# **ASP.NET MVC – Part 1**

### Agenda

- Creating & Running a Simple Project in ASP.NET MVC

#### **Tools**

- Visual Studio 2013

# Pre-requisite

- Understanding of ASP.NET MVC Basic Concepts

Version	Last updated	Comments	Modified By
V1.0	07-05-2016		Bilal Shahzad

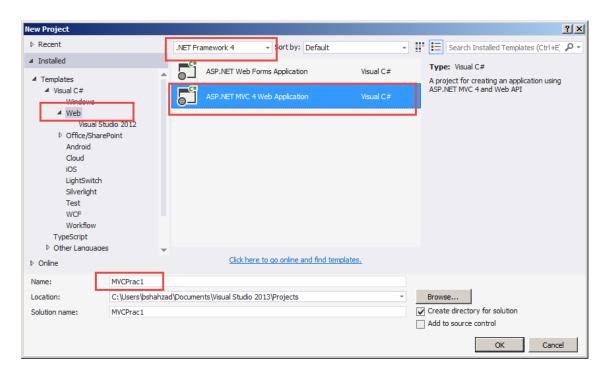
#### **Brief Introduction**

ASP.NET MVC follows MVC architectural design pattern. In this design pattern, elements are mainly divided in three main components (Model, View and Controller). To understand, we can consider Model as BAL + DAL. Controller contains the classes which handles the user requests, may talk to Model (if required) and then process appropriate view and returns the response to client.

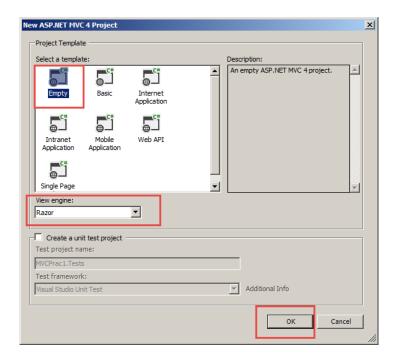
Visual Studio provides different options while working with ASP.NET MVC. We'll start with very basic template. This tutorial will not discuss concepts in detail but will give step by step guide. I'll advise you to explore concepts in depth wherever you feel any confusion.

# **Step by Step Walkthrough**

1- Create a new Project (File -> New -> Project) and choose the option highlighted below. Give it a name.



2- In next window, you will see different options to start with. For now, we'll choose "Empty" template and "Razor" as "View Engine".



3- You will see different folders and files in the solution (created by default). Names of folders are self-explanatory (e.g. Controllers, Models and Views). You will see that some packages are by default added. You can check detail of those packages by opening "packages.config" file. (Note: Nothing to do for you in this step)



4- If you open "Global.axax" file, you will see a class which is being inherited from "HttpApplication" class. This class contains application level methods. For example, "Application\_Start" method is called when application starts the first time. You may write your one time initialization stuff in this method. (**Note: Nothing to do for you in this step**)

```
Global.asax.cs + X packages.config
                                                                                                         Solution Explorer :::
MVCPrac1.MvcApplication

→ Ø<sub>→</sub> Application_Start()

                                                                                                          ○ ○ △ O → → O □ □ ○ ○
          using System.Web.Http;
                                                                                                         Search Solution Explorer (Ctrl+;)
          using System.Web.Mvc;
          using System.Web.Routing;
                                                                                                         Solution 'MVCPrac1' (1 project)

▲ 

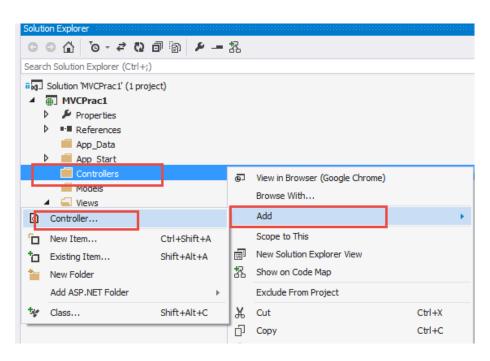
■ MVCPrac1

        □ namespace MVCPrac1
                                                                                                             Properties
    10
         \{
                                                                                                               ■ ■ References
               // Note: For instructions on enabling IIS6 or IIS7 classic mode,
    11 🛱
                                                                                                                 App_Data
    12
               // visit <a href="http://go.microsoft.com/?LinkId=9394801">http://go.microsoft.com/?LinkId=9394801</a>
                                                                                                                App_Start
                                                                                                                Controllers
    13
              public class MvcApplication : System.Web.HttpApplication
    14
                                                                                                                 Models
                                                                                                               Views
                   protected void Application_Start()
    15
                                                                                                                   ₩ Web.config
    16
                                                                                                                Ġ Global.asax
    17
                        AreaRegistration.RegisterAllAreas();
                                                                                                                 packages.config
    18
                                                                                                                ¥☐ Web.config
                        WebApiConfig.Register(GlobalConfiguration.Configuration);
    19
                        FilterConfig.RegisterGlobalFilters(GlobalFilters.Filters);
    20
    21
                        RouteConfig.RegisterRoutes(RouteTable.Routes);
    22
    23
    24
         }
```

