Developing ASP.NET MVC Web Applications

Session: 4

Models in ASP.NET MVC

Objectives

- Define and describe models
- Explain how to create a model
- Describe how to pass model data from controllers to views
- Explain how to create strongly typed models
- Explain the role of the model binder
- Explain how to use scaffolding in Visual Studio.NET

Introducing Models

- In an ASP.NET MVC application, a model:
  - Is a class containing properties that represents data of an application.
  - Represents data associated with the application.
- ASP.NET MVC Framework is based on the MVC pattern.
- The MVC pattern defines the following three types of models, where each model has specific purpose:
  - **Data model**: Represent classes that interact with a database. Data models are set of classes that can either follow the database-first approach or code-first approach.
  - **Business model**: Represent classes that implement a functionality that represents business logic of an application.
  - **View model**: Represent classes that provide information passed between controllers and views.

Creating a Model

- To create a model in an ASP.NET MVC application, you need to:
  - Create a public class.
  - Declare public properties for each information that the model represents.
- Following code snippet shows declaring a model class named `User`:

Code Snippet:

```
public class User
    {
      public long Id { get; set; }
      public string name { get; set; }
      public string address { get; set; }
      public string email { get; set; }
    }
```

- This code creates a model class named `User` that contains the `Id`, `name`, `address`, and `email` properties declared as `public`.

Accessing a Model within a Controller

- In an ASP.NET MVC application when a user request for some information, the request is received by an action method.
- The action method is used to access the model storing the data.
- To access the model, you need to create an object of the model class and either retrieve or set the property values of the object.
- Following code shows the creating an object of the model class in the `Index()` action method:

Code Snippet:

```
public ActionResult Index()
     {
         var user = new MVCModelDemo.Models.User();
         user.name = "John Smith";
         user.address = "Park Street";
         user.email = "john@mvcexample.com";
         return View();
     }
```

- In this code the `user` is an object of the `User` class and the property values of the model is set to the data related to a user, such as name, address, and e-mail.

Passing Model Data from Controller to View 1-10

- Once you have accessed the model within a controller, you need to make the model data accessible to a view so that the view can display the data to the user.
- To do this, you need to pass the model object to the view while invoking the view.
- You can model the object as follows:
  - A single object
  - A collection of model objects

Passing Model Data from Controller to View 2-10

- In an action method, you can create a model object and then pass the object to a view by using the `ViewBag` object.
- Following code shows passing the User model data from an action method to a view by using a `ViewBag` object:

Code Snippet:

```
public ActionResult Index()
   {
      var user = new MVCModelDemo.Models.User();
      user.name = "John Smith";
      user.address = "Park Street";
      user.email = "john@mvcexample.com";
      ViewBag.user = user;
      return View();
   }
```

- In this code, an object of the `User` model class is created and initialized with values. The object is then, passed to the view by using a `ViewBag` object.

Passing Model Data from Controller to View 3-10

- You can access the data of the model object stored in the `ViewBag` object from within the view.
- Following code snippet shows accessing the data of the model object stored in the `ViewBag` object:

Code Snippet:

```
<!DOCTYPE html>
<html> <body>
<p> User Name: @ViewBag.user.name
</p>
<p> Address: @ViewBag.user.address
</p>
<p> Email: @ViewBag.user.email
</p>
</body> </html>
```

- In this code, the view accesses and displays the `name`, `address`, and `email` properties of the `User` model object stored in the `ViewBag` object.

Passing Model Data from Controller to View 4-10

- Following code shows passing a collection of model objects to a view:

Code Snippet:

```
public ActionResult Index(){
var user = new List<User>();
var user1 = new User();
            user1.name = "Mark Smith";
            user1.address = "Park Street";
            user1.email = "Mark@mvcexample.com";
var user2 = new User();
            user2.name = "John Parker";
            user2.address = "New Park";
            user2.email = "John@mvcexample.com";
var user3 = new User();
            user3.name = "Steave Edward ";
            user3.address = "Melbourne Street";
            user3.email = "steave@mvcexample.com";
user.Add(user1); user.Add(user2); user.Add(user3);
ViewBag.user = user; return View(); }
```

Passing Model Data from Controller to View 5-10

- The preceding code:
  - Creates and initializes three objects of the model class, named `User`.
  - Then, a `List<User>` collection is created and the model objects are added to it.
  - Finally, the collection is passed to the view by using a `ViewBag` object.
  - Once you pass a collection of model objects to a view using a `ViewBag` object:
    - You can retrieve the collection stored in the `ViewBag` object from within the view.
    - You can iterate through the collection to retrieve each model object.
    - You can access their properties.

Passing Model Data from Controller to View 6-10

- Following code snippet shows retrieving model objects from a collection and displaying their properties:

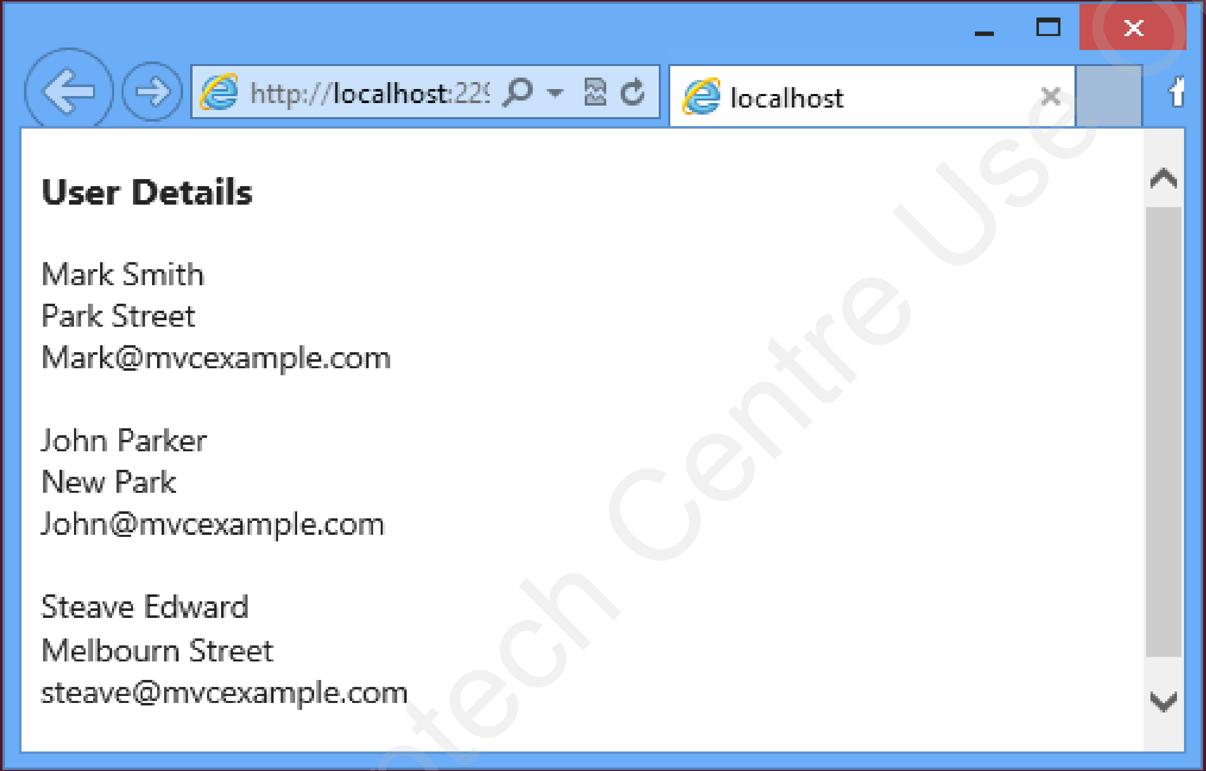
Code Snippet:

```
<!DOCTYPE html>
<html> <body>
<h3>User Details</h3>
    @{ var user = ViewBag.user;
        }
       @foreach (var p in user)
          {
           @p.name<br />
           @p.address<br />
           @p.email<br />
<br />               }
</body> </html>
```

- This code uses a `foreach` loop to iterate through the collection of model object stored in the `ViewBag` object and the `name`, `address`, and `email` properties are rendered as response.

