RESTful web service tutorial for C#

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1   Introduction

This document describes how to create a Hello World RESTful web service in Visual Studio using ASP.NET core.

2   RESTful service

Open a command prompt from your project directory and issue the following commands to create a new web application (the ⮑ symbol means that the command is continued in the next line, and the whole command should be typed as a single line):
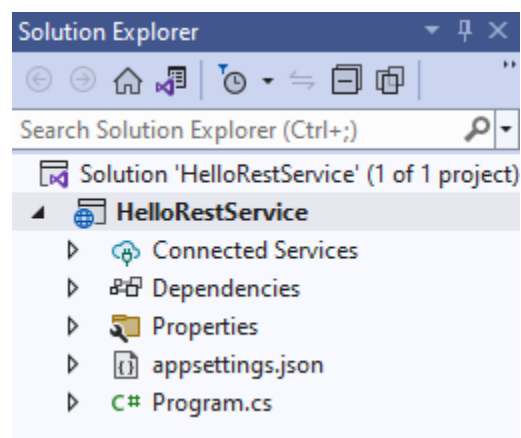
c:\Users\[user]\source\projects>mkdir HelloRestService

c:\Users\[user]\source\projects>dotnet new web -n HelloRestService ⮑
  -o HelloRestService

(Make sure to use the simple command prompt and not PowerShell, since PowerShell handles the dash switches differently.)

Replace the **HelloRestService.csproj** in the newly created **HelloRestService** folder with the one attached to this tutorial (**HelloRestService\HelloRestService.csproj**).

Open the project in Visual Studio:

Create a new class called **HelloController** inside the project with the following content:

```csharp
using Microsoft.AspNetCore.Mvc;

namespace HelloRestService
{
    [ApiController]
    [Route("api/[controller]")]
    public class HelloController : Controller
    {
        [HttpGet]
        [Route("sayHello")]
        public string SayHello([FromQuery] string name)
        {
            return $"Hello: {name}";
        }
    }
}
```

Update the main **Program.cs** with the following content:

```csharp
var builder = WebApplication.CreateBuilder(args);
builder.Services.AddControllers();

var app = builder.Build();
app.MapControllers();

app.Run();
```
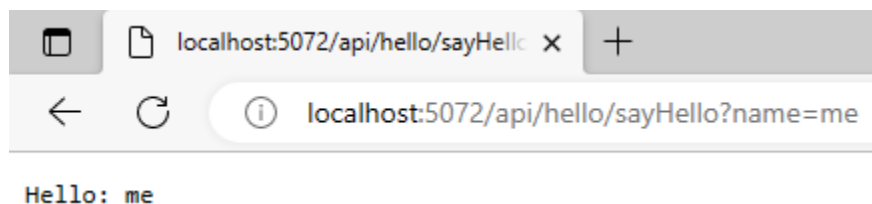
Run the application with **Ctrl+F5**.

To test the service, type the following URL into a browser (FireFox, Chrome, IE, etc.):

http://localhost:[port]/hellorest.service/api/hello/sayHello?name=me

The **[port]** number should be the one in the **Properties/launchSettings.json** file. The result should be similar to this:
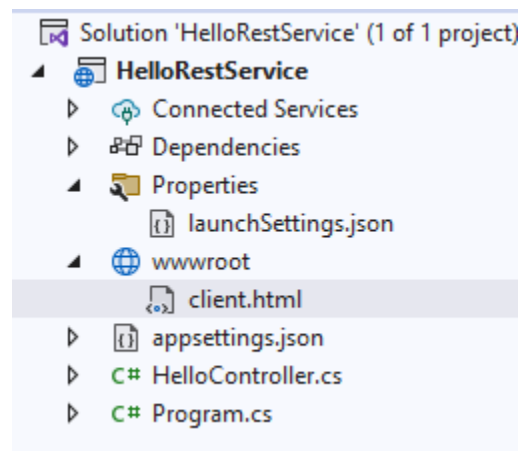

The URL has the following structure:

- **http://localhost:5072** – the protocol, domain name and port number of the server
- **/api/hello** – the **[Route]** mapping of the **HelloController** class
- **/sayHello** – the **[Route]** mapping of the **SayHello** operation
- **?name=me** – the name and value passed as a **[FromQuery]** parameter

3   HTML client

Create a **wwwroot** folder in the project and an HTML file called **client.html** under this folder:

