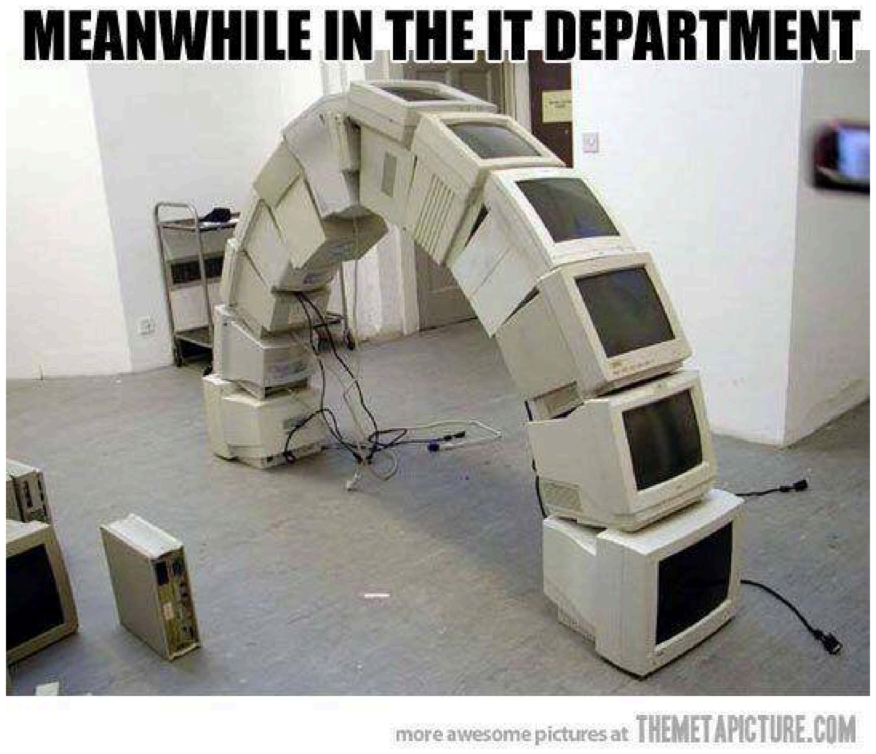
ASP MVC Basics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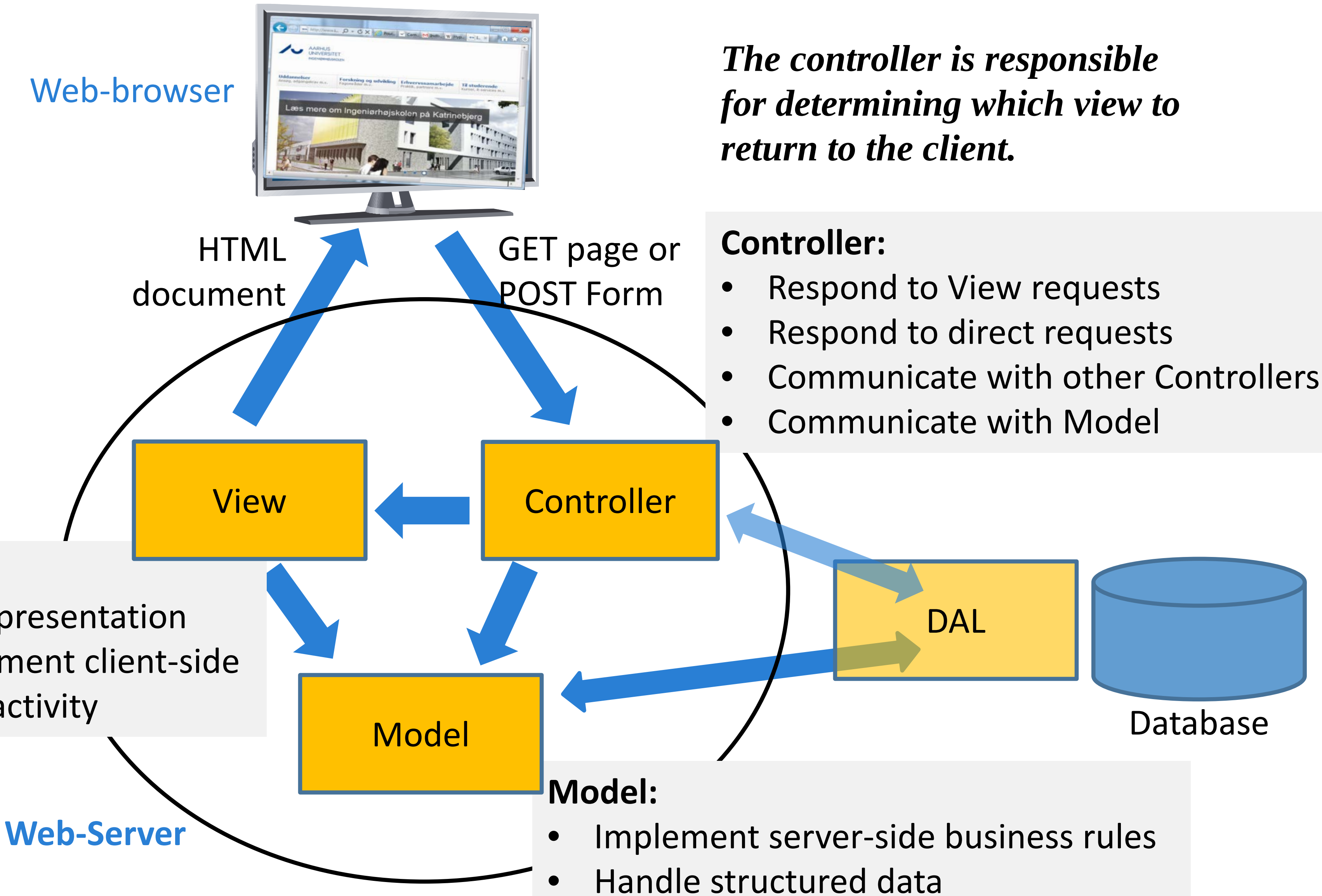
ASP.NET – MVC - Architecture