Passing Model Data from Controller to View 7-10

- Following figure shows the output of retrieving model objects:



User Details

Mark Smith
Park Street
Mark@mvcexample.com

John Parker
New Park
John@mvcexample.com

Steave Edward
Melbourn Street
steave@mvcexample.com

- You can use another approach to pass a collection of model objects from an action method to a view is to pass the collection directly as a parameter to the `View()` method.
- This code uses a foreach loop to iterate through the collection of model object stored in the ViewBag object and the name, address, and email properties are rendered as response.

Passing Model Data from Controller to View 8-10

- Following code snippet shows passing a collection of model objects to a view as a parameter to the `View()` method:

Code Snippet:

```
<!DOCTYPE html>
<html> <body>
<h3>User Details</h3>
    @{ var user = ViewBag.user; }
       @foreach (var p in user) {
           @p.name<br />
           @p.address<br />
           @p.email<br />
<br /> } </body> </html>public ActionResult Index() {
var user = new List<User>(); var user1 = new User();
user1.name = "Mark Smith"; user1.address = "Park Street";
user1.email = "Mark@mvcexample.com";
var user2 = new User(); user2.name = "John Parker";
  user2.address = "New Park"; user2.email = "John@mvcexample.com";
var user3 = new User();  user3.name = "Steave Edward ";
user3.address = "Melbourn Street"; user3.email = "steave@mvcexample.com";
user.Add(user1); user.Add(user2);  user.Add(user3); return View(user);  }
```

Passing Model Data from Controller to View 9-10

- The preceding code will create and initializes three objects of the model class, named `User`.
    - Then, a `List<User>` collection is created and the model objects are added to it.
    - Finally, the collection is passed to the view as a parameter to the `View()` method.

Code Snippet:

```
<!DOCTYPE html>
<html> <body>
<h3>User Details</h3>
    @{ var user = ViewBag.user;
        }
       @foreach (var p in user)
          {
           @p.name<br />
           @p.address<br />
           @p.email<br />
<br />            }
</body> </html>
```

Passing Model Data from Controller to View 10-10

- Following code snippet shows retrieving the user information in the view:

Code Snippet:

```
<!DOCTYPE html>
<html> <body>
<h3>User Details</h3>
  @{
var user = Model;
   }
@foreach(var p in user)
    {
      @p.name <br />
      @p.address<br />
      @p.email<br />
<br/>
    }
</body>
</html>
```

- This code shows how to retrieve the user information that has been passed to a view by passing a collection of objects as a parameter.

Using Strong Typing 1-6

- While passing model data from a controller to a view, the view cannot identify the exact type of the data.
- As a solution, you can typecast the model data to a specific type.
- Following code snippet shows how to typecast model data:

Code Snippet:

```
<html> <body>
<h3>User Details</h3>
      @{
          var user = Model as MVCModelDemo.Models.User;
       }
        @user.name <br/>
        @user.address<br/>
        @user.email<br/>
</body> </html>
```

- In this code, the `Model` object is cast to the type, `MVCModelDemo.Models.User`. As a result, the `User` object is created as an object of the type, `MVCModelDemo.Models.User`, and enables compile-time checking of code.

Using Strong Typing 2-6

- You can also ignore explicit type casting of a model object, by creating a strongly typed view.
- A strongly typed view specifies the type of a model it requires by using the `@model` keyword.
- The general syntax of using the `@model` keyword is as follows:

Syntax:

```
@model <model_name>
```

where,

- `model_name`: is the fully qualified name of the model class.

- Once you use the `@model` keyword, you can access the properties of the model object in the view.

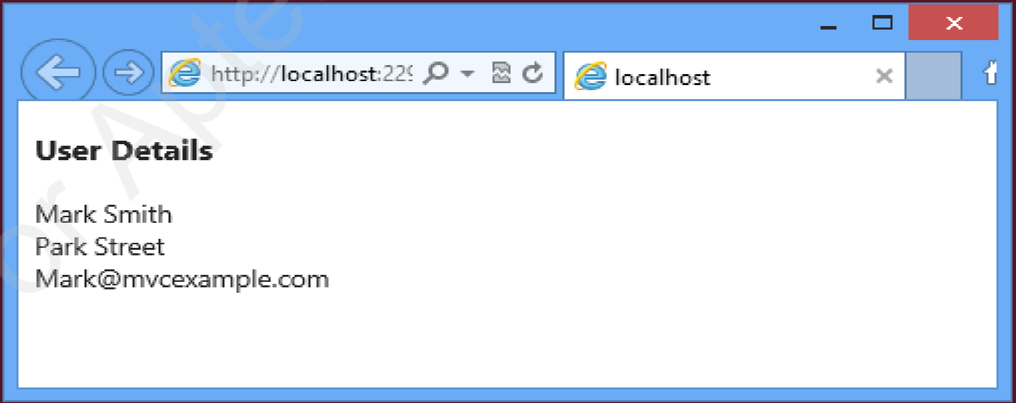
Using Strong Typing 3-6

- Following code snippet shows accessing the properties of the model object by using the `@model` keyword:

Code Snippet:

```
@model MVCModelDemo.Models.User
<html><body>
<h3>User Details</h3>
    @Model.name <br/> @Model.address<br/>
        @Model.email<br/>
</body> </html>
```

- Following figure shows the output of accessing properties of the `Model` object:



User Details

Mark Smith
Park Street
Mark@mvcexample.com

Using Strong Typing 4-6

- Sometime, you may need to pass a collection of objects to a view.
- In such situation, you can use the **@model** keyword.
- Following code snippet shows using the **@model** keyword to pass a collection of Model object:

Code Snippet:

```
@model IEnumerable<MVCModelDemo.Models.User>
```

- This code uses the **@model** keyword to indicate that it expects a collection of the `User` model objects.
- Once you pass a collection of the model objects, you can access it in a view.

Using Strong Typing 5-6

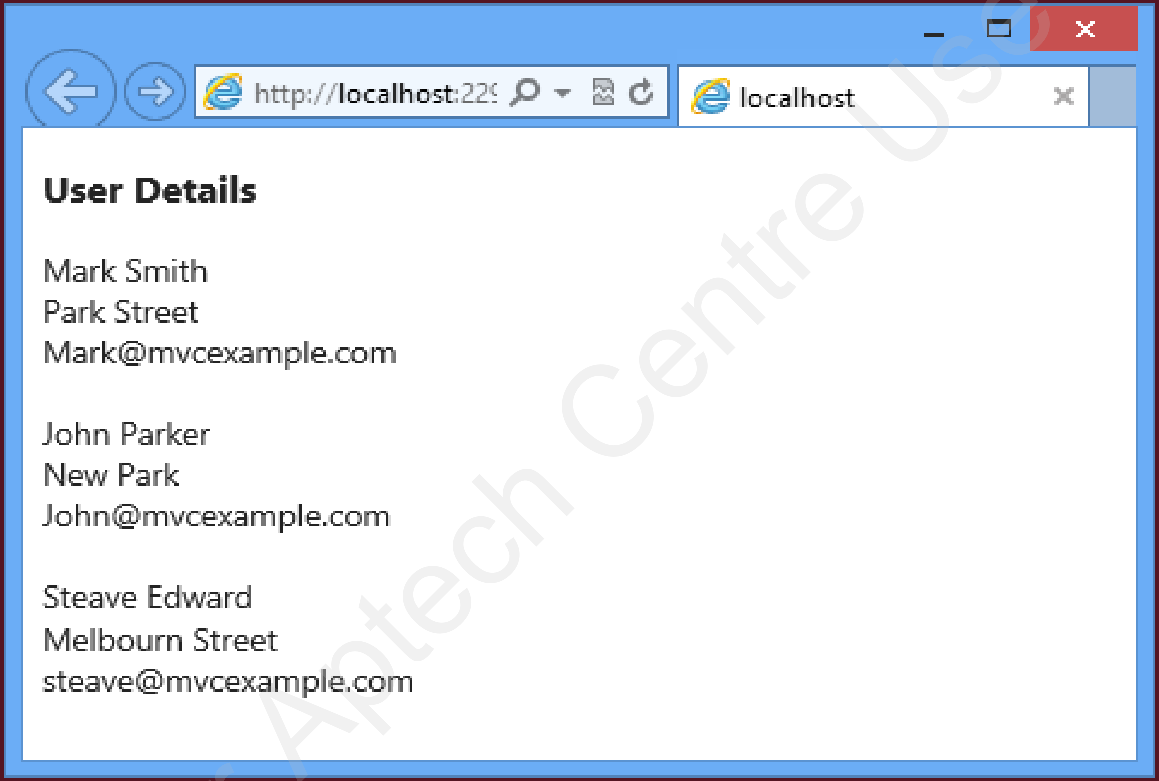
- Following code snippet shows accessing the collection of the `User` model in a view:

Code Snippet:

```
@model IEnumerable<MVCModelDemo.Models.User>
<html>
<body>
<h3>User Details</h3>
      @{
var user = Model;
       }
@foreach(var u in user)
           {
             @u.name <br/>
             @u.address<br/>
             @u.email<br/>
<br/>
        }
</body>
</html>
```

Using Strong Typing 6-6

- Following figure shows the output of accessing collection of the `User` model:



```
User Details

Mark Smith
Park Street
Mark@mvcexample.com

John Parker
New Park
John@mvcexample.com

Steave Edward
Melbourn Street
steave@mvcexample.com
```

HTML Helper Methods in Strongly Types Views 1-5

- The MVC Framework:
  - Enables these helper methods to directly associate with model properties in a strongly types views.
  - Provides helper methods that you can use only in strongly typed views.
- Following table lists the helper methods that you can use only in strongly typed views:

Helper Method	Description
`Html.LabelFor()`	Is the strongly typed version of the `Html.Label()` helper method that uses a lambda expression as its parameter, which provides compile time checking.
`Html.DisplayNameFor()`	Is used to display the names of model properties.
`Html.DisplayFor()`	Is used to display the values of the model properties.

HTML Helper Methods in Strongly Types Views 2-5

Helper Method	Description
`Html.TextBoxFor()`	Is the strongly typed version of the `Html.TextBox()` helper method.
`Html.TextAreaFor()`	Is the strongly typed version of the `Html.TextArea()` helper method that generates the same markup as that of the `Html.TextArea()` helper method.
`Html.EditorFor()`	Is used to display an editor for the specified model property.
`Html.PasswordFor()`	Is the strongly typed version of the `Html.Password()` helper method.
`Html.DropDownListFor()`	Is the strongly typed version of the `Html.DropDownList()` helper method that allows selection of a single item.

HTML Helper Methods in Strongly Types Views 3-5

- Following code snippet shows the HTML helper methods in a strongly typed view:

Code Snippet:

```
@model MVCModelDemo.Models.User
@{
ViewBag.Title = "User Form";
}
<h2>User Form</h2>
@using (Html.BeginForm()) {
@Html.ValidationSummary(true)
<div>
@Html.LabelFor(model => model.name)
</div>
<div>
@Html.EditorFor(model => model.name)
</div>
<div>
@Html.LabelFor(model =>model.address)
</div>
```

HTML Helper Methods in Strongly Types Views 4-5

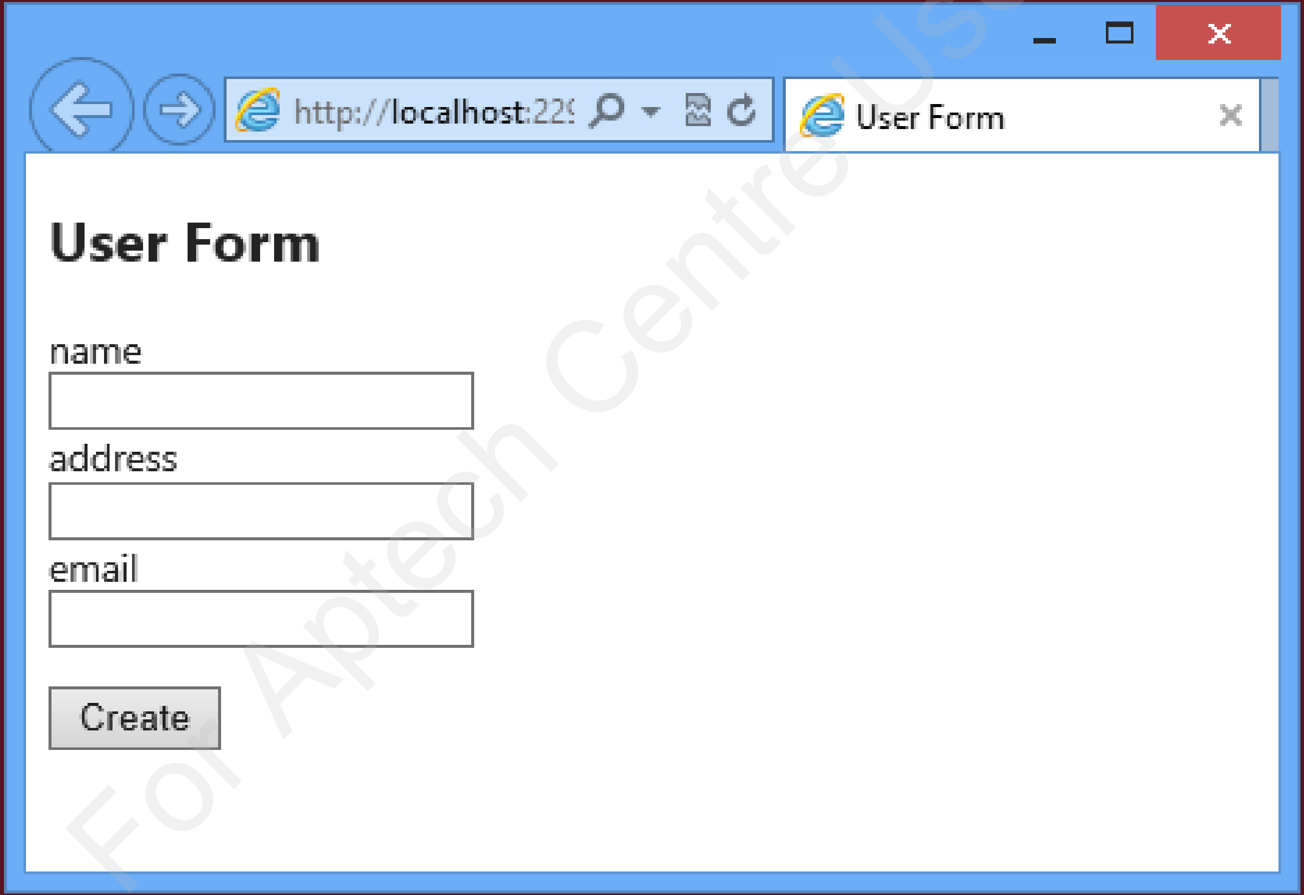
Code Snippet:

```
@Html.EditorFor(model =>model.address)
<div>
@Html.LabelFor(model =>model.email)
</div>
<div>
@Html.EditorFor(model =>model.email)
</div>
<p>
<input type="submit" value="Create" />
</p> }
```

- In this code:
  - The `Html.LabelFor()` method is used to display labels based on the property names of the model.
  - The `Html.EditorFor()` method is used to display editable fields for the properties of the model.

HTML Helper Methods in Strongly Types Views 5-5

- Following figure shows the output of using HTML helper methods:



Role of Model Binder 1-2

- When a user submits information in a form within a strongly typed view, ASP.NET MVC automatically examines the `HttpRequest` object and maps the information sent to fields in the model object.
- The process of mapping the information in the `HttpRequest` object to the model object is known as model binding.
- Some of the advantages of model binding are as follows:
  - Automatically extract the data from the `HttpRequest` object.
  - Automatically converts data type.
  - Makes data validation easy.

