AngularJS – Part 2

Agenda

- Using AngularJS with ASP.NET MVC (Web API)

Tools

- Visual Studio 2013

Pre-requisite

- AngularJS Part 1
- Understanding of ASP.NET MVC
- Understanding of ASP.NET Web API

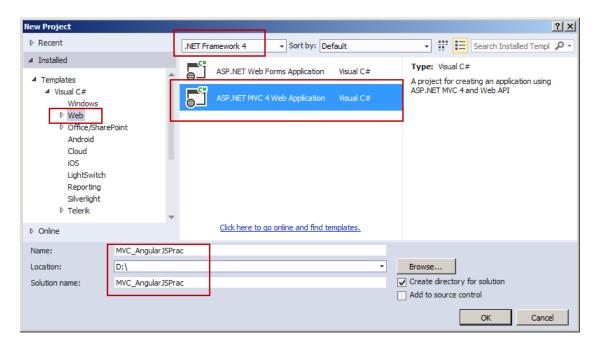
Version	Last updated	Comments	Modified By
V1.0	25-05-2016		Bilal Shahzad

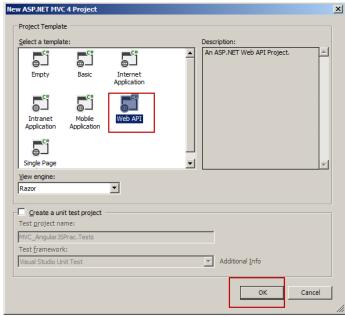
Brief Introduction

- 1- ASP.NET MVC (Web API) application creation.
- 2- Creating a view which will make AJAX call when loaded and get posts from server and display.
- 3- Login screen which will pass login data to Web API controller through AJAX

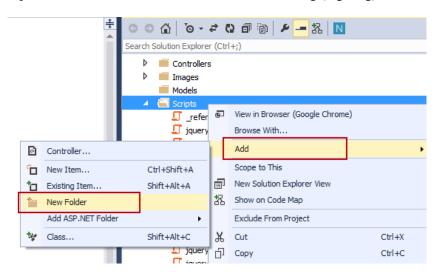
Step by Step Walkthrough

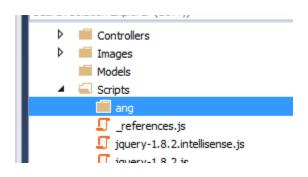
- 1- Create a new "Web" project in VS 2013.
 - a. Go to File => New => Project
 - b. Choose options as shown below and give some name to the project (e.g. MVC_AngularJSPrac). Click OK.



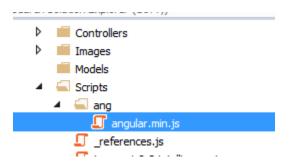


2- Right click on "scripts" => Add => "New Folder". Name it something (e.g. ang)

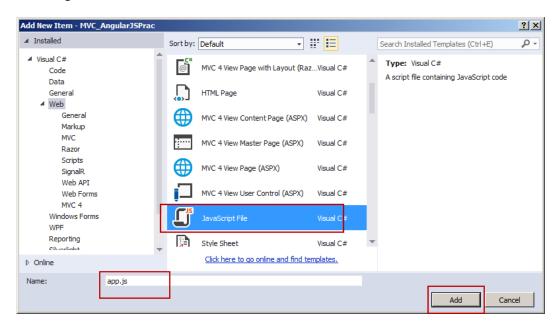




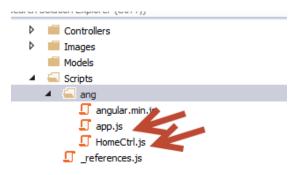
3- Copy paste "angular.min.js" file in "ang" folder.



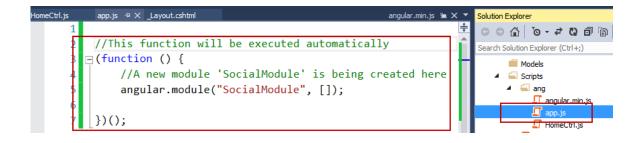
4- Right click on "ang" folder => Add => New Item.



5- Add a new JS file (HomeCtrl.js) in "ang" folder.



6- Now open "app.js" file by double clicking on it and add following code in it. Here we are creating a new module. Please note that we are passing"[]" as second parameter. In second parameter we pass the modules details on which our module depends on.