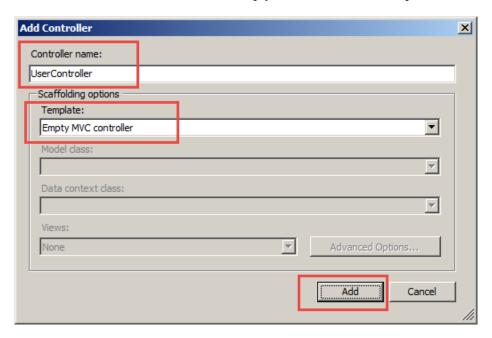
5- If you open main "web.config" file, you will not that there are some default configuration available in this. Discussion of whole web.config is out the scope of this tutorial but you can see "namespaces" section here. Here you can mention all the namespaces which you don't want to add on every page. So for example, you can access items of these namespaces in your controllers, views etc. without adding reference of namespace at top.

```
b.config 🗢 🗙 Global.asax.cs
                           packages.config
                                                                                            Solution Explorer
     ○ ○ △ ○ · → · ○ □ □
         <appSettings>
           <add key="webpages:Version" value="2.0.0.0" />
                                                                                             Search Solution Explorer (Ctrl+:)
           <add key="webpages:Enabled" value="false" />
                                                                                             Solution 'MVCPrac1' (1 project)
           <add key="PreserveLoginUrl" value="true" />
  11
                                                                                                MVCPrac1
           <add key="ClientValidationEnabled" value="true" />
  12
                                                                                                Properties
           <add key="UnobtrusiveJavaScriptEnabled" value="true" />
  13
                                                                                                   ■-■ References
  14
         </appSettings>
  15
         <system.web>
                                                                                                   App_Data
  16 
17 ⊟
           <compilation debug="true" targetFramework="4.0" />
                                                                                                   App_Start
            <pages>
                                                                                                   Controllers
  18
                                                                 You will not have to
                                                                                                    Models
               <add namespace="System.Web.Helpers" />
  19
                                                                  add reference of
                                                                                                   Views
                <add namespace="System.Web.Mvc" />
  20
                                                                   items of these
                                                                                                      ¥☐ Web.config
               <add namespace="System.Web.Mvc.Ajax"</pre>
  21
                                                                  name spaces in
                                                                                                   Global.asax
               <add namespace="System.Web.Mvc.Html" />
  22
               <add namespace="System.Web.Routing" />
                                                                   your page now.
  23
                                                                                                    packages.config
  24
               <add namespace="System.Web.WebPages"</pre>
                                                                                                   Web.config
  25
             </namespaces>
  26
            </pages>
          </system.web>
  28 =
         <system.webServer>
  29
           <validation validateIntegratedModeConfiguration="false" />
  30
           <modules runAllManagedModulesForAllRequests="true" />
  31
             <remove name="ExtensionlessUrlHandler-ISAPI-4.0_32bit" />
  32
             <remove name="ExtensionlessUrlHandler-ISAPI-4.0_64bit" />
  33
```

6- Now let's add a controller in our "Controllers" folder. To do so, right click on Controllers folder => Add => Controller.



7- You will see following dialog box. Provide the name of controller here. Note that "Controller" post fix should be there in your controller name. For now, we'll use "Empty MVC Controller" template. Click Add.

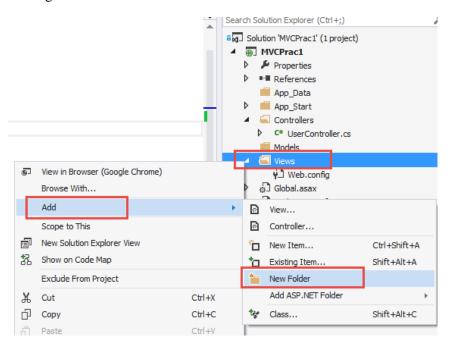


8- This will add a class file. Here we can see that a controller is a class which is being inherited from "Controller" class. A function named "Index()" is also available by default. This function (in the controller) will be called "Action". Action methods return result type of "ActionResult" class. So here "View()" function is being called and the return value of this function is being returned from our action method.

