MVA Microsoft Virtual Academy

Lighting Up Real-time Web Communications with SignalR

Microsoft

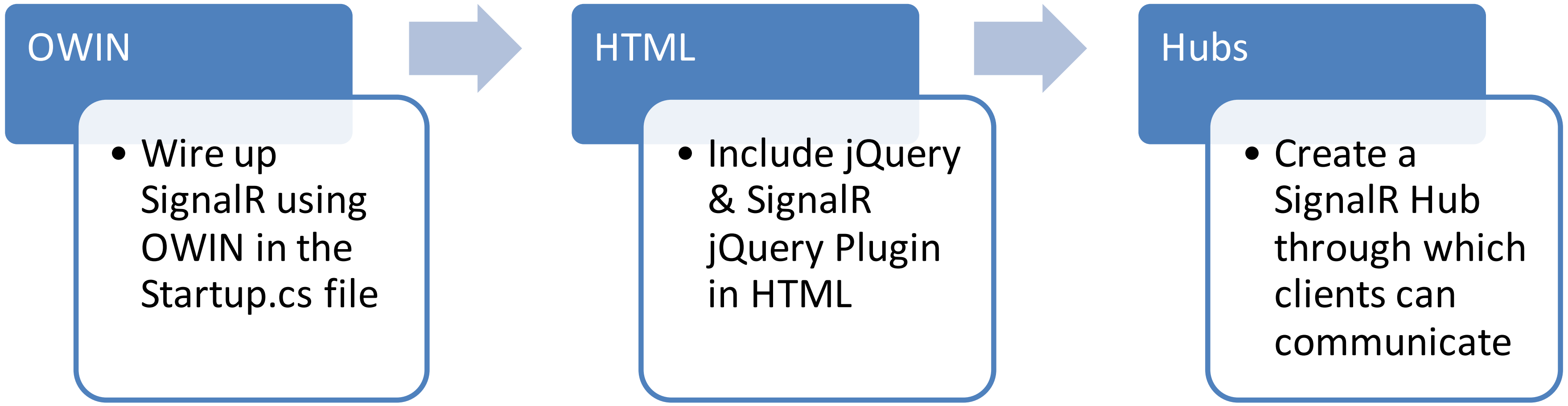
Jon Galloway | Technical Evangelist
Brady Gaster | Program Manager, Azure SDK & Tools

02 | SignalR on the Web

Jon Galloway | Technical Evangelist
Brady Gaster | Program Manager, Azure SDK & Tools

Using SignalR in New ASP.NET Web Applications

SignalR is included in the Visual Studio 2013 ASP.NET templates



OWIN

- Wire up SignalR using OWIN in the Startup.cs file

HTML

- Include jQuery & SignalR jQuery Plugin in HTML

Hubs

- Create a SignalR Hub through which clients can communicate

Using SignalR in Existing ASP.NET Web Applications

SignalR is distributed as numerous NuGet packages, one of which provides the JavaScript client

