COMP 90018 Mobile Computing Systems Programming

Tutorial on Android Development

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Welcome!

Outcomes of this tutorial:

1. **Build Azure API**

2. **Call API in Android App**

How to do work beyond data CRUD?

An example: https://adrianhall.github.io/develop-mobile-apps-with-csharp-and-azure/chapter4/custom/

Go to Visual Studio!
Open BackEnd Code.

API in URL

1. All custom API stay under an endpoint "/api"

2. E.g., a controller "FooController" has a URL like "api/Foo"

   ("api/foo" also works)

Configuring Custom APIs

App_Start\Startup.MobileApp.cs

```
new MobileAppConfiguration()
    .UseDefaultConfiguration()
    .ApplyTo(config);
```

Change it to

```
new MobileAppConfiguration()
    .AddTablesWithEntityFramework()
    .MapApiControllers()
    .ApplyTo(config);
```

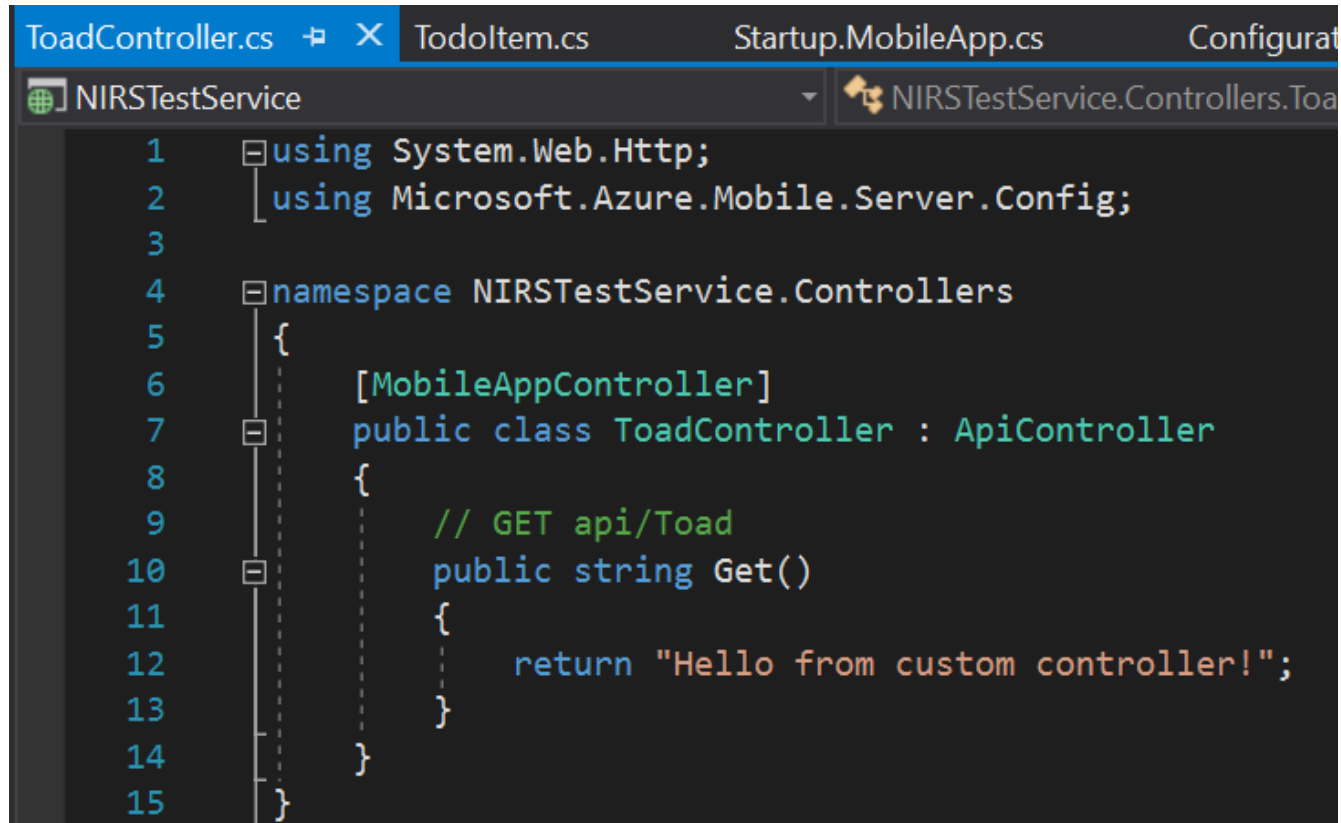# Create a Custom API

On Controllers folder, right click

Add->Controller

An empty API Controller


```csharp
using System.Web.Http;
using Microsoft.Azure.Mobile.Server.Config;

namespace NIRSTestService.Controllers
{
    [MobileAppController]
    public class ToadController : ApiController
    {
        // GET api/Toad
        public string Get()
        {
            return "Hello from custom controller!";
        }
    }
}
```