Role of Model Binder 2-2

- The MVC Framework provides a model binder that performs model binding in application.
- The `DefaultModelBinder` class implements the model binder on the MVC Framework.
- The two most important roles of the model binder are as follows:
  - Bind request to primitive values
  - Bind request to objects

Binding to Primitive Values 1-4

- To understand how the model binder binds request to primitive values, consider a scenario where you are creating a log in form that accepts log in details from user.
- For this, first you need to create a `Login` model in your application.
- Following code snippet shows the `Login` model class:

Code Snippet:

```
public class Login
 {
    public string userName { get; set; }

    [DataType(DataType.Password)]
public string password { get; set; }
}
```

- This code creates two properties named `userName` and `password` in the `Login` model.
- After creating the model class, you need to create an `Index.cshtml` view to display the login form.

Binding to Primitive Values 2-4

- Following code shows the content of the `Index.cshtml` file:

Code Snippet:

```
@model ModelDemo.Models.Login
@{ ViewBag.Title = "Index";
}
<h2>User Details</h2>
@using (Html.BeginForm()) {
@Html.ValidationSummary(true)
<div>
@Html.LabelFor(model =>model.userName)
</div> <div>
@Html.EditorFor(model =>model.userName)
</div> <div>
@Html.LabelFor(model =>model.password)
</div> <div>
@Html.EditorFor(model =>model.password)  </div>
<div>
<input type="submit" value="Submit" />
</div> }
```

Binding to Primitive Values 3-4

- Once, you have created the view, you need to create a controller class that contains the `Index()` action method to display the view.
- Following code shows the `HomeController` controller:

Code Snippet:

```
public class HomeController : Controller   {
   public ActionResult Index() {
   return View();
   }
   [HttpPost]
    publicActionResult Index(string userName, string password) {
      if (userName == "Peter" && password == "pass@123")        {
         stringmsg = "Welcome " + userName;
         return Content(msg);
       }
          else       {
          return View();
       }
     }
   }
```

Binding to Primitive Values 4-4

- In the preceding code:
  - The first `Index()` method returns the `Index.cshtml` view that displays a login form.
  - The second `Index()` method is marked with the `HttpPost` attribute. This method accepts two primitive as parameters. The `Index()` method compares the parameters with predefined values and returns a message if the comparison returns true. Else, the `Index()` method returns back the `Index.cshtml` view.
- When a user submits the login data, the default model binder maps the values of the `userName` and `password` fields to the primitive type parameters of the `Index()` action method.
- In the `Index()` action method, you can perform the required authentication and return a result.

Binding to Object 1-5

- To understand how the model binder binds requests to objects, consider the same scenario where you are creating a login form.
- For this, you have already created the `Login` model and the `Index.cshtml` view.
- To bind request to object, you need to update the controller class so that it accepts a `Login` object as a parameter, instead of an `HttpRequest` object.

Binding to Object 2-5

- Following code shows the updated controller class:

Code Snippet:

```
public class HomeController : Controller {
    public ActionResult Index() {
    return View();
    }
    [HttpPost]
     public ActionResult Index(Login login) {
     if (login.userName == "Peter" &&login.password == "pass@123") {
         stringmsg = "Welcome " + login.userName;
         return Content(msg);        }
      else        {
        return View(); }       }
   }
```

- In this code:
  - The first `Index()` method returns the `Index.cshtml` view that displays a login form.
  - The second `Index()` method automatically removes the data from the `HttpRequest` object and put into the `Login` object.

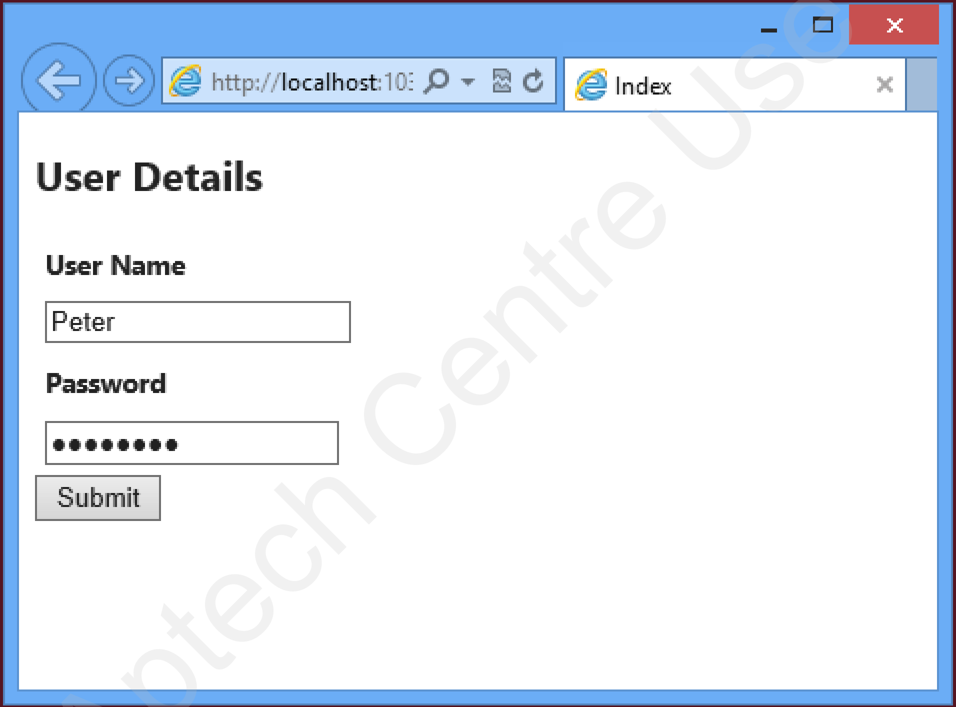
Binding to Object 3-5

- When a user submits the login data, the `Index()` method validates the `username` and `password` passed in the Login object.
- When the validation is successful, the view displays a welcome message.
- When you access the application from the browser the `Index.cshtml` view displays the login form.

1. Type `Peter` in the **User Name** text field and `pass@123` in the **Password** field of the login form.

Binding to Object 4-5

- Following figure shows the login form with data specified in the **User Name** and **Password** fields:



User Details

User Name

Peter

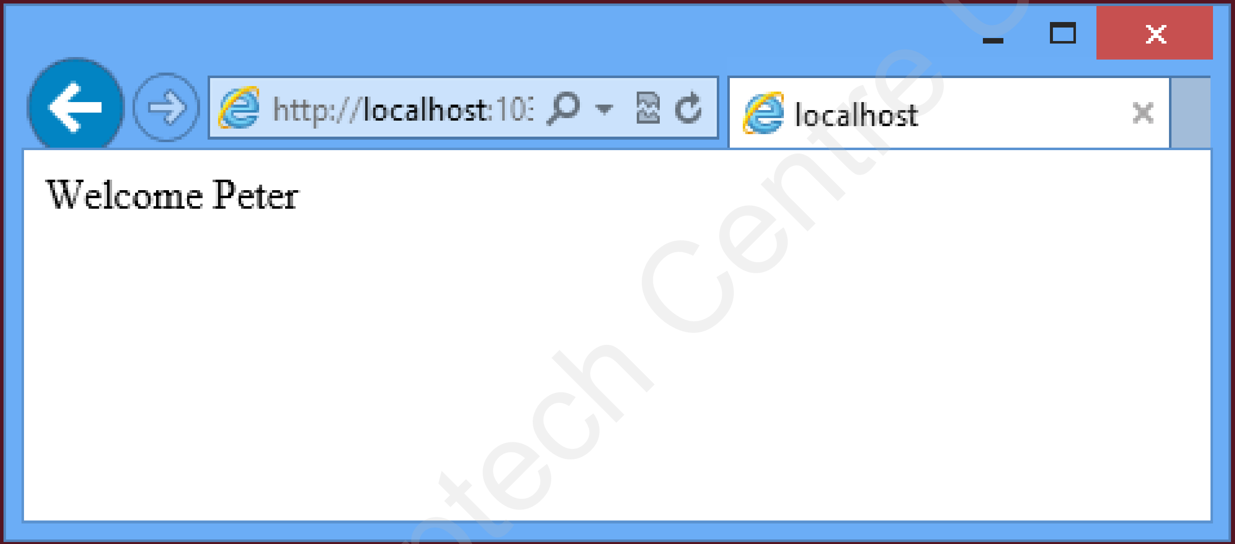
Password

•••••••••

2. Click **Submit**. The login form displays a ‘`Welcome Peter`’ message.

Binding to Object 5-5

- Following figure shows the output of the `Index.cshtml` view after submitting the user name and password:



Welcome Peter

Visual Studio.NET Scaffolding

- The ASP.NET MVC Framework provides a feature called scaffolding that allows you to generate views automatically.
- By convention, scaffolding uses specific name for views.
- After creating a view it stores the auto-generated code in respective places for the application to work.
- Following are the five types of template that the scaffolding feature provides to create views:
  - **List**: Generates markup to display the list of model objects.
  - **Create**: Generates markup to add a new object to the list.
  - **Edit**: Generates markup to edit an existing model object.
  - **Details**: Generates markup to show the information of an existing model object.
  - **Delete**: Generates markup to delete an existing model object.
- In this code, ViewData is used to display the values of the Message and CurrentTime keys.

List Template 1-4

- List template allows you to create a view that displays a list of model objects.
- Following code shows an `Index()` action method that returns an `ActionResult` object through a call to the `View()` method of the controller class:

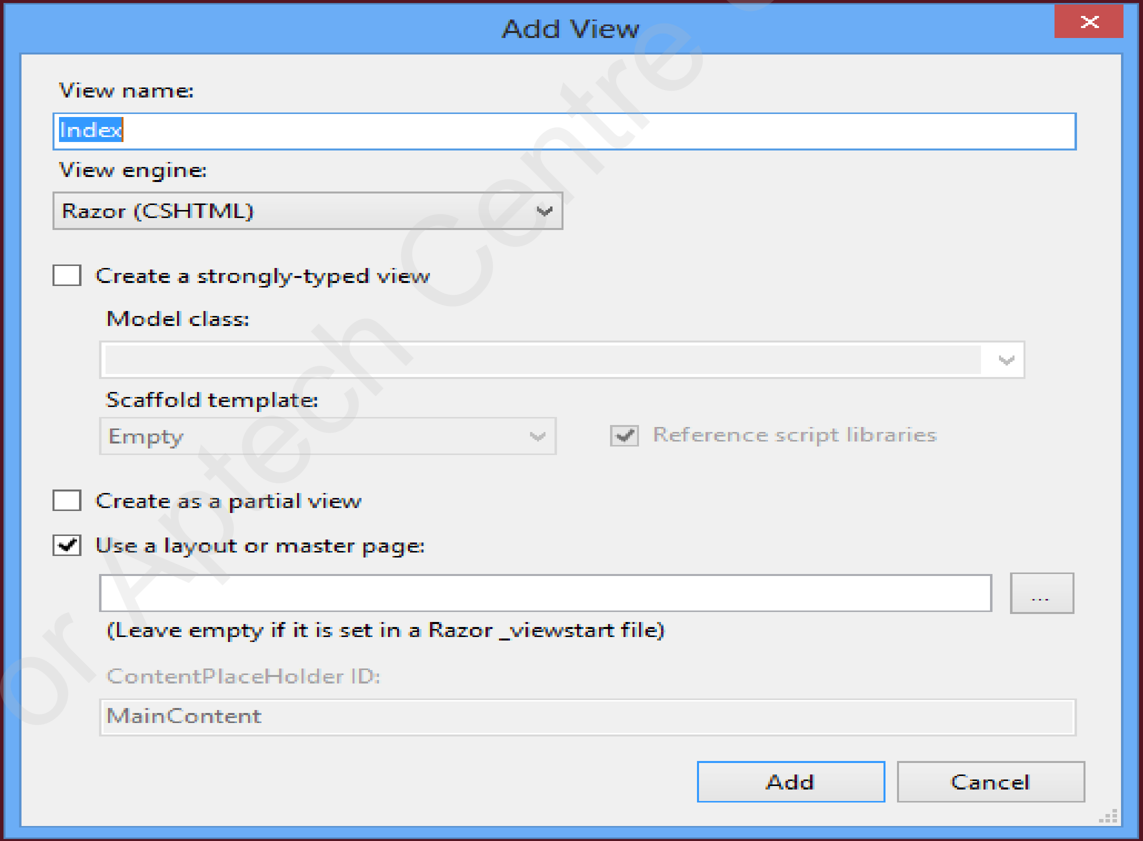
Code Snippet:

```
public ActionResult Index()
   {
     var user = new List<User>();
     //Code to populate the user collection
     return View(user);
   }
```

- This code shows the `Index()` action method of a controller that returns the result of a call to the `View()` method.
- The result of the `View()` method is an `ActionResult` object that renders a view.
- In this code, ViewData is used to display the values of the Message and CurrentTime keys.

List Template 2-4

- To create a view using the List template, you need to perform the following steps:
    1. Right-click inside the action method for which you need to create a view.
    2. Select **Add View** from the context menu that appears. The **Add View** dialog box is displayed, as shown in the following figure:



Add View

View name: Index

View engine: Razor (CSHTML)

☐ Create a strongly-typed view

Model class:

Scaffold template: Empty

✓ Reference script libraries

☐ Create as a partial view

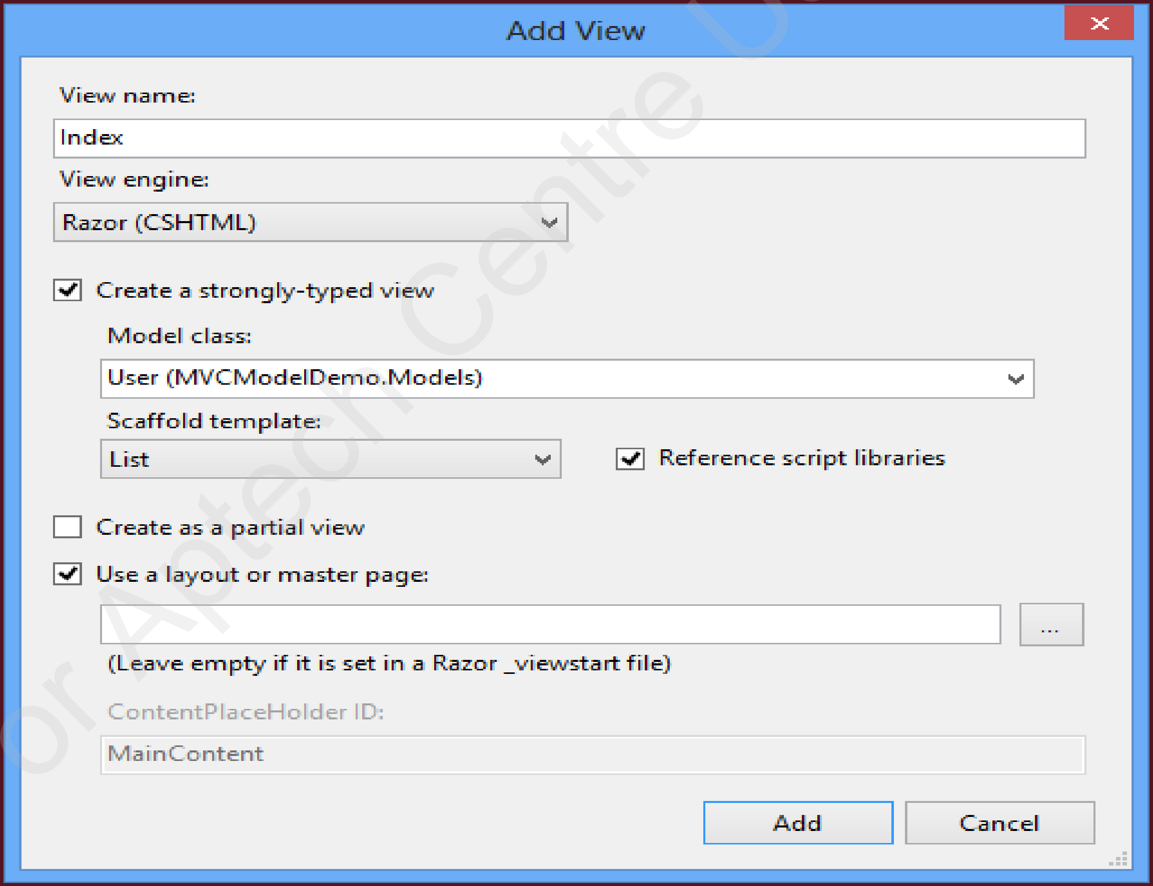
✓ Use a layout or master page:

(Leave empty if it is set in a Razor _viewstart file)

ContentPlaceHolder ID: MainContent

List Template 3-4

3. Select the **Create a strongly-typed view** check box. This will enable the fields that allow you to specify the model class and scaffolding template.
4. Select the model class from the **Model class** drop-down list.
5. Select **List** from the **Scaffold templates** drop-down list. Following figure specifies the model class and the scaffolding template:



Add View

View name: Index

View engine: Razor (CSHTML)

[✓] Create a strongly-typed view

Model class: User (MVCModelDemo.Models)

Scaffold template: List

[✓] Reference script libraries

[ ] Create as a partial view

[✓] Use a layout or master page:

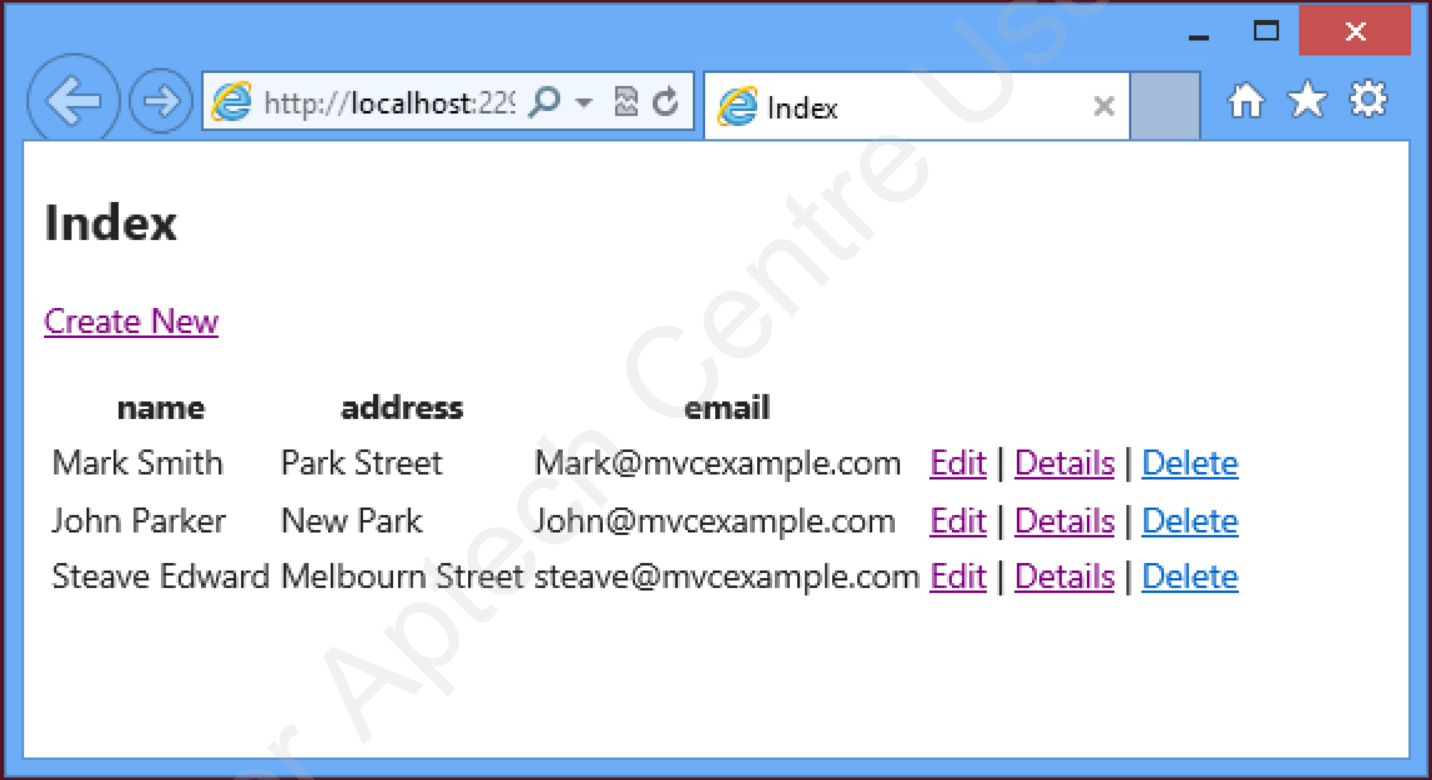
(Leave empty if it is set in a Razor _viewstart file)

ContentPlaceHolder ID: MainContent

List Template 4-4

6. Click **Add**. Visual Studio.NET automatically creates the appropriate directory structure and adds the view file to it.

- Following figure shows the output of the auto-generated markup:



Index

Create New

name	address	email	
Mark Smith	Park Street	Mark@mvcexample.com	Edit | Details | Delete
John Parker	New Park	John@mvcexample.com	Edit | Details | Delete
Steave Edward	Melbourn Street	steave@mvcexample.com	Edit | Details | Delete

Create Template 1-6

- The Create template allows you to generate a view that accepts the details of a new object to be stored in a data store.
- You need to create an action method, to display a view based on the Create template.
- Following code shows creating an action method named, `Create()` in the `HomeController` controller:

Code Snippet:

```
public ActionResult Create()
   {
return View();
}
```

- This code creates the `Create()` action method that will invoke when a user clicks the `Create` link on the view generated using the List template.
- In this code, ViewData is used to display the values of the Message and CurrentTime keys.

Create Template 2-6

- To create a view using the Create template, you need to perform the following steps:
    1. Right-click inside the `Create()` action method.
    2. Select **Add View** from the context menu that appears. The **Add View** dialog box appears.
    3. Select the **Create a strongly-typed view** checkbox.
    4. Select the model class from the **Model class** drop-down list.
    5. Select **Create from the Scaffold templates** drop-down list.
    6. Click **Add**. Visual Studio.NET automatically creates a view named, Create in the appropriate directory structure.

Create Template 3-6

- Following code snippet shows the auto-generated markup using the Create template:

Code Snippet:

```
@model MVCModelDemo.Models.User
@{
ViewBag.Title = "Create";
}
<h2>Create</h2>
@using (Html.BeginForm()) {
@Html.ValidationSummary(true)
<fieldset>
<legend>User</legend>
<div class="editor-label">
@Html.LabelFor(model => model.name)
</div>
<div class="editor-field">
@Html.EditorFor(model => model.name)
@Html.ValidationMessageFor(model => model.name)
</div>
<div class="editor-label">
@Html.LabelFor(model =>model.address)
</div>
<div class="editor-field">
```

Create Template 4-6

Code Snippet:

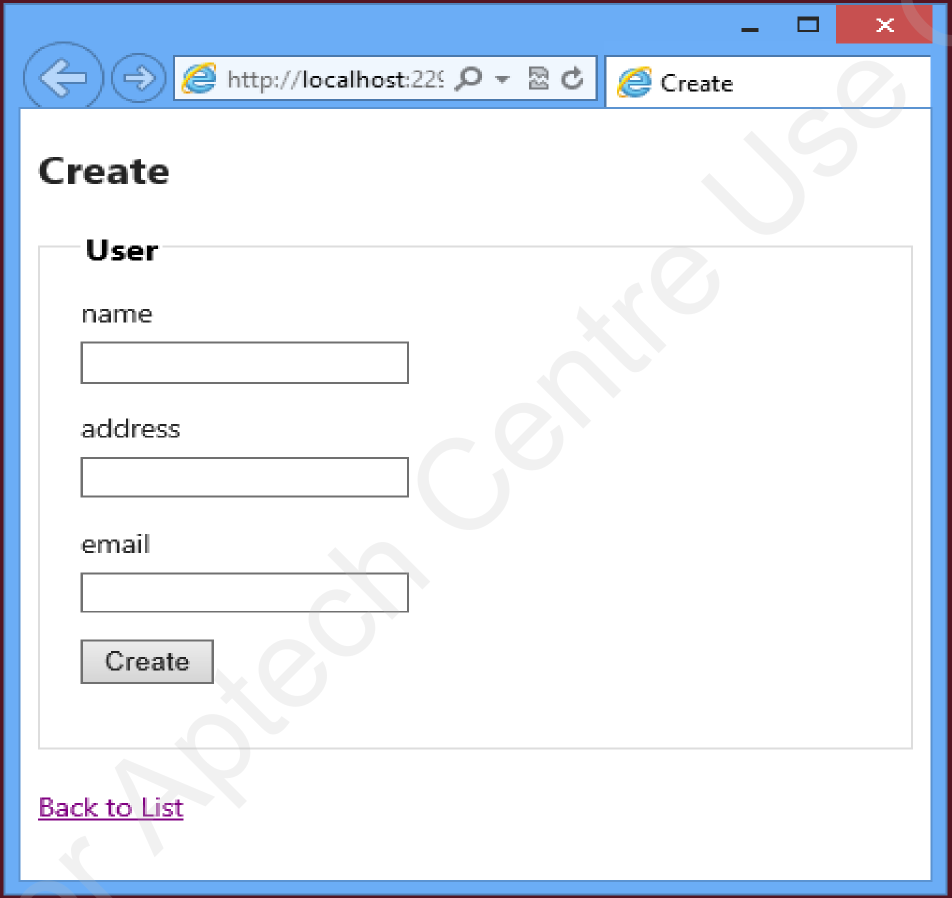
```
@Html.EditorFor(model =>model.address)
@Html.ValidationMessageFor(model =>model.address)
</div>
<div class="editor-label">
@Html.LabelFor(model =>model.email)
</div>
<div class="editor-field">
@Html.EditorFor(model =>model.email)
@Html.ValidationMessageFor(model =>model.email)
</div>
<p>
<input type="submit" value="Create" />
</p>
</fieldset>
}
<div>
@Html.ActionLink("Back to List", "Index")
</div>
@section Scripts {
@Scripts.Render("~/bundles/jqueryval")
}
```

Create Template 5-6

- In this code,
  - The `BeginForm` helper method starts a form.
  - The `Html.ValidationSummary()` validation helper displays the summary of all the error messages at one place.
  - The `Html.LabelFor()` helper method displays an HTML label element with the name of the property.
  - The `Html.EditorFor()` helper method displays a textbox that accepts the value of a model property.
  - The `Html.ValidationMessageFor()` validation helper method displays a validation error message for the associated model property.

Create Template 6-6

- Following figure shows the output of auto-generated markup using the Create template:



http://localhost:22

Create

Create

User

name

address

email

Back to List

- When the user enters data in the form and clicks the **Create** button, an HTTP POST request is sent to the `Create()` action method of the controller.

Edit Template 1-4

- The Edit template can be used whenever you want to generate a view that required to be used for modifying the details of an existing object stored in a data store.
- To display a view based on the Edit template, you need to create an action method to pass the model object to be edited to the view.
- Following code shows the action method named `Edit()`:

Code Snippet:

```
public ActionResult Edit()
    {
      return View();
    }
```

- Once you have created the `Edit()` action method in the controller, you can use Visual Studio.NET to create the view using the Edit template. To create the view using the Edit template in Visual Studio.NET, you need to select **Edit** from the **Scaffold templates** drop-down list.
- After creating a view named, `Edit` for the User model using the Edit template, Visual Studio.NET generates the markup for the view.
- In this code, ViewData is used to display the values of the Message and CurrentTime keys.

Edit Template 2-4

- Following figure shows the output of creating the view using the Edit template:

Code Snippet:

```
@model MVCModelDemo.Models.User
@{
ViewBag.Title = "Edit";
}
<h2>Edit</h2>
@using (Html.BeginForm()) {
@Html.ValidationSummary(true)
<fieldset>
<legend>User</legend>
@Html.HiddenFor(model => model.Id)
<div class="editor-label">
@Html.LabelFor(model => model.name)
</div>
<div class="editor-field">
@Html.EditorFor(model => model.name)
@Html.ValidationMessageFor(model => model.name)
</div>
<div class="editor-label">
@Html.LabelFor(model =>model.address)
</div>
```

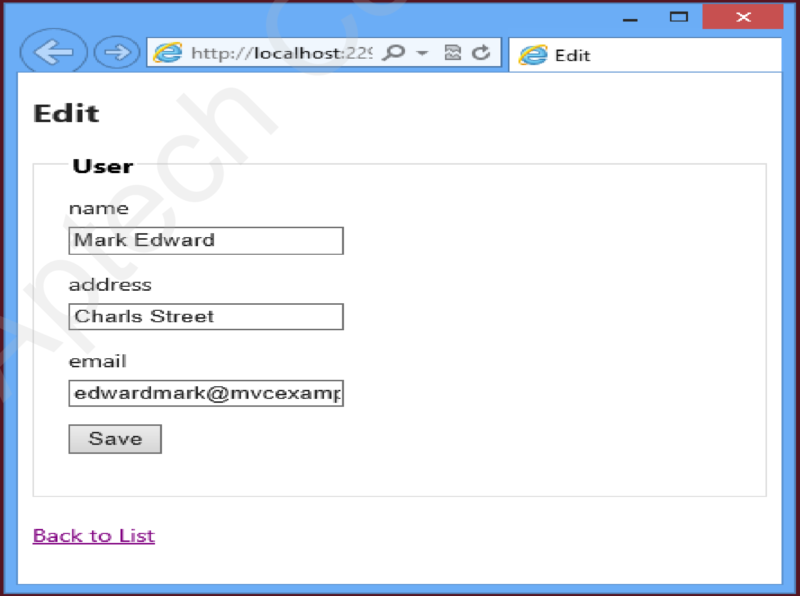
Edit Template 3-4

Code Snippet:

```
<div class="editor-field">
@Html.EditorFor(model =>model.address)
@Html.ValidationMessageFor(model =>model.address)
</div>
<div class="editor-label">
@Html.LabelFor(model =>model.email)
</div>
<div class="editor-field">
@Html.EditorFor(model =>model.email)
@Html.ValidationMessageFor(model =>model.email)
</div>
<p>
<input type="submit" value="Save" />
</p>
</fieldset>
}
<div>
@Html.ActionLink("Back to List", "Index")
</div>
@section Scripts {
@Scripts.Render("~/bundles/jqueryval")
}
```

Edit Template 4-4

- In this code,
  - The `Html.LabelFor()` helper method displays an HTML label element with the name of the property.
  - The `Html.EditorFor()` helper method displays a textbox to accept the value of a model property.
  - The `Html.ValidationMessageFor()` helper method displays a validation error message.
- Following figure shows the output of creating the view using the Edit template:



http://localhost:22

Edit

Edit

User

name

Mark Edward

address

Charls Street

email

edwardmark@mvcexamp

Save

Back to List

Details Template 1-3

- The Details template allows you to create a view that displays details of the `User` model.
- Once you have created the `Details()` action method in the controller, and a view using the Details template in Visual Studio.NET, it generates the markup for the view.
- Following code snippet shows the auto-generated markup when you create the view using the Details template:

Code Snippet:

```
@model MVCModelDemo.Models.User
@{
ViewBag.Title = "Details";
}
<h2>Details</h2>
<fieldset>
<legend>User</legend>
<div class="display-label">
@Html.DisplayNameFor(model => model.name)
</div>
<div class="display-field">
@Html.DisplayFor(model => model.name)
</div>
```

