



# Controller

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.NET

**Controllers** are responsible for responding to requests made against an ASP.NET website. Each browser request is mapped to a particular **controller**.

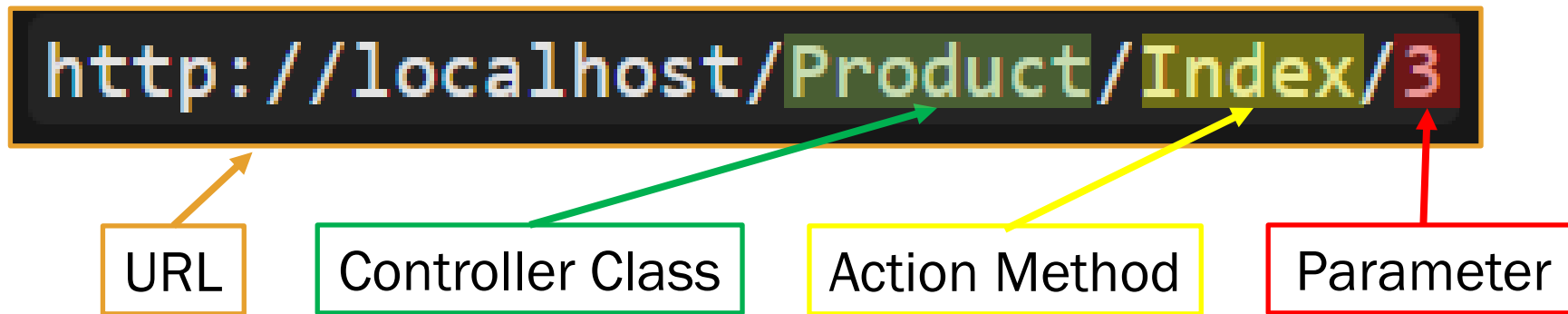
[HTTPS://DOCS.MICROSOFT.COM/EN-US/ASPNET/MVC/OVERVIEW/OLDER-VERSIONS-1/CONTROLLERS-AND-ROUTING/ASPNET-MVC-CONTROLLERS-OVERVIEW-CS#UNDERSTANDING-CONTROLLERS](https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/aspnet-mvc-controllers-overview-cs#understanding-controllers)

# ASP.NET URL Routing

<https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/asp-net-mvc-routing-overview-cs>

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The default route in an ASP.NET Core application maps the **first addition of a URL to a controller name**, **the second addition to the controller action**, and **the third addition to a named parameter**. The below URL equates to calling *Product.Index(3)*.



The routing configuration includes defaults for all three parameters. If a **controller** is not supplied, the route defaults 'Home'. If an **action** is not supplied, the action defaults to 'Index'. If there's no id, the id parameter defaults to an empty string.

# Controllers

<https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/aspnet-mvc-controllers-overview-cs>

If the URL, *http://localhost/Product/Index/3*, is entered into the browser, a **controller** named '**ProductController**' is invoked. **ProductController** is responsible for generating the response to the browser request. Convention (and default) is to route Urls to a named **controller**.

A **controller** is a regular C# class that derives from either the base **System.Web.Mvc.Controller** class for MVC apps or the **Microsoft.AspNetCore.Mvc.ControllerBase** class for APIs. These base classes provide the controller with valuable functionality.

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Web;
using System.Web.Mvc;
using System.Web.Mvc.Ajax;

namespace MvcApplication1.Controllers
{
    public class ProductController : Controller
    {
        //
        // GET: /Products/

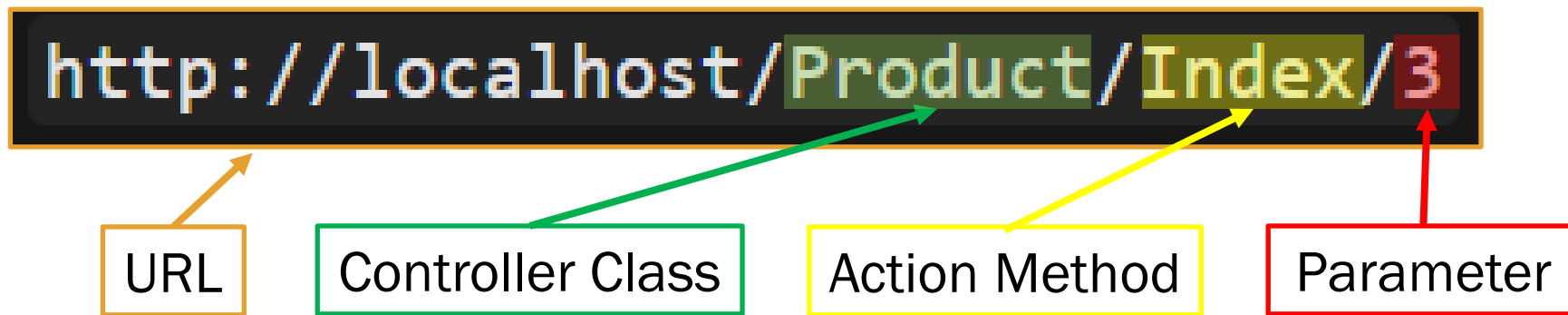
        public ActionResult Index()
        {
            // Add action logic here
            return View();
        }
    }
}
```

# Controller Actions

<https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/aspnet-mvc-controllers-overview-cs#understanding-controller-actions>

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An **action** method is a method in a **controller** class that gets called when you enter a URL with the **action** specified. A request is made URL `http://localhost/Product/Index/3`, will be routed to the Product **controller** and the Index **action** with the parameter 3.



A **controller action** must be a **public method** of a **controller** class. Any **public method** in a **controller** class is exposed as a **controller action**. A **method** used as a **controller action** cannot be overloaded.

# ActionResult<>

<https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/aspnet-mvc-controllers-overview-cs#understanding-action-results>

When a browser makes a request, a ***controller action*** returns a response in the form of an ***ActionResult***.