NuGet

- Install the SignalR and/or SignalR JS packages

OWIN

- Wire up SignalR using OWIN in the Startup.cs file

HTML

- Include jQuery & SignalR jQuery Plugin in HTML

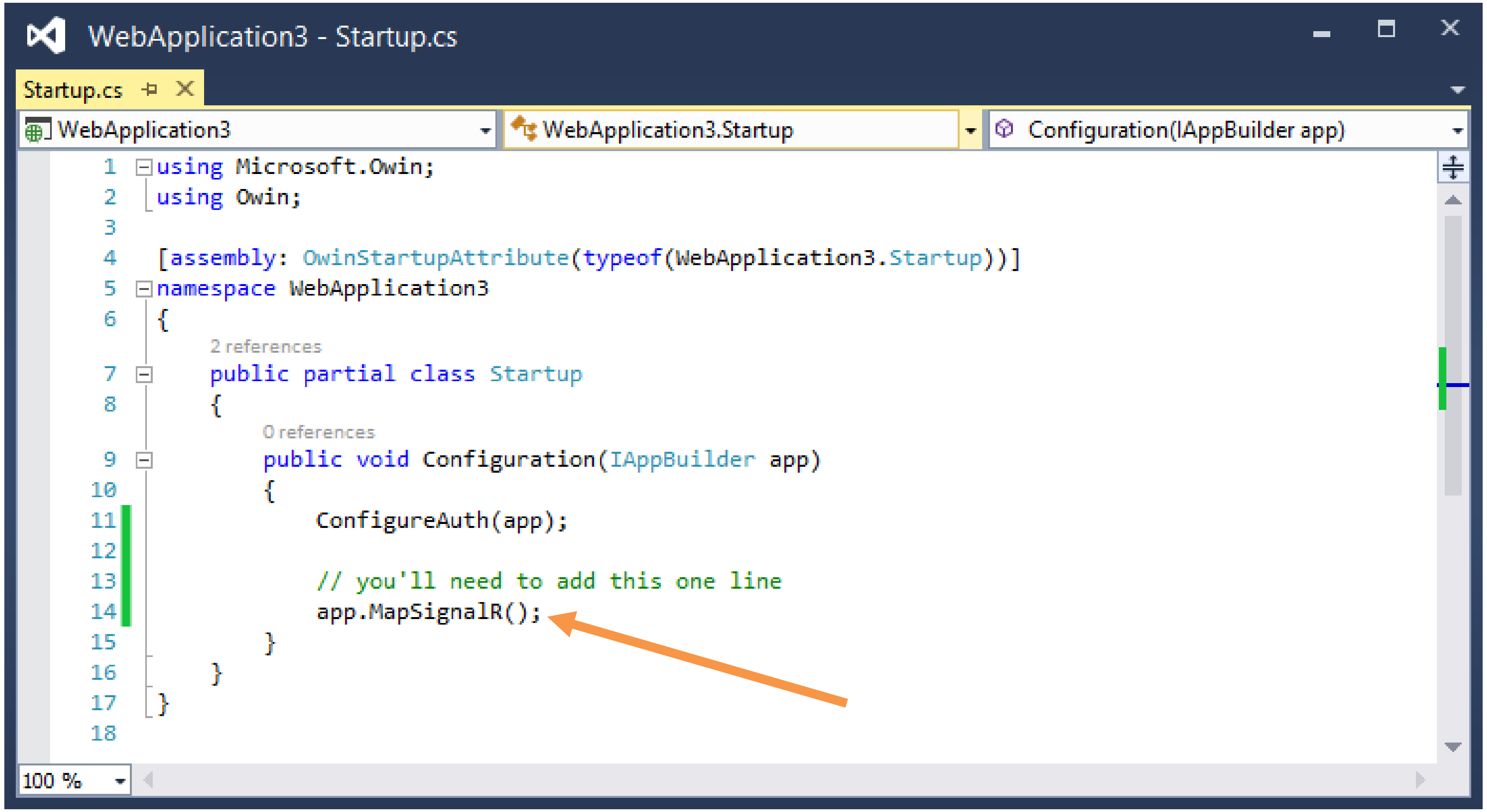
Hubs

- Create a SignalR Hub through which clients can communicate

```
PM> Install-Package Microsoft.AspNet.SignalR
```

```
PM> Install-Package Microsoft.AspNet.SignalR.JS
```

Wire up SignalR using OWIN

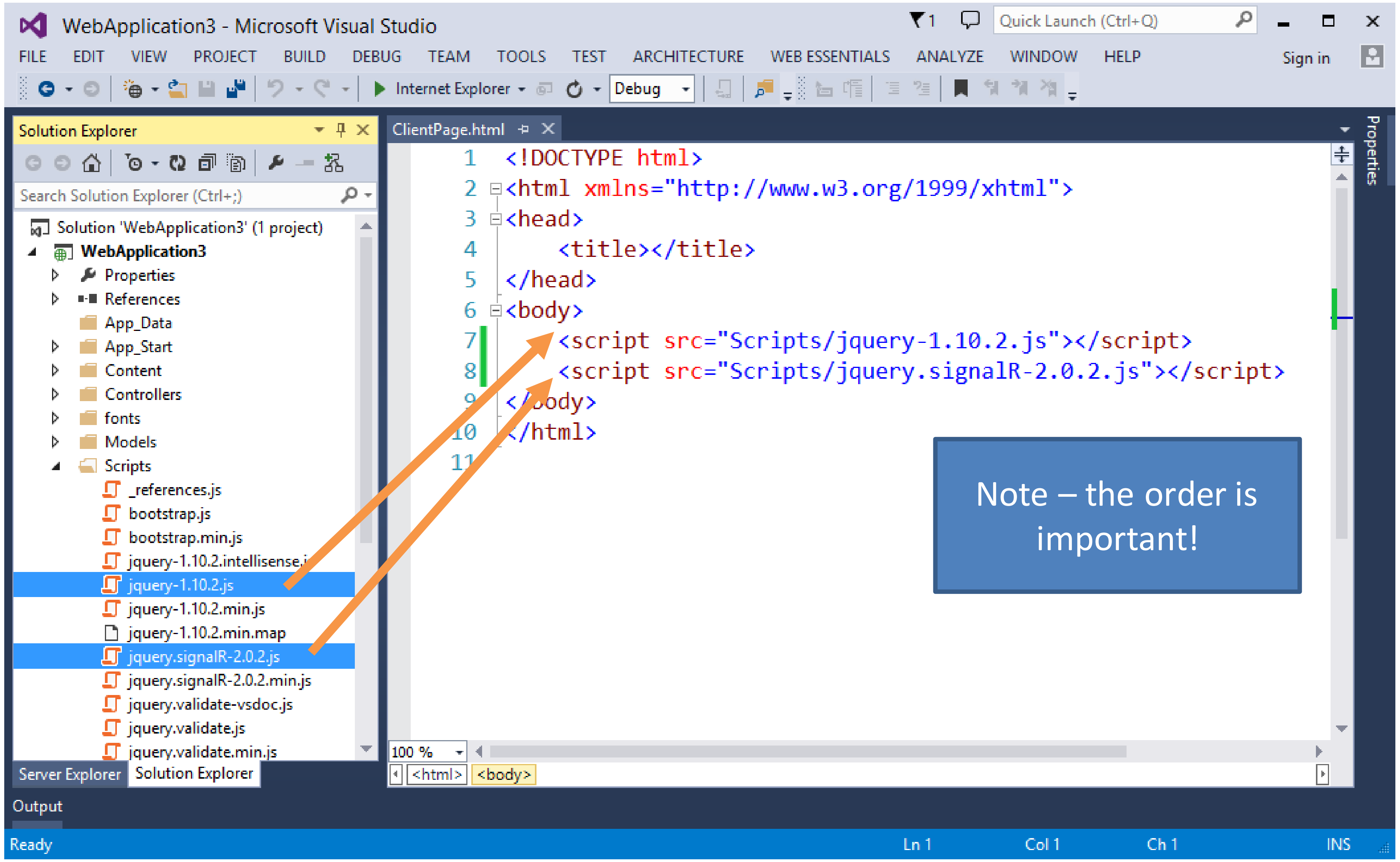


```
using Microsoft.Owin;
using Owin;

[assembly: OwinStartupAttribute(typeof(WebApplication3.Startup))]
namespace WebApplication3
{
    2 references
    public partial class Startup
    {
        0 references
        public void Configuration(IAppBuilder app)
        {
            ConfigureAuth(app);

            // you'll need to add this one line
            app.MapSignalR();
        }
    }
}
```

