

# Web API: Controller, Configuration, Routing and Binding

Prepared for VI<sup>th</sup> CE DDU

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# Configure your new project

ASP.NET Web Application (.NET Framework) C# Windows Web

Project name

Location



Solution name 

Place solution and project in the same directory

Framework



## Empty

An empty project template for creating ASP.NET applications. This template does not have any content in it.

No Authentication

[Change](#)



## Web Forms

A project template for creating ASP.NET Web Forms applications. ASP.NET Web Forms lets you build dynamic websites using a familiar drag-and-drop, event-driven model. A design surface and hundreds of controls and components let you rapidly build sophisticated, powerful UI-driven sites with data access.



## MVC

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.



## Web API

A project template for creating RESTful HTTP services that can reach a broad range of clients including browsers and mobile devices.

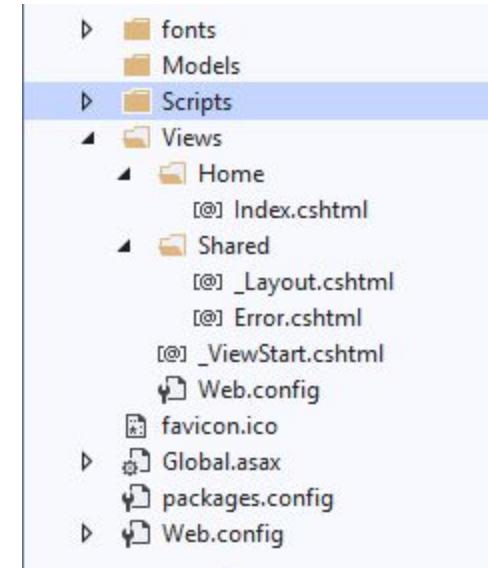
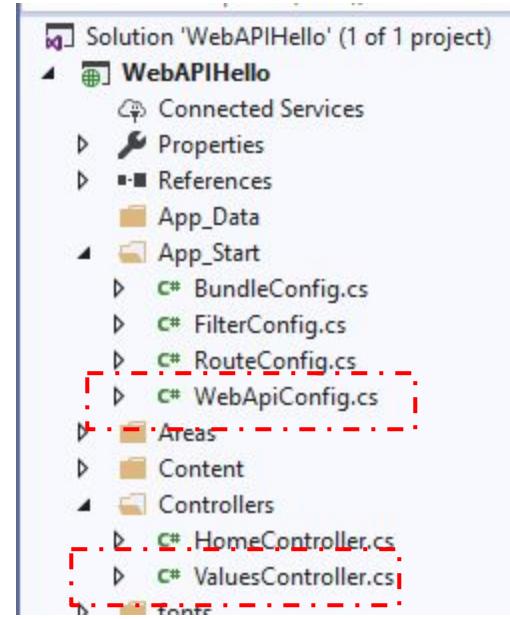
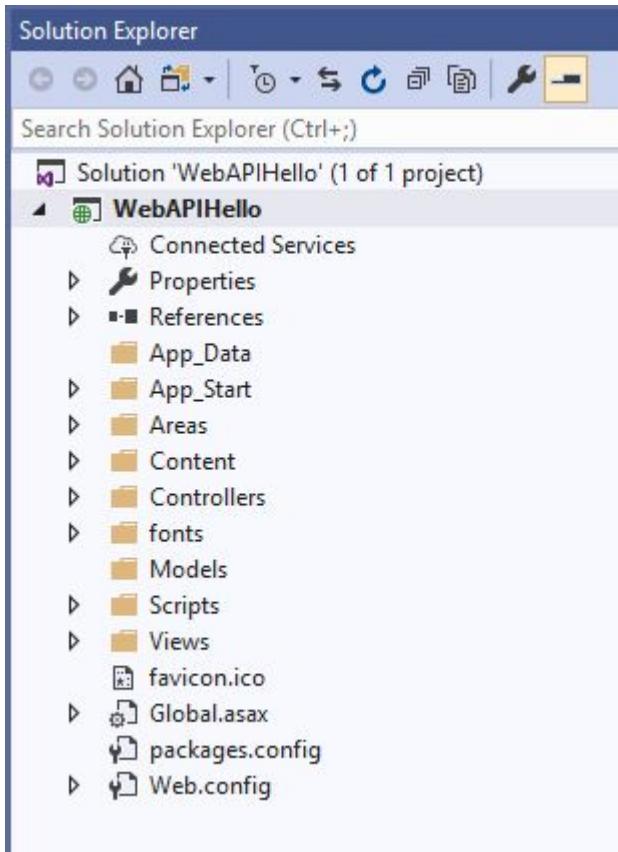
Add folders & components

- Web Forms
- MVC
- Web API

Advanced

- Configure for HTTPS
- Docker support  
(Requires Docker Desktop)

[... more](#)



Global.asax.cs X WebAPIHello Object Browser

WebAPIHello WebAPIHello.WebApiApplication Application\_Start()

```
4  using System.Web;
5  using System.Web.Http;
6  using System.Web.Mvc;
7  using System.Web.Optimization;
8  using System.Web.Routing;
9
10 namespace WebAPIHello
11 {
12     public class WebApiApplication : System.Web.HttpApplication
13     {
14         protected void Application_Start()
15         {
16             AreaRegistration.RegisterAllAreas();
17             GlobalConfiguration.Configure(WebApiConfig.Register);
18             FilterConfig.RegisterGlobalFilters(GlobalFilters.Filters);
19             RouteConfig.RegisterRoutes(RouteTable.Routes);
20             BundleConfig.RegisterBundles(BundleTable.Bundles);
21         }
22     }
23 }
```

```
1 reference
public static class WebApiConfig
{
    1 reference
    public static void Register(HttpConfiguration config)
    {
        // Web API configuration and services

        // Web API routes
        config.MapHttpAttributeRoutes();

        config.Routes.MapHttpRoute(
            name: "DefaultApi",
            routeTemplate: "api/{controller}/{id}",
            defaults: new { id = RouteParameter.Optional }
        );
    }
}
```

## Properties of `HttpConfiguration` class

Property	Description
<code>DependencyResolver</code>	Gets or sets the dependency resolver for dependency injection.
<code>Filters</code>	Gets or sets the filters.
<code>Formatters</code>	Gets or sets the media-type formatters.
<code>IncludeErrorDetailPolicy</code>	Gets or sets a value indicating whether error details should be included in error messages.
<code>MessageHandlers</code>	Gets or sets the message handlers.
<code>ParameterBindingRules</code>	Gets the collection of rules for how parameters should be bound.
<code>Properties</code>	Gets the properties associated with this Web API instance.
<code>Routes</code>	<i>Gets the collection of routes configured for the Web API.</i>
<code>Services</code>	Gets the Web API services.

## Parameters of MapHttpRoute() method.

Parameter	Description
name	Name of the route
routeTemplate	URL pattern of the route
defaults	An object parameter that includes default route values
constraints	Regex expression to specify characteristic of route values
handler	The handler to which the request will be dispatched.

# Web API routing

- It routes an incoming HTTP request to a particular action method on a Web API controller.
- Web API supports two types of routing:
  1. Convention-based Routing
  2. Attribute Routing

```
    reference
public static void Register(HttpConfiguration config)
{
    // Web API configuration and services

    // Web API routes
    config.MapHttpAttributeRoutes();

    //Define own route
    IHttpRoute defaultRoute = config.Routes.CreateRoute("api/{controller}/{id}",
        new { id = RouteParameter.Optional },
        null);

    config.Routes.Add("DefaultApi", defaultRoute);
    //config.Routes.MapHttpRoute(
    //    name: "DefaultApi",
    //    routeTemplate: "api/{controller}/{id}",
    //    defaults: new { id = RouteParameter.Optional }
    //);
}
```

localhost:6950/api/Values/ x +

localhost:6950/api/Values/

This XML file does not appear to have any style information associated with it.

```
▼<ArrayOfstring xmlns:i="http://www.w3.org/2001/XMLSchema-instance"
  xmlns="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
  <string>value1</string>
  <string>value2</string>
</ArrayOfstring>
```

F Fiddler Orchestra Beta     JS FiddlerScript     Log     Filters     Timeline  
Get Started     Statistics     Inspectors     AutoResponder     Composer

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.     Execute

Parsed Raw Scratchpad Options

GET http://localhost:6950/api/Values/ HTTP/1.1

User-Agent: Fiddler  
Host: localhost:6950

Log Requests

History

- localhost:6950/api/Val...
- localhost:3715/api/Pr...
- localhost:3715/api/Pr...
- localhost:3715/api/Pr...