```
[HandleError]
public class HomeController : Controller
{
    public ActionResult Index(string id)
    {
        return View();
    }
}
```

```
public class StatusController : Controller
{
    public ActionResult Index()
    {
        return Content("Hello World!");
    }
}
```

ActionResult	Controller Base Class Method	Purpose
ViewResult	Return View();	Returns a HTML <b>View</b> to the browser
EmptyResult	Return new EmptyResult()	Returns empty (void)
RedirectResult	Return RedirectToAction(Index);	Calls another <b>Action</b> Method.
ContentResult	Content("Hello World!");	Returns text to the browser

```
public class HomeController : Controller
{
    // GET: for main view
    public EmptyResult EmptyData()
    {
        return new EmptyResult();
    }
}
```

# Filter Attributes

<https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/understanding-action-filters-cs#the-different-types-of-filters>

<https://docs.microsoft.com/en-us/aspnet/web-api/overview/security/authentication-filters#setting-an-authentication-filter>

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The ASP.NET framework supports four different types of filters. Here they are listed in order of execution.

- [Authorization filters](#) – Implements the *IAuthorizationFilter* attribute. Always executes first.
- [Action filters](#) – Implements the *IActionFilter* attribute.
- [Result filters](#) – Implements the *IResultFilter* attribute.
- [Exception filters](#) – Implements the *IExceptionFilter* attribute. Always executes last. Can be used for logging.

To implement any filter, create a class that inherits the base ***Filter*** class and implements one or more of the ***IAuthorizationFilter***, ***IActionFilter***, ***IResultFilter***, or ***IExceptionFilter*** interfaces.

```
[Authorize] // Require authenticated requests.
public class HomeController : ApiController
{
    public IHttpActionResult Get() { . . . }

    [IdentityBasicAuthentication] // Enable Basic authentication for this action.
    public IHttpActionResult Post() { . . . }
}
```



# Action Filters

<https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/understanding-action-filters-cs>

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An **action filter** is an **attribute** that you can apply to a **controller action** or an entire **controller**. It modifies the way in which the **action** is executed. The ASP.NET framework includes several **action filters**:

- [OutputCache](#) – caches the output of a controller action for a specified amount of time.
- [HandleError](#) – handles errors raised when a controller action executes.
- [Authorize](#) – enables you to restrict access to a user or role.
- You can also [create custom filters](#).

You can apply more than one action filter at a time.

```
using System;
using System.Web.Mvc;

namespace MvcApplication1.Controllers
{
    public class DataController : Controller
    {
        [OutputCache(Duration=10)]
        public string Index()
        {
            return DateTime.Now.ToString("T");
        }
    }
}
```

This **OutputCache** filter causes the returned value to be cached for 10 seconds. If you repeatedly invoke the Index() **action** by hitting the Refresh button, you will see the same time for 10 seconds.



# Request Parameters

<https://docs.microsoft.com/en-us/aspnet/mvc/overview/older-versions-1/controllers-and-routing/creating-a-route-constraint-cs>

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The last part of a Url is the query parameter. This value is passed in the **Action** Method where it can be acted upon.

To prevent an invalid value from being passed to the **Action** Method, you can

- define constraints when defining routes.
- check the value of the parameter and **RedirectToAction()** to handle the input correctly.

```
using System.Web.Mvc;

namespace MvcApplication1.Controllers
{
    public class CustomerController : Controller
    {
        public ActionResult Details(int? id)
        {
            if (!id.HasValue)
                return RedirectToAction("Index");

            return View();
        }

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

# HTTP Verbs in ASP.NET

<https://docs.microsoft.com/en-us/aspnet/web-api/overview/web-api-routing-and-actions/routing-in-aspnet-web-api>

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Instead of using the naming convention for **HTTP verbs**, you can explicitly specify the **HTTP verb** for an **action** by decorating the **action** method with one of the following **attributes**:

[HttpGet]	[HttpPut]
[HttpDelete]	[HttpOptions]
[HttpPatch]	[HttpPost]
[HttpHead]	

Use **attributes** to specify the allowed **HTTP verbs**. You can override the **action** name given in the URL by using the **[ActionName]** **attribute**.

**api/products/thumbnail/id** maps to both of the below **Action** Methods.

```
public class ProductsController : ApiController
{
    [HttpGet]
    [ActionName("Thumbnail")]
    public HttpResponseMessage GetThumbnailImage(int id);

    [HttpPost]
    [ActionName("Thumbnail")]
    public void AddThumbnailImage(int id);
}
```

# ASP.NET Core MVC Tutorial

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Complete the ASP.NET Core MVC tutorial [here](#)