



Ground Up

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4. DIRECTIVES



DIRECTIVES

- Building blocks of web applications
- A collection of functionality that can be packaged and dropped into various locations within the application.
- For a user, a collection of functionality that they can interact with it can be called a directive
- Directives represent the transforming of otherwise static html elements into dynamic data driven components



What is a Directive?

- The attribute or set of attributes that we use to declare an HTML node
- The JavaScript that implements that specific functionality



Attaching directive to an element

- There are different ways to attach a directive to an element and how additional data might be passed through
 - Within HTML, use dashes, like this: `contact-card`
 - Within JavaScript, use CamelCase like this `Contact-card`.



INSERTING DIRECTIVE INTO DOM


- 4 Way to insert directive into a DOM
- EACM (by specifying restrict property)
 - A – by adding an attribute to an element **(Most Common)**
 - For e.g. `<div contact-card="person"></div>`
 - E- by creating a new element **(custom directive)**
 - For e.g. `<contact-card></contact-card>`
 - ***No way to pass data to attributes***
 - C- by giving an element a classname, **(Not used often)**
 - For e.g. `<div class="contact-card"></div>`
 - M by using an HTML comment **(Not used often)**
 - For e.g. `<!-- contact-card-->`



DIRECTIVES


- \$scope provides the model
- Model does not touch HTML
- Binding Expressions **{{message}}** – Data binding directive – data binding moves model data to view.
- Separation of Concerns – the controller and model are concerned with the gathering of the data and view is concerned with the presentation of the data.
- Moving information from the view into the Model. Ex: HTML5 Form.
- Directives allow for indirect model view interaction

```
var MainController = function($scope){  
    $scope.message="Hello, Angular"  
};
```



```
<div>  
    <h3>{{message}}</h3>  
</div>
```

```
<form action="">  
    Change the message  
    <input type="message" name="text"/>  
    <input type="submit" value="Save"/>  
</form>
```



```
var MainController = function($scope){  
    $scope.message="Hello, Angular"  
};
```



DIRECTIVES

Binding Directive

Model Directive

Event Directive

Display Directive

ng-app	ng-bind	ng-blur	ng-change
ng-class	ng-click	ng-copy	ng-dblclick
ng-disabled	ng-focus	ng-hide	ng-href
ng-if	ng-include	ng-init	ng-keydown
ng-keypress	ng-keyup	ng-model	ng-mouseenter
ng-mouseleave	ng-mousemove	ng-mouseover	ng-paste
ng-repeat	ng-style	ng-switch	ng-transclude

Around 50 directives currently available

Custom Directives



ngModel

- ngModel directive binds an
 - Input, select, textarea or custom form control to a property on the scope using NgModelController, which is created and exposed by this directive.
 - ngModel is responsible for
 - Binding the view into the model, which other directives such as input, textarea or select require
 - Providing validation behaviour(i.e. Required, number, email, url)
 - Keeping the state of control(valid/invalid, dirty/pristine, touched/untouched, validation errors).
 - Setting related css classes on the element(ng-valid, ng-invalid, ng-dirty, ng-pristine, ng-touched, ng-untouched, ng-empty, ng-not-empty) including animations.
 - Registering the control with its parent form

<https://docs.angularjs.org/api/ng/directive/ngModel>



Using directives and Data Binding Syntax

```
<!DOCTYPE html>
```

```
<html ng-app>
```

Directive

**Example: 4.1ngModel-basice
4.2ngModel-wctrl**

```
<head>
```

```
  <title></title>
```

```
</head>
```

```
<body>
```

```
  <div class="container">
```

```
    Name: <input type="text" ng-model="name" /> {{ name }}
```

```
  </div>
```

Directive

```
  <script src="Scripts/angular.js"></script>
```

```
</body>
```

```
</html>
```

**Data Binding
Expression**



ngInit

Example: 4.3ngInit-ex

- The **ngInit** directive allows you to evaluate an expression in the current scope.

```
<div ng-app="" ng-init="quantity=1;cost=5">  
  
<p>Total in dollar: {{ quantity * cost }}</p>  
  
<p>expression: {{5*100}}</p>  
  
<p>expression: {{5/100}}</p>
```