7- Now open "HomeCtrl.js" file by double clicking on it and add following code in it. Here we are accessing already created module object and then adding a controller inside it. In controller, we are adding a simple property "message" to our "\$scope" object.

```
HomeCtrl.js → X app.js _Layout.cshtml
                                                                                   Search Solution Explorer (Ctrl+;)
           ∃(function () {
                                                                                        Scripts
                 //Get 'SocialModule'
                                                                                        🗸 偏 ang
                                                                                             🖵 angular.min.js
                 var app = angular.module("SocialModule");

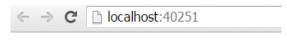
☐ HomeCtrl.js

                 //Create a new controller
                                                                                             _references.js
                 app.controller("HomeCtrl", function ($scope) {
                                                                                           🖵 jquery-1.8.2.intellisense.js
                                                                                           🖵 jquery-1.8.2.js
                       $scope.message = "Welcome on my Book!";
                                                                                           🖵 jquery-1.8.2.min.js
                 });
      10
                                                                                           🖵 jquery-ui-1.8.24.js
      11
                                                                                           🖵 jquery-ui-1.8.24.min.js
      12
            })();
                                                                                           🖵 jquery.unobtrusive-ajax.js
```

8- Now open (Views/Home/Index.cshtml) file and remove existing content. Add content as highlighted below. We are currently doing to do it without (Layout) page to make things simpler.

```
Layout = null;
                                                                                                          Search Solution Explorer (Ctrl+;)
 3
                                                                                                                  jquery.validate.js
 4
     <!DOCTYPE html>
                                                                                                                  jquery.validate.min.js
   5
                                                                                                                  jquery.validate.unobtru
6
    - <head>
                                                                                                                  🖵 jquery.validate.unobtru
7
         <meta charset="utf-8" />
                                                                                                                  knockout-2.2.0.debug.j:
8
         <meta name="viewport" content="width=device-width" />
                                                                                                                  knockout-2.2.0.js
                                                                                                                  modernizr-2.6.2.js
9
                                                                                                                Views
         <script src='@Url.Content("~/Scripts/ang/angular.min.js")' type="text/javascript"></s</pre>
10
         <script src='@Url.Content("~/Scripts/ang/app.js")' type="text/javascript"></script>
11
                                                                                                                   [@] Index.cshtn
         <script src='@Url.Content("~/Scripts/ang/HomeCtrl.js")' type="text/javascript"></script</pre>
12
                                                                                                                  Shared
13
                                                                                                                  [@] _ViewStart.cshtml
14
     </head>
                                                                                                                  ¥☐ Web.config
   15
                                                                                                                favicon.ico
                                                                                                               வி Global.asax
16
                                                                                                                Ÿ packages.config
17
         {{message}}
                                                                                                               ¥☐ Web.config
18
     </body>
19
                                                                                                          IntelliTrace Solution Explorer
20
     </html>
```

9- Run the application and check if you see following result or not.



Welcome on my Book!

- 10- Let's make some changes for WEB API.
- 11- Now open "App Start/WebApiConfig.cs" file and make one change as highlighted below.

```
Index.cshtml
     WebApiConfig.cs ⊅ X PostDTO.cs
Prac.WebApiConfig

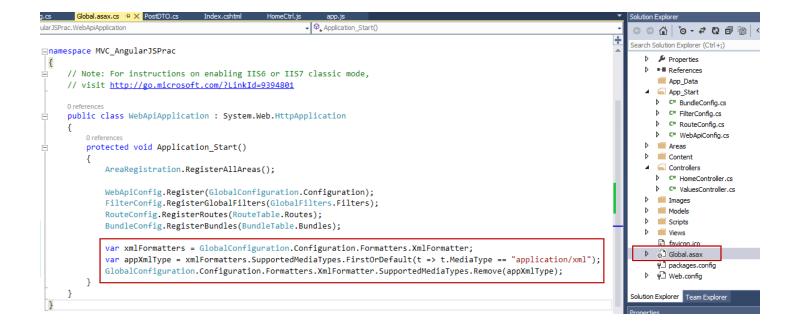
→ Register(HttpConfiguration config)
                                                                                              G D A TO - ≠ N d B
∃using System;
                                                                                              Search Solution Explorer (Ctrl+;)
  using System.Collections.Generic;
                                                                                               Solution 'MVC_AngularJSPrac' (1 pr
 using System.Linq;
                                                                                                MVC_AngularJSPrac
                                                            Add (action) in the route.
                                                                                                Properties
 using System.Web.Http;
                                                                                                 ▶ ■■ References
                                                                                                   App Data
                                                                                                   App_Start
■namespace MVC AngularJSPrac
                                                                                                   C# BundleConfig.cs
                                                                                                   C# FilterConfig.cs
       1 reference
                                                                                                     C# RouteConfig.cs
                                                                                                  ▶ C* WebApiConfig.cs
       public static class WebApiConfig
                                                                                                   Areas
       {
                                                                                                   Content
                                                                                                   Controllers
            public static void Register(HttpConfiguration onfig)
                                                                                                   ▶ C# HomeController.cs
                                                                                                   C# ValuesController.cs
                                                                                                   Images
                  config.Routes.MapHttpRoute(
                                                                                                   Models
                                                                                                   Scripts
                       name: "DefaultApi",
                                                                                                   Views
                       routeTemplate: "api/{controller}/{action}/{id}",
                                                                                                   favicon.ico
                       defaults: new { id = RouteParameter.Optional }

    Global.asax

                                                                                                   packages.config
                  );
                                                                                              Solution Explorer Team Explorer
```

