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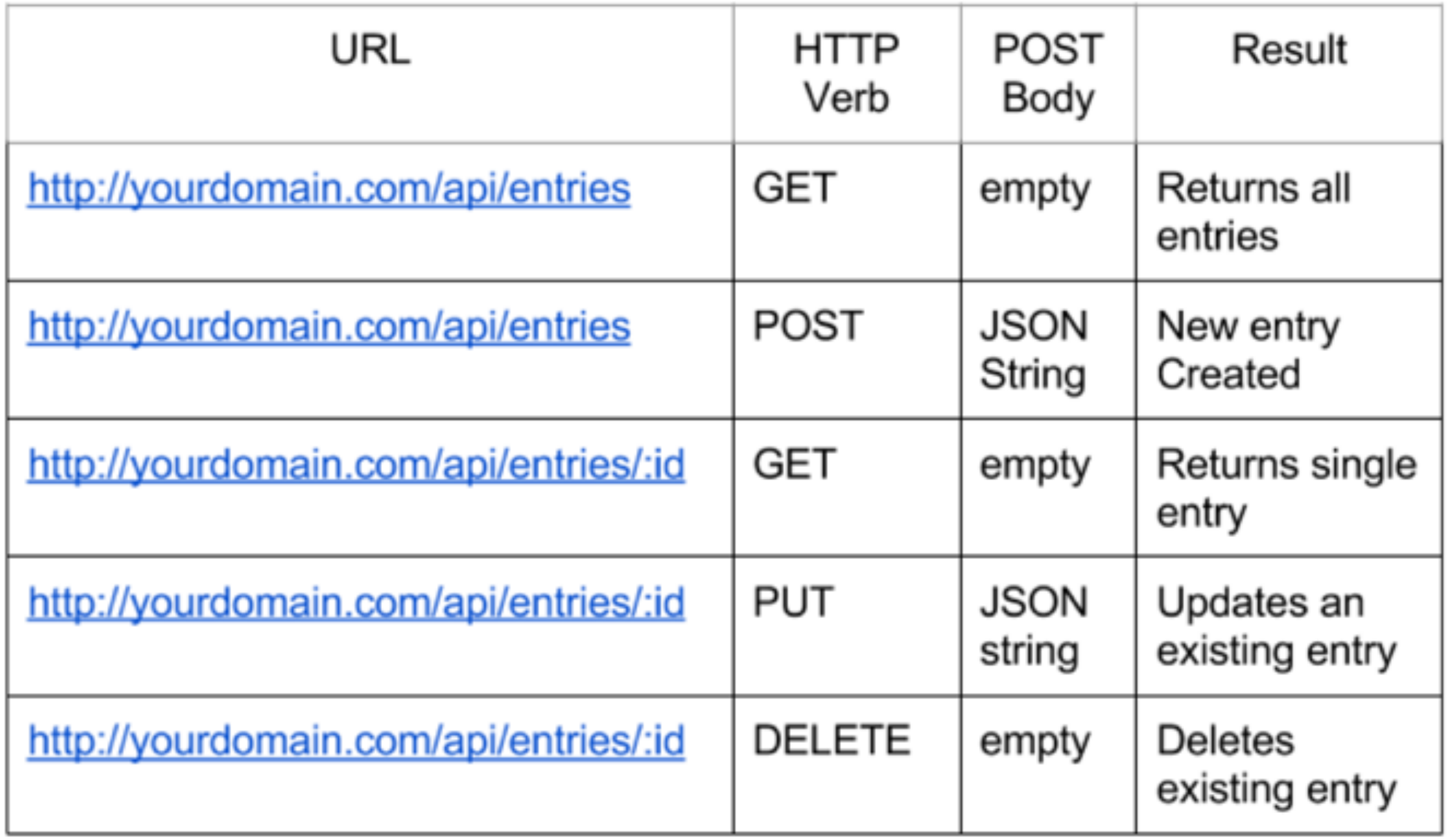
More Angular JS

Easier REST

- Since rest servies are the backbone of most angular apps, angular ships with a module called ngResource that helps rest service programming
- ngResource is a service that provides an API like interface to deal with server side REST apis without using the raw $http syntax

Backend

- ngResource module expects the backend to be a proper REST backend



URL	HTTP Verb	POST Body	Result
http://yourdomain.com/api/entries	GET	empty	Returns all entries
http://yourdomain.com/api/entries	POST	JSON String	New entry Created
http://yourdomain.com/api/entries/:id	GET	empty	Returns single entry
http://yourdomain.com/api/entries/:id	PUT	JSON string	Updates an existing entry
http://yourdomain.com/api/entries/:id	DELETE	empty	Deletes existing entry

Using ngResource

- To use $resource inside your controller/service you need to declare a dependency on $resource. The next step is calling the $resource() function with your REST endpoint

```
app.controller('UserController',function($http, $log, $scope,
$resource){

     var userResource = $resource('rest/user/:id', { id:
'@_id' }, {
            update: {
              method: 'PUT' // this method issues a PUT request
            }
          });
```

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Available APIs

- All $resource created objects have the following API methods:
- get()
- query()
- save()
- remove()
- delete()

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Invoking APIs

```
userResource.query(function(data) {})

userResource.save(user, function(){})

userResource.update(user,function(data){})
```

use ngResource(11)

- Prepare the server side resource to consume JSON (Modify createUser and updateUser methods)

```
@Consumes(MediaType.APPLICATION_JSON)
    //@Consumes(MediaType.APPLICATION_FORM_URLENCODED)
    //public void createUser(@FormParam("name") String name,@FormParam("age") Integer
age,@FormParam("emailId") String emailId){
    public void createUser(User u){
```

- include angular-resource.js

- Provide dependency of ngResource for the app

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

- Change all $http calls to use $resource created object

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Separating Code

- Controllers, filters, services, etc that belong to an app can be split over multiple files.

