AngularJS Fundamentals Data Entry Forms

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Who Am I?

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- 11 time Microsoft Most Valuable Professional (MVP)
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TakeNote TECHNOLOGIES

The Plan For This Session Is

- Data Binding Review
- Control Focus vs Data Model Focus
- Working With Input Elements
- Data Validation Attributes
- Data Entry States
- Show Validation Messages
- Use CSS Classes
- Form Submission Options

TakeNote TECHNOLOGIES

Data Binding Review

- One-way data binding
  - `ng-bind="Lastname"`
  - `{{ Lastname }}` syntax more common
- Two-way data binding
  - `ng-model="Lastname"`

```
<div>
   <label for="Lastname">Last Name:</label>
   <input type="text"
      name="Lastname"
      ng-model="vm.Lastname" />
</div>
```


TakeNote TECHNOLOGIES

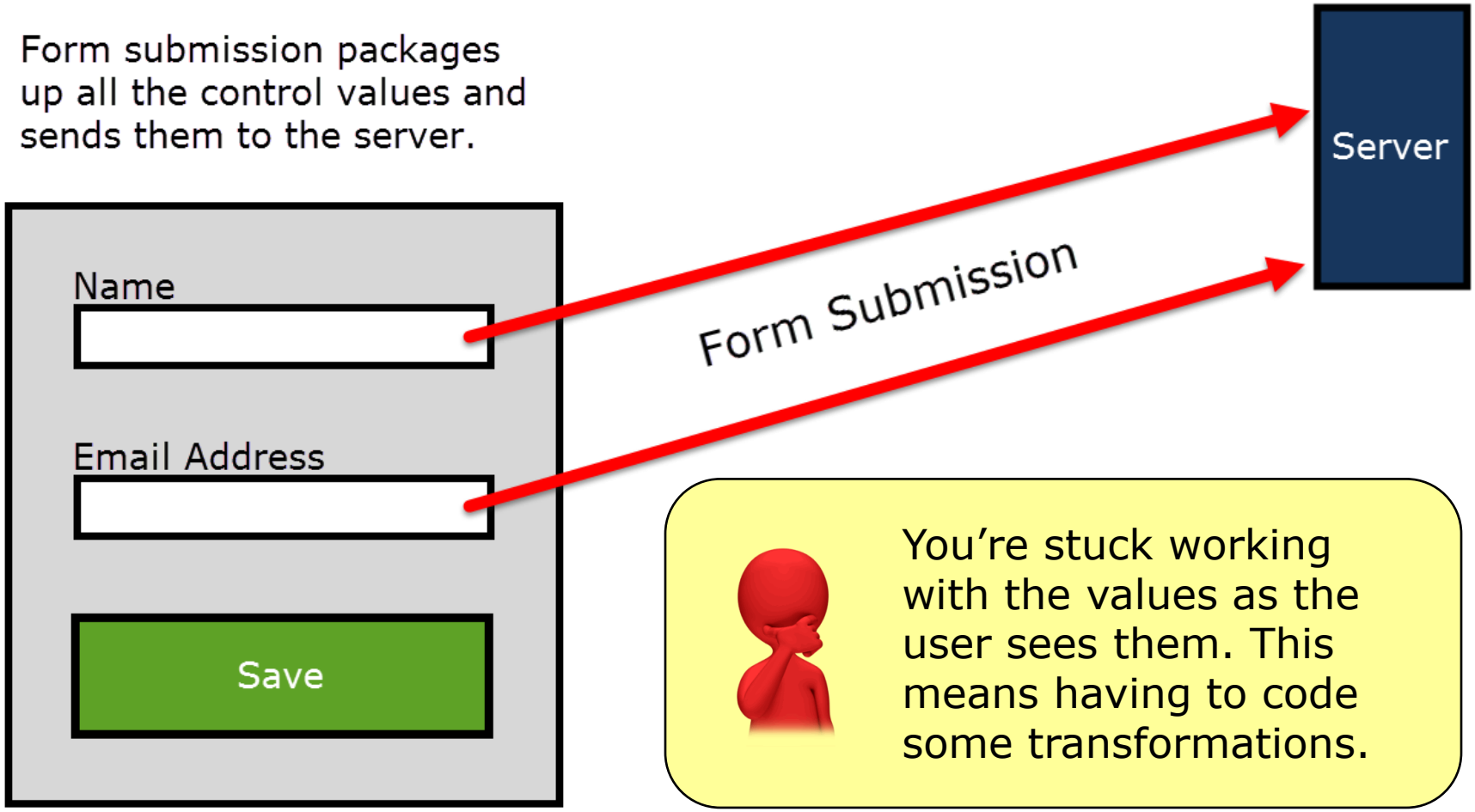
Data Binding Review

DEMO 1

TakeNote TECHNOLOGIES

Control Focused Mindset

Form submission packages up all the control values and sends them to the server.



You're stuck working with the values as the user sees them. This means having to code some transformations.

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Control Focused Code

- Define a textbox

```
<input type="text" id="city" />
```

- Assign a value to a textbox

```
document.getElementById('city').value =
'Hollywood';
```

- Data is updated and Save button clicked
- Grab textbox value and assign to a var

```
var city =
  document.getElementById('city').value;
```


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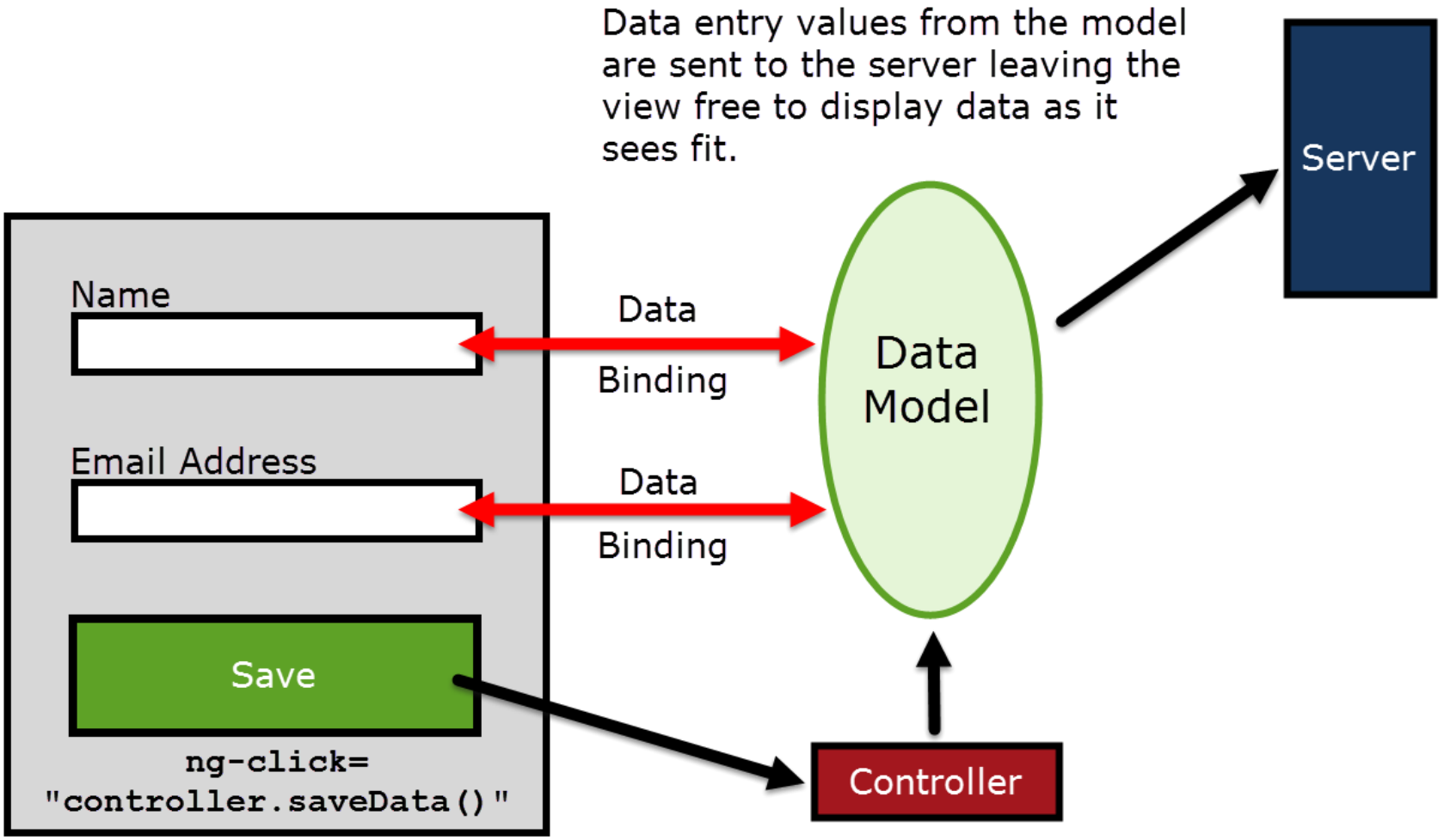
Data Model Focused Mindset



