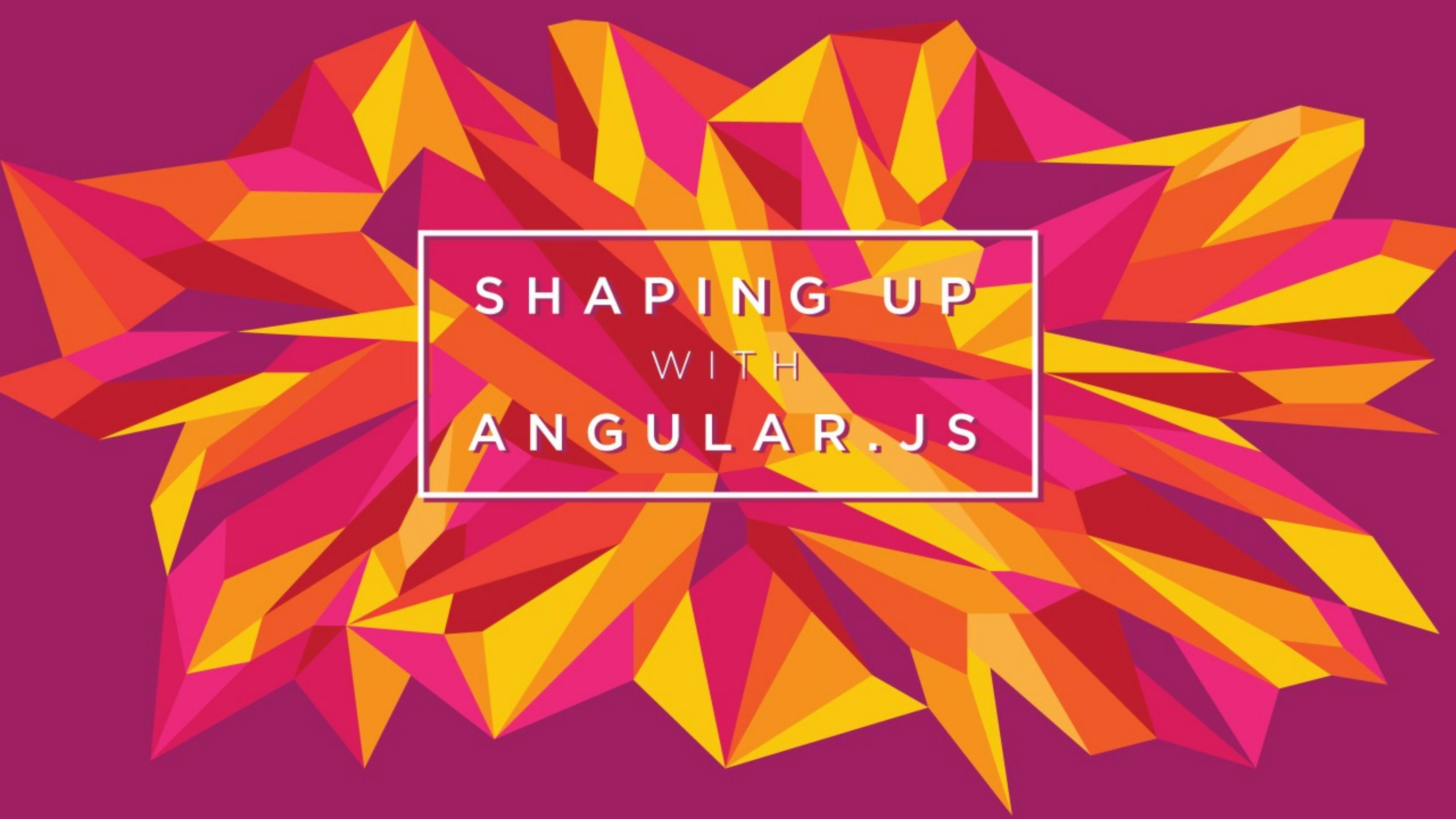
```
<input type="number" name="quantity">
```

Can also define min  
& max with numbers

```
min=1 max=10
```



SHAPING UP  
WITH  
ANGULAR.JS



SHAPING UP  
WITH  
ANGULAR.JS



# Shaping Up with Angular JS

Level 4: Creating a Directive with an  
Associated Controller

SHAPING UP  
WITH  
ANGULAR.JS



# Decluttering our Code

```
<ul class="list-group">
  <li class="list-group-item" ng-repeat="product in store.products">
    <h3>
      {{product.name}}
      <em class="pull-right">${{product.price}}</em>
    </h3>
    <section ng-controller="PanelController as panel">
      . . .

```

index.html

We're going to have multiple pages that want to reuse this HTML snippet.

How do we eliminate this duplication?

SHAPING UP  
WITH  
ANGULAR.JS



# Using ng-include for Templates

```
<ul class="list-group">
  <li class="list-group-item" ng-repeat="product in store.products">
    <h3 ng-include="'product-title.html'"> ↗ - → name of file to include
    </h3>
    <section ng-controller="PanelController as panel">
```

index.html

ng-include is expecting a variable with the name of the file to include.  
To pass the name directly as a string, use single quotes (' . . . ')

```
  {{product.name}}
  <em class="pull-right">${{product.price}}</em>
```

