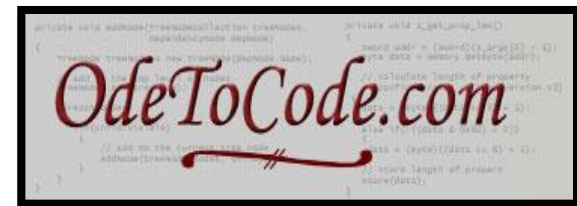


ASP.NET MVC

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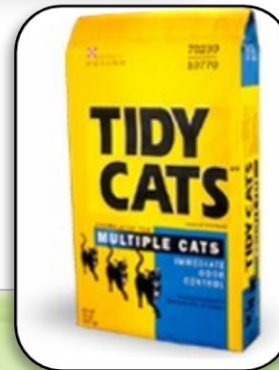
Background - 1999



http +



+



=



Active Server Pages

```
<%  
    Dim i  
    Dim j  
%>  
<TABLE BORDER="1"><TR><%  
    For i = 0 To rs.Fields.Count - 1  
        %><TD><B><%=rs.Fields(i).Name%></B></TD><%  
    Next  
%></TR><%  
    i = 1  
    Do While Not rs.EOF  
        %><TR><%  
        For j = 0 To rs.Fields.Count-1  
            %><TD><%=rs.Fields(j).Value%></TD><%  
        Next  
        %></TR><%  
        rs.MoveNext  
        i=i+1  
    Loop  
%></TABLE>
```

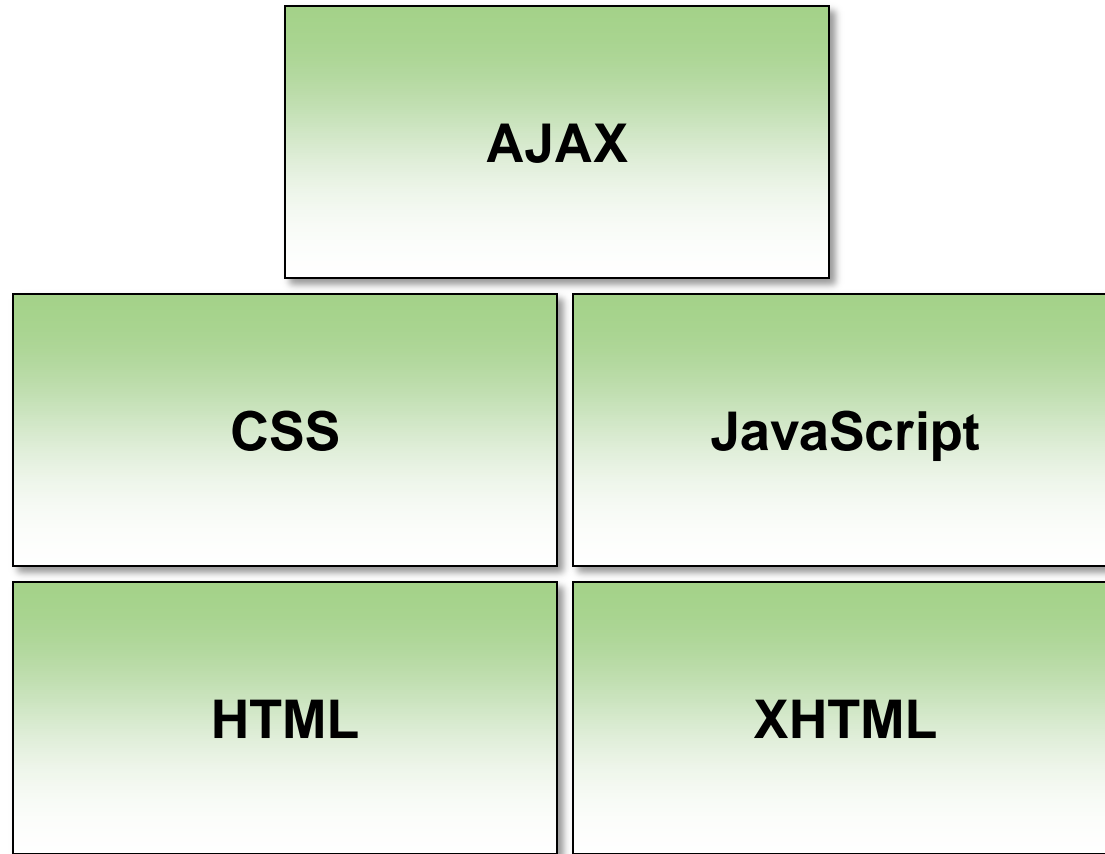
ASP.NET

```
<form id="form1" runat="server">
<div>
    <asp:DataGrid runat="server" ID="_grid" >
        <ItemStyle BackColor="Aqua" />
        <AlternatingItemStyle BackColor="Aquamarine" />
    </asp:DataGrid>
</div>
<asp:Button runat="server" ID="_button" onclick="_button_Click" />
</form>
```

```
protected void _button_Click(object sender, EventArgs e)
{
    _grid.DataSource = FetchEmployees();
    _grid.DataBind();
}
```