Do whatever you want here

E.g., Addition

```csharp
    public ResultViewModel Get( int? first, int? second)
    {
        if (first ==null||second ==null)
        {
            throw new HttpResponseException(HttpStatusCode.BadRequest);
        }
        ResultViewModel results = new ResultViewModel
        {
            First = first.GetValueOrDefault(),
            Second = second.GetValueOrDefault()
        };
        results.Result = results.First + results.Second;
        return results;
    }
}

public class ResultViewModel
{
    public int First { get; set; }
    public int Second { get; set; }
    public int Result { get; set; }
```
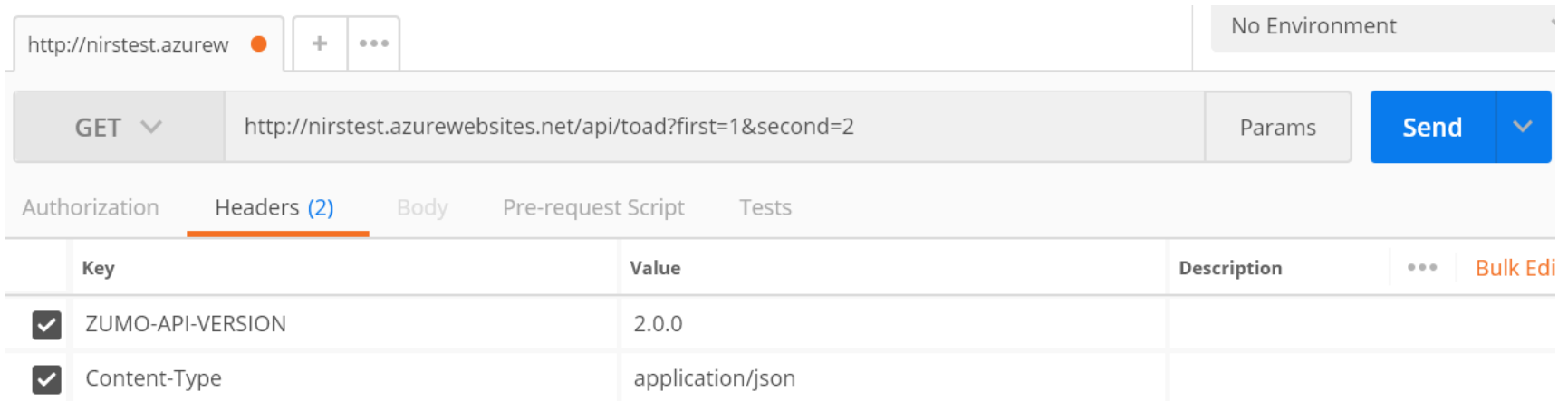
https://adrianhall.github.io/develop-mobile-apps-
with-csharp-and-azure/chapter4/custom/
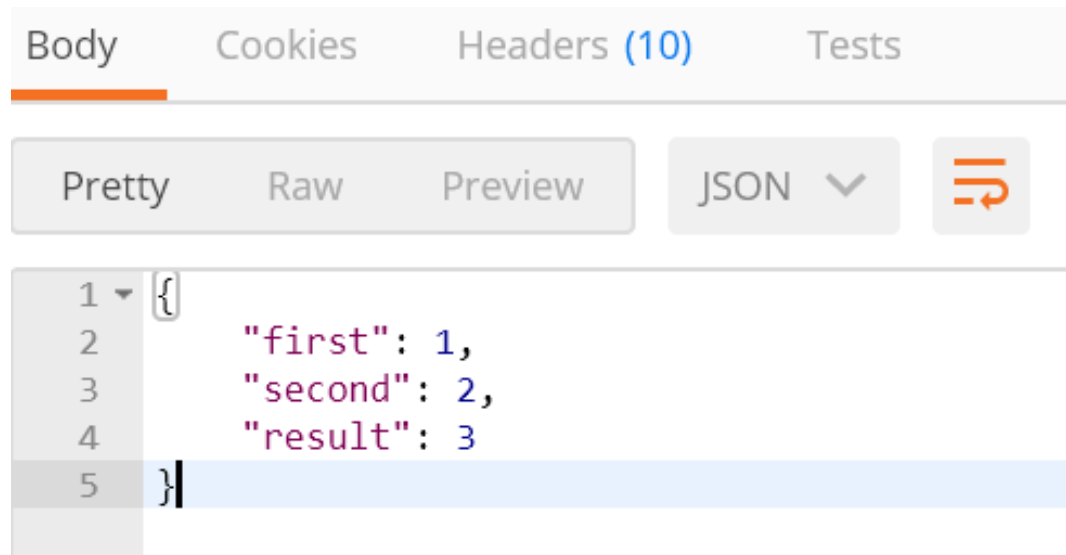
Use Postman to Test