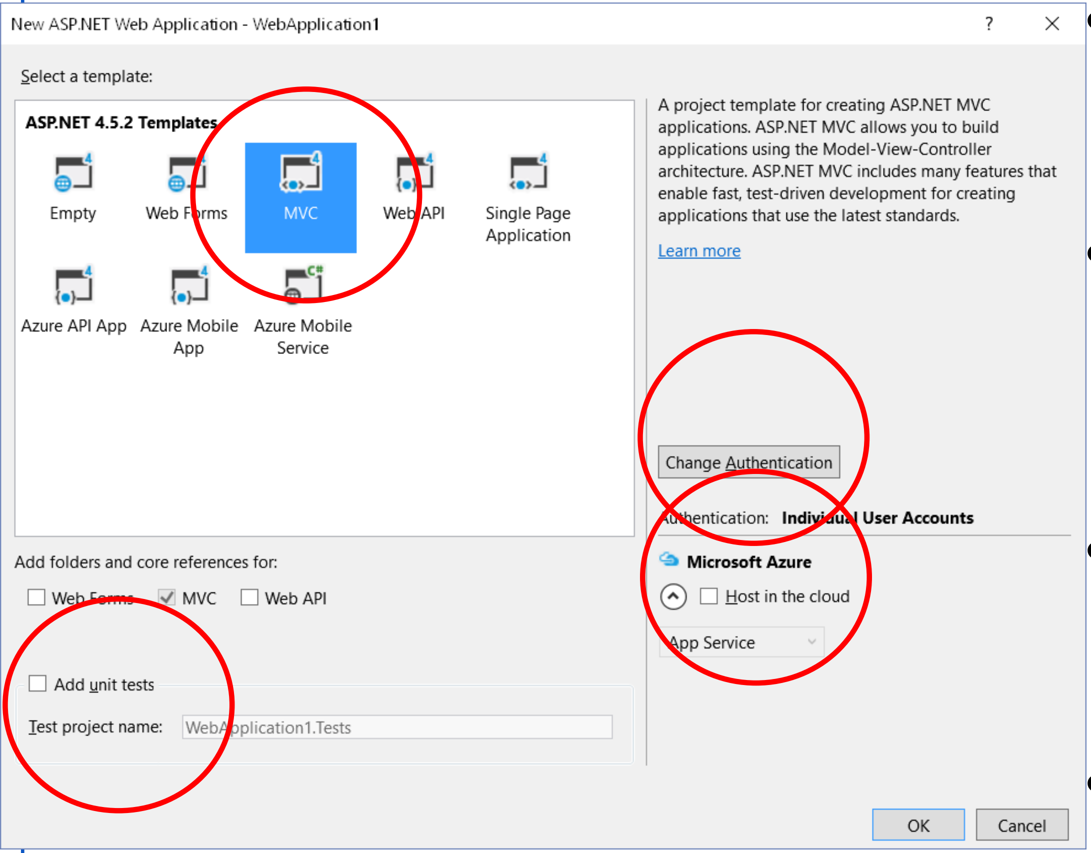
The controller is responsible for determining which view to return to the client.