Fiddler Orchestrator Beta FiddlerScript

Get Started Statistics Inspectors

Headers TextView SyntaxView WebForms HexView Auth

Request Headers

GET /api/Values/ HTTP/1.1

**Client**

User-Agent: Fiddler

**Transport**

Host: localhost:6950

Transformer Headers TextView SyntaxView ImageView  
Cookies Raw JSON XML

JSON

- value1
- value2

Get Started Statistics Inspectors

Headers TextView SyntaxView WebForms HexView Auth

Request Headers

GET /api/Values/ HTTP/1.1

**Client**

User-Agent: Fiddler

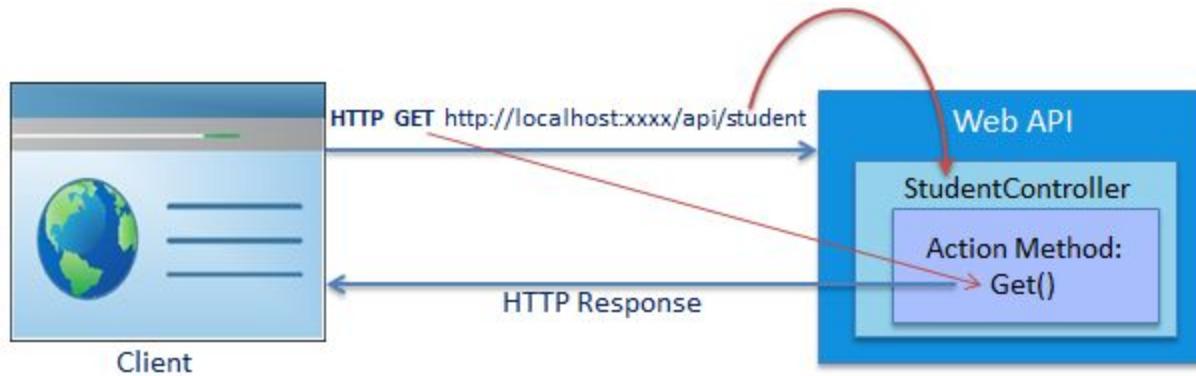
**Transport**

Host: localhost:6950

Transformer Headers TextView SyntaxView ImageView  
Cookies Raw JSON XML

HTTP/1.1 200 OK  
Cache-Control: no-cache  
Pragma: no-cache  
Content-Type: application/json; charset=utf-8  
Expires: -1  
Server: Microsoft-IIS/10.0  
X-AspNet-Version: 4.0.30319  
X-SourceFiles: =?UTF-8?B?QzpcVXN1cnNcdXN1cjEuREVTS?  
X-Powered-By: ASP.NET  
Date: Mon, 06 Jan 2020 08:00:50 GMT  
Content-Length: 19

["value1", "value2"]



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<b>Request URL</b>	<b>Request HTTP method</b>	<b>Action method</b>	<b>Controller</b>
http://localhost:1234/api/course	GET	Get()	CourseController
http://localhost:1234/api/product	POST	Post()	ProductController
http://localhost:1234/api/teacher	PUT	Put()	TeacherController

1 reference

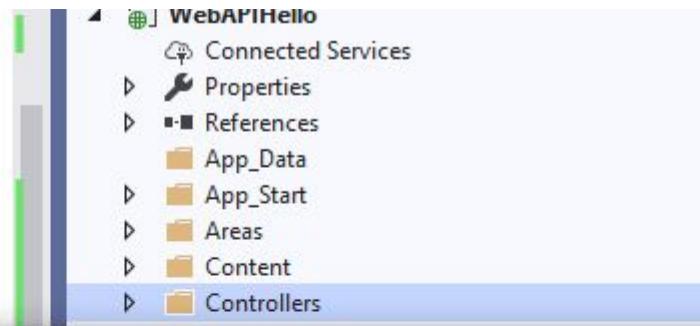
```
public static void Register(HttpConfiguration config)
{
    // Web API configuration and services

    // Web API routes
    config.MapHttpAttributeRoutes();

    //student route
    config.Routes.MapHttpRoute(
        name: "Student",
        routeTemplate: "api/DDUStudent/{id}",
        defaults: new { controller = "Student" },
        constraints: new { id = @"\d+" }
    );

    //default route
    config.Routes.MapHttpRoute(
        name: "DefaultApi",
        routeTemplate: "api/{controller}/{id}",
        defaults: new { id = RouteParameter.Optional }
    );
}
```

vices



Add Scaffold

▲ Installed

▷ Common  
Controller

- |  |   |   |
|--|---|---|
|  | MVC 5 Controller - Empty                            | Web API 2 Cor<br>by Microsoft<br>v2.0.0.0 |
|  | MVC 5 Controller with read/write actions            | An empty Web                              |
|  | MVC 5 Controller with views, using Entity Framework | Id: ApiController                         |
|  | Web API 2 Controller – Empty                        |   |

StudentController.cs X Object Browser X WebApiConfig.cs Global.asax.cs WebAPIHe

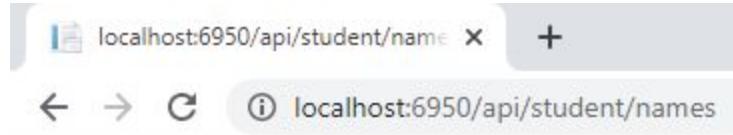
WebAPIHello WebAPIHello.Controllers.StudentController

```
1 using System;
2 using System.Collections.Generic;
3 using System.Linq;
4 using System.Net;
5 using System.Net.Http;
6 using System.Web.Http;
7
8 namespace WebAPIHello.Controllers
9 {
10     public class StudentController : ApiController
11     {
12     }
13 }
14
```

# Attribute routing

```
using System.Web.Http;

namespace WebAPIHello.Controllers
{
    0 references
    public class StudentController : ApiController
    {
        [Route("api/student/names")]
        0 references
        public IEnumerable<string> Get()
        {
            return new string[] { "student1", "student2" };
        }
    }
}
```



```
<ArrayOfstring xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://schemas.microsoft.com/2003/10/Serialization/Arrays">
  <string>student1</string>
  <string>student2</string>
</ArrayOfstring>
```

Route() attribute can be used with action method or controller  
Enable attribute routing using config.MapHttpAttributeRoutes()

# Parameter binding

- Action methods in Web API controller can have one or more parameters of different types.
- It can be either primitive type or complex type.
- Web API binds **action method parameters** either with **URL's query string** or with **request body** depending on the **parameter type**.
- By default, if parameter type is of **.NET primitive type** such as int, bool, double, string, GUID, DateTime, decimal or any other type that can be converted from string type then it sets the value of a parameter from the **query string**. And if the parameter type is **complex type** then Web API tries to get the value from **request body** by default.

## Default rules for parameter binding

<b>HTTP method</b>	<b>Query string</b>	<b>Request body</b>
GET	Primitive Type, Complex Type	NA
POST	Primitive Type	Complex Type
PUT	Primitive Type	Complex Type
DELETE	Primitive Type, Complex Type	NA
PATCH	Primitive Type	Complex Type

The screenshot shows the Visual Studio IDE with the 'ValuesController.cs' file open. The code defines a controller for an API endpoint. A specific line of code, 'public string Get(int id)', has its parameter 'id' highlighted with a red rectangle, indicating it is the target of the discussion.

```
7
8     namespace WebAPIHello.Controllers
9     {
10        public class ValuesController : ApiController
11        {
12            // GET api/values
13            public IEnumerable<string> Get()
14            {
15                return new string[] { "value1", "value2" };
16            }
17            // GET api/values/5
18            public string Get(int id)
19            {
20                return "value";
21            }
22        }
23    }
```

Query string parameter name and action method parameter name must be the same (case-insensitive).

The screenshot shows the Microsoft Visual Studio IDE with the 'ValuesController.cs' file open. The code defines a controller with four methods: Get, Post, Put, and Delete. The 'Post' and 'Put' methods are highlighted with red boxes, indicating they are the focus of the current discussion.

```
20         return "value";
21     }
22     // POST api/values
23     public void Post([FromBody]string value)
24     {
25     }
26     // PUT api/values/5
27     public void Put(int id, [FromBody]string value)
28     {
29     }
30     // DELETE api/values/5
31     public void Delete(int id)
32     {
33     }
34   }
35 }
```

Opposite to the defaults

← → C ⓘ localhost:6950/api/values/

This XML file does not appear

---

▼<ArrayOfstring xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xmlns="http://schemas.microsoft.com/2003/10/Serialization/">  
    <string>value1</string>  
    <string>value2</string>  
  </ArrayOfstring>

← → C ⓘ localhost:6950/api/values/1

This XML file does not appear to have any style information associated with it. The document

---

<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">value</string>

```
public class ValuesController : ApiController
{
    static List<string> values = new List<string>() { "value0", "value1", "value2" };
    // GET api/values
    0 references
    public IEnumerable<string> Get()
    {
        return values;
    }
    // GET api/values/5
    0 references
    public string Get(int id)
    {
        return values[id];
    }
    ...
}

// POST api/values
//public void Post([FromBody]string value)
[HttpPost]
0 references
public void CreateRecord([FromBody]string value)
{
    values.Add(value);
}
// PUT api/values/5
0 references
public void Put(int id, [FromBody]string value)
{
    values[id] = value;
}
// DELETE api/values/5
0 references
public void Delete(int id)
{
    values.RemoveAt(id);
}
```



Fiddler Orchestra Beta      FiddlerScript      Log      Filters      Timeline

Get Started      Statistics      Inspectors      AutoResponder      Composer

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list. [Execute](#)

Parsed Raw Scratchpad Options

GET http://localhost:6950/api/values/0 HTTP/1.1

User-Agent: Fiddler  
Host: localhost:6950

Log Requests

History

localhost:6950/api/val...  
localhost:6950/api/Val...  
localhost:6950/api/Val...

The screenshot shows the Fiddler Orchestra Beta interface. At the top, there are tabs for 'Fiddler Orchestra Beta', 'FiddlerScript', 'Log', 'Filters', and 'Timeline'. Below that is a navigation bar with 'Get Started', 'Statistics', 'Inspectors', 'AutoResponder', and 'Composer'. A central text area says 'Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.' with a 'Execute' button. Below this is a row of buttons: 'Parsed', 'Raw', 'Scratchpad', and 'Options'. Underneath is a form with 'GET' selected, the URL 'http://localhost:6950/api/values/0', and 'HTTP/1.1'. To the right of the form are checkboxes for 'Log Requests' and 'History', which lists previous requests. The bottom left shows the Fiddler Headers pane with 'User-Agent: Fiddler' and 'Host: localhost:6950'. The bottom right shows the Log pane with several entries.

Get Started    Statistics    Inspectors

Headers | TextView | SyntaxView | WebForms | HexView

Request Headers

GET /api/values/0 HTTP/1.1

**Client**

User-Agent: Fiddler

**Transport**

Host: localhost:6950

Transformer | Headers | TextView | SyntaxView | ImageView  
Cookies | Raw | JSON | XML

HTTP/1.1 200 OK

Cache-Control: no-cache

Pragma: no-cache

Content-Type: application/json; charset=utf-8

Expires: -1

Server: Microsoft-IIS/10.0

X-AspNet-Version: 4.0.30319

X-SourceFiles: =?UTF-8?B?QzpcVXN1cnNcdXN1cje=?

