

APPMOB - AngularJS

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Why AngularJS?

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

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

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

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

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" }  
      ];  
    }  
  };  
});
```

Filters

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

Directives

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

Templates

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

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

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

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>
```

```
$(("<ul />").append($("<li />").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

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.

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>  
</html>
```

It can 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

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

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

AngularJS has excellent testing tools built-in:

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

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

AngularJS: Unit Tests

```
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);  
    });  
  });  
});
```

Inject it into
your service.

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