Controller:
- Respond to View requests
- Respond to direct requests
- Communicate with other Controllers
- Communicate with Model

View:
- Build presentation
- Implement client-side interactivity

Model:
- Implement server-side business rules
- Handle structured data
- Data persistence
- Data manipulation

MVC Project Templates



New ASP.NET Web Application - WebApplication1

Select a template:

ASP.NET 4.5.2 Templates

A project template for creating ASP.NET MVC applications. ASP.NET MVC allows you to build applications using the Model-View-Controller architecture. ASP.NET MVC includes many features that enable fast, test-driven development for creating applications that use the latest standards.

Learn more

Change Authentication

Authentication: **Individual User Accounts**

Microsoft Azure

☐ Host in the cloud

App Service

Add folders and core references for:

☐ Web Forms ✓ MVC ☐ Web API

☐ Add unit tests

Test project name: WebApplication1.Tests

- Empty
  - You add everything
- **MVC**
  - Set up folders etc. for an MVC app
- Web API
  - No views (for AJAX)
- Single Page Application
  - Only 1 view

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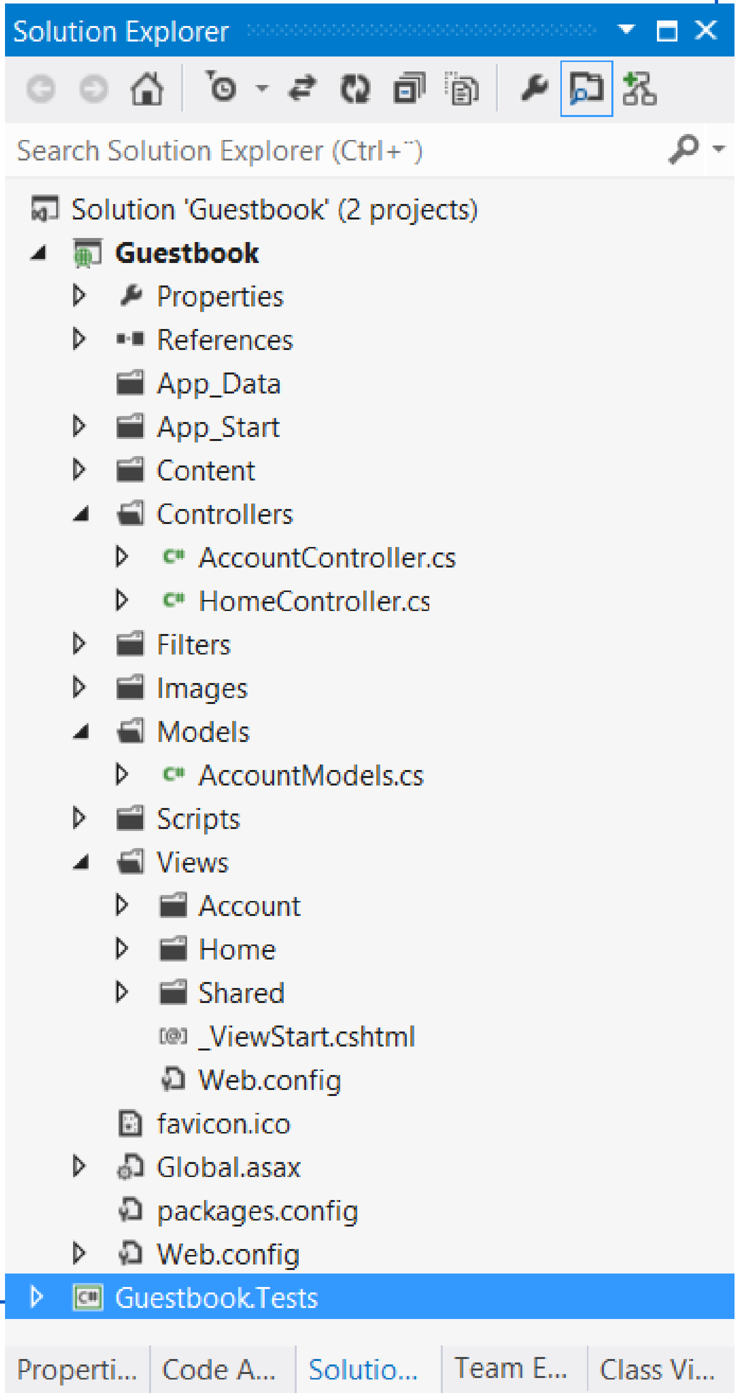
ASP.NET – MVC: File Structure