X-Powered-By: ASP.NET

Date: Mon, 06 Jan 2020 08:30:05 GMT

Content-Length: 8

"value0"

Get Started    Statistics    Inspectors

Headers | TextView | SyntaxView | WebForms | HexView

Request Headers

GET /api/values/0 HTTP/1.1

**Client**

User-Agent: Fiddler

**Transport**

Host: localhost:6950

Transformer | Headers | TextView | SyntaxView | ImageView  
Cookies | Raw | JSON | XML

... JSON=value0

#	Re...	Pro...	Host	URL
1	200	HTTP	localhost:6950	/api/values/0

[Get Started](#)[Statistics](#)[Inspectors](#)[AutoResponder](#)[Composer](#)

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

[Execute](#)[Parsed](#) [Raw](#) [Scratchpad](#) [Options](#)

POST

http://localhost:6950/api/Values/

HTTP/1.1

User-Agent: Fiddler

Host: localhost:6950

Content-type: application/json

Content-Length: 12

Request Body

"new string"

Upload file...

 Log Requests

History

- HTTP POST localhost:6950/api/Val
- HTTP POST localhost:6950/api/Val
- HTTP POST localhost:6950/api/Val
- HTTP GET localhost:6950/api/Val
- HTTP GET localhost:6950/api/val
- HTTP POST localhost:6950/api/val
- HTTP POST localhost:6950/api/val
- HTTP GET localhost:6950/api/val
- HTTP GET localhost:6950/api/val
- HTTP GET localhost:6950/api/Val
- HTTP GET localhost:3715/api/Pr.
- HTTP GET localhost:3715/api/Pr.
- HTTP GET localhost:3715/api/Pr.

[Get Started](#)[Statistics](#)[Inspectors](#)[Headers](#)[TextView](#)[SyntaxView](#)[WebForms](#)[HexV](#)[JSON](#)[XML](#)

### Request Headers

POST /api/Values/ HTTP/1.1

### Client

User-Agent: Fiddler

### Entity

Content-Length: 12

Content-type: application/json

### Transport

Host: localhost:6950

[Transformer](#)[Headers](#)[TextView](#)[SyntaxView](#)[Ima](#)[Auth](#)[Caching](#)[Cookies](#)[Raw...](#)[JSON](#)[XML](#)

HTTP/1.1 204 No Content

Cache-Control: no-cache

Pragma: no-cache

Expires: -1

Server: Microsoft-IIS/10.0

X-AspNet-Version: 4.0.30319

X-SourceFiles: =?UTF-8?B?QzpcVXN1cnNcdXN?

X-Powered-By: ASP.NET

Date: Mon, 06 Jan 2020 08:46:47 GMT

Fiddler Orchestra Beta FiddlerScript Log Filters Timeline

Get Started Statistics Inspectors AutoResponder Composer

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

Execute

Parsed Raw Scratchpad Options

GET http://localhost:6950/api/Values/ HTTP/1.1

User-Agent: Fiddler  
Host: localhost:6950  
Content-type: application/json  
Content-Length: 0

FO Fiddler Orchestra Beta JS FiddlerScript LO

Get Started Statistics Inspectors A

Headers TextView SyntaxView WebForms HexView

JSON XML

Request Headers

GET /api/Values/ HTTP/1.1

Client

User-Agent: Fiddler

Entity

Content-Length: 0  
Content-type: application/json

Transport

Host: localhost:6950

Transformer Headers TextView SyntaxView Image

Auth Caching Cookies Raw JSON XML

JSON

- value0
- value1
- value2
- new string

Get Started    Statistics    Inspectors    AutoResponder    Composer

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

Execute

Parsed Raw Scratchpad Options

PUT http://localhost:6950/api/Values/1 HTTP/1.1

User-Agent: Fiddler  
Host: localhost:6950  
Content-type: application/json  
Content-Length: 16

Request Body

"updated string"

Upload file...

Log Requests

History

- localhost:6950/api/Val
- localhost:6950/api/Pr.
- localhost:3715/api/Pr.
- localhost:3715/api/Pr.
- localhost:3715/api/Pr.

Get Started    ⚛ Statistics    📑 Inspectors    ⚡ AutoResponder    🖊 Composer

Headers | TextView | SyntaxView | WebForms | HexView | Auth | Cookies | Raw |  
JSON | XML |

PUT <http://localhost:6950/api/values/1> HTTP/1.1

User-Agent: Fiddler

Host: localhost:6950

Content-type: application/json

Content-Length: 16

"updated string"

Find... (press Ctrl+Enter to highlight all)

View in Notepad

Transformer | Headers | TextView | SyntaxView | ImageView | HexView | WebView |

Auth | Caching | Cookies | Raw | JSON | XML |

#### Response Headers

[ Raw ] [Header Definitions]

HTTP/1.1 204 No Content

#### Cache

Cache-Control: no-cache

Date: Mon, 06 Jan 2020 08:53:59 GMT

Expires: -1

Pragma: no-cache

#### Miscellaneous

Server: Microsoft-IIS/10.0

X-AspNet-Version: 4.0.30319

X-Powered-By: ASP.NET

X-SourceFiles: =?UTF-8?B?QzpcVXNlcnNcdXNlcjEuREVTS1RPUC1JSEQzU0pPXHNvdXJjZV:

[Get Started](#)[Statistics](#)[Inspectors](#)[AutoResponder](#)[Composer](#)

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

[Execute](#)[Parsed](#) [Raw](#) [Scratchpad](#) [Options](#)

GET

http://localhost:6950/api/Values

HTTP/1.1

 Log Requests

User-Agent: Fiddler  
Host: localhost:6950  
Content-type: application/json  
Content-Length: 0

[Get Started](#)[Statistics](#)[Inspectors](#)[Auto](#)[Headers](#)[TextView](#)[SyntaxView](#)[WebForms](#)[HexView](#)[JSON](#)[XML](#)

GET <http://localhost:6950/api/values> HTTP/1.  
User-Agent: Fiddler  
Host: localhost:6950  
Content-type: application/json  
Content-Length: 0

Find... (press Ctrl+Enter to highlight all)

[Transformer](#)[Headers](#)[TextView](#)[SyntaxView](#)[ImageVi](#)[Auth](#)[Caching](#)[Cookies](#)[Raw](#)[JSON](#)[XML](#)[JSON](#)

value0

updated string

value2

new string

## FO Fiddler Orchestra Beta

## FiddlerScript

## Log

## Filters

## Timeline

Get Started

Statistics

Inspectors

AutoResponder

Composer

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

Execute

Parsed Raw Scratchpad Options

DELETE http://localhost:6950/api/Values/2

HTTP/1.1

 Log Requests

## History

- localhost:6950/api/Val...
- localhost:6950/api/Val...
- localhost:6950/api/Val...
- localhost:6950/api/Val...
- localhost:6950/api/Val...

[Get Started](#)[Statistics](#)[Inspectors](#)[AutoRespon](#)[Headers](#)[TextView](#)[SyntaxView](#)[WebForms](#)[HexView](#)[Auth](#)[Cookies](#)[Raw](#)

```
DELETE http://localhost:6950/api/Values/2 HTTP/1.1
```

User-Agent: Fiddler

Host: localhost:6950

Content-type: application/json

Content-Length: 0

Find... (press Ctrl+Enter to highlight all)

[Transformer](#)[Headers](#)[TextView](#)[SyntaxView](#)[ImageView](#)[HexView](#)[WebView](#)[Raw](#)[JSON](#)[XML](#)

HTTP/1.1 204 No Content

Cache-Control: no-cache

Pragma: no-cache

Expires: -1

Server: Microsoft-IIS/10.0

X-AspNet-Version: 4.0.30319

X-SourceFiles: =?UTF-8?B?QzpcVXN1cnNcdXN1cjEuREVTS1RPUC1JSEQzu0p

X-Powered-By: ASP.NET

Date: Mon, 06 Jan 2020 08:58:25 GMT

[Get Started](#)[Statistics](#)[Inspectors](#)[AutoResponder](#)[Composer](#)

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

[Execute](#)[Parsed](#) [Raw](#) [Scratchpad](#) [Options](#)GET <http://localhost:6950/api/Values/>

HTTP/1.1

 Log Requests

History

- GET localhost:6950/api/Val...
- GET localhost:6950/api/Val...
- GET localhost:6950/api/Val...

User-Agent: Fiddler  
Host: localhost:6950  
Content-type: application/json  
Content-Length: 0

Get Started Statistics Inspectors AutoResponder

Headers TextView SyntaxView WebForms HexView Auth Cookies Raw

GET <http://localhost:6950/api/values/> HTTP/1.1

User-Agent: Fiddler  
Host: localhost:6950  
Content-type: application/json  
Content-Length: 0

Find... (press Ctrl+Enter to highlight all)

Transformer Headers TextView SyntaxView ImageView HexView WebView

Raw JSON XML

- JSON
  - value0
  - updated string
  - new string

# Action Method Naming Conventions

- Action method name can be the same as HTTP verbs like Get, Post, Put, Patch or Delete as shown in the Web API Controller example.
- However, you can append any **suffix** with HTTP verbs for more readability.
- For example, Get method can be GetAllNames(), GetStudents() or any other name which starts with Get.