↓  
product-title.html

```
<h3 ng-include="'product-title.html'" class="ng-scope">
  <span class="ng-scope ng-binding">Awesome Multi-touch Keyboard</span>
  <em class="pull-right ng-scope ng-binding">$250.00</em>
</h3>
```

generated html

# Flatlander Crafted Gems

– an Angular store –

Pentagonal Gem

\$5.95



Description

Specifications

Reviews

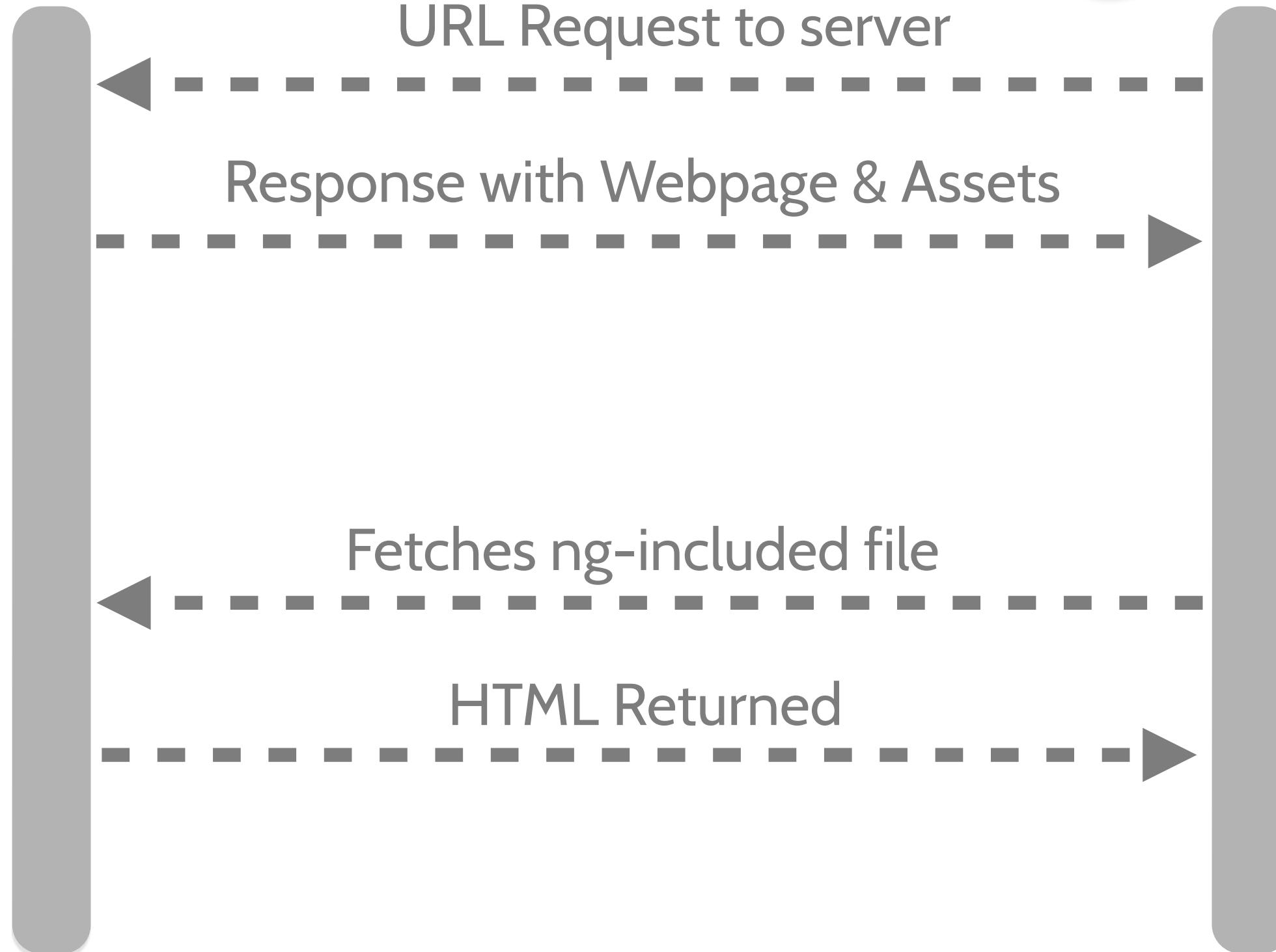
## Description

Origin of the Pentagonal Gem is unknown, hence its low value. It has a very high shine and 12 sides,

*Web Server*



*Web Browser*



HTML      JavaScript



Browser loads up  
Angular app.

HTML





# Creating our First Custom Directive

Using ng-include...

```
<h3 ng-include="'product-title.html'"></h3>
```

index.html

Custom Directive

```
<product-title></product-title>
```

index.html

Our old code and our custom Directive will do the same thing...  
with some additional code.

Why write a Directive?

SHAPING UP  
WITH  
ANGULAR.JS



# Why Directives?

---

Directives allow you to write HTML that expresses the behavior of your application.

```
<aside class="col-sm-3">
  <book-cover></book-cover>
  <h4><book-rating></book-rating></h4>
</aside>

<div class="col-sm-9">
  <h3><book-title></book-title></h3>

  <book-authors></book-authors>

  <book-review-text></book-review-text>

  <book-genres></book-genres>
</div>
```

Can you tell what  
this does?

SHAPING UP  
WITH  
ANGULAR.JS



# Writing Custom Directives

---

**Template-expanding Directives** are the simplest:

- define a custom tag or attribute that is expanded or replaced
- can include Controller logic, if needed

**Directives can also be used for:**

- Expressing complex UI
- Calling events and registering event handlers
- Reusing common components



# How to Build Custom Directives

```
<product-title></product-title>
```

index.html



```
app.directive('productTitle', function(){
  return {
    };
});
```

A configuration object defining how your directive will work

app.js



# How to Build Custom Directives

```
<product-title></product-title>
```

index.html

dash in HTML translates to ... camelCase in JavaScript

```
app.directive('productTitle', function(){
  return {
    restrict: 'E', Type of Directive (E for Element)
    templateUrl: 'product-title.html' Url of a template
  };
});
```

generates  
into  
app.js

```
<h3>
  {{product.name}}
  <em class="pull-right">$250.00</em>
</h3>
```