- The **App_Data** directory can be used to store databases, XML files, or any other data that your application needs
- The **App_Start** directory contains configuration files
- The **Content** directory contain any noncode assets that need to be deployed with your application. These typically include CSS files
- The **controller** is the coordinator that is responsible for processing input and then deciding which actions should be performed

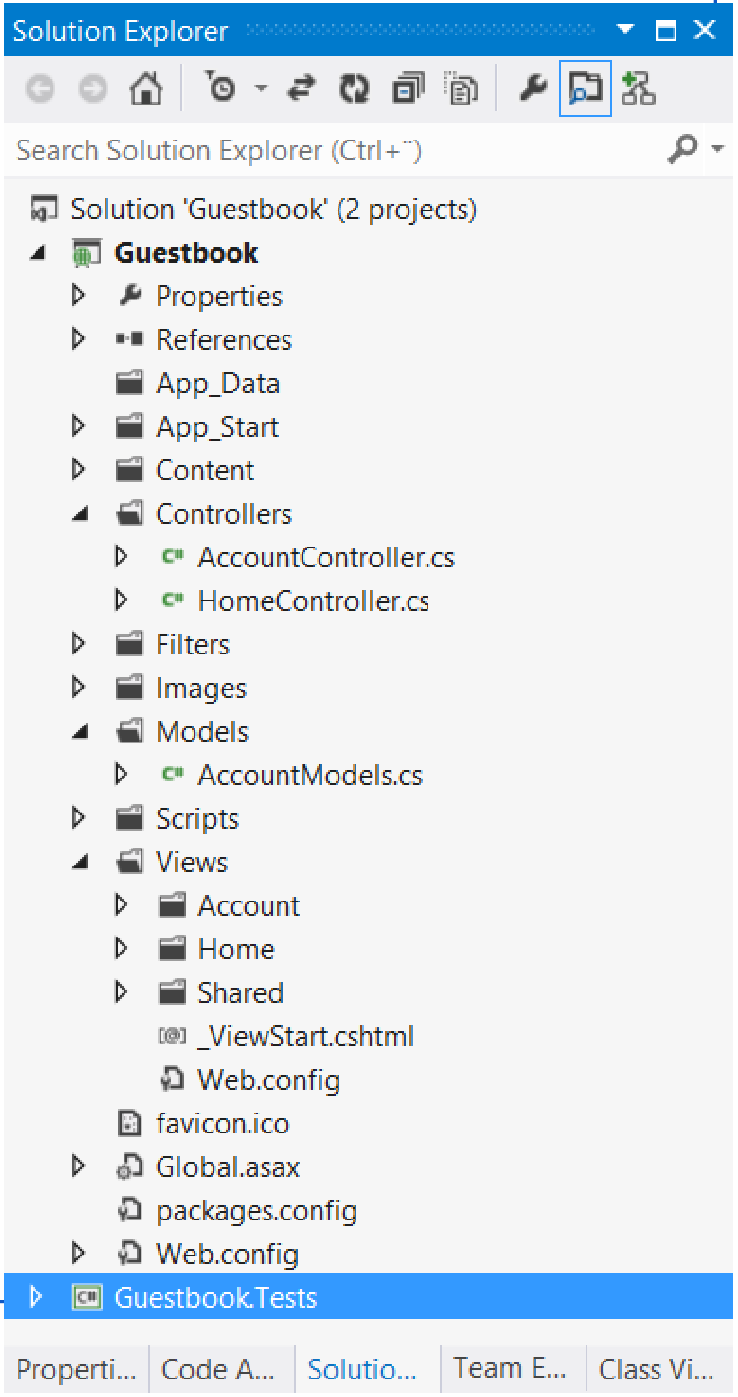


```
Solution Explorer
Search Solution Explorer (Ctrl+¨)
Solution 'Guestbook' (2 projects)
◢ Guestbook
    ▷ Properties
    ▷ References
      App_Data
    ▷ App_Start
    ▷ Content
    ◢ Controllers
        ▷ AccountController.cs
        ▷ HomeController.cs
    ▷ Filters
    ▷ Images
    ◢ Models
        ▷ AccountModels.cs
    ▷ Scripts
    ◢ Views
        ▷ Account
        ▷ Home
        ▷ Shared
          _ViewStart.cshtml
          Web.config
      favicon.ico
    ▷ Global.asax
      packages.config
    ▷ Web.config
▷ Guestbook.Tests
```