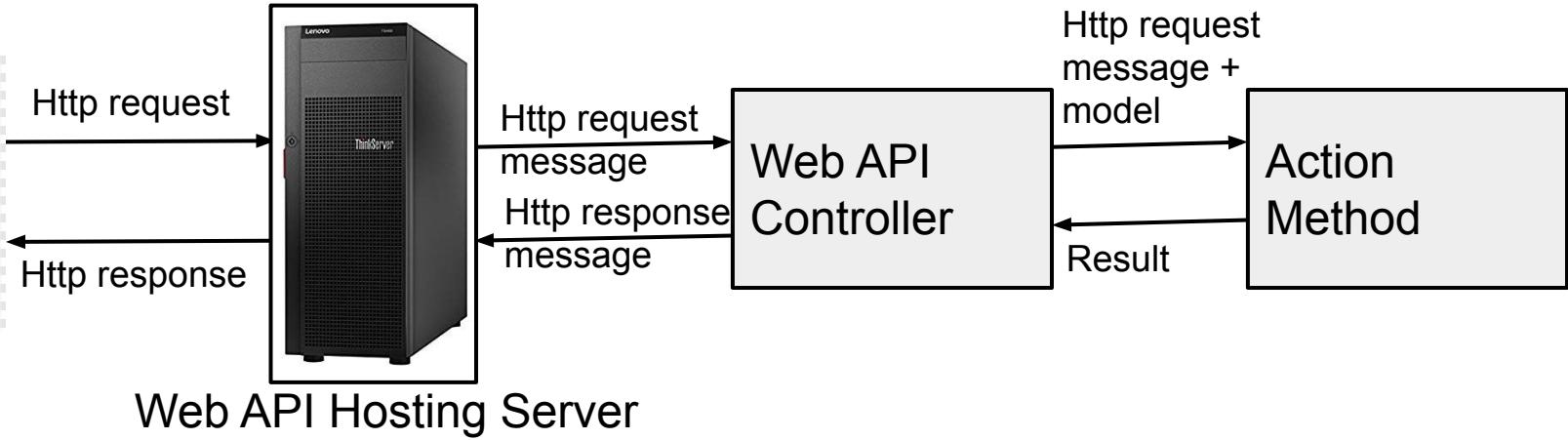


HTTP method	Possible Web API Action Method Name	Usage
GET	Get(),get(),GET(), GetAllStudent(), any name starting with Get	Retrieves data.
POST	Post(),post(),POST(), PostNewStudent(), any name starting with Post	Inserts new record.
PUT	Put(),put(),PUT(), PutStudent(), any name starting with Put	Updates existing record.
PATCH	Patch(),patch(),PATCH(), PatchStudent(), any name starting with Patch	Updates record partially.
DELETE	Delete(),delete(),DELETE(), DeleteStudent(), any name starting with Delete	Deletes record.

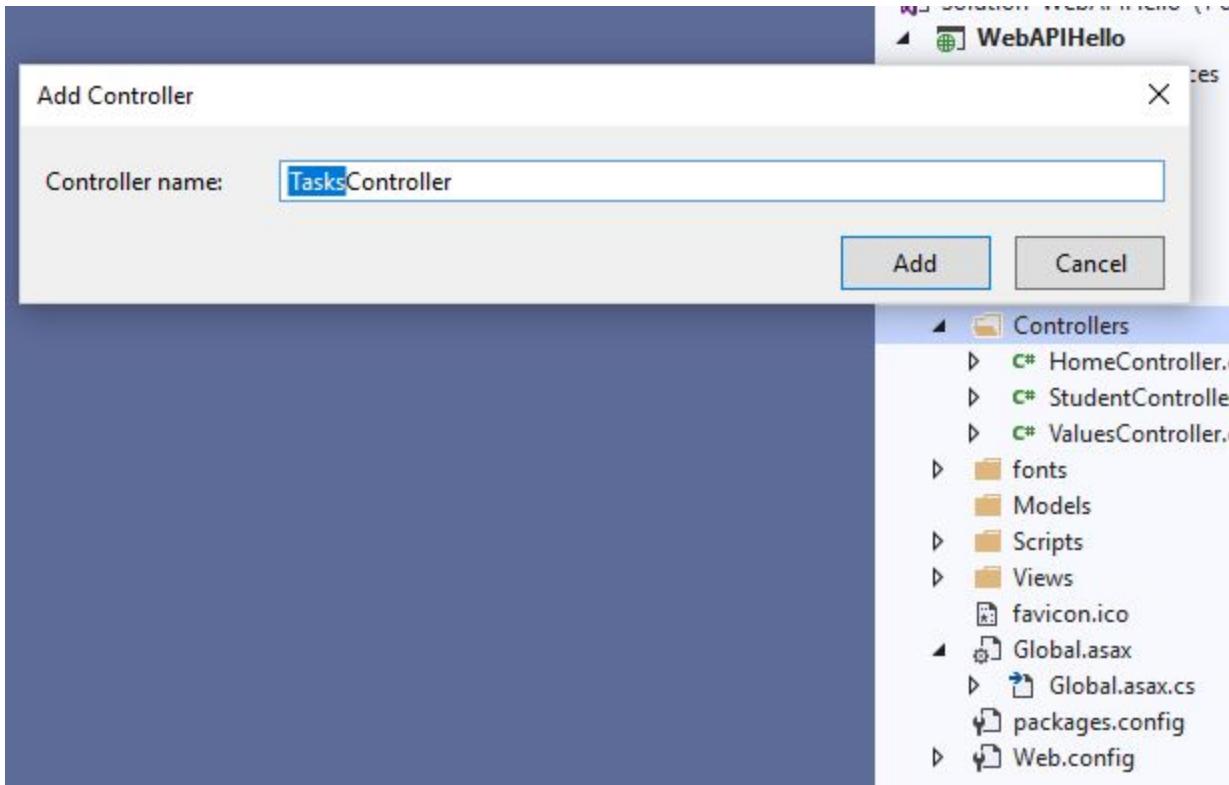
# Web API Request Pipeline



Client



<b>Web API Controller</b>	<b>MVC Controller</b>
Derives from System.Web.Http.ApiController class	Derives from System.Web.Mvc.Controller class.
Method name must start with Http verbs otherwise apply http verbs attribute.	Must apply appropriate Http verbs attribute.
Specialized in returning data.	Specialized in rendering view.
Return data automatically formatted based on Accept-Type header attribute. Default to json or xml.	Returns ActionResult or any derived type.
Requires .NET 4.0 or above	Requires .NET 3.5 or above



```
namespace WebAPIHello.Controllers
{
    [RoutePrefix("api/employeeTasks")]
    0 references
    public class TasksController : ApiController
    {
        [Route("{id:int:max(100)}")]
        0 references
        public string GetMax(int id)
        {
            return "In the GetMax(int id) with id = " + id;
        }
        [Route("{id:int:min(101)}")]
        0 references
        public string GetMin(int id)
        {
            return "In the GetMin(int id) with id = " + id;
        }
        [Route("~/api/tasks/{newString}")]
        0 references
        public string Get(string newString)
        {
            return "In the Get(string newString) with newString = " + newString;
        }
    }
}
```

## Constraint supported in attribute based routing

Constraint	Description	Example
alpha	Matches uppercase or lowercase Latin alphabet characters (a-z, A-Z)	{x:alpha}
bool	Matches a Boolean value.	{x:bool}
datetime	Matches a DateTime value.	{x:datetime}
decimal	Matches a decimal value.	{x:decimal}
double	Matches a 64-bit floating-point value.	{x:double}
float	Matches a 32-bit floating-point value.	{x:float}
guid	Matches a GUID value.	{x:guid}
int	Matches a 32-bit integer value.	{x:int}
max	Matches an integer with a maximum value.	{x:max(10)}

## Constraint supported in attribute based routing

Constraint	Description	Example
maxlength	Matches a string with a maximum length.	{x:maxlength(10)}
min	Matches an integer with a minimum value.	{x:min(10)}
minlength	Matches a string with a minimum length.	{x:minlength(10)}
range	Matches an integer within a range of values.	{x:range(10,50)}
regex	Matches a regular expression.	{x:regex(^\\d{3}-\\d{3}-\\d{4}\$)}

localhost:6950/api/employeeTask x +

← → C ⓘ localhost:6950/api/employeeTasks/10

Apps Get Started with AS... ASP.NET Web API -...

---

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">In the GetMax(int id) with id = 10</string>
```

localhost:6950/api/employeeTask x +

← → C ⓘ localhost:6950/api/employeeTasks/100

Apps Get Started with AS... ASP.NET Web API -...

---

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">In the GetMax(int id) with id = 100</string>
```

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">In the GetMax(int id) with id = 100</string>
```

localhost:6950/api/employeeTask x +

← → C ⓘ localhost:6950/api/employeeTasks/101

Apps Get Started with AS... ASP.NET Web API -...

---

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">In the GetMin(int id) with id = 101</string>
```

localhost:6950/api/employeeTask x +

← → C ⓘ localhost:6950/api/employeeTasks/101131321

Apps Get Started with AS... ASP.NET Web API -...

---

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">In the GetMin(int id) with id = 101131321</string>
```

localhost:6950/api/employeeTasks x +

← → C i localhost:6950/api/employeeTasks/hello

Apps Get Started with AS... ASP.NET Web API -...

This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
▼<Error>
  ▼<Message>
    No HTTP resource was found that matches the request URI 'http://localhost:6950/api/employeeTasks/hello'.
  </Message>
  ▼<MessageDetail>
    No type was found that matches the controller named 'employeeTasks'.
  </MessageDetail>
</Error>
```

localhost:6950/api/Tasks/hello x +

← → C i localhost:6950/api/Tasks/hello

Apps Get Started with AS... ASP.NET Web API -...