12- Open "Global.asax" file and add following three lines (to remove XML formatter and get data in JSON by default) as shown in the screenshot below.

var xmlFormatters = GlobalConfiguration.Configuration.Formatters.XmlFormatter;
var appXmlType = xmlFormatters.SupportedMediaTypes.FirstOrDefault(t => t.MediaType == "application/xml");
GlobalConfiguration.Configuration.Formatters.XmlFormatters.SupportedMediaTypes.Remove(appXmlType);



13- Now create a new class file in "Models" folder. Name it "PostDTO.cs". Add following content in the class.

```
PostDTO.cs → X Index.cshtml
MVC_AngularJSPrac.Models.PostDTO
                                                                            G D A To - ₹ N A
             using System.Web;
                                                                       ‡
                                                                           Search Solution Explorer (Ctrl+;)

☐ Solution 'MVC_AngularJSPrac' (1)

           namespace MVC_AngularJSPrac.Models
                                                                              MVC_AngularJSPrac
                                                                                 Properties
        7
                                                                                 ■·■ References
                                                                                  App_Data
        8
                  public class PostDTO
                                                                                  App_Start
        9
                                                                                 Areas
                        0 references
                                                                                 Content
                        public int PostId { get; set; }
      10
                                                                                 Controllers
                        0 references
                                                                                 Images
                        public String Title { get; set; }
      11
                                                                                    C# PostDTO.cs
                        0 references
                                                                                  Scripts
      12
                        public String PicURL { get; set; }
                                                                                 Views
      13
                                                                           Favicon ico
Solution Explorer Team Explorer
      14
```

14- Now open "Controllers/ValuesController.cs" file. Remove all functions from class and add a new function as shown in following screenshot. Here we are creating a dummy list of posts and returning it to request.

```
Controller.cs + X PostDTO.cs
/C_AngularJSPrac.Controllers.ValuesController

→ GetAllPosts()

                                                                                                                            Search Solution Explorer (Ctrl+;)

¬using System;

                                                 PostDTO namespace reference.
                                                                                                                             Solution 'MVC Angular JSPrac' (1 project)
       using System.Collections.Generic;
                                                                                                                               MVC AngularJSPrac
       using System.Linq;
                                                                                                                               Properties
       using System.Net;
                                                                                                                                 ■·■ References
       using System.Net.Http;
                                                                                                                                  App_Data
                                                                               Here we are creating list of dummy
                                                                                                                                 App_Start
       using System.Web.Http;
                                                                                 objects and returning. In actual
                                                                                                                                  Areas
                                                                              Environment, you would be getting this
                                                                                                                                  Content
       using MVC_AngularJSPrac.Models;
                                                                                      list from database.
                                                                                                                                  Controllers
  10
  11 = namespace MVC_AngularJSPrac.Controllers
                                                                                                                                   C# ValuesController.cs
  12
       {
                                                                                                                                  Images
                                                                                                                                 Models
  13
           public class ValuesController : ApiController
                                                                                                                                 Scripts
  14
                                                                                                                                 Views
                                                                                                                                  favicon.ico
  15
                [HttpGet]
                                                                                                                                 Global.asax
                public List<PostDTO> GetAllPosts()
                                                                                                                                  packages.config
  16
                                                                                                                                 भें Web.config
  17
                    List<PostDTO> posts = new List<PostDTO>();
  18
                    posts.Add(new PostDTO() { PostId = 1, Title = "Testing Post 1", PicURL = "pic1.jpg" });
  19
                    posts.Add(new PostDTO() { PostId = 2, Title = "Testing Post 2", PicURL = "pic2.jpg" });
  20
                                                                                                                            Solution Explorer Team Explorer
                    posts.Add(new PostDTO() { PostId = 3, Title = "Testing Post 3", PicURL = "pic3.jpg" });
  21
  22
  23
                    return posts;
                                                                                                                            24
  25
  26 }
```