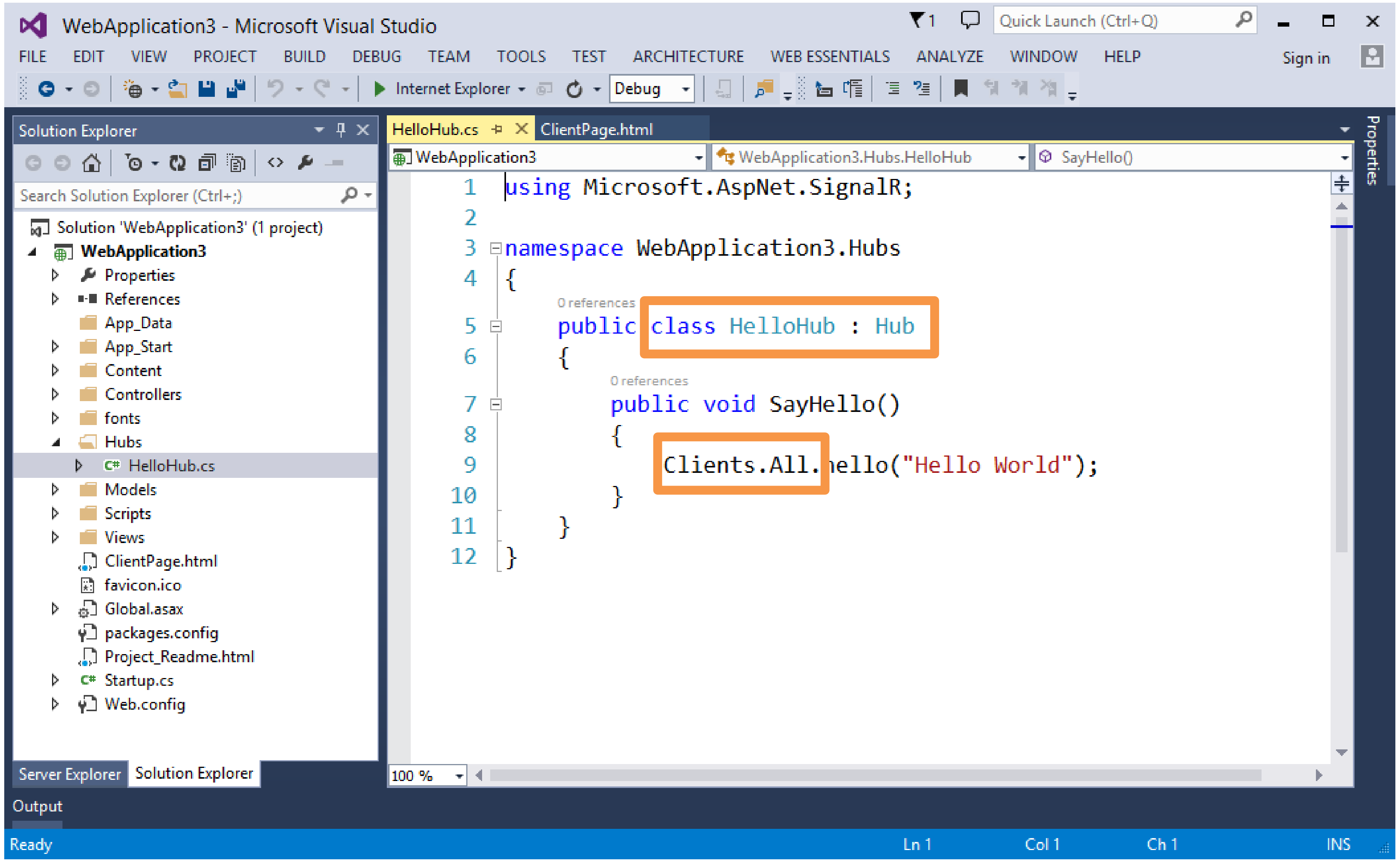
Include the jQuery Scripts



```html
<!DOCTYPE html>
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
    <title></title>
</head>
<body>
    <script src="Scripts/jquery-1.10.2.js"></script>
    <script src="Scripts/jquery.signalR-2.0.2.js"></script>
</body>
</html>
```

Note – the order is important!