This XML file does not appear to have any style information associated with it. The

```
▼<string xmlns="http://schemas.microsoft.com/2003/10/Serialization/">
  In the Get(string newString) with newString = hello
</string>
```

## Default rules for parameter binding

<b>HTTP method</b>	<b>Query string</b>	<b>Request body</b>
GET	Primitive Type, Complex Type	NA
POST	Primitive Type	Complex Type
PUT	Primitive Type	Complex Type
DELETE	Primitive Type, Complex Type	NA
PATCH	Primitive Type	Complex Type

```
]} namespace WebAPIHello.Models
{
    public class Product
    {
        public int ProductId { get; set; }
        public string ProduceName { get; set; }
        public double ProductPrice { get; set; }
    }
}
```

Add Controller

{ ge

Controller name:

ProductsController

Add

Cancel

App_Data
App_Start
Areas
Content
Controllers
HomeController.cs
StudentController.cs
TasksController.cs
ValuesController.cs
fonts
Models
Product.cs
Scripts
Views

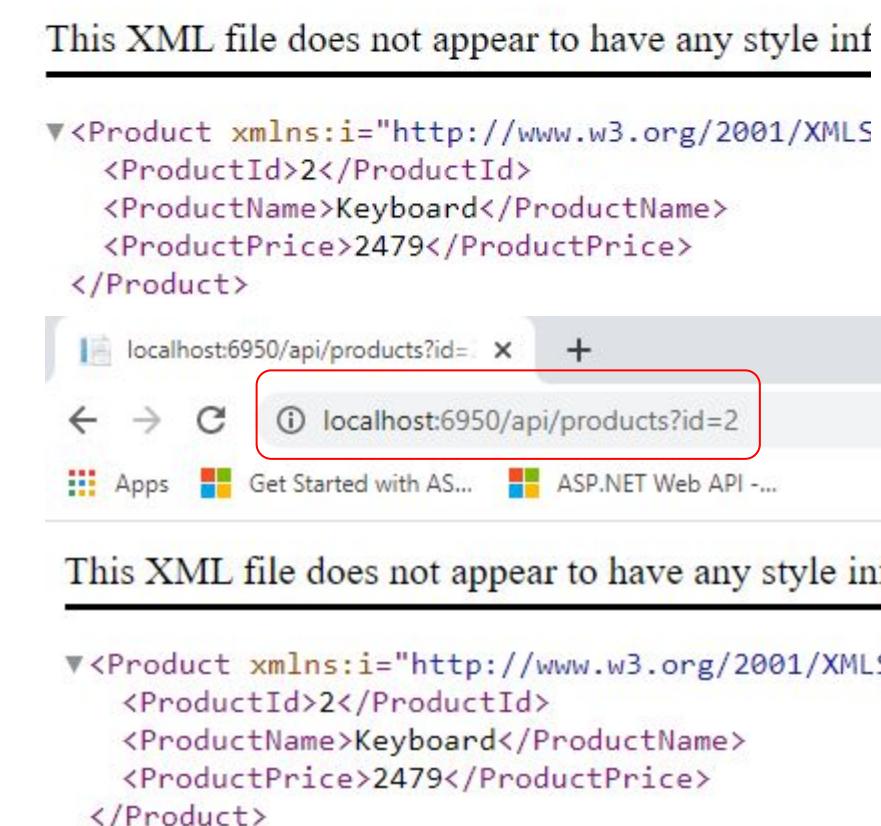
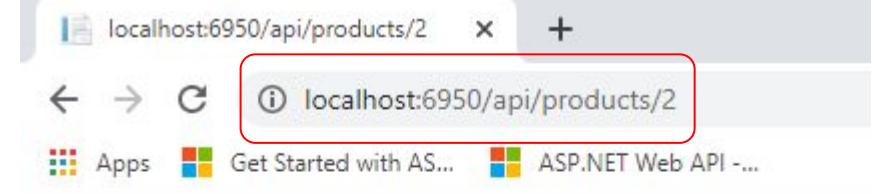
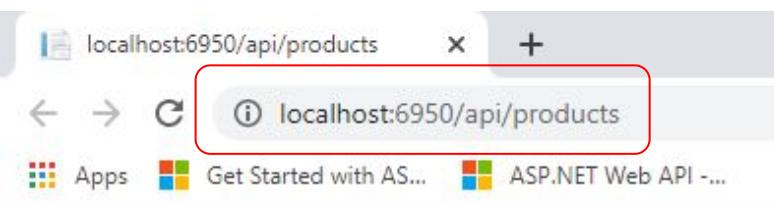
```
using System.Web.Http;
using WebAPIHello.Models;

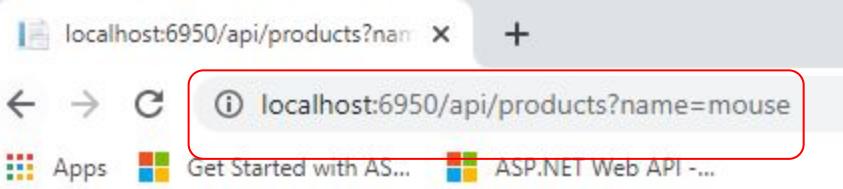
}namespace WebAPIHello.Controllers
{
    0 references
}
public class ProductsController : ApiController
{
    static List<Product> products = new List<Product>
    {
        new Product{ ProductId=1, ProductName="Monitor", ProductPrice=4599},
        new Product{ ProductId=2, ProductName="Keyboard", ProductPrice=2479},
        new Product{ ProductId=3, ProductName="Mouse", ProductPrice=1101}
    };

    0 references
}
public IEnumerable<Product> GetProducts()
{
    return products;
}
```

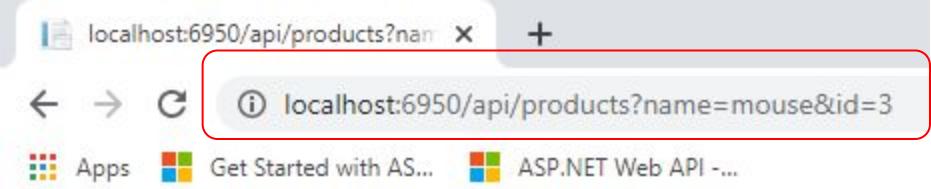
```
public Product GetProductId(int id)
{
    return products[id - 1];
}
0 references
public Product GetProductName(string name)
{
    switch(name.ToUpper())
    {
        case "MONITOR": return products[0];
        case "KEYBOARD": return products[1];
        case "MOUSE": return products[2];
        default:
            return new Product
            {
                ProductId = 0,
                ProductName = "NotAProduct",
                ProductPrice = double.MaxValue
            };
    }
}
```

```
public Product GetProductIdName(int id, string name)
{
    Product none = new Product()
    { ProductId = 0, ProductName = "NotAProduct", ProductPrice = double.MaxValue };
    id--;
    switch (name.ToUpper())
    {
        case "MONITOR":
            if (id == 0)
                return products[0];
            else
                return none;
        case "KEYBOARD":
            if (id == 1)
                return products[1];
            else
                return none;
        case "MOUSE":
            if (id == 2)
                return products[2];
            else
                return none;
        default:
            return none;
    }
}
```

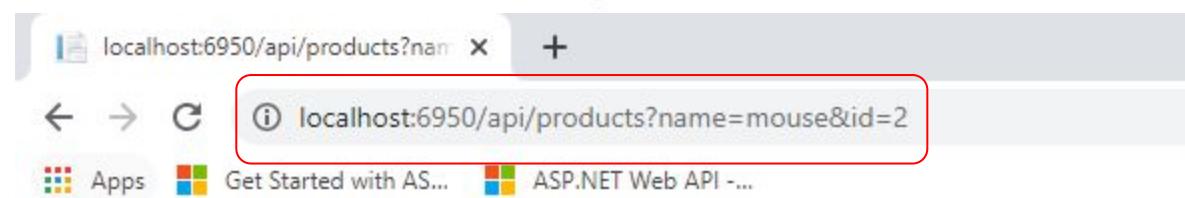




This XML file does not appear to have any style information associated with it.



This XML file does not appear to have any style information associated with it.



This XML file does not appear to have any style information associated with it.

```
<Product xmlns:i="http://www.w3.org/2001/XMLSchema-instance" xml:lang="en-US">
  <ProductId>0</ProductId>
  <ProductName>NotAProduct</ProductName>
  <ProductPrice>1.7976931348623157E+308</ProductPrice>
</Product>
```

[HttpPost]

0 references

```
public void AddProduct(int id)
{
    Product p = new Product();
    p.ProductId = id;
    p.ProductName = "Not A Product";
    p.ProductPrice = double.MaxValue;
    products.Add(p);
}
```

[HttpPost]

0 references

```
public void AddProductComposite(Product prod)
{
    Product p = new Product();
    if (prod != null)
    {
        p.ProductId = prod.ProductId;
        p.ProductName = prod.ProductName;
        p.ProductPrice = prod.ProductPrice;
        products.Add(p);
    }
}
```

[HttpPost]

0 references

```
public void AddProductDetails(int id, string name, double price)
{
    Product p = new Product();
    p.ProductId = id;
    p.ProductName = name;
    p.ProductPrice = price;
    products.Add(p);
}
```

localhost:6950/api/products X +

← → ⌂ ⌂ localhost:6950/api/products

This XML file does not appear to have any style information associated with it.

```
--<ArrayOfProduct>
--<Product>
    <ProductId>1</ProductId>
    <ProductName>Monitor</ProductName>
    <ProductPrice>4599</ProductPrice>
</Product>
--<Product>
    <ProductId>2</ProductId>
    <ProductName>Keyboard</ProductName>
    <ProductPrice>2479</ProductPrice>
</Product>
--<Product>
    <ProductId>3</ProductId>
    <ProductName>Mouse</ProductName>
    <ProductPrice>1101</ProductPrice>
</Product>
</ArrayOfProduct>
```

Status	Method	Domain	File
200	GET	localhost:6950	products



Click to see header and response

Headers Cookies Params Response Timings Stack Trace

Request URL: http://localhost:6950/api/products  
Request Method: GET  
Remote Address: 127.0.0.1:6950  
Status Code: 200 OK ?  
Version: HTTP/1.1