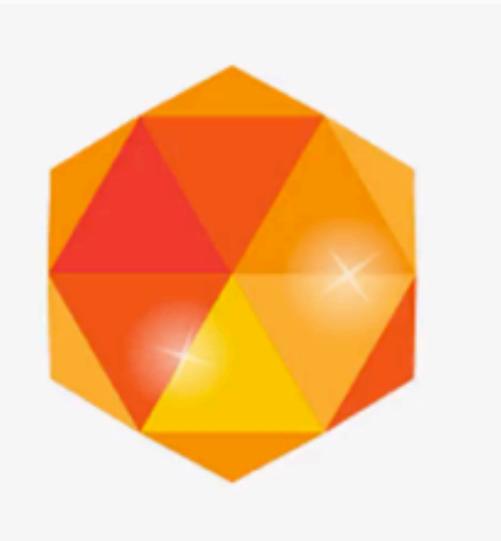
index.html

# Flatlander Crafted Gems

– an Angular store –

Pentagonal Gem

\$5.95



Description

Specifications

Reviews

## Description

Origin of the Pentagonal Gem is unknown, hence its low value. It has a very high shine and 12 sides,



# Attribute vs Element Directives

## Element Directive

```
<product-title></product-title>
```

index.html

Notice we're not using a self-closing tag...

```
<product-title/>
```

...some browsers don't like self-closing tags.

## Attribute Directive

```
<h3 product-title></h3>
```

index.html

Use Element Directives for UI widgets and Attribute Directives for mixin behaviors... like a tooltip.

SHAPING UP  
WITH  
ANGULAR.JS



# Defining an Attribute Directive

```
<h3 product-title></h3>
```

index.html

```
app.directive('productTitle', function(){
  return {
    restrict: 'A', Type of Directive  
(A for Attribute)
    templateUrl: 'product-title.html'
  };
});
```

generates  
into  
app.js

```
<h3>
  {{product.name}}
  <em class="pull-right">$250.00</em>
</h3>
```

index.html

Though normally attributes would be for mixin behaviors ...



# Directives allow you to write better HTML

---

When you think of a dynamic web application, do you think you'll be able to understand the functionality just by looking at the HTML?

No, right?

When you're writing an Angular JS application, you should be able to understand the behavior and intent from just the HTML.

And you're likely using custom directives to write expressive HTML.

SHAPING UP  
WITH  
ANGULAR.JS



# Shaping Up with Angular JS

Creating Our Own Directives

SHAPING UP  
WITH  
ANGULAR.JS



# Reviewing our Directive

## Template-Expanding Directives

```
<h3>  
  {{product.name}}  
  <em class="pull-right">${{product.price}}</em>  
</h3>
```

index.html

An Attribute Directive

```
<h3 product-title></h3>
```

An Element Directive

```
<h3> <product-title></product-title> </h3>
```



# What if we *need* a Controller?

```
<section ng-controller="PanelController as panels">
  <ul class="nav nav-pills"> . . . </ul>
  <div class="panel" ng-show="panels.isSelected(1)"> . . . </div>
  <div class="panel" ng-show="panels.isSelected(2)"> . . . </div>
  <div class="panel" ng-show="panels.isSelected(3)"> . . . </div>
</section>
```

index.html

Directive?



# First, extract the template...

```
<h3> <product-title> </h3>
<product-panels ng-controller="PanelController as panels">
    . . .
</product-panels>
```

index.html

```
<section>
<ul class="nav nav-pills"> . . . </ul>
<div class="panel" ng-show="panels.isSelected(1)"> . . .
<div class="panel" ng-show="panels.isSelected(2)"> . . .
<div class="panel" ng-show="panels.isSelected(3)"> . . .
</section>
```

product-panels.html

SHAPING UP  
WITH  
ANGULAR.JS



# Now write the Directive ...

```
<product-panels ng-controller="PanelController as panels">  
    . . .  
</product-panels>
```

index.html

```
app.directive('productPanels', function(){  
    return {  
        restrict: 'E',  
        templateUrl: 'product-panels.html'  
    };  
});
```

app.js



# What about the Controller?

```
<product-panels ng-controller="PanelController as panels">  
  . . .  
</product-panels>
```

index.html

```
app.directive('productPanels', function(){  
  return {  
    restrict: 'E',  
    templateUrl: 'product-panels.html'  
  };  
});  
app.controller('PanelController', function(){  
  . . .  
});
```

app.js

First we need to move the functionality inside the directive



# Moving the Controller Inside

```
<product-panels ng-controller="PanelController as panels" >  
  . . .  
</product-panels>
```

index.html

Next, move the alias inside

```
app.directive('productPanels', function(){  
  return {  
    restrict: 'E',  
    templateUrl: 'product-panels.html',  
    controller: function(){  
      . . .  
    }  
  };  
});
```

app.js



# Need to Specify the Alias

```
<product-panels>
  ...
</product-panels>
```

index.html

```
app.directive('productPanels', function(){
  return {
    restrict: 'E',
    templateUrl: 'product-panels.html',
    controller: function(){
      ...
    },
    controllerAs: 'panels'
  };
});
```

Now it works, using panels as our Controller Alias.