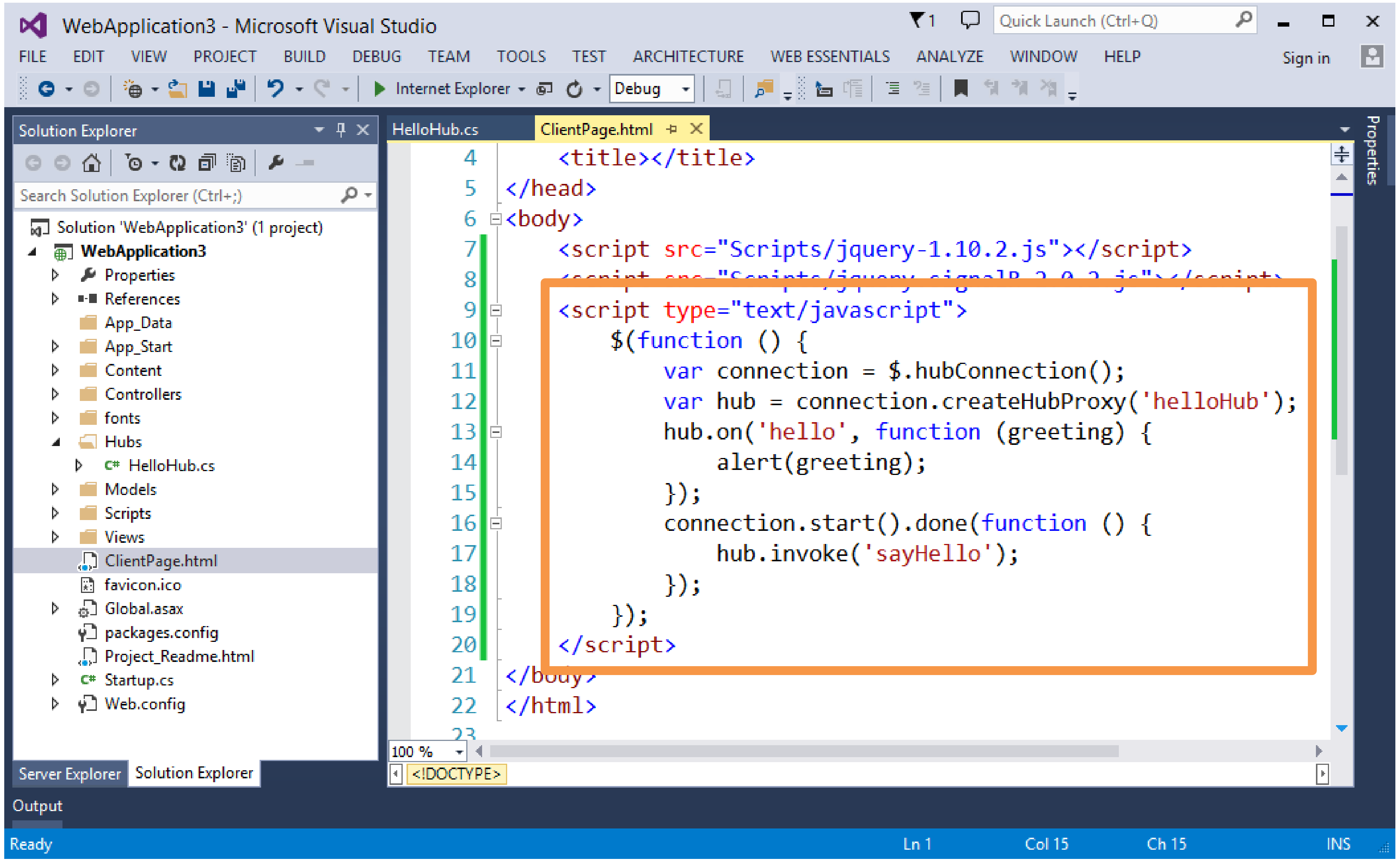
Create a Hub



```csharp
using Microsoft.AspNet.SignalR;

namespace WebApplication3.Hubs
{
    0 references
    public class HelloHub : Hub
    {
        0 references
        public void SayHello()
        {
            Clients.All.hello("Hello World");
        }
    }
}
```

Connect the client to the Hub using JavaScript



```html
    <title></title>
</head>
<body>
    <script src="Scripts/jquery-1.10.2.js"></script>
    <script src="Scripts/jquery.signalR-2.0.2.js"></script>
    <script type="text/javascript">
        $(function () {
            var connection = $.hubConnection();
            var hub = connection.createHubProxy('helloHub');
            hub.on('hello', function (greeting) {
                alert(greeting);
            });
            connection.start().done(function () {
                hub.invoke('sayHello');
            });
        });
    </script>
</body>
</html>
```

MVA Microsoft Virtual Academy

DEMO

Installing SignalR into an Existing ASP.NET App

MVA Microsoft Virtual Academy

Using SignalR with AngularJS

Microsoft

Jon Galloway | Technical Evangelist
Brady Gaster | Program Manager, Azure SDK & Tools

Connect the client to the Hub using JavaScript

- Hubs are wrapped by Angular factories
- Multiple controllers can make use of a single factory
- Angular factories are created as singletons
- All controllers can share single-instance Hub proxies