The Web 1999-2009

- Web standards evolve and strengthen



Unsolved Mysteries

```
<asp:Menu runat="server" />  
<asp:Login runat="server" />  
<asp:Wizard runat="server" />
```



Viewstate

```
<input type="hidden" name="__VIEWSTATE" id="__VIEWSTATE" value="/wEPDwUKMTUyMjI0OTQ4Ng9kFgICAw9kFgICAQ88KwALAgAPFggeCERv5hhdGFLZXlzfGgAeC18hSXRlbUNvdW50Aph1Hg1QYWdlQ291bnQCAR4VXyFEYXRhU291cmNlSXRlbUNvdW50Aph1ZAoUKwABPCsABAEAFggeCkh1YWR1clRleHQFAklEHg1EYXRhRml1bGQFAklEHg5Tb3J0RXhwcMvZc2lvdGUCSUQeCFJlYWRPbmx5aBYCZg9kFrDgAQIBD2QWAmYPDxYCHgRUZXh0BQEWZGQCAg9kFgJmDw8WAh8IBQExZGQCAw9kFgJmDw8WAh8IBQEyZGQCBw9kFgJmDw8WAh8IBQEZGQCBQ9kFgJmDw8WAh8IBQE0ZGQCBg9kFgJmDw8WAh8IBQE1ZGQCBw9kFgJmDw8WAh8IBQE2ZGQCBw9kFgJmDw8WAh8IBQE3ZGQCCQ9kFgJmDw8WAh8IBQE4ZGQCCg9kFgJmDw8WAh8IBQE5ZGQCCw9kFgJmDw8WAh8IBQIxMGRkAgwZBYCZg8PFgIfCAUCMTRkZAIQD2QWAmYPDxYCHwgFAjEYzGQCDg9kFgJmDw8WAh8IBQIxmRkAg8PBYCZg8PFgIfCAUCMTRkZAIQD2QWAmYPDxYCHwgFAjE1ZGQCEQ9kFgJmDw8WAh8IBQIxmRkAhIPZBYCZg8PFgIfCAUCMTdkZAITD2WAmYPDxYCHwgFAjE4ZGQCFw9kFgJmDw8WAh8IBQIxmRkAhUPZBYCZg8PFgIfCAUCjBkZAIWD2QWAmYPDxYCHwgFAjIxZGQCFw9kFgJmDw8WAh8IBQIymMkAhgPZBYCZg8PFgIfCAUCMjNkZAIzD2QWAmYPDxYCHwgFAjI0ZGQCGg9kFgJmDw8WAh8IBQIynNRkhsPZBYCZg8PFgIfCAUCMjZkZAIcD2QWAmYPDxYCHwgFAjI3ZGQCHQ9kFgJmDw8WAhBQIyOGRkAh4PZBYCZg8PFgIfCAUCMjlkZAIcD2QWAmYPDxYCHwgFAjMwZGQCIa9kFmDw8WAh8IBQIzmWRkAiEPZBYCZg8PFgIfCAUCMzJkZAIcD2QWAmYPDxYCHwgFAjMzQCiw9kFgJmDw8WAh8IBQIznGRkAiQPZBYCZg8PFgIfCAUCMzVkJZAIcD2QWAmYPDxYwgFAjM2ZGQCJg9kFgJmDw8WAh8IBQIzn2RkAicPZBYCZg8PFgIfCAUCMzhkZAIcD2
```

WTF?