15- Run the project and try to access "/api/Values/GetAllPosts". Please verify if result is coming as expected (as shown in following screenshot)

← → C [localhost:40251/api/Values/GetAllPosts [("PostId":1,"Title":"Testing Post 1","PicURL":"pic1.jpg"}, ("PostId":2,"Title":"Testing Post 2","PicURL":"pic2.jpg"}, ("PostId":3,"Title":"Testing Post 3","PicURL":"pic3.jpg"}]

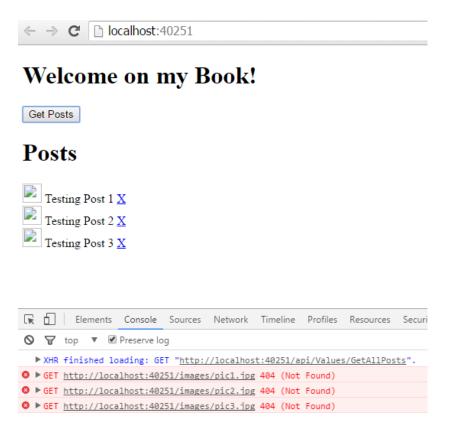
16- Now let's write code in our "HomeCtrl.js" file to make AJAX call to this Web API and get posts. Here we've added one more parameter to our controller function i.e. \$http. "\$http" is required to make AJAX call. We've also created a "posts" variable in our \$scope. Then we've added a new function "getPosts" in \$scope. In this function, we are making an HTTP hit to our Web API URL to get posts. Once response is available, it can be accessed using "data" property. Please check following screenshot for these changes.

```
HomeCtrl.js → X WebApiConfig.cs ©
                                                                                          Solution Explorer
                                                                                           Search Solution Explorer (Ctrl+;)
⊡(function () {
                                                                                             ▶ ■ Models
      //Get 'SocialModule'
                                                                                               Scripts
                                                                                                🗸 🚄 ang
      var app = angular.module("SocialModule");
                                                                                                     angular.min.js
                                                                                                     app.js
      //Create a new controller
                                                                                                     HomeCtrl.js
      app.controller("HomeCtrl", function ($scope, $http) {
                                                                                                     _references.js
                                                                                                   🖵 jquery-1.8.2.intellisense.js
           $scope.message = "Welcome on my Book!";
                                                                                                   🖵 jquery-1.8.2.js
           $scope.posts = [];
                                                                                                   🖵 jquery-1.8.2.min.js
                                                                                                   J jquery-ui-1.8.24.js
           $scope.getPosts = function () {
                                                                                                   J jquery-ui-1.8.24.min.js
                                                                                                   jquery.unobtrusive-ajax.js
                $http({
                                                                                                   iguery.unobtrusive-ajax.min.is
                     method: 'GET',
                                                                                                   jquery.validate-vsdoc.js
                     url: '/api/Values/GetAllPosts'
                                                                                                   jquery.validate.js
                }).then(function successCallback(response) {
                                                                                                   💶 jquery.validate.min.js
                                                                                                   jquery.validate.unobtrusive.js
                     $scope.posts = response.data;
                                                                                                   jquery.validate.unobtrusive.min.js
                                                                                                   knockout-2.2.0.debug.js
                }, function errorCallback(response) {
                                                                                          IntelliTrace Solution Explorer
                     // called asynchronously if an error occurs
                     // or server returns response with an error status.
                });
                                                                                           })();
```