app.js

# Flatlander Crafted Gems

– an Angular store –

## Pentagonal Gem

\$5.95



Description

Specifications

Reviews

### Description

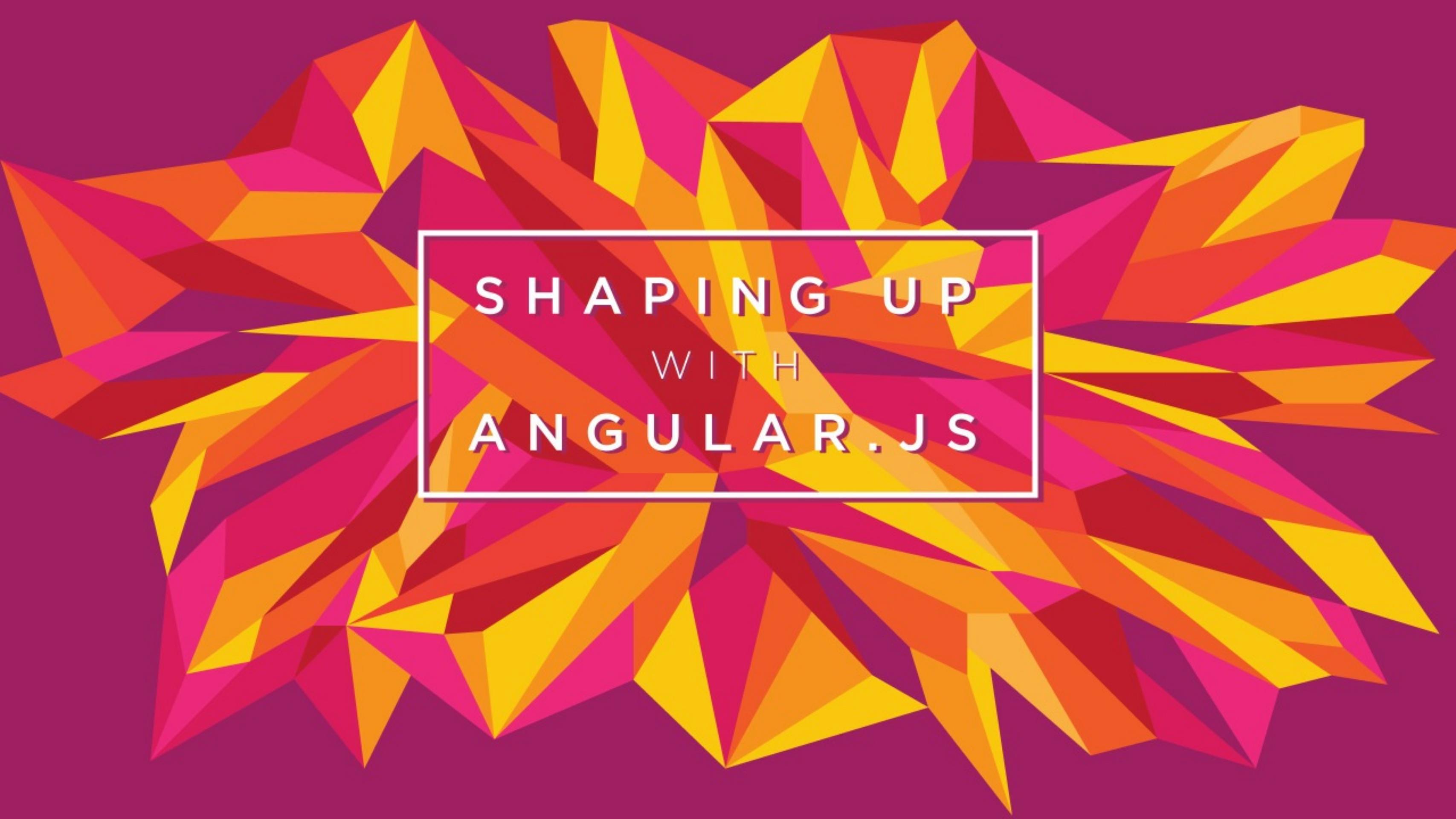
Origin of the Pentagonal Gem is unknown, hence its low value. It has a very high shine and 12 sides,

[in.plnkr.co/eGBp8lg9Y72Gm2vI/](https://in.plnkr.co/eGBp8lg9Y72Gm2vI/)