Details Template 2-3

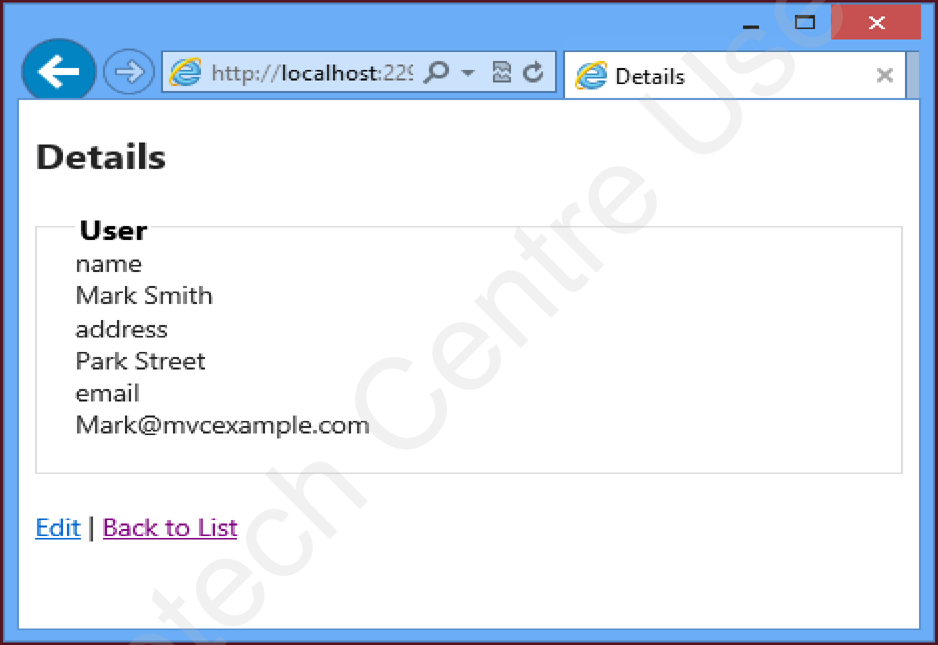
Code Snippet:

```
<div class="display-label">
@Html.DisplayNameFor(model =>model.address)
</div>
<div class="display-field">
@Html.DisplayFor(model =>model.address)
</div>
<div class="display-label">
@Html.DisplayNameFor(model =>model.email)
</div>
<div class="display-field">
@Html.DisplayFor(model =>model.email)
</div>
</fieldset>
<p>
@Html.ActionLink("Edit", "Edit", new { id=Model.Id }) |
@Html.ActionLink("Back to List", "Index")
</p>
```

- In this code, the `Html.DisplayNameFor()` helper method displays the name of model properties and the `Html.DisplayFor()` helper method displays the values of the model properties.

Details Template 3-3

- Following figure shows the output of auto-generated markup for Details template:



Details

User

name
Mark Smith
address
Park Street
email
Mark@mvcexample.com

Edit | Back to List

Delete Template 1-4

- Allows generating a view that allows a user to delete an existing object from a data store.
- To create a view based on the Delete template, first you need to create an action method that passes the model object to be deleted to the view.
- After you create the `Delete()` action method, and a view for the User model using the Delete template in Visual Studio.NET, it generates the markup for the view.

Delete Template 2-4

- Following code snippet shows the auto-generated markup when you create a view using the Delete template:

Code Snippet:

```
@model MVCModelDemo.Models.User
@{
ViewBag.Title = "Delete";
}
<h2>Delete</h2>
<h3>Are you sure you want to delete this?</h3>
<fieldset>
<legend>User</legend>
<div class="display-label">
@Html.DisplayNameFor(model => model.name)
</div>
<div class="display-field">
@Html.DisplayFor(model => model.name)
</div>
<div class="display-label">
@Html.DisplayNameFor(model =>model.address)
</div>
<div class="display-field">
@Html.DisplayFor(model =>model.address)
</div>
```

Delete Template 3-4

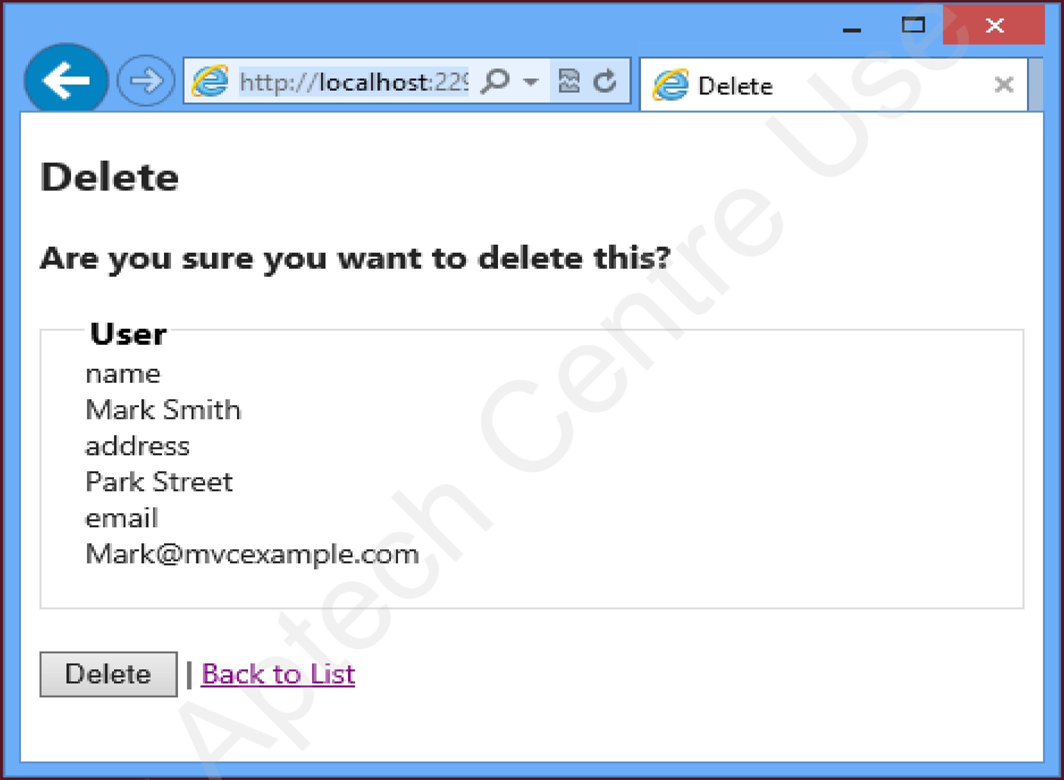
Code Snippet:

```
<div class="display-label">
@Html.DisplayNameFor(model =>model.email)
</div>
<div class="display-field">
@Html.DisplayFor(model =>model.email)
</div>
</fieldset>
@using (Html.BeginForm()) {
<p>
<input type="submit" value="Delete" /> |
@Html.ActionLink("Back to List", "Index")
</p>
}
```

- In this code, the `Html.DisplayNameFor()` helper method displays the names of model properties and the `Html.DisplayFor()` helper method displays the values of the model properties.
- In addition, the `Html.Actionlink()` helper method is used to create a link to list the details for a product.

Delete Template 4-4

- Following figure shows the output of creating view using the Delete template:



Delete

Are you sure you want to delete this?

User

name
Mark Smith
address
Park Street
email
Mark@mvcexample.com

Delete | Back to List

Summary

- In an ASP.NET MVC application, a model represents data associated with the application.
- In the MVC pattern, there are three types of models, where each model has specific purpose.
- The MVC Framework provides helper methods that you can use only in strongly typed views.
- The process of mapping the data in an HttpRequest object to a model object is known as model binding.
- The MVC Framework provides a model binder that performs model binding in application.
- The ASP.NET MVC Framework provides a feature called scaffolding that allows you to generate views automatically.
- Visual Studio.NET simplifies the process of creating views for an action method using the different scaffolding template.