17- Now make following changes in "Views/Home/Index.cshtml" file. Here we are calling "getPosts" method on button click. And then we are displaying the data of "posts" object. We are assuming that images are in "images" folder. We are also showing a hyper link (X) which is calling a function "deleteMe(this). We are passing current attached object (with which this record has been created) to "deleteMe" function. Note: We hadn't defined "deleteMe" function in our controller.

```
PostDTO.cs @ HomeCtrl.js
                              WebApiConfig.cs 	☐ Index.cshtml 	⇒ X app.js
     <script src='@Url.Content("~/Scripts/ang/angular.min.js")' type="text/javascript"></script> ±
                                                                                                            <script src='@Url.Content("~/Scripts/ang/app.js")' type="text/javascript"></script>
                                                                                                            Search Solution Explorer (Ctrl+;)
     <script src='@Url.Content("~/Scripts/ang/HomeCtrl.js")' type="text/javascript"></script>
                                                                                                              MVC_AngularJSPrac
                                                                                                                Properties
 </head>
                                                                                                                 ■-■ References
_
-
Stody ng-controller="HomeCtrl">
                                                                                                                 App Data
     <h1>{{message}}</h1>
                                                                                                                 App_Start
                                                                                                                 Areas
                                                                                                                 Content
     <input type="submit" ng-click="getPosts()" value="Get Posts" />
                                                                                                                 Controllers
     <div>
                                                                                                                 Images
         <h1>Posts</h1>
                                                                                                                 Models
         <div ng-repeat="p in posts">
                                                                                                                 Scripts
             <img ng-src='@Url.Content("~/images/{{p.PicURL}}")' height="25px" width="25px"</pre>
                                                                                                                 Views
              <span>{{p.Title}}</span>
             <a href="#" ng-click="deleteMe(this);">X</a>
                                                                                                                    [@] Index.cshtml
         </div>
                                                                                                                   [@] _ViewStart.cshtml
     </div>
                                                                                                                   Y Web.config
 </body>
                                                                                                                 favicon.ico
 </html>
                                                                                                                 Global.asax
```

18- Run the project, click on "Get Posts" button and see if posts are displayed or not. Also inspect the html of page to see if any error is appearing in console. As we don't have these images in our project so errors are appearing.



19- Now add following code in "HomeCtrl.js" file to define "deleteMe" function. "obj" will contain the object in "p" property as we've used "p" alias during repeat. So here are finding the post in our array and then removing it (using splice function). Note: We are going to delete post from local array (not from server) for now.

```
PostDTO.cs @
                 HomeCtrl.js → X WebApiConfig.cs 🗈
                                                                              Solution Explorer
             }).then(function successCallback(response) {
                                                                               $scope.posts = response.data;
                                                                              Search Solution Explorer (Ctrl+;)
                                                                                   Scripts
             }, function errorCallback(response) {
                                                                                    🗸 偏 ang
                  // called asynchronously if an error occurs
                                                                                         🎵 angular.min.js
                                                                                         🔲 app.js
                  // or server returns response with an error
             });
                                                                                         _references.js
        }
                                                                                       💶 jquery-1.8.2.intellisens
                                                                                       🖵 jquery-1.8.2.js
                                                                                       J jquery-1.8.2.min.js
        $scope.deleteMe = function (obj) {
                                                                                       J jquery-ui-1.8.24.js
             var ind = $scope.posts.indexOf(obj.p);
                                                                                       🎵 jquery-ui-1.8.24.min.js
             $scope.posts.splice(ind, 1);
                                                                                       jquery.unobtrusive-aja
                                                                                       💶 jquery.unobtrusive-aja
                                                                                       jguery.validate-vsdoc.j
                                                                                       jquery.validate.js
)();
                                                                                       jquery.validate.min.js
```

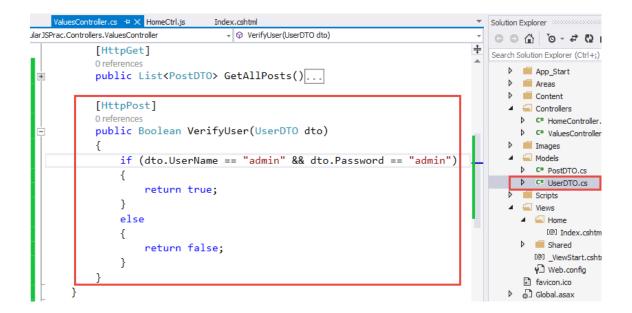
- 20- Let's check how to do AJAX Post hit. For this, let's work on login screen.
- 21- Create a new class in Model (i.e. UserDTO) as shown in following screenshot.

```
JserDTO.cs + X ValuesController.cs
                              HomeCtrl.js
                                                                            Solution Explorer
MVC_AngularJSPrac.Models.UserDTO

    ▶ Password

                                                                             -118 2,500....
                                                                            Search Solution Explorer (Ctrl+;)
           using System.Linq;
          using System.Web;
      4
                                                                               Content 
                                                                                  Controllers
      5
                                                                                  ▶ C# HomeController.cs
         -namespace MVC AngularJSPrac.Models
                                                                                  ▶ C# ValuesController.cs
      7
                                                                                  Images
                1 reference
                                                                                  Models
      8
                public class UserDTO
                                                                                    C# PostDTO cs
      9
                                                                                    C# UserDTO.cs
                    1 reference
                                                                                  Scripts
                    public String UserName { get; set; }
     10
                                                                                  Views
                    1 reference
                                                                                  Home
     11
                    public String Password { get; set; }
                                                                                       [@] Index.cshtml
                                                                                    Shared
     12
                                                                                    [@] _ViewStart.cshtml
     13
                                                                                    ₩ Web.config
```