Properti... | Code A... | Solutio... | Team E... | Class Vi...

ASP.NET – MVC: File Structure

- The **Models** directory is typically used to contain any classes that represent the core concepts of your application, or classes that hold data in a format that is specific to a particular view
- The **Scripts** directory is where you can place any JavaScript files used by your application
- The **Views** directory contains the templates used to render your user interface. Each of these templates is represented as a Razor view (a .cshtml file) within a subdirectory named after the controller responsible for rendering that view
- The **Global.asax** file lives in the root of the project structure and contains initialization code that runs when the application is first started up



```
Solution 'Guestbook' (2 projects)
  Guestbook
    Properties
    References
    App_Data
    App_Start
    Content
    Controllers
      AccountController.cs
      HomeController.cs
    Filters
    Images
    Models
      AccountModels.cs
    Scripts
    Views
      Account
      Home
      Shared
      _ViewStart.cshtml
      Web.config
    favicon.ico
    Global.asax
    packages.config
    Web.config
  Guestbook.Tests
```

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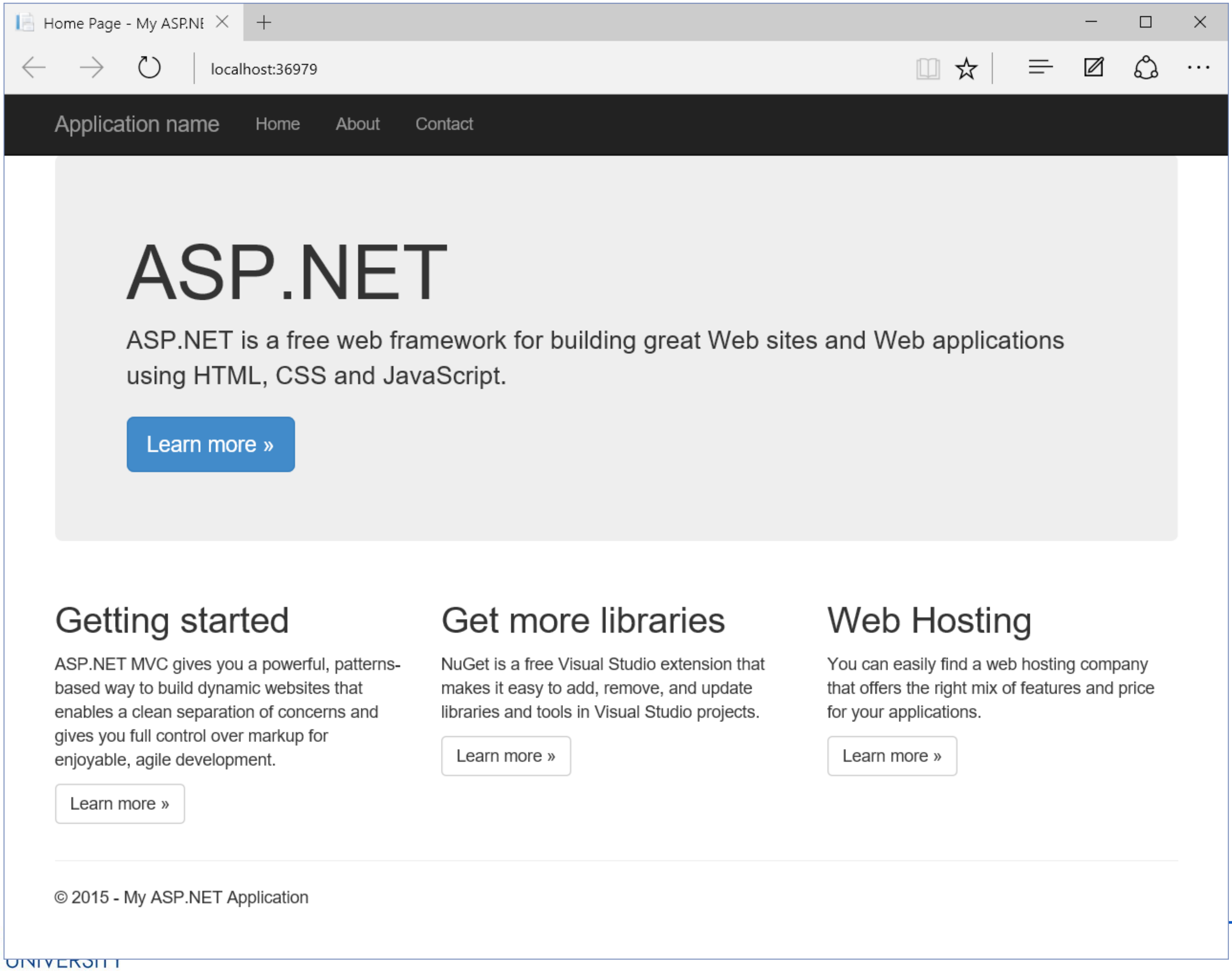
The Generated Start Page


Home Page - My ASP.NE

localhost:36979

Application name Home About Contact

ASP.NET

ASP.NET is a free web framework for building great Web sites and Web applications using HTML, CSS and JavaScript.

Learn more »

Getting started