MVA Microsoft Virtual Academy

DEMO

Using SignalR and AngularJS Together

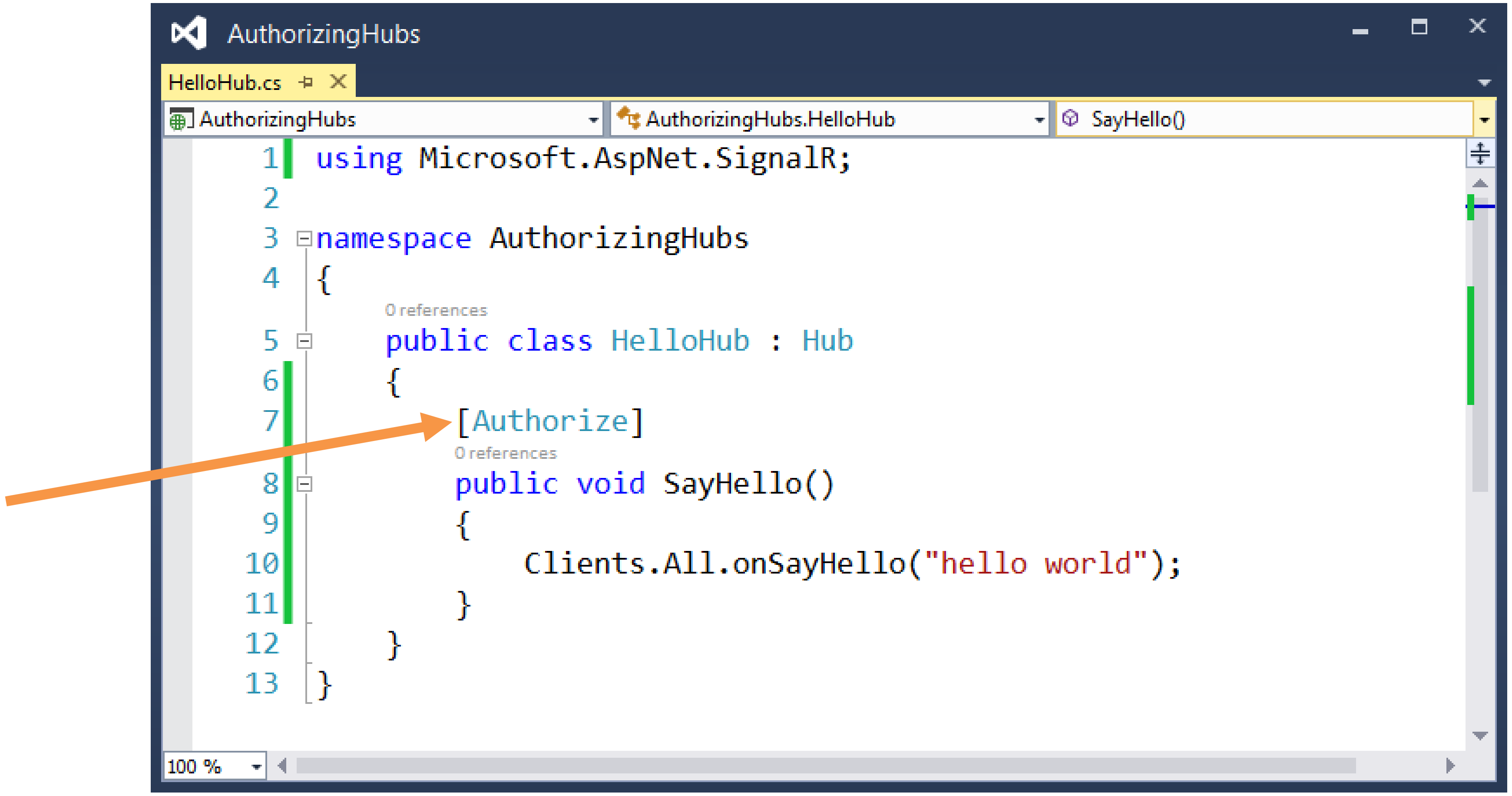
DEMO

Building a Real-world Angular/SignalR App

Enabling Authorization with SignalR

Jon Galloway | Technical Evangelist
Brady Gaster | Program Manager, Azure SDK & Tools