Edit and Resend

Filter Headers

Response Headers (396 B)

Raw Headers

- Cache-Control: no-cache
- Content-Length: 481
- Content-Type: application/xml; charset=utf-8
- Date: Tue, 07 Jan 2020 09:29:29 GMT
- Expires: -1
- Pragma: no-cache
- Server: Microsoft-IIS/10.0

## New Request

Cancel

Send

Method

POST

URL

http://localhost:6950/api/products?id=-1

### Query String

id=-1

### Request Headers

Host: localhost:6950

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:71.0) Gecko/20100101 Firefox/7

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,\*/\*;q=0.8

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate

Connection: keep-alive

Upgrade-Insecure-Requests: 1

Cache-Control: max-age=0



localhost:6950/api/products

This XML file does not appear to have any style information associated with it.

```
--<ArrayOfProduct>
-<Product>
    <ProductId>1</ProductId>
    <ProductName>Monitor</ProductName>
    <ProductPrice>4599</ProductPrice>
</Product>
-<Product>
    <ProductId>2</ProductId>
    <ProductName>Keyboard</ProductName>
    <ProductPrice>2479</ProductPrice>
</Product>
-<Product>
    <ProductId>3</ProductId>
    <ProductName>Mouse</ProductName>
    <ProductPrice>1101</ProductPrice>
</Product>
-<Product>
    <ProductId>-1</ProductId>
    <ProductName>Not A Product</ProductName>
    <ProductPrice>1.7976931348623157E+308</ProductPrice>
</Product>
</ArrayOfProduct>
```

## New Request

[Cancel](#) [Send](#)

Method

POST

URL

http://localhost:6950/api/products?id=4&price=667&name=speaker

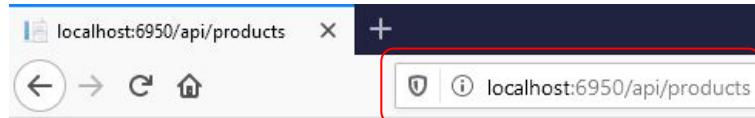
Query String

id=4  
price=667  
name=speaker

Request Headers

Host: localhost:6950  
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:71.0) Gecko/20100101 Firefox/71.0  
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,\*/\*;q=0.8  
Accept-Language: en-US,en;q=0.5  
Accept-Encoding: gzip, deflate  
Connection: keep-alive  
Upgrade-Insecure-Requests: 1  
Cache-Control: max-age=0, no-cache  
Pragma: no-cache

Request Body



This XML file does not appear to have any style information associated with it.

The XML response contains the following data, with the fourth product entry highlighted by a red box:

```
<ArrayOfProduct>
  <Product>
    <ProductId>1</ProductId>
    <ProductName>Monitor</ProductName>
    <ProductPrice>4599</ProductPrice>
  </Product>
  <Product>
    <ProductId>2</ProductId>
    <ProductName>Keyboard</ProductName>
    <ProductPrice>2479</ProductPrice>
  </Product>
  <Product>
    <ProductId>3</ProductId>
    <ProductName>Mouse</ProductName>
    <ProductPrice>1101</ProductPrice>
  </Product>
  <Product>
    <ProductId>-1</ProductId>
    <ProductName>Not A Product</ProductName>
    <ProductPrice>1.7976931348623157E+308</ProductPrice>
  </Product>
  <Product>
    <ProductId>4</ProductId>
    <ProductName>speaker</ProductName>
    <ProductPrice>667</ProductPrice>
  </Product>
</ArrayOfProduct>
```

## New Request

Method URL

POST

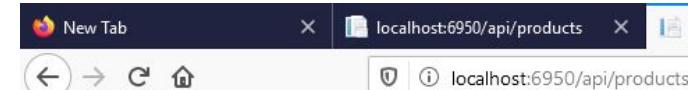
http://localhost:6950/api/products

### Request Headers

Host: localhost:6950  
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:71.0) Gecko/20100101 Firefox/71.0  
Accept: application/json, text/html, application/xhtml+xml, application/xml;q=0.9,\*/\*;q=0.8  
Content-Type: application/json  
Accept-Language: en-US,en;q=0.5  
Accept-Encoding: gzip, deflate  
Connection: keep-alive  
Upgrade-Insecure-Requests: 1  
Cache-Control: max-age=0

### Request Body

```
{  
    ProductId:6,  
    ProductName:'Motherboard',  
    ProductPrice:21232|  
}
```



This XML file does not appear to have any style information associated with it.

The XML response contains an array of product objects. The first five products are standard items with IDs 1, 2, 3, 4, and 6 respectively. The product with ID -1 is labeled 'Not A Product' and has an extremely high price. The product with ID 5 is missing from the XML output shown in the screenshot. The product with ID 6 is identical to the one in the request body, with a price of 21232.

```
[HttpPost]
0 references
public void AddProductComposite([FromUri] Product prod)
{
    Product p = new Product();
    if (prod != null)
    {
        p.ProductId = prod.ProductId;
        p.ProductName = prod.ProductName;
        p.ProductPrice = prod.ProductPrice;
        products.Add(p);
    }
}
```

## New Request

Cancel

Send

## Method

POST

## URL

`http://localhost:6950/api/products?productname='modem'&productprice=1100&productid=7`

## Query String

```
productname='modem'  
productprice=1100  
productid=7
```

## Request Headers

```
Host: localhost:6950  
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:71.0) Gecko/20100101 Firefox/71.0  
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8  
Accept-Language: en-US,en;q=0.5  
Accept-Encoding: gzip, deflate  
Content-Type: application/json  
Connection: keep-alive  
Upgrade-Insecure-Requests: 1  
Cache-Control: max-age=0, no-cache
```

## Request Body

## New Tab



localhost:6950/api/products



localhost:6950/api/pr...

This XML file does not appear to have any style information associated with it.

```
<ArrayOfProduct>  
  <Product>  
    <ProductId>1</ProductId>  
    <ProductName>Monitor</ProductName>  
    <ProductPrice>4599</ProductPrice>  
  </Product>  
  <Product>  
    <ProductId>2</ProductId>  
    <ProductName>Keyboard</ProductName>  
    <ProductPrice>2479</ProductPrice>  
  </Product>  
  <Product>  
    <ProductId>3</ProductId>  
    <ProductName>Mouse</ProductName>  
    <ProductPrice>1101</ProductPrice>  
  </Product>  
  <Product>  
    <ProductId>7</ProductId>  
    <ProductName>'modem'</ProductName>  
    <ProductPrice>1100</ProductPrice>  
  </Product>  
</ArrayOfProduct>
```

```
[HttpPost]
0 references
public void AddProduct([FromBody] int id)
{
    Product p = new Product();
    p.ProductId = id;
    p.ProductName = "Not A Product";
    p.ProductPrice = double.MaxValue;
    products.Add(p);
}
```

## New Request

Cancel

Send

Method

URL

POST

http://localhost:6950/api/products

### Request Headers

Host: localhost:6950

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:71.0) Gecko/20100101 Firefox/71.0

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,\*/\*;q=0.8

Accept-Language: en-US,en;q=0.5

Accept-Encoding: gzip, deflate

Connection: keep-alive

Upgrade-Insecure-Requests: 1

Cache-Control: max-age=0

### Request Body

4

The screenshot shows a browser window with the following details:

- HTTP Method: POST
- URL: localhost:6950/products
- Status Code: 500
- Content Type: application/xml
- Content Length: 845...

The error response body contains the following XML:

```
<Error><Message>An error has occurred.</Message><ExceptionMessage>Multiple actions were found that match the request:</ExceptionMessage><ExceptionType>System.InvalidOperationException</ExceptionType><StackTrace> at System.Web.Http.Controllers.ApiControllerActionSelector.SelectAction(HttpContext controllerContext) at System.Web.Http.ApiController.ExecuteAsync(HttpContext controllerContext, CancellationToken cancellationToken) at System.Web.Http.Dispatcher.HttpControllerDispatcher.&lt;SendAsync&gt;d__15.MoveNext()</StackTrace></Error>
```

<Error><Message>An error has occurred.</Message><ExceptionMessage>Multiple actions were found that match the request:

AddProduct on type WebAPIHello.Controllers.ProductsController  
AddProductComposite on type WebAPIHello.Controllers.ProductsController</ExceptionMessage><ExceptionType>System.InvalidOperationException</ExceptionType><StackTrace> at System.Web.Http.Controllers.ApiControllerActionSelector.ActionSelectorCacheItem.SelectAction(HttpContext controllerContext) at System.Web.Http.Controllers.ApiControllerActionSelector.SelectAction(HttpContext controllerContext) at System.Web.Http.ApiController.ExecuteAsync(HttpContext controllerContext, CancellationToken cancellationToken) at System.Web.Http.Dispatcher.HttpControllerDispatcher.&lt;SendAsync&gt;d\_\_15.MoveNext()</StackTrace></Error>

To solve this error comment code in controller which is not needed right now

## New Request

Cancel Send

Method URL  
POST http://localhost:6950/api/products

## Request Headers

Host: localhost:6950  
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:71.0) Gecko/20100101 Firefox/71.0  
Accept: application/json, text/html, application/xhtml+xml, application/xml;q=0.9, \*/\*;q=0.8  
Accept-Language: en-US,en;q=0.5  
Accept-Encoding: gzip, deflate  
Content-Type: application/json  
Connection: keep-alive  
Upgrade-Insecure-Requests: 1  
Cache-Control: max-age=0, no-cache

## Request Body

4

localhost:6950/api/products X +

localhost:6950/api/product

This XML file does not appear to have any style information associated with it.

```

--><ArrayOfProduct>
--><Product>
<ProductId>1</ProductId>
<ProductName>Monitor</ProductName>
<ProductPrice>4599</ProductPrice>
</Product>
--><Product>
<ProductId>2</ProductId>
<ProductName>Keyboard</ProductName>
<ProductPrice>2479</ProductPrice>
</Product>
--><Product>
<ProductId>3</ProductId>
<ProductName>Mouse</ProductName>
<ProductPrice>1101</ProductPrice>
</Product>
--><Product>
<ProductId>4</ProductId>
<ProductName>Not A Product</ProductName>
<ProductPrice>1.7976931348623157E+308</ProductPrice>
</Product>
</ArrayOfProduct>

```

[Get Started](#)[Statistics](#)[Inspectors](#)[AutoResponder](#)[Composer](#)

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

[Execute](#)[Parsed](#) [Raw](#) [Scratchpad](#) [Options](#)POST <http://localhost:6950/api/products>

HTTP/1.1

 Log Requests

User-Agent: Fiddler  
Content-Type: application/json  
Host: localhost:6950  
Content-Length: 1

History

- localhost:6950/api/pr...
- localhost:6950/api/pr...
- localhost:6950/api/Val...

