CS 572 Modern Web Applications

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V1.1.0

JavaScript Full Stack Development

- MongoDB
  - NoSQL database (document store)
  - Stores JSON documents
- Express
  - JavaScript web framework
  - On top of Node
- Angular
  - JavaScript UI framework
  - Single Page Applications
- Node
  - JavaScript server-side platform
  - Single threaded, fast and scalable

Roadmap and Outcomes

- Node.js: write asynchronous (non-blocking) code. Understand node platform to start a project.
- Express: setup express and get requests and send back responses. REST API.
- MongoDB: what NoSQL DB looks like. Full API interacting with DB.
- AngularJS: Investigate AngularJS and architect it. A single page application.
- MEAN application: Learn by example. We will create a MEAN Games application.

Integrating MEAN

Setup

- Check endpoints working properly using REST browser plugin.
- Create angular-app folder in the application public folder.
- Add public/angular-app/app.js file (empty for now). This is angular app.
- Install AngularJS using npm (or any other way)
  - npm i angular angular-route
- Add the angular files as dependencies to project
  - <script src="node_modules/angular/angular.js"></script>
    <script src="node_modules/angular-route/angular-route.js"></script>
- Include the angular application
  - <script src="angular-app/app.js"></script>
- Enable our node application to reach Angular (add app.use)
  - app.use("/node_modules", express.static(path.join(__dirname, "node_modules")));

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Get List

Get One

Rating

Get the home page from Angular

Update index.html

```
…
<html ng-app="meanGames">
…
<body>
<div ng-view></div>
…
<script src="angular-app/game-list/game-list-
controller.js"></script>
</body>
}
```

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Update angular-app/app.js

```
angular.module("meanGames", ["ngRoute"]).config(config);
function config($routeProvider) {
   $routeProvider.when("/", {
      templateURL: "angular-app/game-list/games.html",
      controller:" GamesController",
      controllerAs: "vm"
   });
}
```

Add the controller angular-app/game-list/game-list-controller.js

```
angular.module("meanGames", ["ngRoute"])
.controller("GamesController", GamesController);
function GamesController() {
  const vm= this;
  vm.title= "Mean Games App";
}
```

Add the template angular-app/game-list/gmaes.html

```
<H1>{{vm.title}}</H1>
```

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Get the list of games from API

Update controller to make the request, public/angular-app/game-list/game-list-controller.js

```
function GamesController($http) {
  const vm= this;
  vm.title= "Mean Games App";
  $http.get("/api/games").then(function(response) {
    vm.games= response.data;
  }
}
```

Update the template angular-app/game-list/games.html

```
<H1>{{vm.title}}</H1>
<ul>
<li ng-repeat="game in vm.games">{{game.title}}</li>
</ul>
```

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Date routing to display a game

Update public/angular-app/app.js

```
…
function config($routeProvider, $locationProvier) {
$locationProvier.hashPrefix("");
…
.when("/game/:id", {
templateUrl: "angular-app/game-display/game.html",
controller: "GameController",
controllerAs: "vm"
});

}
```

Add controller to html page public/index.html

```
…
<script src="angular-app/game-data-factory/game-data-factory.js"></script>
<script src="angular-app/game-display/game-display-controller.js"></script>
```

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Create the data factory that calls the endpoints, and it used in our app.

Create public/game-data-factory/game-data-factory.js

```
angular.module("meanGames").factory("GameDataFactory", GameDataFactory);
function GameDataFactory($http) {
  return {
    getAllGames: getAllGames,
    getOneGame: getOneGame
  };
  function getAllGames() {
    return $http.get("/api/games").then(complete).catch(failed);
  }
  function getOneGame(id) {
    return $http.get("/api/games/"+id).then(complete).catch(failed);
  }
  function complete(response){
    console.log(response.data);
    return response.data;
  }
  function failed(error) {
    return error.status.statusText;
  }
}
```

Update game-list-controller.js to use the factory

```
function GamesController(GameDataFactory) {
 const vm= this;
 vm.title= "Mean Games App";
 GameDataFactory.getAllGames().then(function(response) {
  vm.games= response;
 });
}
```

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Get data about one game, add controller and template

Add controller public/angular-app/game-display/game-display-controller.js

```
angular.module("meanGames").controller("GameController", GameController);
function GameController(GameDataFactory, $routeParams) {
    const vm= this;
    const id= $routeParams.id;
    GameDataFactory.getOneGame(id).then(function(response) {
        vm.game= response;
    });
}
```

Add the template angular-app/game-display/game.html

```
<H1>Information about game: <p>{{vm.game.title}}</p></H1>
<p>
    Price: {{vm.game.price | currency}}<BR/>
    Minimum Players: {{vm.game.minPlayers}}<BR/>
    Maximum Players: {{vm.game.maxPlayers}}<BR/>
    Minimum Age: {{vm.game.minAge}}</BR>
    Publisher: {{vm.game.publisher.name}}
</p>
```

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Selecting a game from the list

Update public/angular-app/game-list/games.html

```
…
<li ng-repeat="game in vm.games"><a ng-
href="#/game/{{game._id}}">{{game.title}}</a></li>
}
```

Display Ratings

- What is the best way to display ratings?
- Number :(
- Images :/
- Stars :)
- Custom directive

Custom Directives

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Update template public/game-display/game-display-controller.js

…

vm.rating= response.rate;

…

Update template public/game-display/game.html

<H1>Information about game: {{vm.game.title}} - {{vm.rating}} </H1>

…

We would prefer to see stars according to this number

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Update template public/game-display/game.html

```
<H1>Information about game: <p>{{vm.game.title}} <game-rating
stars={{vm.rating}}></game-rating> </p></H1>
```

Add to html file index.html

```
<link rel="stylesheet"
href="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/css/bootstrap.min.css">
...
<script src="angular-app/game-rating/game-rating-directive.js></script>
```

Update controller to send an array instead of a number game-display-controller.js

```
…
    vm.rating= _getStarRating(response.rate);
  });
}
function _getStarRating(stars) {
    return new Array(rate);
}
...
```

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Create directive public/angular-app/game-rating/game-rating-directive.js

```
angular.module("meanGames").directive("gameRating".
GameRating);
function GameRating() {
  return {
    restrict: "E",
    templateUrl: "angular-app/game-rating/rating.html",
    bindToController: true,
    controller: "GameController",
    controllerAs: "vm",
    scope: {
      stars: "@"
    }
  }
}
```

Create template public/angular-app/game-rating/rating.html

```
<span ng-repeat="star  in vm.rating track by $index"
class="glyphicon glyphicon-star"></span>
```

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Use component instead public/angular-app/game-rating/game-rating-directive.js

```
angular.module("meanGames").component("gameRating"
, {
    bindings: {
      stars: "*"
    },
    templateUrl: "angular-app/game-rating/rating.html",
    controller: "GameController",
    controllerAs: "vm",
});
```