Client HTML

```
<input type="text"  
      value="29.99"  
      name="ctl100$ContentPlaceHolder1$WebUserControl1$_grid$ctl2364$_price"  
      id="ctl100_ContentPlaceHolder1_WebUserControl1__grid_ctl2364__price" />
```

```
<span>  
  <a class="ctl100_ContentPlaceHolder1_WebUserControl1__menu_1"  
      href="javascript:__doPostBack('...','bHome')">  
    Home  
  </a>  
</span>
```


Competition



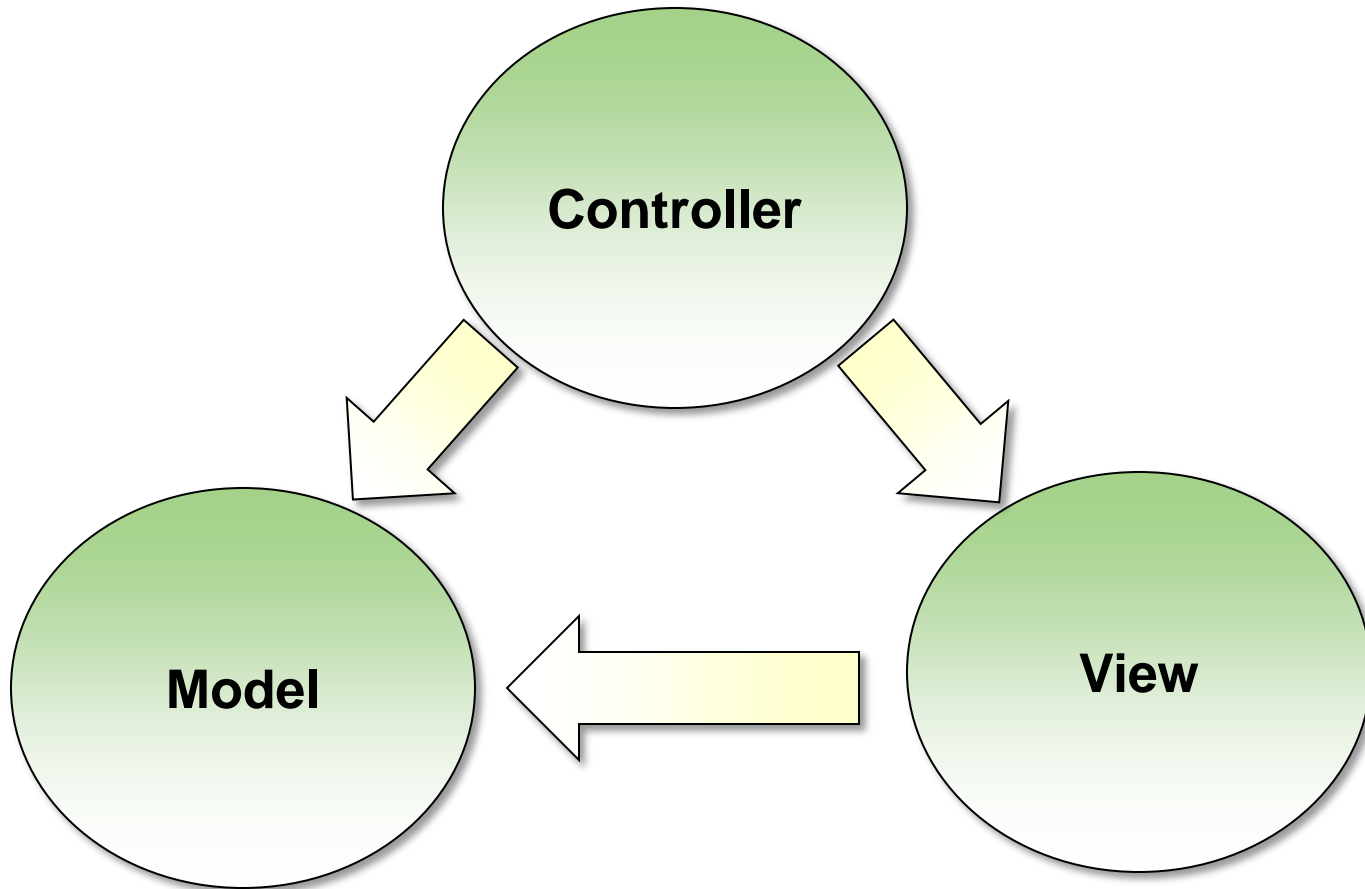
- **Convention over configuration**
- **Separation of concerns**
- **Clean URLs and markup**