Request Body

4

[Upload file...](#)

localhost:6950/api/products X +

← → ⌂ ⌄ localhost:6950/api/produ

This XML file does not appear to have any style information associated with it.

```
<ArrayOfProduct>
  <Product>
    <ProductId>1</ProductId>
    <ProductName>Monitor</ProductName>
    <ProductPrice>4599</ProductPrice>
  </Product>
  <Product>
    <ProductId>2</ProductId>
    <ProductName>Keyboard</ProductName>
    <ProductPrice>2479</ProductPrice>
  </Product>
  <Product>
    <ProductId>3</ProductId>
    <ProductName>Mouse</ProductName>
    <ProductPrice>1101</ProductPrice>
  </Product>
  <Product>
    <ProductId>4</ProductId>
    <ProductName>Not A Product</ProductName>
    <ProductPrice>1.7976931348623157E+308</ProductPrice>
  </Product>
</ArrayOfProduct>
```

# Action method return types

- The Web API action method can have following return types.
  1. Void
  2. Primitive type or Complex type
  3. HttpResponseMessage
  4. IHttpActionResult

# Void

- It's not necessary that all action methods must return something. It can have void return type.

```
[HttpPost]
0 references
public void AddProductComposite(int id, [FromUri] Product prod)
{
    Product p = new Product();
    if (prod != null)
    {
        p.ProductId = prod.ProductId;
        p.ProductName = prod.ProductName;
        p.ProductPrice = prod.ProductPrice;
        products.Add(p);
    }
}
```

## Execute

Parsed Raw Scratchpad Options

**POST** <http://localhost:6950/api/products?id=10&ProductId=9&ProductName=Test&ProductPrice=100>

HTTP/1.1

User-Agent: Fiddler

Content-Type: application/json

Host: localhost:6950

Content-Length: 0

Log Requests

## History

-  localhost:6950/api/pr...
  -  localhost:6950/api/pr...
  -  localhost:6950/api/pr...
  -  localhost:6950/api/pr...
  -  localhost:6950/api/pr...
  -  localhost:6950/api/pr...
  -  localhost:6950/api/pr...
  -  localhost:6950/api/Val...
  -  localhost:6950/api/Val...
  -  localhost:6950/api/Val...
  -  localhost:6950/api/Val...
  -  localhost:6950/api/Val...
  -  localhost:6950/api/Val...
  -  localhost:6950/api/Val...

FO Fiddler Orchestra Beta    JS FiddlerScript    Log    Filters    Timeline

Get Started    Statistics    Inspectors    AutoResponder    Composer

Headers    TextView    SyntaxView    WebForms    HexView    Auth    Cookies    Raw    JSON    XML

Request Headers    [Raw]    [Header Definitions]

POST /api/products?id=10&ProductId=9&ProductName=Test&ProductPrice=100 HTTP/1.1

**Client**

User-Agent: Fiddler

Transformer    Headers    TextView    SyntaxView    ImageView    HexView    WebView    Auth

Caching    Cookies    Raw    JSON    XML

HTTP/1.1 204 No Content

Cache-Control: no-cache

Pragma: no-cache

Expires: -1

Server: Microsoft-IIS/10.0

X-AspNet-Version: 4.0.30319

X-SourceFiles: =?UTF-8?B?QzpcVXN1cnNcdXN1cjEuREVTS1RPUC1JSEQzU0pPXHNvdX?

X-Powered-By: ASP.NET

Date: Tue, 07 Jan 2020 11:48:03 GMT

localhost:6950/api/products

This XML file does not appear to have any style information associated with it.

```
<ArrayOfProduct xmlns:i="http://www.w3.org/2001/XMLSchema-instance">
  <Product>
    <ProductId>1</ProductId>
    <ProductName>Monitor</ProductName>
    <ProductPrice>4599</ProductPrice>
  </Product>
  <Product>
    <ProductId>2</ProductId>
    <ProductName>Keyboard</ProductName>
    <ProductPrice>2479</ProductPrice>
  </Product>
  <Product>
    <ProductId>3</ProductId>
    <ProductName>Mouse</ProductName>
    <ProductPrice>1101</ProductPrice>
  </Product>
  <Product>
    <ProductId>9</ProductId>
    <ProductName>Test</ProductName>
    <ProductPrice>100</ProductPrice>
  </Product>
</ArrayOfProduct>
```

# Primitive or Complex Type

```
0 references
public Product GetProductId(int id)
{
    return products[id - 1];
}
```

```
0 references
public string GetProductName(int id)
{
    return products[id - 1].ProductName;
}
-----
```

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## ⚡ AutoResponder

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## Execute

Parsed Raw Scratchpad Options

User-Agent: Fiddler  
Host: localhost:6950

```
0 references
public Product GetProductId(int id)
{
    return products[id - 1];
}
```

### Request Body

[Upload file.](#)

### Log Requests

## History

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Request Headers

GET /api/products?id=1 HTTP/1.1

**Client**

User-Agent: Fiddler

**Transport**

Host: localhost:6950

Transformer | Headers | TextView | SyntaxView | ImageView | HexView

Raw | **JSON** | XML

JSON

- ProductId=1
- ProductName=Monitor
- ProductPrice=4599

```
0 references
public Product GetProductId(int id)
{
    return products[id - 1];
}
```

## Get Started

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## Execute

Parsed Raw Scratchpad Options

GET  http://localhost:6950/api/products?id=1

## HTTP/1.1

User-Agent: Fiddler  
Host: localhost:6950

```
0 references
public string GetProductName(int id)
{
    return products[id - 1].ProductName;
}
```

### Request Body

[Upload file...](#)

```
0 references
public string GetProductName(int id)
{
    return products[id - 1].ProductName;
}
```

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Request Headers

GET /api/products?id=1 HTTP/1.1

**Client**  
User-Agent: Fiddler

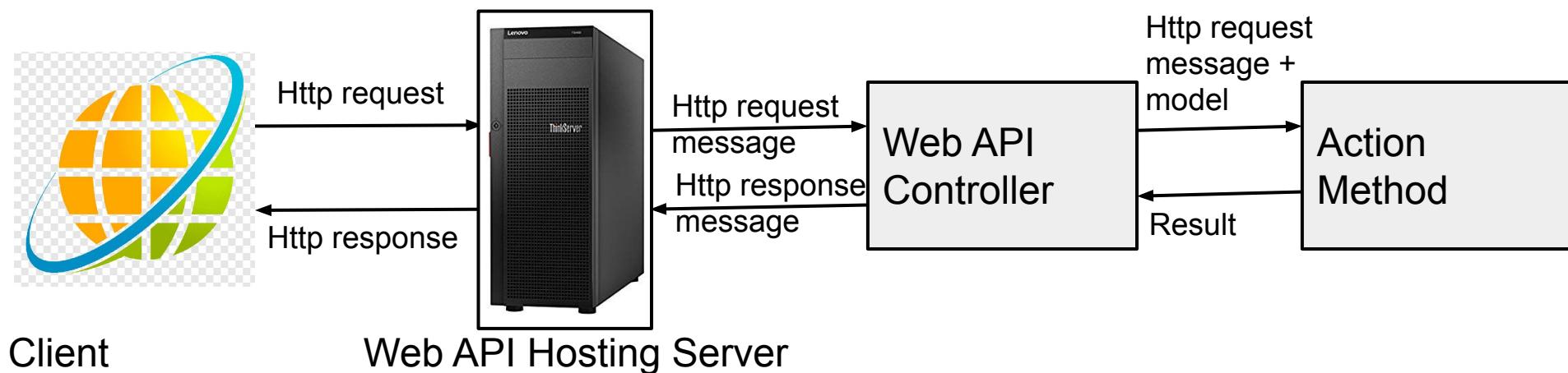
**Transport**  
Host: localhost:6950

Transformer | Headers | TextView | SyntaxView | ImageView | H  
Raw | JSON | XML |

.... JSON=Monitor

# HttpResponseMessage

- Web API controller always returns an object of HttpResponseMessage to the hosting infrastructure.
- You can also create and return an object of HttpResponseMessage directly from an action method.
- The advantage of sending HttpResponseMessage from an action method is that you can **configure** a **response** your way. You can set the **status code**, **content** or **error message** (if any) as per your requirement.



```
public HttpResponseMessage GetProductId(int id)
{
    Product p = new Product();
    p = products[id - 1];
    if (p == null)
    {
        return Request.CreateResponse(HttpStatusCode.NotFound, id);
    }
    else
    {
        return Request.CreateResponse(HttpStatusCode.OK, p);
    }
}
```

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

Execute

Parsed Raw Scratchpad Options

GET http://localhost:6950/api/products?id=1

HTTP/1.1

Log Requests

User-Agent: Fiddler  
Host: localhost:6950

Get Started Statistics Inspectors AutoRespo  
Headers TextView SyntaxView WebForms HexView Auth Cookies Raw  
GET http://localhost:6950/api/products?id=1 HTTP/1.1  
User-Agent: Fiddler  
Host: Localhost:6950  
Find... (press Ctrl+Enter to highlight all)