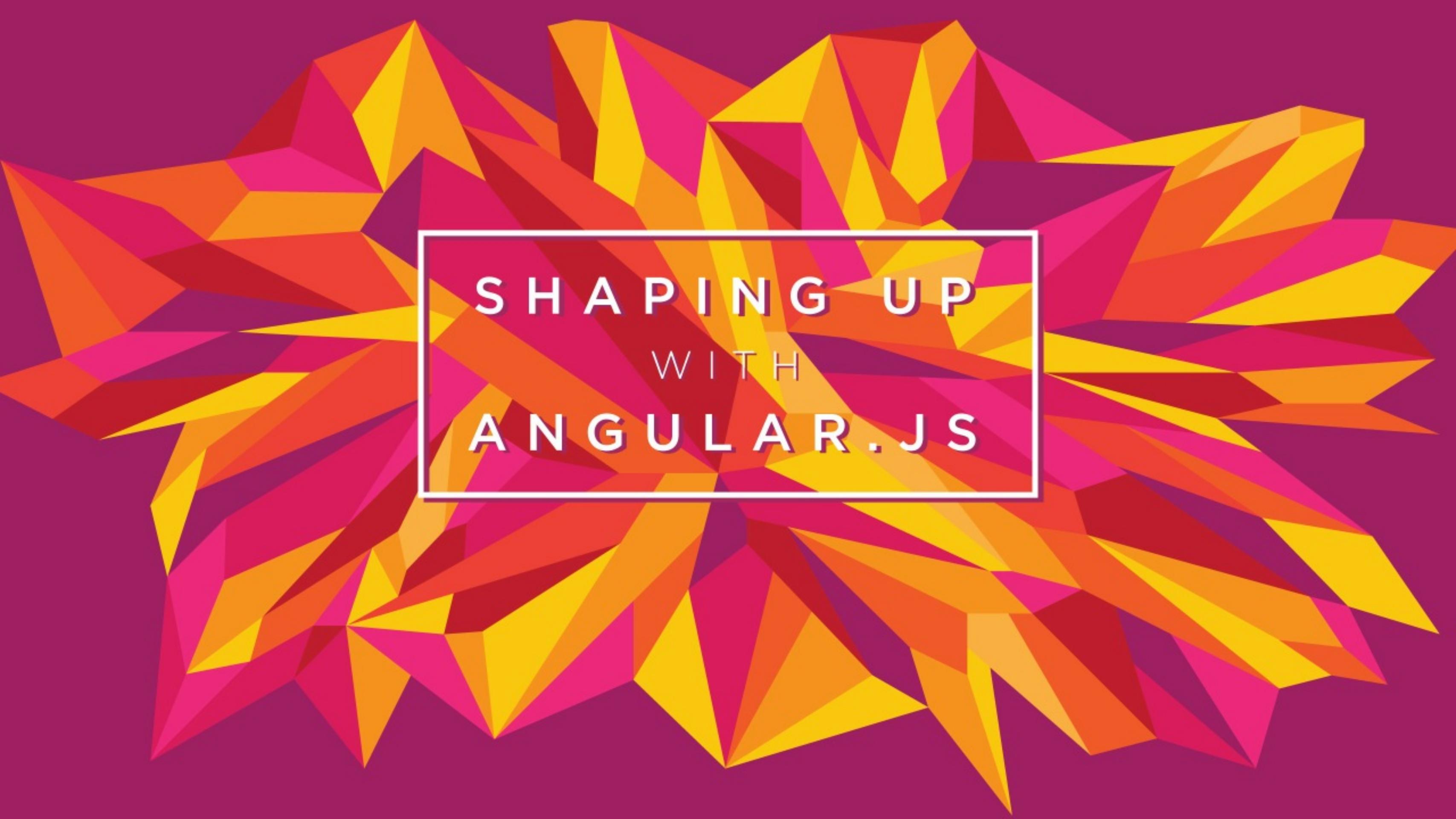


# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



SHAPING UP  
WITH  
ANGULAR.JS



SHAPING UP  
WITH  
ANGULAR.JS



# Shaping Up with Angular JS

Level 5: Dependencies and Services

SHAPING UP  
WITH  
ANGULAR.JS



# Starting to get a bit cluttered?

```
(function(){
  var app = angular.module('store', []);

  app.controller('StoreController', function(){ . . . });

  app.directive('productTitle', function(){ . . . });
  app.directive('productGallery', function(){ . . . });
  app.directive('productPanels', function(){ . . . });

  . . .
})());
```

*Can we refactor  
these out?*

app.js



# Extract into a new file ... products.js

```
(function(){
  var app = angular.module('store', []);
  app.controller('StoreController', function(){ . . . });
  . . .
})();
```

app.js

```
app.directive('productTitle', function(){ . . . });
app.directive('productGallery', function(){ . . . });
app.directive('productPanels', function(){ . . . });
```

products.js



# Make a new Module

```
(function(){
  var app = angular.module('store', [ ]);

  app.controller('StoreController', function(){ . . . });
  . . .
})();
```

Define a new module just  
for Product stuff...

Module Name  
app.js

Different closure  
means different  
app variable.

```
(function(){
  var app = angular.module('store-products', [ ]);

  app.directive('productTitle', function(){ . . . });
  app.directive('productGallery', function(){ . . . });
  app.directive('productPanels', function(){ . . . });
})();
```

products.js



# Add it to the dependencies ...

store depends on  
store-products

```
(function(){
  var app = angular.module('store', ['store-products']);

  app.controller('StoreController', function(){ . . . });
  . . .
})();
```

Module Name  
app.js

```
(function(){
  var app = angular.module('store-products', [ ]);

  app.directive('productTitle', function(){ . . . });

  app.directive('productGallery', function(){ . . . });

  app.directive('productPanels', function(){ . . . });
})();
```

products.js



# We'll also need to include the file

```
<!DOCTYPE html>
<html ng-app="store">
  <head> . . . </head>
  <body ng-controller="StoreController as store">
    . . .
    <script src="angular.js"></script>
    <script src="app.js"></script>
    <script src="products.js"></script>
  </body>
</html>
```

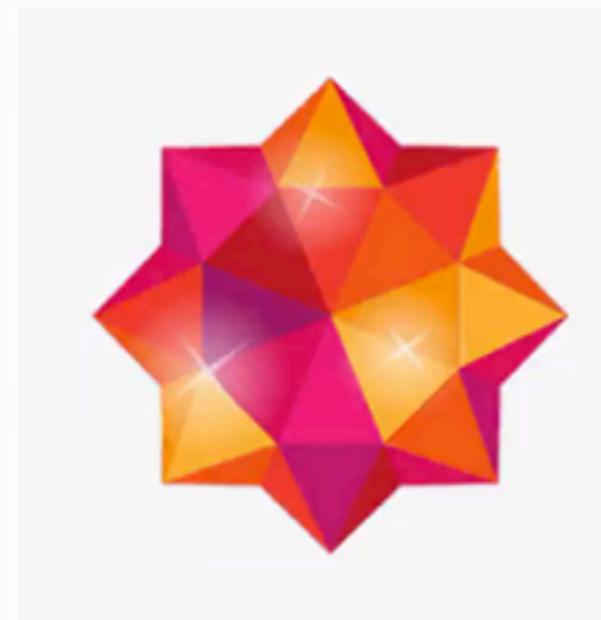
index.html

# Flatlander Crafted Gems

## – an Angular store –

Gem #1: Zircon

\$1,100.00



Description

Specs

Reviews

Description

Zircon is our most coveted and sought after gem.



# How should I organize my application Modules?

---

**Best to split Modules around functionality:**

- `app.js` - top-level module attached via `ng-app`
- `products.js` - all the functionality for products and only products



# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



# Does this feel strange?

```
(function(){
  var app = angular.module('store', [ 'store-products' ]);

  app.controller('StoreController', function(){
    this.products = [
      { name: '...', price: 1.99, ... },
      { name: '...', price: 1.99, ... },
      { name: '...', price: 1.99, ... },
      ...
    ];
    ...
  });
})();
```

What is all this data  
doing here?

app.js

Where can we put it?  
Shouldn't we fetch this from an API?

SHAPING UP  
WITH  
ANGULAR.JS



# How do we get that data?

```
(function(){
  var app = angular.module('store', [ 'store-products' ]);

  app.controller('StoreController', function(){
    this.products = ???; ← .....
    ...
  });
})();
```

How do we fetch our  
products from an API?

app.js

<http://api.example.com/products.json>

```
[  
  { name: '...', price: 1.99, ... },  
  { name: '...', price: 1.99, ... },  
  { name: '...', price: 1.99, ... },  
  ...  
]
```



# We need a Service!

---

Services give your Controller additional functionality, like ...

- Fetching JSON data from a web service with `$http`
- Logging messages to the JavaScript console with `$log`
- Filtering an array with `$filter`



All built-in Services  
start with a \$

sign ...