Can get Postman from Chrome

You need this header setting

Result in Postman

How to call API in Android App?

Go to Android Studio!
Open FrontEnd Code.

Call API in Android App

https://docs.microsoft.com/en-us/azure/app-service-mobile/app-service-mobile-android-how-to-use-client-library#custom-api

Call API in Android App

Define a Java class to get values

```java
public class AdditionResult {
    public int first;
    public int second;
    public int result;
}
```

Call API in Android App

e.g., Call "Toad" API using Http

```
ArrayList<Pair<String,String>> parameters = new ArrayList<>();

parameters.add(new Pair<>("first","1"));
parameters.add(new Pair<>("second","2"));

ListenableFuture<AdditionResult> result =mClient.invokeApi("Toad",
        "GET",parameters,  AdditionResult.class);
```

You may also use different calls
https://blogs.msdn.microsoft.com/carlosfigu
eira/2013/06/18/custom-api-in-azure-
mobile-services-client-sdks/

Call API in Android App
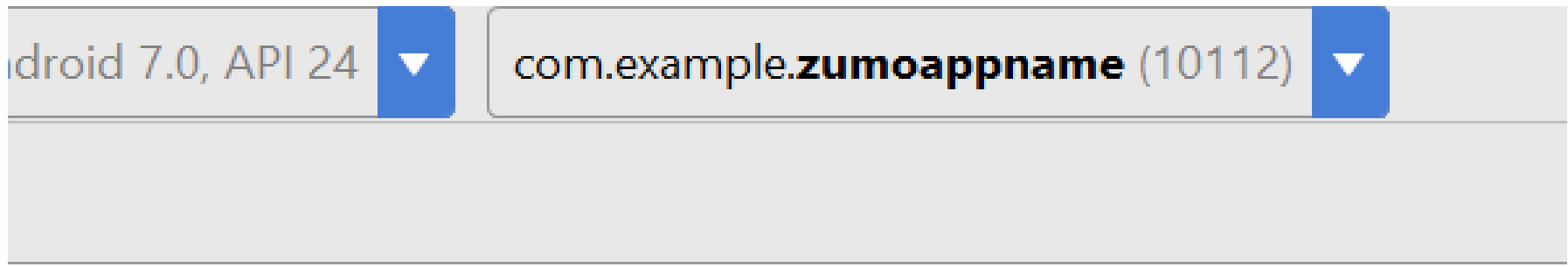
e.g., get results from server

```java
Futures.addCallback(result, new FutureCallback<AdditionResult>() {
    @Override
    public void onFailure(Throwable e) {
        Log.d("API","failed ");
        Log.e("MYAPP", "exception", e);
    }


    @Override
    public void onSuccess(AdditionResult result) {
        Log.d("API","result = "+result.result);
    }


});
```

Call API in Android App

Got 3 in LogCat


```
ndroid 7.0, API 24  ▼    com.example.zumoappname (10112)  ▼
```

```
1667-1932/? D/EGL_emulation: eglMakeCurrent: 0x8f78bc0
10112-10142/com.example.zumoappname D/API: running
1654-1654/? I/LatinIME: Starting input. Cursor positio
10112-10112/com.example.zumoappname D/API: result = 3
```

More learning directions:

1. Handling POST requests

2. Manage data according to HttpPost

See you sometime later

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