Transformer Headers TextView SyntaxView ImageView HexView WebView  
Raw JSON XML

HTTP/1.1 200 OK  
Cache-Control: no-cache  
Pragma: no-cache  
Content-Type: application/json; charset=utf-8  
Expires: -1  
Server: Microsoft-IIS/10.0  
X-AspNet-Version: 4.0.30319  
X-SourceFiles: =?UTF-8?B?QzpcVXN1cnNcdXN1cjEuREVTS1RPUClJSEQzu0p  
X-Powered-By: ASP.NET  
Date: Wed, 08 Jan 2020 06:36:59 GMT  
Content-Length: 61  
  
{"ProductId":1,"ProductName":"Monitor","ProductPrice":4599.0}

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

Execute

Parsed Raw Scratchpad Options

GET

http://localhost:6950/api/products?id=4

HTTP/1.1

Log Requests

User-Agent: Fiddler  
Host: localhost:6950

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XML

GET http://localhost:6950/api/products?id=4 HTTP/1.1  
User-Agent: Fiddler  
Host: localhost:6950

Find... (press Ctrl+Enter to highlight all)

View

Transformer

Headers

TextView

SyntaxView

Image View

HexView

WebView

Caching

Cookies

Raw

JSON

XML

HTTP/1.1 404 Not Found

Cache-Control: no-cache

Pragma: no-cache

Content-Type: application/json; charset=utf-8

Expires: -1

Server: Microsoft-IIS/10.0

X-AspNet-Version: 4.0.30319

X-SourceFiles: =?UTF-8?B?QzpcVXN1cnNcdXN1cjEuREVTS1RPUC1JSEQzU0pP?

X-Powered-By: ASP.NET

Date: Wed, 08 Jan 2020 06:43:28 GMT

Content-Length: 1

```
public HttpResponseMessage GetProductId(int id)
{
    Product p = new Product();
    if(id > 3)
    {
        p = null;
    }
    //p = products[id - 1];
    if (p == null)
    {
        var message = string.Format("Product with id = {0} not found", id);
        HttpError err = new HttpError(message);
        return Request.CreateResponse(HttpStatusCode.NotFound, err);
        //return Request.CreateResponse(HttpStatusCode.NotFound, id);
    }
    else
    {
        return Request.CreateResponse(HttpStatusCode.OK, p);
    }
}
```

Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

Execute

Parsed Raw Scratchpad Options

GET http://localhost:6950/api/products?id=4 HTTP/1.1  Log RequestsUser-Agent: Fiddler  
Host: localhost:6950

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GET http://localhost:6950/api/products?id=4 HTTP/1.1  
User-Agent: Fiddler  
Host: localhost:6950

Find... (press Ctrl+Enter to highlight all)

View

Transformer Headers TextView SyntaxView ImageView HexView WebView  
Caching Cookies Raw JSON XMLHTTP/1.1 404 Not Found  
Cache-Control: no-cache  
Pragma: no-cache  
Content-Type: application/json; charset=utf-8  
Expires: -1  
Server: Microsoft-IIS/10.0  
X-AspNet-Version: 4.0.30319  
X-SourceFiles: =?UTF-8?B?QzpcVXN1cnNcdXN1cjEuREVTS1RPUC1JSEQzu0pP?  
X-Powered-By: ASP.NET  
Date: Wed, 08 Jan 2020 06:50:57 GMT  
Content-Length: 43  
  
{"Message": "Product with id = 4 not found"}

# IHttpActionResult

- The IHttpActionResult was introduced in Web API 2 (.NET 4.5).
- An action method in Web API 2 can return an implementation of IHttpActionResult class which is more or less similar to ActionResult class in ASP.NET MVC.
- You can create your own class that implements *IHttpActionResult* or use various methods of *ApiController* class that returns an object that implement the IHttpActionResult.

```
public IHttpActionResult GetProductId(int id)
{
    Product p = new Product();
    if (id > 3 || id < 1)
    {
        p = null;
    }
    else
    {
        p = products[id - 1];
    }
    if (p == null)
    {
        return NotFound();
    }
    else
    {
        return Ok(p);
    }
}
```

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Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

[Execute](#)[Parsed](#) [Raw](#) [Scratchpad](#) [Options](#)GET <http://localhost:6950/api/products?id=3>

HTTP/1.1

 Log Requests

User-Agent: Fiddler  
Host: localhost:6950

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GET <http://localhost:6950/api/products?id=3> HTTP/1.1  
User-Agent: Fiddler  
Host: localhost:6950

Find... (press Ctrl+Enter to highlight all)

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HTTP/1.1 200 OK

Cache-Control: no-cache

Pragma: no-cache

Content-Type: application/json; charset=utf-8

Expires: -1

Server: Microsoft-IIS/10.0

X-AspNet-Version: 4.0.30319

X-SourceFiles: =?UTF-8?B?QzpcVXN1cnNcdXN1cjEuREVTS1RPUC1JSE=

X-Powered-By: ASP.NET

Date: Wed, 08 Jan 2020 09:24:29 GMT

Content-Length: 59

{"ProductId": 3, "ProductName": "Mouse", "ProductPrice": 1101.0}

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Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

[Execute](#)[Parsed](#) [Raw](#) [Scratchpad](#) [Options](#)GET <http://localhost:6950/api/products?id=10>

HTTP/1.1

 Log Requests

History

GET localhost:6950/api/pr

User-Agent: Fiddler  
Host: localhost:6950[Get Started](#)[Statistics](#)[Inspectors](#)[AutoResponder](#)[Composer](#)[Headers](#)[TextView](#)[SyntaxView](#)[WebForms](#)[HexView](#)[Auth](#)[Cookies](#)[Raw](#)[JSON](#)[XML](#)GET <http://localhost:6950/api/products?id=10> HTTP/1.1User-Agent: Fiddler  
Host: localhost:6950

Find... (press Ctrl+Enter to highlight all)

[View in Notepad](#)[Transformer](#)[Headers](#)[TextView](#)[SyntaxView](#)[ImageView](#)[HexView](#)[WebView](#)[Auth](#)[Caching](#)[Cookies](#)[Raw](#)[JSON](#)[XML](#)

HTTP/1.1 404 Not Found

Cache-Control: no-cache

Pragma: no-cache

Expires: -1

Server: Microsoft-IIS/10.0

X-AspNet-Version: 4.0.30319

X-SourceFiles: =?UTF-8?B?QzpcVXNlcnNcdXNlcjEuREVTS1RPUC1JSEQzU0pPXHNvdX:

X-Powered-By: ASP.NET

Date: Wed, 08 Jan 2020 09:27:39 GMT

Content-Length: 0

All the methods of ApiController class that returns an object of a class that implements IHttpActionResult interface.

ApiController Method	Description
BadRequest()	Creates a BadRequestResult object with status code 400.
Conflict()	Creates a ConflictResult object with status code 409.
Content()	Creates a NegotiatedContentResult with the specified status code and data.
Created()	Creates a CreatedNegotiatedContentResult with status code 201 Created.
CreatedAtRoute()	Creates a CreatedAtRouteNegotiatedContentResult with status code 201 created.
InternalServerError()	Creates an InternalServerErrorResult with status code 500 Internal server error.
NotFound()	Creates a NotFoundResult with status code 404.
Ok()	Creates an OkResult with status code 200.
Redirect()	Creates a RedirectResult with status code 302.

All the methods of ApiController class that returns an object of a class that implements IHttpActionResult interface.

ApiController Method	Description
RedirectToRoute()	Creates a RedirectToRouteResult with status code 302.
ResponseMessage()	Creates a ResponseMessageResult with the specified HttpResponseMessage.
StatusCode()	Creates a StatusCodeResult with the specified http status code.
Unauthorized()	Creates an UnauthorizedResult with status code 401.

# Create Custom Result Type

- You can create your own custom class as a result type that implements `IHttpActionResult` interface.

```
public class TextResult : IHttpActionResult
{
    string _value;
    HttpResponseMessage _request;
```

1 reference

```
public TextResult(string value, HttpResponseMessage request)
{
    _value = value;
    _request = request;
}
```

0 references

```
public Task<HttpResponseMessage> ExecuteAsync(CancellationToken cancellationToken)
{
    var response = new HttpResponseMessage()
    {
        Content = new StringContent(_value),
        RequestMessage = _request
    };
    return Task.FromResult(response);
}
```

0 references

```
public IHttpActionResult Get()
{
    return new TextResult("hello", Request);
}
```

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Use this page to compose a Request. You can clone a prior request by dragging and dropping a session from the Web Sessions list.

Parsed Raw Scratchpad Options

GET http://localhost:6950/api/products HTTP/1.1 Log Requests

User-Agent: Fiddler  
Host: localhost:6950

History

GET localhost:6950/api/pr  
GET localhost:6950/api/nr

API

GET http://localhost:6950/api/products HTTP/1.1  
User-Agent: Fiddler  
Host: localhost:6950

Find... (press Ctrl+Enter to highlight all) View

Transformer Headers TextView SyntaxView ImageView HexView WebView  
Caching Cookies Raw JSON XML

HTTP/1.1 200 OK  
Cache-Control: no-cache 0 references  
Pragma: no-cache public IHttpActionResult Get()  
Content-Length: 5 {  
Content-Type: text/plain  
Expires: -1 return new TextResult("hello", Request);  
Server: Microsoft-IIS/7.5  
X-AspNet-Version: 4.0.30319  
X-SourceFiles: =?UTF-8?B?QzpcVXNlcjEuREVTS1RPUC1JSEQzU0pF?  
X-Powered-By: ASP.NET  
Date: Wed, 08 Jan 2020 09:55:46 GMT

hello

AutoResponder

w Auth Cookies Raw