- Any number of js files can carry the module line. If such a module has already been created, we just get a reference to the existing module and it wont create new.

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

  - We can register controllers in different js files and include them all

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Inter-Controller Communication

- The fundamental design philosophy of MVC is to ensure that each view is responsible for itself.
  - Allowing another controller to change variables in a controller’s scope violates this principle
- Hence all inter-controller communication happens via events.

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Broadcast and Listen

- We can broadcast events from one controller and listen to them in another controller

- Inject $rootScope into the controller and then call broadcast

```
$rootScope.$broadcast('eventname',eventdata);
```

- In any controller thats interested in the events call $on method on $scope

```
$scope.$on(‘eventName’,function(event,eventdata){});
```

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SPA Problems

- Single Page Applications are rich and interactive but they are not usable in the traditional web sense
  - Users cant use the back and next buttons
  - The links to pages cant be book marked
  - Inspite of templating, HTML starts getting too complicated

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Routes

- Routes help bring the sense of traditional apps to SPAs
- Changing URLs need complicated server side implementations.
    - Angular provides routes by using in-page markers: www.mysite.com/index.html#admin, www.mysite.com/index.html#users

Routes

- angular-route.js is a separate inclusion module
- Declare a dependency on ngRoute module to be able to use it

```
var module = angular.module("sampleApp", ['ngRoute']);

module.config(['$routeProvider',
    function($routeProvider) {
        $routeProvider.
            when('/route1', {
                templateUrl: 'angular-route-template-1.jsp',
                controller: 'RouteController'
            }).
            when('/route2', {
                templateUrl: 'angular-route-template-2.jsp',
                controller: 'RouteController'
            }).
            otherwise({
                redirectTo: '/'
            });
    }]);
```

Dependent Modules

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ng-view

- ngView is a directive that complements the $route service by including the rendered template of the current route into the main layout (index.html) file.
- In the index.html place the <div ng-view></div> where you need the route replacements to be sitting

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Implement Routes(10)

- Separate the user listing and products listing/cart into two separate routes.

- Also move the controllers in two separate files.

- Create a new section at the top of the page above the ng-view the displays the current user count in the system. This count should be updated as we add/remove users. This count is initialized when the user listing is opened

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Modules

- Main component types in Angular
  - Value
  - Factory
  - Service
- These core types can be injected into each other using AngularJS dependency injection mechanism.

Value

- A value is a simple object. It can be a number, string or JavaScript object. Values are typically used as configuration which is injected into factories, services or controllers.

```
var myModule = angular.module("myModule", []);
myModule.value("numberValue", 999);
myModule.controller("MyController", function($scope,
                                              numberValue) {
    console.log(numberValue);
});
```

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Factory

- Its a function that can return other values

```
var myModule = angular.module("myModule", []);
myModule.factory("myFactory", function() {
    return "a value";
});
myModule.controller("MyController", function($scope,
                                              myFactory) {
    console.log(myFactory);
});
```

Services

- A service in AngularJS is a singleton JavaScript object which contains a set of functions.

- Services are defined like constructor functions

```
function MyService() {
    this.doIt = function() {
        console.log("done");
    }
}
var myModule = angular.module("myModule", []);
myModule.service("myService", MyService);
myModule.controller("MyController", function($scope, myService) {
    myService.doIt();
});
```

Module Dependencies

- a module needs to declare a dependency on the module which contains the values, factories and services it wants to use.

```
var myUtilModule = angular.module("myUtilModule", []);
myUtilModule.value  ("myValue"  , "12345");
var myOtherModule = angular.module("myOtherModule",
['myUtilModule']);
myOtherModule.controller("MyController", function($scope, myValue) {

}
```

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Create an Utils Module(14)

- Separate the custom filters and custom directives in a separate js file called appUtils.js and declare them in a different module called “MyUtils”

- in the main app.js make MyUtils a dependency for our app module so that it can use filters and directives from there

```
var app = angular.module('Airlines',['ngRoute','MyUtils']);
```

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Minification Safe Code

- When you minify JavaScript the JavaScript minifier replaces the names of local variables and parameters with shorter names.

```
var myapp = angular.module("myapp", ['myservices']);
myapp.controller("AController", ['$scope', function(p1) {
    p1.myvar = "the value";//p1 is $scope
}]);

var myutil = angular.module("myutil", []);
myutil.value("safeValue", "a safe value");
myutil.factory("safeFactory", ['safeValue', function(p1) {
    return { value : p1 };
}]);
```

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Unit Testing

- Unit Testing in Angular is very important because code coverage is needed with javascript

- Due to dependency injection, angular is easy to test. Angular mock allows for mocking of most framework components.

- We need to use a test runner such as Karma and a test framework such as Jasmine

Unit Testing

- Since tests are run from development environment, it has to run without a browser. Nodejs is used for unit testing
- Nodejs is a command line javascript runner used on server side aswell.
- Karma is a nodejs based commandline test runner for jasmine

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Test Cases In Jasmine

```
describe(‘UserController', function() {

   //Called before each execution of test assertions
   beforeEach(function(){
      //Fire the test case here
   });

   it('Loading should be true.', function() {
      //Assertions after calling beforeEach function
       expect(scope.loading == true);
   });

});
```

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Testing Demo

- We can test a controller with jasmine and karma: View code…