ASP.NET MVC Design Goals

- **Does not replace web forms**
 - An alternative project type
- **Still runs on ASP.NET!!!**
 - Caching, modules, master pages, providers, handlers, session state ...
- **Embrace the web**
 - No illusions of state – no page lifecycle
 - Clean URLs and clean HTML
- **Extensible**
 - Pluggable view engines
 - Controller factories
- **Testable**
 - Maintains a strict separation of concerns

MVC – The Pattern



MVC Routing

- **System.Web.Routing**
 - Part of ASP.NET and released with .NET 3.5 SP1
- **Directs incoming request to an MVC controller**
 - Define routes during application startup
 - Map URLs to controller action with parameters

```
routes.MapRoute(  
    "Default",           // Route name  
    "{controller}/{action}/{id}", // URL with parameters  
    new {  
        controller = "Home",  
        action = "Index",  
        id = ""  
    } // Parameter defaults
```

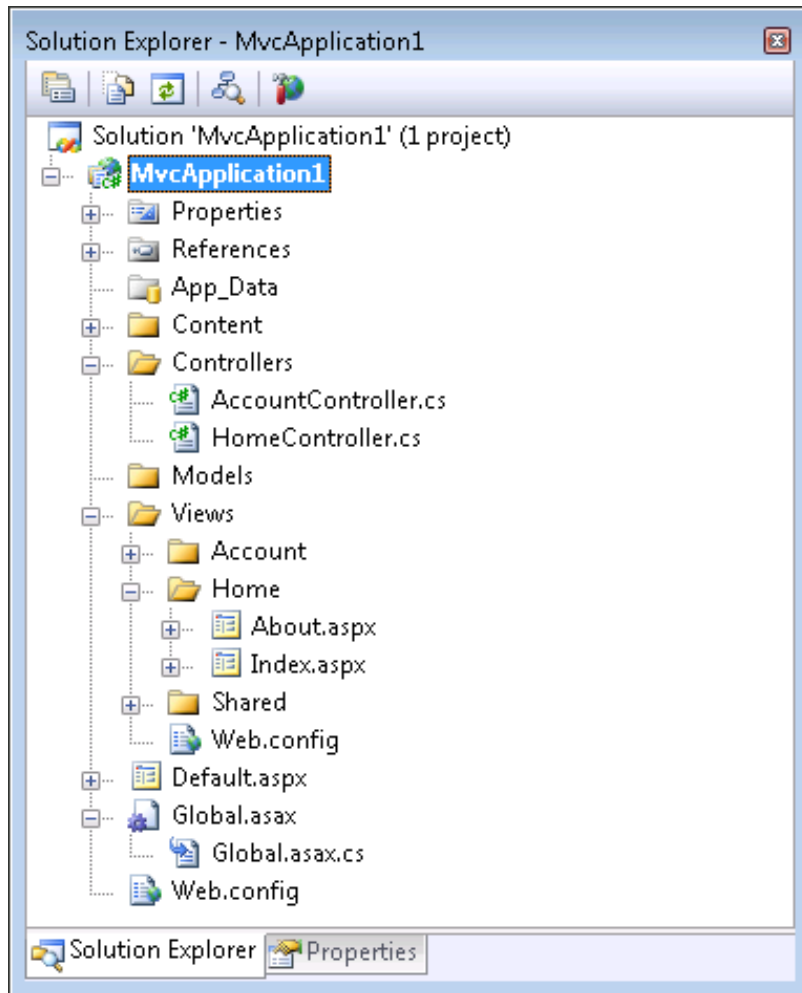
MVC Controllers

- **Public methods are “actions”**
 - Method invoked by ASP.NET once it determines the proper route
 - Controller can build the model and place in ViewData
 - Return value of ActionResult tells the framework where to go next

```
public class HomeController : Controller
{
    public ActionResult Index()
    {
        ViewData["Title"] = "Home Page";
        ViewData["Message"] = "Welcome to ASP.NET MVC!";

        return View("Home");
    }
}
```

Controller & View Conventions



- **Controllers folder**
 - Recommended location for controllers.
 - Controller type name must end with Controller (thus omitted from the route).
- **Views folder**
 - Recommended location for views
 - .aspx, .ascx, .master files
 - Subfolders for every controller
 - Shared folder contains views used by multiple controllers

View Rendering

- **Views are .aspx files**

- Derive from ViewPage, which derives from Page
- Have a ViewData dictionary property populated from the controller
- Still use markup, can still contain server-side script
- No server-side form required
 - No __VIEWSTATE
 - No control state

- **Strongly typed views**

- Derive from ViewPage<T> instead of ViewPage
- Generic type parameter represents the type of the model.