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Data Model Focused Code

- Data model property (city) is bound to a textbox

```
<input type="text" ng-model="city" />
```

- User updates city textbox & data model property (city) automagically reflects user changes OR
- Data model property (city) is programmatically changed and textbox automagically reflects the change
- Controller works with model not HTML

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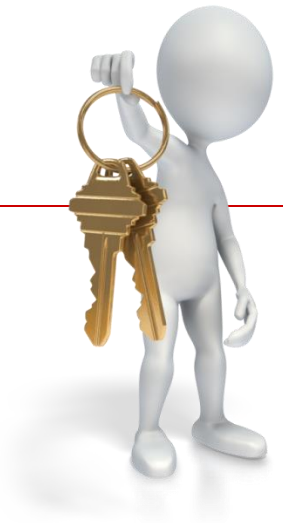
ng-Model Directive



- Used to bind model value to view input directive
- Provides validation behavior (required, number, email, url)
- Keeps the state of the control (valid/invalid, dirty/pristine, touched/untouched & validation errors)
- Sets related css classes on the element (`ng-valid`, `ng-invalid`, `ng-dirty`, `ng-pristine`, `ng-touched`, `ng-untouched`)
- Registers the control with its parent form

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Text-Based Input Directives

- Text Inputs
  - Text
  - Textarea
  - Email
  - URL
  - Number

All support:

```
ng-model= "emp.Lastname"
required
ng-required="true/false"
ng-minlength = 2
ng-maxlength = 15
ng-pattern = "/^[a-z]+$/"
```


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Text-Based Input Directives

DEMO 2

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Radio Button Inputs

- Used to provide a fixed group of options for a model field
- Grouped by using the same model field
- HTML value attribute specifies value stored in model

```
<label><input type="radio"
      ng-model="employee.gender" value="M">Male
</label>
<label><input type="radio"
      ng-model="employee.gender" value="F">Female
</label>
```


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Radio Button Inputs

DEMO 3

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Checkbox Inputs

- Display a boolean input value
- Model field will contain `true` or `false` based on checked status
- Optionally you can store different values in the model based on `ng-true-value` and `ng-false-value`.

```
<input type="checkbox" ng-model="employee.status">
<input type="checkbox"
   ng-model="employee.status"
   ng-true-value="'Active'"
   ng-false-value="'Inactive'">
```


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Checkbox Inputs

DEMO 4

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Select Dropdown Inputs

- The select directive displays a dropdown list for the user to select one or more items
- Can be populated statically or from an array in the scope
- `Option value = ""` specifies which item to display when bound model value doesn't match items in list

```
<select ng-model="employee.department">
   <option value="sales">Sales</option>
   <option value="admin“>Admin</option>
   <option value="">-- No Selection --</option>
</select>
```


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Select Dropdown Inputs

- Dynamically populating with `ng-Options` directive

Controller Code:

```
vm.colorsArray = ["Red", "Green", "Blue"];
```

View Markup:

```
<select id="colorsArray"
   ng-model="selectedColor"
   ng-options="color for color in vm.colorsArray">
      <option value="">[No color]</option>
</select>
```


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Select Dropdown Inputs

DEMO 5

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Data Validation Attributes

- `ng-required`: entry required
- `ng-minlength`: min string length
- `ng-maxlength`: max string length
- `ng-pattern`: regex comparison
- Visibility attributes review
  - `ng-show`: Displays an element
  - `ng-hide`: Hides an element