ASP.NET MVC gives you a powerful, patterns-based way to build dynamic websites that enables a clean separation of concerns and gives you full control over markup for enjoyable, agile development.

Learn more »

Get more libraries

NuGet is a free Visual Studio extension that makes it easy to add, remove, and update libraries and tools in Visual Studio projects.

Learn more »

Web Hosting

You can easily find a web hosting company that offers the right mix of features and price for your applications.

Learn more »

© 2015 - My ASP.NET Application

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Convention-over-Configuration

- Means that the application will execute tasks based on the names of objects

- When you call **http://mysite.com/Account**, MVC will look for an **`AccountController`** object with an **`Index`** method
  - No custom code needs to be written to make this happen

- It's simply the convention that the name of the HTTP URL action corresponds to the name of the controller, and the default view will always be named Index

Controllers

- Controllers are represented as classes that inherit from the Controller base class, where individual methods (known as ***actions***) correspond to individual URLs

```
public class HomeController : Controller
    {
        public ActionResult Index()
        {
            ViewBag.Message = "Modify this template to jump-start your ASP...";
            return View();
        }

        public ActionResult About()
        {
            ViewBag.Message = "Your app description page.";
            return View();
        }

        public ActionResult Contact()
        {
            ViewBag.Message = "Your contact page.";
            return View();
        }
    }
```