22- Add following method in Web API controller. It will receive object of type UserDTO in method.



23- Add following code in "HomeCtrl.js" file which will make hit to Web API for user verification. Hect re we've a "user" object which will be bound with form elements.

```
app.controller("HomeCtrl", function ($scope, $http) {
                                                                                                  $scope.message = "Welcome on my Book!";
                                                                                                  Search Solution Explorer (Ctrl+;)
        $scope.posts = [];
                                                                                                    $scope.user = {};
                                                                                                       ang
                                                                                                            angular.min.js
       $scope.verify = function () {
                                                                                                          _references.js
            $http.post(
                                                                                                          jquery-1.8.2.intellisense
                  '/api/Values/VerifyUser', $scope.user).success(function (data) {
                                                                                                         🖵 jquery-1.8.2.js
                                                                                                         jquery-1.8.2.min.js
                      if (data == true) {
                                                                                                          🖵 jquery-ui-1.8.24.js
                                                                                                          🖵 jquery-ui-1.8.24.min.js
                           $scope.showerrormsg = false;
                                                                                                         🖵 jquery.unobtrusive-ajax
                                                                                                         jquery.unobtrusive-ajax
                      else {
                                                                                                         jquery.validate-vsdoc.j:
                           $scope.showerrormsg = true;
                                                                                                         jquery.validate.js
                                                                                                         jquery.validate.min.js
                  });
                                                                                                          🖵 jquery.validate.unobtru
                                                                                                          🖵 jquery.validate.unobtru
       };
                                                                                                         knockout-2,2,0,debug.j
                                                                                                         knockout-2,2,0,is
       $scope.getPosts = function () {
                                                                                                          modernizr-2.6.2.js
            $http({
```

24- Add following code in "Views/Home/Index.cshtml" file. It is to show login controls. Note that "ng-show" is another directive which hides or show the control based on the bound property.

```
HomeCtrl.js Index.cshtml → ×
   ValuesController.cs
 </head>
                                                                                               ○ ○ △ ○ ○ → → ○ □ □
Search Solution Explorer (Ctrl+;)
      <h1>{{message}}</h1>
                                                                                               ▲ ■ MVC_AngularJSPrac
                                                                                                   Properties
      <div>
                                                                                                  ▶ ■•■ References
         Login:
                                                                                                    App Data
          <input type="text" ng-model="user.UserName" />
                                                                                                   App_Start
                                                                                                   Areas
          <br > Password:
                                                                                                    Content
          <input type="password" ng-model="user.Password" />
                                                                                                   Controllers
                                                                                                   Images
          <input type="button" value="Login" ng-click="verify()" />
                                                                                                   Models
          <span style="color:red" ng-show="showerrormsg">Invalid Login details</span>
                                                                                                   Scripts

■ Views

      <input type="submit" ng-click="getPosts()" value="Get Posts" />
                                                                                                       Shared
     <div>
                                                                                                      [@] _ViewStart.cshtml
                                                                                                      ₩ Web.config
          <div ng-repeat="p in posts">
                                                                                                    favicon.ico
                                                                                                    வி Global, asax
              <img ng-src='@Url.Content("~/images/{{p.PicURL}}")' height="25px" width=</pre>
                                                                                                    packages.config
              <span>{{p.Title}}</span>
                                                                                                    ♥ Web.config
```

25- Run the application and check if everything is working fine as expected. First provide correct credentials (admin & admin) and then provide wrong credentials.

Tasks for Practice

Once you are done with above tutorial. Try to work on these tasks.

- 1- https://material.angularjs.org/latest/
- 2-

Useful Links

https://angularjs.org/

http://www.w3schools.com/angular/

http://www.tutorialspoint.com/angularjs/