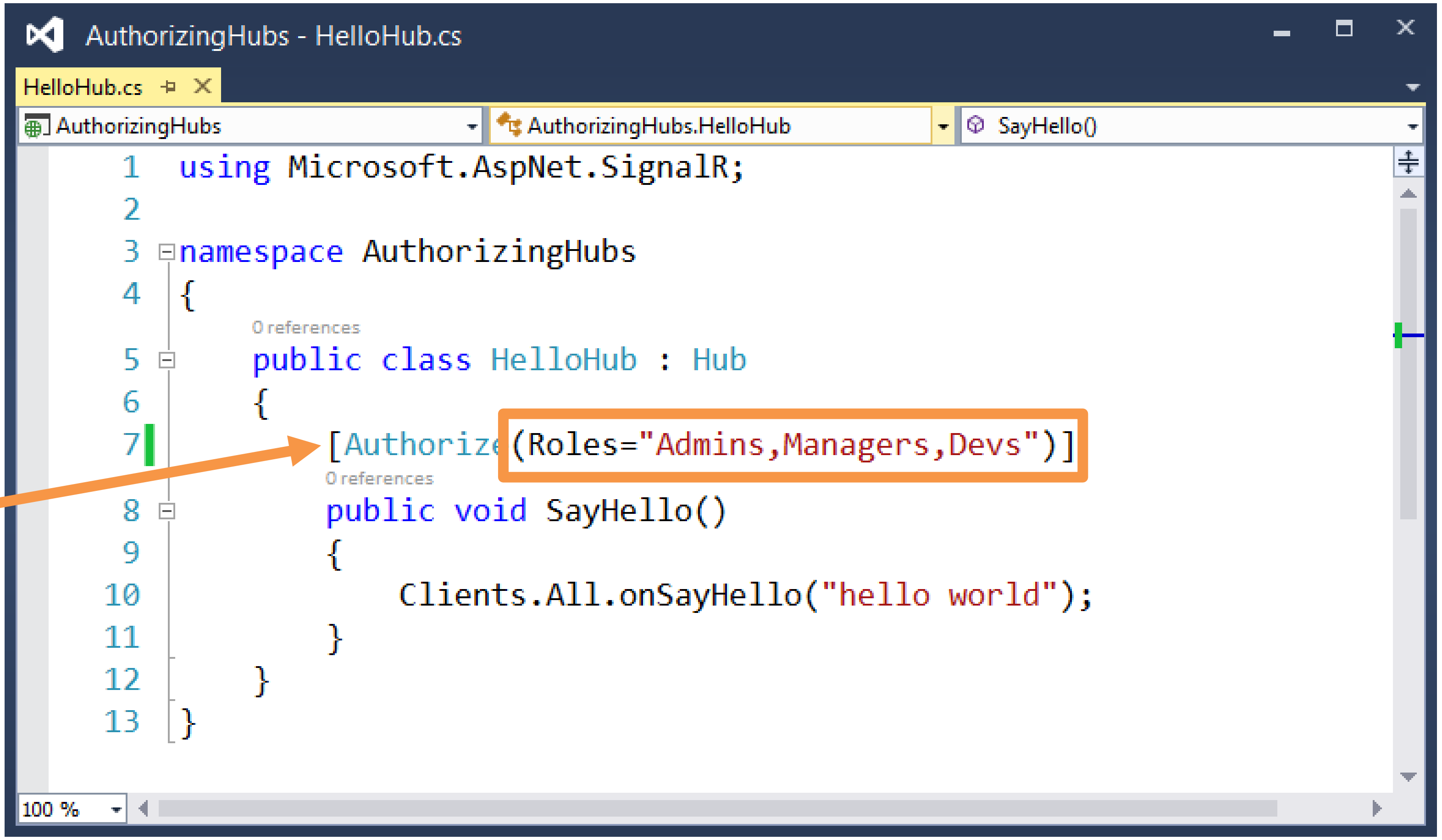
Allowing Authorized Users Only



```
using Microsoft.AspNet.SignalR;

namespace AuthorizingHubs
{
    0 references
    public class HelloHub : Hub
    {
        [Authorize]
        0 references
        public void SayHello()
        {
            Clients.All.onSayHello("hello world");
        }
    }
}
```

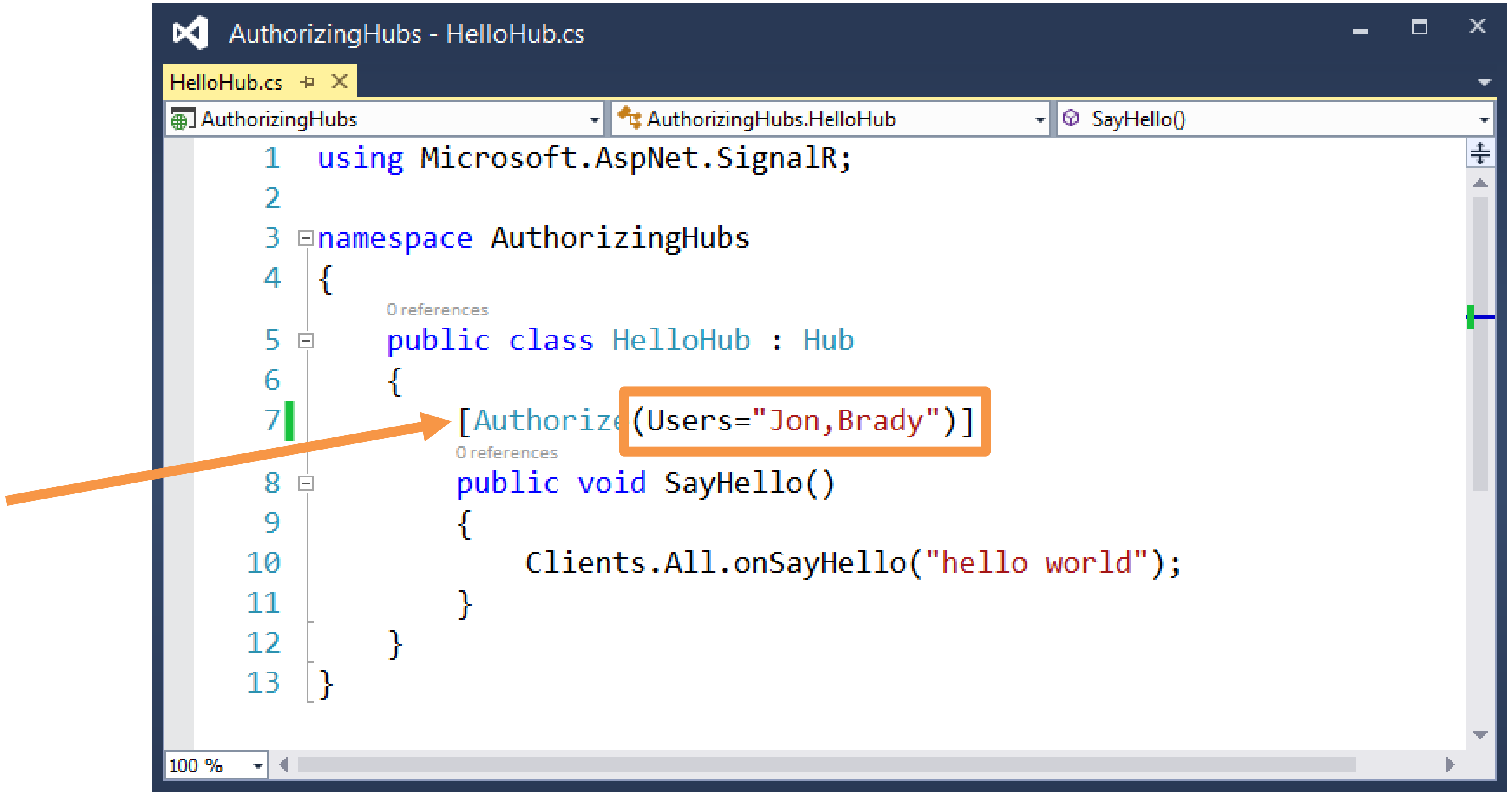
Controlling Access by Role



```
using Microsoft.AspNet.SignalR;

namespace AuthorizingHubs
{
    0 references
    public class HelloHub : Hub
    {
        [Authorize(Roles="Admins,Managers,Devs")]
        0 references
        public void SayHello()
        {
            Clients.All.onSayHello("hello world");
        }
    }
}
```