THE VIEW

- Index.cshtml

```
<div class="jumbotron">
    <h1>ASP.NET MVC</h1>
    <p class="lead">ASP.NET is a free web framework for building great Web sites and
Web applications using HTML, CSS and JavaScript.</p>
    <p><a href="http://asp.net" class="btn btn-primary btn-lg">Learn more
&raquo;</a></p>
</div>

<div class="row">
    <div class="col-md-4">
        <h2>Getting started</h2>
        <p>
            ASP.NET MVC gives you a powerful, patterns-based way to build dynamic
websites that
            enables a clean separation of concerns and gives you full control over
markup
            for enjoyable, agile development.
        </p>
        <p><a class="btn btn-default"
href="http://go.microsoft.com/fwlink/?LinkId=301865">Learn more &raquo;</a></p>
    </div>
```

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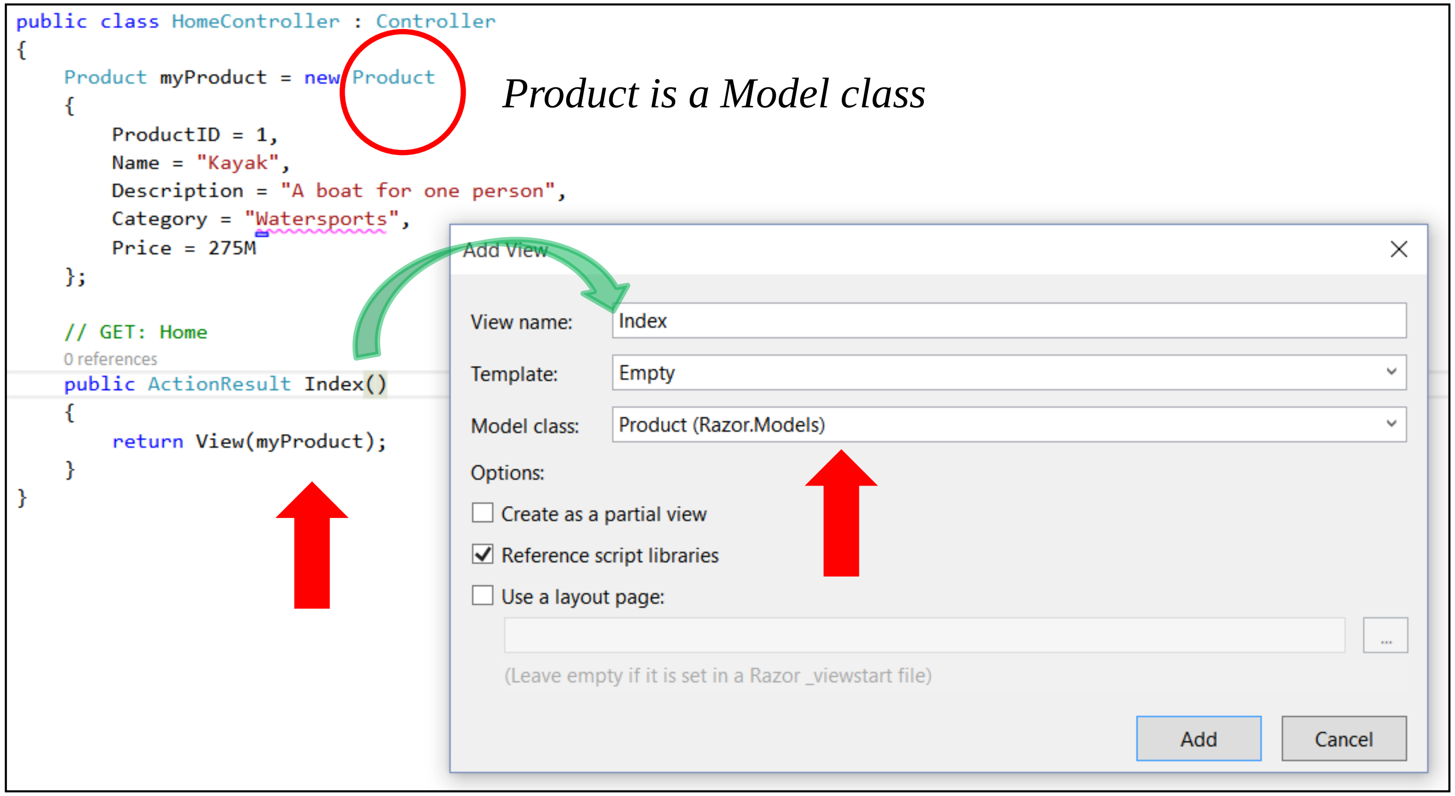
From Controller to View