Note: If you have assignment in ngInit along with a [filter](#), make sure you have parentheses to ensure correct operator precedence:

```
<div ng-init="test1 = ($index | toString)"></div>
```



ngRepeat

Examples: 4.4 to 4.12

- The **ngRepeat** directive instantiates a template once per item from a collection. Each template instance gets its own scope, where the given loop variable is set to the current collection item, and \$index is set to the item index or key

```
<html data-ng-app="">
  ...
  <div class="container"
    data-ng-init="names=['Dave','Napur','Heedy','Shriva']">
    <h3>Looping with the ng-repeat Directive</h3>
    <ul>
      ...
    </ul>
  </div>
</html>
```

<https://docs.angularjs.org/api/ng/directive/ngRepeat>



ngRepeat

Examples: 4.13 to 4.14

- Special Properties are exposed on the local scope of each template

Variable	Type	Details
\$index	number	iterator offset of the repeated element (0..length-1)
\$first	boolean	true if the repeated element is first in the iterator.
\$middle	boolean	true if the repeated element is between the first and last in the iterator.
\$last	boolean	true if the repeated element is last in the iterator.
\$even	boolean	true if the iterator position \$index is even (otherwise false).
\$odd	boolean	true if the iterator position \$index is odd (otherwise false).



Event Directives

Examples: 4.15

- ng-click : allows users to specify custom behaviour when an element is clicked.
- ng-show: The **ngShow** directive shows or hides the given HTML element based on the expression provided to the ngShow attribute.
- ng-hide: The ngHide directive shows or hides the given HTML element based on the expression provided to the ngHide attribute.
- ng-disabled: This directive sets the disabled attribute on the element if the [expression](#) inside ngDisabled evaluates to truthy.



Filters

Examples: 4.16-4.18

- Basic format: `expression | filterName:parameter`

Name	
currency	{{amount currency:"USD\$"}}
date	{{startDate date:'short'}}
filter	repo in repos filter:searchTerm
json	{{ repo json }}
limitTo	repo in repos limitTo:10
lowercase, uppercase	{{ user.name uppercase }}
number	{{ stars number }}
orderBy	repo in repos filter:searchTerm orderBy:'name'



ng-include

- Fetches, compiles and includes an external HTML fragment.

```
<!-- include the partial/template html using ngInclude -->  
<div ng-include="'userdetails.html'" ng-show="user"></div>
```

In chrome : We need to provide relative url with reference to the root directory



3rd Party

The screenshot shows the ngmodules.org website. The header includes the AngularJS logo, the site name "ANGULAR MODULES", a search bar, and a "Sign in with Github" button. The navigation bar has links for "Modules", "Submit a Module", "Tags", "Blog", and "Give Feedback". Below the navigation bar, there are filters for "Popular", "Newest", and "A-Z", and a count of "1769 modules". The main content area displays two module cards: "ng-file-upload" by "danielarid" and "angular-ui" by "angular-ui". Each card shows the number of people using it, a description, and a list of tags. To the right of the module cards is a green button "Add a Module" and a section titled "Popular Tags" with a list of tags and their counts.

ANGULAR MODULES
FIND MODULES FOR ANGULARJS

Search

Sign in with Github

Modules Submit a Module Tags Blog Give Feedback

Popular Newest A-Z 1769 modules

ng-file-upload — danielarid 600 people use it
Lightweight Angular directive to upload files with optional FileAPI shim for cross browser support

file drag&drop data-uri Image paste directive upload file-upload
HTML5 FileAPI

angular-ui — angular-ui 452 people use it
AngularUI - The companion suite for AngularJS

bootstrap jQuery maps directive service ui

Add a Module

Popular Tags

- directive (774)
- angular (186)
- service (133)
- bootstrap (93)
- AngularJS (93)
- ui (77)
- api (77)
- input (60)



3rd Party Directives

The screenshot shows the ngmodules.org website with the URL `ngmodules.org/tags/directive` in the browser address bar. The page title is "Modules Tagged with 'directive'". Two modules are listed:

- angular-ui** — angular-ui (452 people use it)
AngularUI - The companion suite for AngularJS
Tags: bootstrap, jQuery, maps, directive, service, ui
- ng-grid** — angular-ui (87 people use it)
Angular Data Grid
Tags: directive, grid, data, ui

Custom Directive
-Used to extend the functionality of HTML, simply Replaces the element For which it is Activated.

We shall look at it Later part of the course



Summary

- Controllers setup the model, view consumes the model and directives are intermediary
- Directives are building blocks of angular web applications
- 4 ways to insert directive into a DOM – EACM
- Directives are intermediary and Angular provides one way (`{{expr}}`) and two-way binding approaches (`ngModel`)
- Directives can be categorized into binding directive, model directives, event directives and display directives.
- We can create or include a 3rd party directive i.e. a custom directive