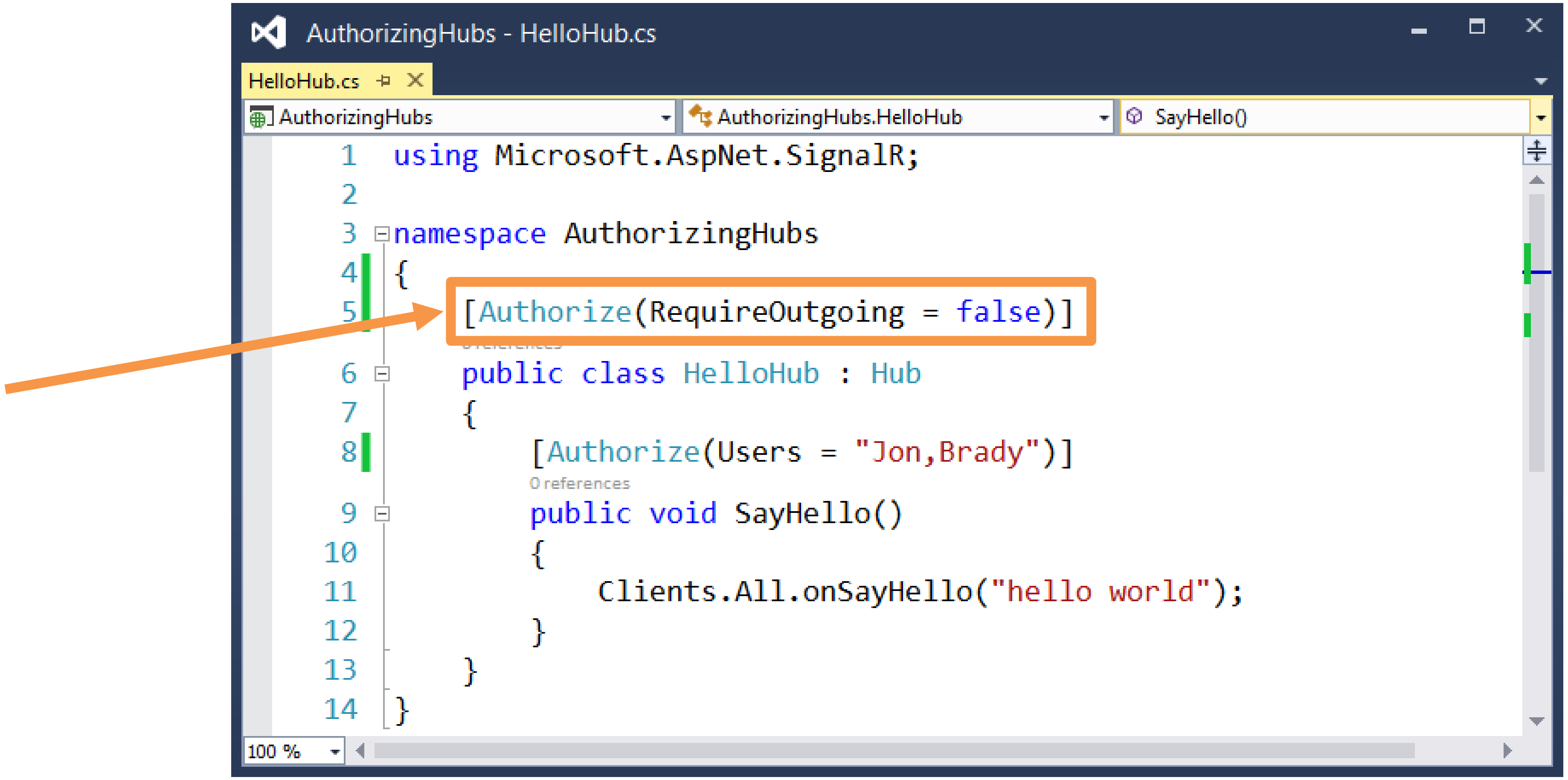
Controlling Access to Specific Users



```
using Microsoft.AspNet.SignalR;

namespace AuthorizingHubs
{
    0 references
    public class HelloHub : Hub
    {
        [Authorize(Users="Jon,Brady")]
        0 references
        public void SayHello()
        {
            Clients.All.onSayHello("hello world");
        }
    }
}
```