- Right-click on an action and select Add-View



```
public class HomeController : Controller
{
    Product myProduct = new Product
    {
        ProductID = 1,
        Name = "Kayak",
        Description = "A boat for one person",
        Category = "Watersports",
        Price = 275M
    };

    // GET: Home
    0 references
    public ActionResult Index()
    {
        return View(myProduct);
    }
}
```

Product is a Model class

Add View

View name: Index

Template: Empty

Model class: Product (Razor.Models)

Options:

- [ ] Create as a partial view
- [✓] Reference script libraries
- [ ] Use a layout page:

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

You can also use the ViewBag object to transfer data to the view, but properties of the ViewBag are weakly typed (ViewBag is of type dynamic)

MVC - Separation of Concerns

- The responsibilities of Controller and View

Component	Does Do	Doesn't Do
Controller (Action Method)	Pass a (view-) model object to the view	Pass formatted data to the view
View	Use the view model object to present content to the user	Change any aspect of the model object
Model	Contains data and business logic	View logic
VievModel (not always needed)	A composite object holding all the data needed for a view	business logic

ROUTING

Controlling URLs with routing

Controlling Urls with Routing

- ASP.NET MVC decouples the URL from a physical file by making use of URL routing to provide a way to map URLs without extensions to controller actions

The Default Route

- In a new ASP.NET MVC application, the default project templates creates a method called RegisterRoutes in the Global.asax file

- This method is responsible for configuring the routes for the application and is initially defined with two routes:
  - An ignore route and
  - the default route that follows the pattern:

    {controller}/{action}/{id}

The Default Route

```
public static void RegisterRoutes(RouteCollection routes)
{
   routes.IgnoreRoute("{resource}.axd/{*pathInfo}");

   routes.MapRoute(
          name: "Default",
          url: "{controller}/{action}/{id}",
          defaults: new { controller = "Home", action = "Index",
                         id = UrlParameter.Optional }
          );
}
```

URL	Method called
http://example.com/Users/Edit/5	UsersController.Edit(5)
http://example.com/Users/Edit	UsersController.Edit()
http://example.com/Users	UsersController.Index()
http://example.com	HomeController.Index()

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URL Pattern with Static Segments

- You can create patterns that have **static segments**

```
routes.MapRoute(
    "",
    "Products/{controller}/{action}",
    new { controller = "Labtop",
          action = "List"
});
```

URL	Method called
http://example.com/Products/Pc/Edit/	PcController.Edit()
http://example.com/Products/Pc/Edit/7	*No match*
http://example.com/Products	LabtopController.List()
http://example.com/Products/Tablet	TabletController.List()

Route Ordering

- The route system tries to match an incoming URL against the URL pattern of the route that was defined first, and proceeds to the next route only if there is no match
- The routes are tried in sequence until a match is found or the set of routes has been exhausted

- The result of this is that:
  the most specific routes must be defined first

References & Links

- https://docs.microsoft.com/da-dk/aspnet/mvc/
- **MVC Video Training** **https://docs.microsoft.com/da-dk/aspnet/mvc/pluralsight**
- https://www.asp.net/
- ASP.NET Core Succinctly http://files2.syncfusion.com/Downloads/Ebooks/ASP_NET_Core_Succinctly.pdf

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