# Introducing the \$http Service!

The \$http Service is how we make an async request to a server ...

- By using \$http as a function with an options object:

```
$http({ method: 'GET' , url: '/products.json' });
```

- Or using one of the shortcut methods:

```
$http.get('/products.json' , { apiKey: 'myApiKey' });
```

- Both return a Promise object with .success() and .error()
- If we tell \$http to fetch JSON, the result will be automatically decoded into JavaScript objects and arrays

*So how do we use it?*

SHAPING UP  
WITH  
ANGULAR.JS



# How does a Controller use a Service like \$http?

Use this funky array syntax:

```
app.controller('SomeController', [ '$http', function($http){  
} ]);
```

*Service name*

*Service name as an argument*

*Dependency Injection!*

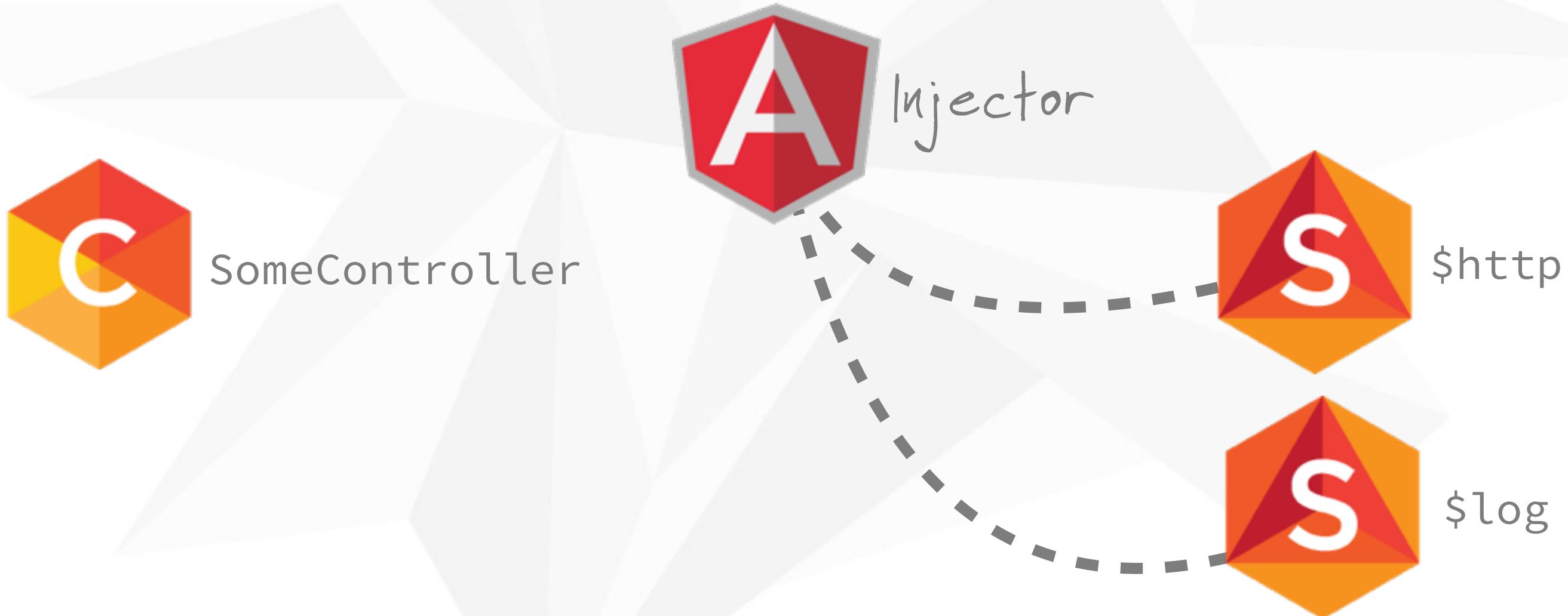
```
app.controller('SomeController', [ '$http', '$log', function($http, $log){  
} ]);
```

*If you needed more than one*



# When Angular is Loaded Services are Registered

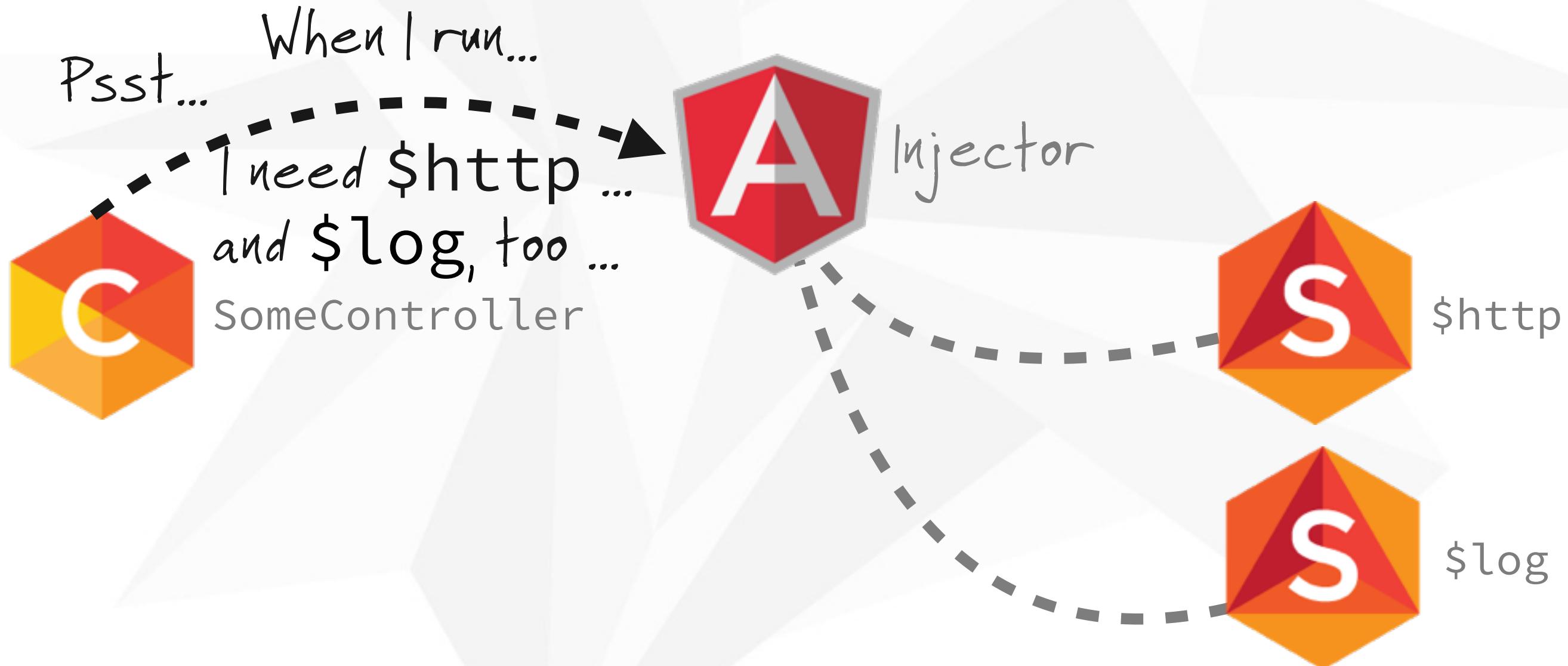
```
app.controller('SomeController', [ '$http', '$log', function($http, $log){  
} ]);
```