Inbound is restricted, but outbound is open



```
using Microsoft.AspNet.SignalR;

namespace AuthorizingHubs
{
    [Authorize(RequireOutgoing = false)]
    public class HelloHub : Hub
    {
        [Authorize(Users = "Jon,Brady")]
        0 references
        public void SayHello()
        {
            Clients.All.onSayHello("hello world");
        }
    }
}
```

MVA Microsoft Virtual Academy

DEMO

Requiring Authorization to Access Hubs

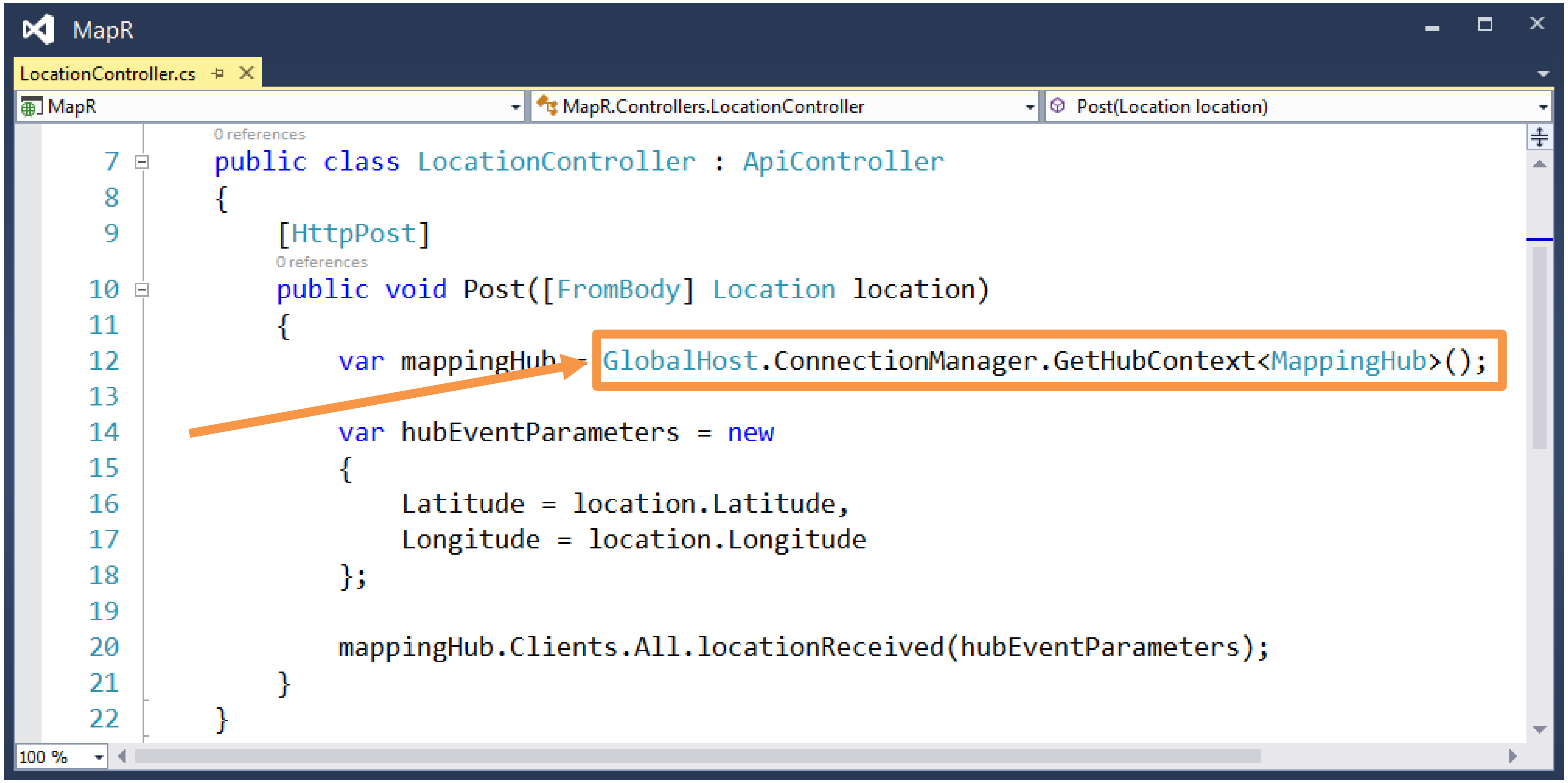
Let’s all participate in an interactive demo together

MVA Microsoft Virtual Academy

DEMO

From Where are You Watching?

Calling SignalR from ASP.NET Server-side Code



```
    0 references
    public class LocationController : ApiController
    {
        [HttpPost]
        0 references
        public void Post([FromBody] Location location)
        {
            var mappingHub = GlobalHost.ConnectionManager.GetHubContext<MappingHub>();

            var hubEventParameters = new
            {
                Latitude = location.Latitude,
                Longitude = location.Longitude
            };

            mappingHub.Clients.All.locationReceived(hubEventParameters);
        }
    }
```

Resources

Title	URL
Authentication & Authorization for SignalR Hubs	http://aka.ms/signalr-auth

MVA Microsoft Virtual Academy

Next Section: SignalR on the Client

Microsoft

Jon Galloway | Technical Evangelist
Brady Gaster | Program Manager, Azure SDK & Tools

Microsoft