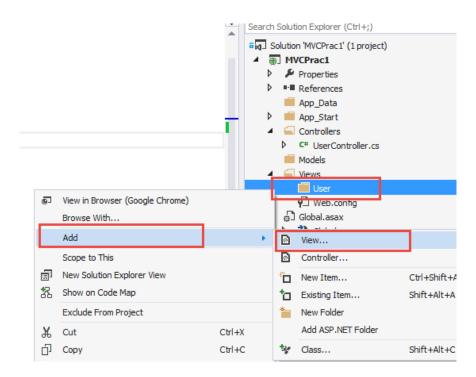
Also, we know that request lands on a controller and then on a specific action. As here "View()" method is empty, it will look for a folder named "User" in Views folder and then a file "Index.cshtml" in that folder.

```
JserController.cs → X Web.config
                                                packages.config
                                Global.asax.cs
                                                                                  Solution Explorer
🔩 MVCPrac1.Controllers.UserController
                                      → Ø Index()
                                                                                   © © ∰ 6 0 + ≠ 12 m m m
            using System.Web;
                                                                                   Search Solution Explorer (Ctrl+;)
       5
            using System.Web.Mvc;
                                                                                   Solution 'MVCPrac1' (1 project)
                                                                                      MVCPrac1
       6
          namespace MVCPrac1.Controllers
                                                                                         Properties
                                                                                         ■-■ References
            {
       8
                                                                                          App_Data
                                                                                         App Start
                 public class UserController : Controller
       9
                                                                                            Controllers
      10
                                                                                            C# UserController.cs
      11
                                                                                            Models
      12
                       // GET: /User/
                                                                                            ¥☐ Web.config
      13
                                                                                         Global.asax
                       0 references
                                                                                         packages.config
      14
                       public ActionResult Index()
                                                                                         ♥ Web.config
      15
                       {
                            return View();
      16
      17
      18
      19
                 }
      20
           }
```

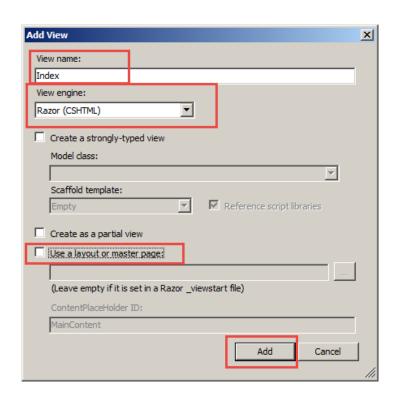
9- Now let's add a view file (which will contain our html). By following basic conventions, we'll have to add a folder first in our "Views". Name of this folder will be same as our controller name. Let's create a folder named "User" by right clicking on views -> Add -> New Folder.



10- Now let's create a view (with same name of our action name) in "User" folder. To do so, right click on "User" folder -> Add -> View.



11- Keep the name of View as "Index" (same as our action name). Select "Razor" as View engine. Follow the selection according to following screenshot and click on "Add" button.



12- A file "Index.cshtml" will be added. This is our view file. If you open this file, you will see something like shown in this screenshot. Currently, this file is not using any "Layout" so you can see that "Layout" property is null. You can also see some basic HTML is written in this page.

```
ndex.cshtml + × UserController.cs
                             Web.config
                                          Global.asax.cs
                                                         packages.config
                                                                                   Solution Explorer
          @{
                                                                                   2
               Layout = null;
                                                                                   Search Solution Explorer (Ctrl+;)
      3
                                              Here we are saying that this
                                                                                   Solution 'MVCPrac1' (1 project)
                                             page has no "Layout". @{ } is
     4
                                                                                    ■ MVCPrac1
                                              to write C# code view files.
     5
          <!DOCTYPE html>
                                                                                      Properties
     6
                                                                                      ▶ ■ ■ References
                                                                                         App_Data
     7
        ⊡<html>
                                                                                        App_Start
        Ė<head>
     8
                                                                                        Controllers
     9
               <meta name="viewport" content="width=device-width" />
                                                                                        ▶ C# UserController.cs
               <title>Index</title>
    10
                                                                                         Models
          </head>
    11
                                                                                      Views
    12 ⊡≺body>
                                                                                             User
                                                                                             [@] Index.cshtml
    13 Ė
              <div>
                                                                                           Y_ Web.config
    14

▲ Global.asax

    15
               </div>
                                                                                        ▶ ☼ Global.asax.cs
    16
         </body>
                                                                                         packages.config
    17
          </html>
                                                                                      ▶ Ý Web.config
```