# A Controller is Initialized

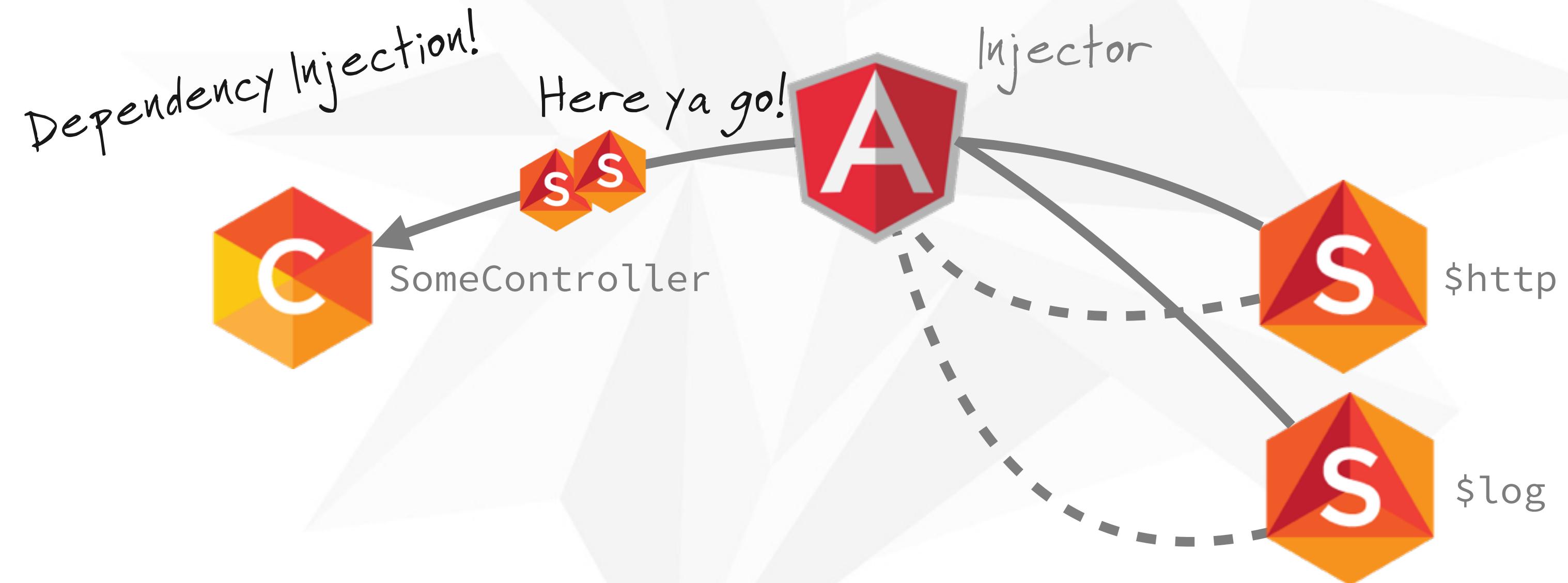
```
app.controller('SomeController', [ '$http', '$log', function($http, $log){  
} ]);
```





# Then When the Controller runs ...

```
app.controller('SomeController', [ '$http', '$log', function($http, $log){  
} ]);
```





# So where were we?

```
(function(){
  var app = angular.module('store', [ 'store-products' ]);

  app.controller('StoreController', function(){
    this.products = ???;
  });
})();
```

app.js

SHAPING UP  
WITH  
ANGULAR.JS

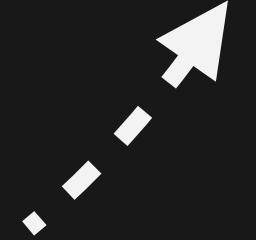


# Time for your injection!

```
(function(){
  var app = angular.module('store', [ 'store-products' ]);

  app.controller('StoreController', [ '$http',function($http){
    this.products = ???;
  }]);
})();
```

StoreController needs  
the \$http Service...



...so \$http  
gets injected  
as an argument!

app.js

Now what?

SHAPING UP  
WITH  
ANGULAR.JS



# Let's use our Service!

```
(function(){
  var app = angular.module('store', [ 'store-products' ]);

  app.controller('StoreController', [ '$http',function($http){
    this.products = ???;

    $http.get('/products.json')
  }]);
})();
```

Fetch the contents of  
products.json...

app.js

SHAPING UP  
WITH  
ANGULAR.JS



# Our Service will Return Data

```
(function(){
  var app = angular.module('store', [ 'store-products' ]);

  app.controller('StoreController', [ '$http',function($http){
    this.products = ???;

    $http.get('/products.json').success(function(data){
      ??? = data;
    });
  }]);
})();
```

What do we assign  
data to, though...?

