APPMOB - AngularJS

Olivier Liechti & Simon Oulevay
COMEM Applications Mobiles

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Why AngularJS?

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HTML is great for declaring **static documents**, but it falters when we try to use it for declaring **dynamic views** in **web applications**. **AngularJS** lets you **extend HTML** vocabulary for your application. The resulting environment is extraordinarily expressive, readable, and quick to develop.

AngularJS: Directives & The Scope

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Angular Directives:
new dynamic HTML vocabulary.

Angular Controllers: instead of manipulating
the view, work with the $scope.

```
<ul ng-controller="PeopleController">
  <li ng-repeat="person in people">
    {{ person.firstName }} {{ person.lastName }}
  </li>
</ul>
```

```
myApp.controller("PeopleController", function($scope) {
  $scope.people = [
    { firstName: "John", lastName: "Doe" },
    { firstName: "John", lastName: "Smith" }
  ];
});
```

Live example:

http://codepen.io/AlphaHydrae/pen/EadXWp/

AngularJS: Two-Way Binding

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With the ngModel directive, it works the other way too!

```
<form ng-controller="FormController">
  <input type="text" ng-model="firstName" />
</ul>
```

```
myApp.controller("FormController", function($scope) {
 $scope.firstName = "John";
});
```

The binding goes two ways:

- if the user types in the field, the $scope variable is updated;
- if the $scope variable changes, the field is updated.

Live example:

http://codepen.io/AlphaHydrae/pen/YPJPOx/

AngularJS: Main Components

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Controllers

```
myApp.controller("PeopleController", function(PeopleService, $scope) {
  $scope.people = PeopleService.getPeople();
});
```

Services

```
myApp.factory("PeopleService", function() {
  return {
    getPeople: function() {
      return [
        { firstName: "John", lastName: "Doe" },
        { firstName: "John", lastName: "Smith" }
      ];
    }
  };
});
```

Templates

```
<ul ng-controller="PeopleController">
  <li ng-repeat="person in people">
    {{ person.firstName }} {{ person.lastName }}
  </li>
</ul>
```

Filters

```
myApp.filter("upcase", function() {
  return function(input) {
    return input.toUpperCase();
  };
});
```

```
<ul ng-controller="PeopleController">
  <li ng-repeat="person in people">
    {{ person.firstName }} {{ person.lastName | upcase }}
  </li>
</ul>
```

Directives

```
myApp.directive("personName", function() {
  return {
    type: "E",
    scope: {
      person: "=personObject"
    },
    template: "{{ person.firstName }} {{ person.lastName | upcase }}"
  };
});
```

```
<ul ng-controller="PeopleController">
  <li ng-repeat="person in people">
    <person-name personObject="person" />
  </li>
</ul>
```

AngularJS: DOM Manipulation

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It's important to understand that the AngularJS philosophy is to **only do DOM Manipulation inside *directives***. In most AngularJS code, you will never use libraries such as jQuery directly except in a directive.

```
<ul ng-controller="PeopleController">
  <li ng-repeat="person in people">
    {{ person.firstName }} {{ person.lastName }}
  </li>
</ul>
```

~~$("
").append($("
").text(person.name));~~

That way, your UI components are only concerned with the **view**, while your controllers and services are only concerned about **the data** (in the $scope). This helps keep your UI components modular and reusable.

AngularJS: Initialization

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Constants

```
myApp.constant("apiUrl", "https://api.example.com");
```

You can use constants to store reusable information. They can be injected into controllers, services, etc.

Config Blocks

```
myApp.config(function($logProvider) {
  $logProvider.setDebugEnabled(true);
});
```

Config blocks are run before your AngularJS application starts. Some modules can be configured there.

Run Blocks

```
myApp.run(function(VisitCounterService) {
  VisitCounterService.countVisitor();
});
```

Run blocks are run once immediately after your application has started.

AngularJS: Modules

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Your application is an Angular module:

```
var myApp = angular.module("myApp", []);

myApp.controller("aController", function() { … });
myApp.factory("aService", function() { … });
myApp.filter("aFilter", function() { … });
myApp.directive("aDirective", function() { … });
```

```
<html ng-app="myApp">
  <head>…</head>
  <body>
    <div ng-controller="aController">
      …
    </div>
  </body>
</ul>
```

It can have include other AngularJS libraries:

```
var myApp = angular.module("myApp", ["satellizer", "ui.bootstrap", "ui.gravatar"]);
```

You can organize your app into separate modules:

```
var myApp = angular.module("myApp", ["myApp.security", "myApp.game"]);

var securityModule = angular.module("myApp.security", []);
securityModule.controller("LoginController", function(AuthenticationService) { … });
securityModule.factory("AuthenticationService", function() { … });

var gameModule = angular.module("myApp.game", []);
gameModule.controller("GameController", function() { … });
gameModule.directive("gameBoard", function() { … });
```

AngularJS: Dependency Injection

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Angular is based around dependency injection.
The Angular injector is in charge of creating components, resolving their dependencies, and providing them to other components as requested.

```
myApp.factory("PeopleService", function($http) {
  return {
    getPeople: function() {
      return $http({
        url: "https://api.example.com/people",
      });
    },

    getFullName: function(person) {
      return person.firstName + " " + person.lastName;
    }
  };
});
```

You ask Angular to inject the **$http** service into **PeopleService**.

It's the same principle as injection with Java EE.

```
@Stateless
public class UserService implements IUserService {

    @EJB
    private UtilityService utilityService;
}
```

AngularJS: Dependency Injection

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You can inject dependencies into any AngularJS component: controllers, services, directives, filters.

```
myApp.factory("PeopleService", function($http) {
  return {
    getPeople: function() { … },
    getFullName: function(person) { … }
  };
});
```

Inject your a service into a directive.

```
myApp.directive("personName", function(PeopleService) {
  return {
    type: "E",
    scope: {
      person: "="
    },
    controller: function($scope) {
      $scope.getFullName = PeopleService.getFullName;
    },
    template: "{{ getFullName(person) }}"
  };
});
```

Inject your a service into a controller.

```
myApp.controller("PeopleController",
  function(PeopleService, $scope) {
    PeopleService.getPeople().success(function(people) {
      $scope.people = people;
    });
  });
```

AngularJS: Automated Tests

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AngularJS has excellent testing tools built-in:

https://docs.angularjs.org/guide/unit-testing

https://docs.angularjs.org/guide/e2e-testing

AngularJS: Unit Tests

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```
myApp.factory("PeopleService", function($http) {
  return {
    getPeople: function() {
      return $http({
        url: "https://api.example.com/people",
      });
    }
  };
});
```

To unit test a service which makes remote calls to an API…

It's easy to unit-test with dependency injection.

```
describe("PeopleService", function() {
  it("should return the list of people from the API", function() {

    var expectedList = [
      { firstName: "John", lastName: "Doe" },
      { firstName: "John", lastName: "Smith" }
    ];

    var fakeHttp = function() {
      return {
        success: function(callback) {
          callback(expectedList);
        }
      };
    };

    module(function($provide) {
      $provide.value("$http", fakeHttp);
    });

    var service;
    inject(function($injector) {
      service = $injector.get("PeopleService");
    });

    service.getPeople().success(function(people) {
      expect(people).toEqual(expectedList);
    });
  });
});
```

Tell Angular to use a **fake $http service**.

Inject it into your service.

That way your test only checks the functionality of the service itself. And since it's not calling the API, it runs **very fast**.