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Data Validation Attributes

```
<div class="form-group">
   <label for="firstname">First Name:</label>
   <input type="text"
      name="firstname"
      autofocus
      placeholder="Enter first name"
      ng-required="true"
      ng-model="firstname"
      ng-minlength="2"
      ng-maxlength="20"
      ng-pattern="/^[a-z]+$/"
      class="form-control" />
</div>
```


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Data Entry States

- Properties
  - `$pristine:` True if user has not interacted with the form or control yet
  - `$dirty:` True if user has already interacted with the form or control
  - `$valid:` True if there is no error on the form or control
  - `$invalid:` True if there is at least one error on the form or control

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Data Entry Control States #2

- Properties
  - `$touched:` True if control has lost focus
  - `$untouched:` True if control has not lost focus yet
  - `$error:` Is an object hash, containing references to controls or forms with failing validators

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- Use $dirty && $valid to determine if there is an error
- Use $error to determine specific error

```
<div class="form-group">
   <label for="firstname">First Name:</label>
   <input type="text" name="firstname" autofocus required
      placeholder="Enter first name"
      ng-model="firstname" ng-minlength="2"
      ng-maxlength="20" ng-pattern="/^[a-z]+$/"
      class="form-control" />
   <div class="error-container"
      ng-show="myForm.firstname.$dirty &&
               myForm.firstname.$invalid">
      <small class="error"
         ng-show="myForm.firstname.$error.required">
            First name is required.</small>
      <small class="error"
         ng-show="myForm.firstname.$error.minlength">
            First name requires at least 2 char.</small>
      <small class="error "
         ng-show="myForm.firstname.$error.maxlength">
            First Name cannot exceed 20 chars.</small>
   </div>
</div>
```


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Show Validation Messages

DEMO 6

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CSS Classes

CSS classes added & removed from elements depending on the validity of the model:

- `ng-pristine`: Elements the user has not interacted are added to this class
- `ng-dirty`: Elements the user has interacted with are added to this class
- `ng-valid`: Elements that are valid are added to this class
- `ng-invalid`: Elements that are not valid are added to this class

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CSS Classes #2

- `ng-touched:` Elements that have been blurred are added to this class
- `ng-untouched:` Elements that have not been blurred are added to this class

- FYI: HTML DOM Blur() method is used to remove focus from an element

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CSS Classes

```
form .ng-pristine {
      background-color: #fffeb9;
}
form .ng-valid.ng-dirty {
      background-color: lightgreen;
}
form .ng-invalid.ng-dirty {
      background-color: #ff0000;
}
```


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CSS Classes

DEMO 7

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Form Submission Events

- ng-submit
  - Used at the `<form>` level to specify an expression to be evaluated when form is submitted
  - Form submits when user presses Enter in an input element or when button is clicked
  - Use on forms with one input element and only one button (Example: Search Form)

```
<form ng-submit="processForm(searchText)">
      <input ng-model="searchText">
</form>
```


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Form Submission Events

- ng-click
  - Used on a button to specify an expression to be evaluated when clicked

```
<form>
   <input ng-model="firstName">
   <input ng-model="lastName">
   …
   <button ng-click="saveData()">Save</button>
</form>
```


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Form Submission Events

DEMO 8

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Canceling & Reverting Changes

- Done by creating a copy of the original model

```
vm.employee = {"firstname": "elmer",
"lastname": "FUDD", "email": "getwabbit@fake.com"
};
var vm.origEmp = angular.copy(vm.employee);

vm.revert = function() {
  vm.employee = angular.copy(vm.origEmp);
  vm.employeeForm.$setPristine();
};
vm.canRevert = function() {
  return !angular.equals(vm.employee, vm.origEmp);
};
```


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Canceling & Reverting Changes

DEMO 9

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Resources

- https://www.angularjs.org/
- https://github.com/angular/angular.js
- https://docs.angularjs.org/guide
- https://blog.angularjs.org/
- http://www.angularjshub.com/

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Hands On AngularJS Training Classes

AngularJS Fundamentals (next class 12/15 & 12/16)

Developing Line of Business Applications With AngularJS (next class 12/17 & 12/18)

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Thank You for Attending!

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