\$http returns a Promise, so  
success() gets the data...

app.js



# Storing the Data for use in our Page

```
(function(){
  var app = angular.module('store', [ 'store-products' ]);

  app.controller('StoreController', [ '$http',function($http){
    var store = this;

    $http.get('/products.json').success(function(data){
      store.products = data;
    });
  }]);
})();
```

... and now we have somewhere  
to put our data!

We need to store what this is ...

app.js

But the page might look funny until the data loads.

SHAPING UP  
WITH  
ANGULAR.JS



# Initialize Products to be a Blank Array

```
(function(){
  var app = angular.module('store', [ 'store-products' ]);

  app.controller('StoreController', [ '$http',function($http){
    var store = this;
    store.products = [ ];  
    ←-----  
$http.get('/products.json').success(function(data){
      store.products = data;  We need to initialize products to an empty
    });  
  }]);  
}());
```

We need to initialize products to an empty array, since the page will render before our data returns from our get request.

app.js

# Flatlander Crafted Gems

– an Angular store –

Gem #1: Zircon

\$1,100.00



Description

Specs

Reviews

Description

Zircon is our most coveted and sought after gem.



# Additional \$http functionality

In addition to get() requests, \$http can post(), put(), delete()...

```
$http.post('/path/to/resource.json', { param: 'value' });
```

```
$http.delete('/path/to/resource.json');
```

...or any other HTTP method by using a config object:

```
$http({ method: 'OPTIONS', url: '/path/to/resource.json' });
```

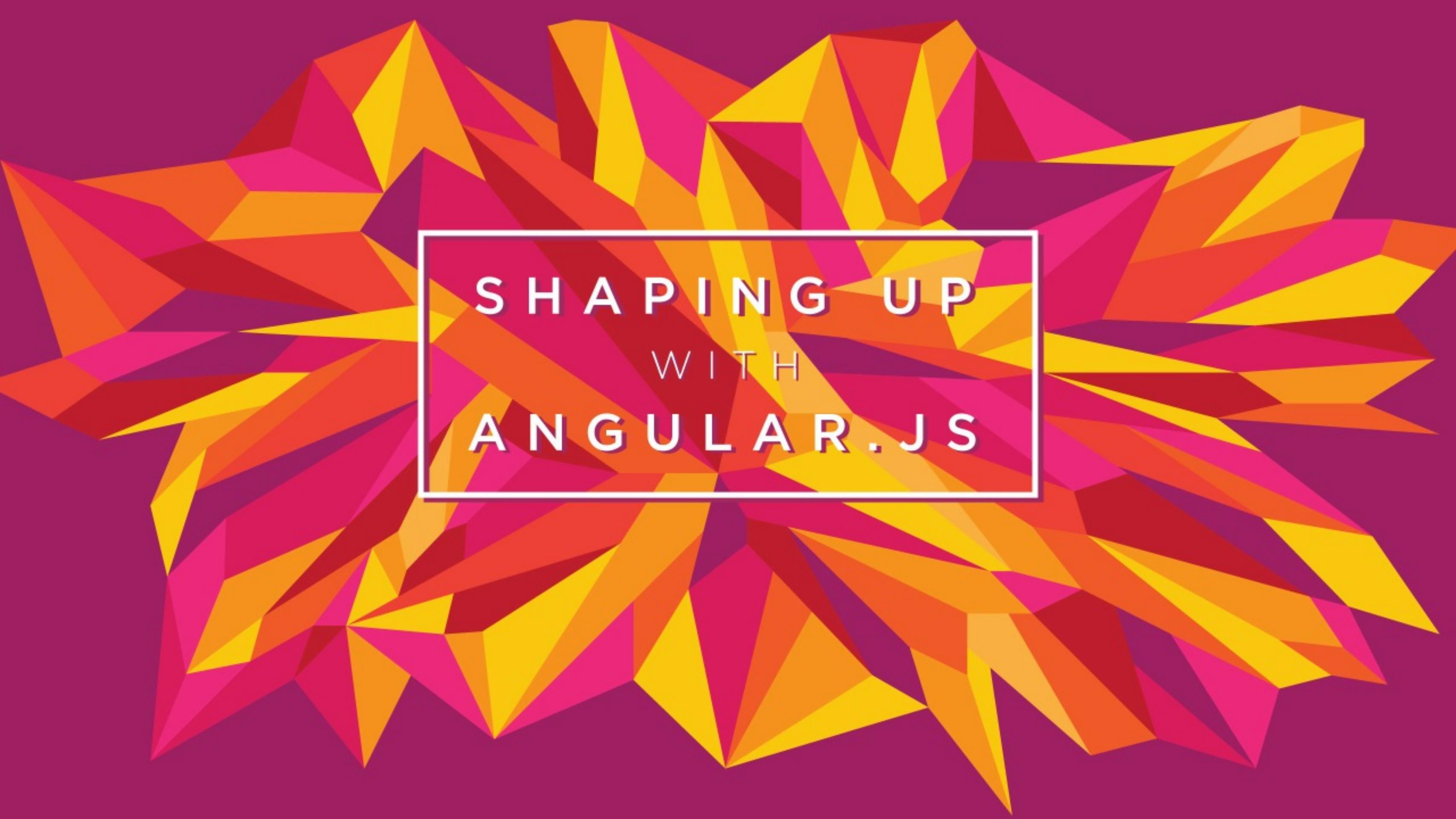
```
$http({ method: 'PATCH', url: '/path/to/resource.json' });
```

```
$http({ method: 'TRACE', url: '/path/to/resource.json' });
```



# Challenges

SHAPING UP  
WITH  
ANGULAR.JS



SHAPING UP  
WITH  
ANGULAR.JS