Simple View

```
<%@ Page Language="C#"
    MasterPageFile="~/Views/Shared/Site.Master" %>

<asp:Content ID="indexContent"
    ContentPlaceHolderID="MainContent"
    runat="server">

    <h2><%= Html.Encode(ViewData["Message"]) %></h2>

</asp:Content>
```


ViewPage<T>

```
public class ProcessController : Controller
{
    public ActionResult Index()
    {
        var data = from p in Process.GetProcesses()
                   select p;

        return View(data);
    }
}
```

```
public partial class Index :
    ViewPage<IEnumerable<System.Diagnostics.Process>>
```

```
<% foreach (var process in ViewData.Model) { %>
    <li>
        <%= Html.Encode(process.ProcessName) %>
    </li>
<% } %>
```

View Helpers

- **Helpers available via properties of ViewPage**

Property	Class	Description
Ajax	AjaxHelper	Invoke controller actions asynchronously and update client content
Html	HtmlHelper	Create anchor tags, encode HTML
Url	UrlHelper	Create URLs to invoke controller actions

```
<%= Html.ActionLink("About Us", "About", "Home")%>
```

Renders

```
<a href="/Home/About">About Us</a>
```

Action Filters

- **Action filters are attributes applied to action methods**
- **Can execute code before and after action method**
 - Authorization
 - Error handling
 - Localization
 - Logging
- **Built in filter - OutputCacheAttribute**
- **Custom filters built by inheriting from ActionFilterAttribute**

Unit Testing

- **A Focus for ASP.NET MVC**
 - MVC Project Wizard can create associated test project
 - Plays well with custom test frameworks
 - NUnit, XUnit, MBUnit
- **No hard dependencies**
 - HttpContext was a problem in testing web forms code-behind logic
- **MVC uses abstract base classes and interfaces**
 - Can be mocked or stubbed for testing
 - IViewEngine
 - HttpSessionStateBase
 - HttpContextBase

Resources

- **Download ASP.NET MVC - <http://aspnet.codeplex.com/>**
 - ASP.NET 1.0
 - ASP.NET 2.0 Preview 2
 - License – Microsoft Public License (MS-PL)
- **Also check out:**
 - MVCContrib (<http://mvcccontrib.org/>)
 - MVC T4 Tempalte (<http://aspnet.codeplex.com>)

Questions ?

- <http://odetocode.com/blogs/scott>
- <http://twitter.com/OdeToCode>