The contents of the file should be the following:

```html
<!DOCTYPE html>
<html>
<head>
    <meta charset="utf-8" />
    <title></title>
</head>
<body>
    <form method="get" action="api/hello/sayHello">
        Type your name: <input type="text" name="name" />
        <input type="submit" value="Say hello" />
    </form>
</body>
</html>
```

Update the main **Program.cs** with the following content:

```csharp
var builder = WebApplication.CreateBuilder(args);
builder.Services.AddControllers();

var app = builder.Build();
app.MapControllers();
app.UseStaticFiles();

app.Run();
```
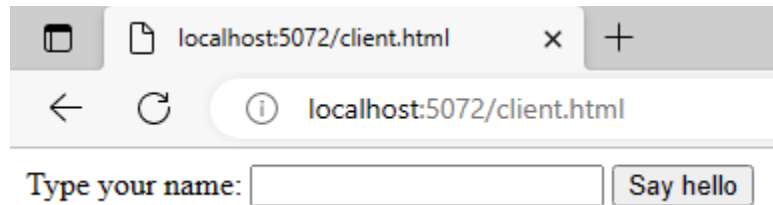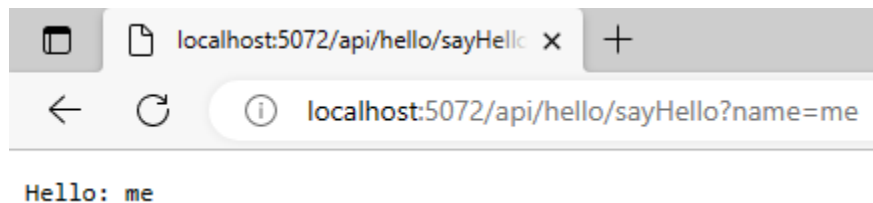
Run the application, and open the following URL in a browser:

http://localhost:[port]/client.html

3

This is where the HTML is accessible. The page should be loaded in the browser. Type something in the text field and click the **Say hello** button:

The result should be the following:

4   C# client using HttpClient

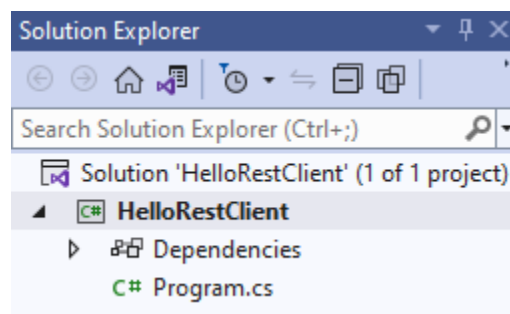The HttpClient class can be used to call the REST service.

Open a command prompt from your project directory and issue the following commands to create a new console application:

c:\Users\[user]\source\projects>mkdir HelloRestClient

**c:\Users\[user]\source\projects>dotnet new console -n HelloRestClient ↪
  -o HelloRestClient**

Replace the **HelloRestClient.csproj** in the newly created **HelloRestClient** folder with the one attached to this tutorial (**HelloRestClient\HelloRestClient.csproj**).

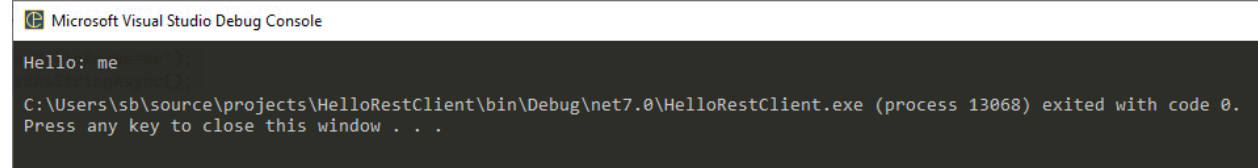Open the project in Visual Studio. The project should look like this:

Update **Program.cs** with the following content (make sure that the port number is correct):

```csharp
var client = new HttpClient();
client.BaseAddress = new Uri("http://localhost:5072/api/hello/");

var result = await client.GetAsync("sayHello?name=me");
var content = await result.Content.ReadAsStringAsync();
Console.WriteLine(content);
```

When you run the application, the result will be:

Microsoft Visual Studio Debug Console

```
Hello: me

C:\Users\sb\source\projects\HelloRestClient\bin\Debug\net7.0\HelloRestClient.exe (process 13068) exited with code 0.
Press any key to close this window . . .
```