13- Let's make a small change in our view file and add a simple text "Pakistan Zindbad" in div element as highlighted below.

```
ndex.cshtml 😕 🗶 UserController.cs Web.config Global.asax.cs packages.config
     1
                                                                          2
             Layout = null;
                                                                          Search Solution Explorer (Ctrl+;)
     3
                                                                          Solution 'MVCPrac1' (1 project)
     4 <!DOCTYPE html>
                                                                           5 -<html>
                                                                             Properties
     6 -<head>
                                                                             ▶ ■·■ References
             <meta name="viewport" content="width=device-width" />
                                                                                App_Data
     7
                                                                                App_Start
             <title>Index</title>
                                                                                Controllers
     9
         </head>
                                                                               ▶ C# UserController.cs
    Models
    11 🚊
             <div>
                                                                             Views
    12
               Pakistan Zindbad!
    13
             </div>
                                                                                  ₩ Web.config
    14
        </body>
                                                                               Global.asax
    15
        </html>
                                                                               ▶ ☼ Global.asax.cs
    16
                                                                                packages.config
                                                                               ₩ Web.config
```

14- MVC allows us to set custom routs. Requests land on some controller and then on some action. We can configure the route pattern though. Open "RoutConfig.cs" file in "App\_Start" folder. You will see that some sample code is already added here. "MapRoute" function is taking some configuration. Route name is set to "Default". URL pattern is telling that user will have to add controller first then action name first and then some value. Also we are providing default values if some parameter misses in URL (request). Here we've set default controller to "User" and default action to "Index". Now in browser if user types "localhost:someport/User", route engine knows that which action to choose. If user types "localhost:someport", route engine knows that request will be landed on "User" controller and then on "Index" action.

```
eConfig.cs + X Index.cshtml UserController.cs Web.config Global.asax.cs
VCPrac1.RouteConfig

→ RegisterRoutes(RouteCollection routes)
                                                                                       © © 6 0 0 - ≥ 0 0 0 0 0 ×
   8 - space MVCPrac1
                                                                                      Search Solution Explorer (Ctrl+;)
                                                                                      Solution 'MVCPrac1' (1 project)
        1 reference

■ MVCPrac1

  10 public class RouteConfig
                                                                                         ▶ Properties
  11
                                                                                         ▶ ■·■ References
             1 reference
  12
             public static void RegisterRoutes(RouteCollection routes
                                                                                           App_Start
  13
                                                                                            ▶ C# FilterConfig.cs
                                                                                            ▶ C# RouteConfig.cs
                  routes.IgnoreRoute("{resource}.axd/{*pathInfo}");
  14
                                                                                               C# WebApiConfig.cs
  15
                                                                                            Controllers
  16
                  routes.MapRoute(
                                                                                              C# UserController.cs
                       name: "Default",
  17
                                                                                            Models
                      url: "{controller}/{action}/{id}",
  18
                                                                                            Views
                       defaults: new { controller =
  19
                                                                                              User
                            action = "Index",
                                                                                                 [@] Index.cshtml
  20
                                                                                               ¥ Web.config
                            id = UrlParameter.Optional }
  21
                                                                                            வி Global.asax
  22
                  );
                                                                                              Global.asax.cs
  23
             }
                                                                                            Ÿ packages.config
        }
  24
                                                                                         ▶ ∳ Web.config
  25
```

15- Now run the project and see what is URL and what result is. Try changing URL by adding controller name only. Then by adding controller and action name.

#### **Tasks for Practice**

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

- 1- Create one more action "Home" in "User" Controller same like "Index" action.
- 2- Create view for "Home" action.
- 3- Create a new Controller "Student"
- 4- Create a new action "Index" in "Student" Controller.
- 5- Create a view "Index.cshtml" (in "Student" folder")
- 6- Make changes in your RouteConfig that when you run your application, "Student/Index" action should be called by default.
- 7- Right Click on "Controller" class => "Go to Definition. Check the members of "Controller" class.

# **Useful Links**

http://www.asp.net/mvc