Xamarin Forms

Consuming RESTful API's With Refit

1.

What are RESTFul Services?

Let's start with a brief base concept

What does **REST** Stand for?

Stands for Representational State Transfer, which is an architectural style for networked hypermedia applications, it is primarily used to build Web services that are lightweight, maintainable, and scalable.

Main Features of **RESTFul** services

- ▸ Representations

- ▸ Messages

- ▸ URIs

- ▸ Uniform interface

- ▸ Stateless

- ▸ Links between resources

- ▸ Caching

Representations

Demo Representation

```json
UserProfile.json
1  {
2       "ID": "1210123012",
3       "FirstName": "Luis",
4       "LastName": "Pujols",
5       "Email": "luispujolso@gmail.com",
6       "Country": "USA"
7  }
```

Messages - Request

<VERB> <URI> <HTTP VERSION>
<HEADER>
<BODY>

```
GET /doc/test.html HTTP/1.1                    Request Line
Host: www.test101.com
Accept: image/gif, image/jpeg, */*
Accept-Language: en-us                         Request Headers
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0
Content-Length: 35

                                               A blank line separates header & body
bookId=12345&author=Tan+Ah+Teck                Request Message Body
```

Request Message Header

Image:
https://www.ntu.edu.sg/home/ehchua/programming/webprogramming/HTTP_Basics.html

Messages - Request <VERB>

VERB	Meaning
GET	Read data
POST	Insert data
PUT	Update data
DELETE	Remove data

Messages - Response

<HTTP VERSION> <RESPONSE CODE>
<HEADER>
<BODY>


```
HTTP/1.1 200 OK                          ──────────→  Status Line
Date: Sun, 08 Feb xxxx 01:11:12 GMT  ┐
Server: Apache/1.3.29 (Win32)        │                              Response
Last-Modified: Sat, 07 Feb xxxx      │                              Message
ETag: "0-23-4024c3a5"                ├── Response Headers           Header
Accept-Ranges: bytes                 │
Content-Length: 35                   │
Connection: close                    │
Content-Type: text/html              ┘

─────────────────────────────────────→  A blank line separates header & body
<h1>My Home page</h1>                ┐── Response Message Body
```
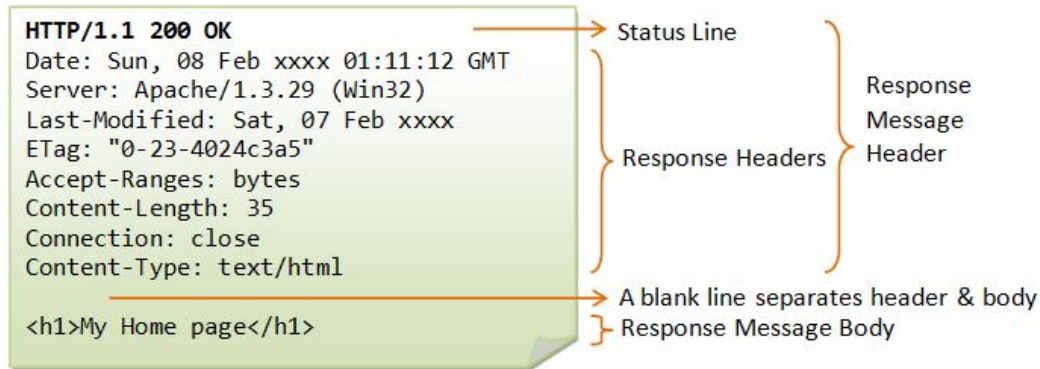
Image:
https://www.ntu.edu.sg/home/ehchua/programming/webprogramming/HTTP_Basics.html

Uniform Interface - URI

A string of characters that unambiguously identifies a particular resource.

```
<PROTOCOL> <SERVICE> <RESOURCE> <ID>
https://orlandocodecamp.com/Persons
https://orlandocodecamp.com/Persons?id=1
```

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Libraries to Consume RESTful Services.

- ▸ Microsoft Http Client
- ▸ Refit
- ▸ RestSharp
- ▸ PortableRest
- ▸ etc.

Refit

Open Source library created by **Paul Betts** heavily inspired on Retrofit (Android Native), turns your API into a live interface.
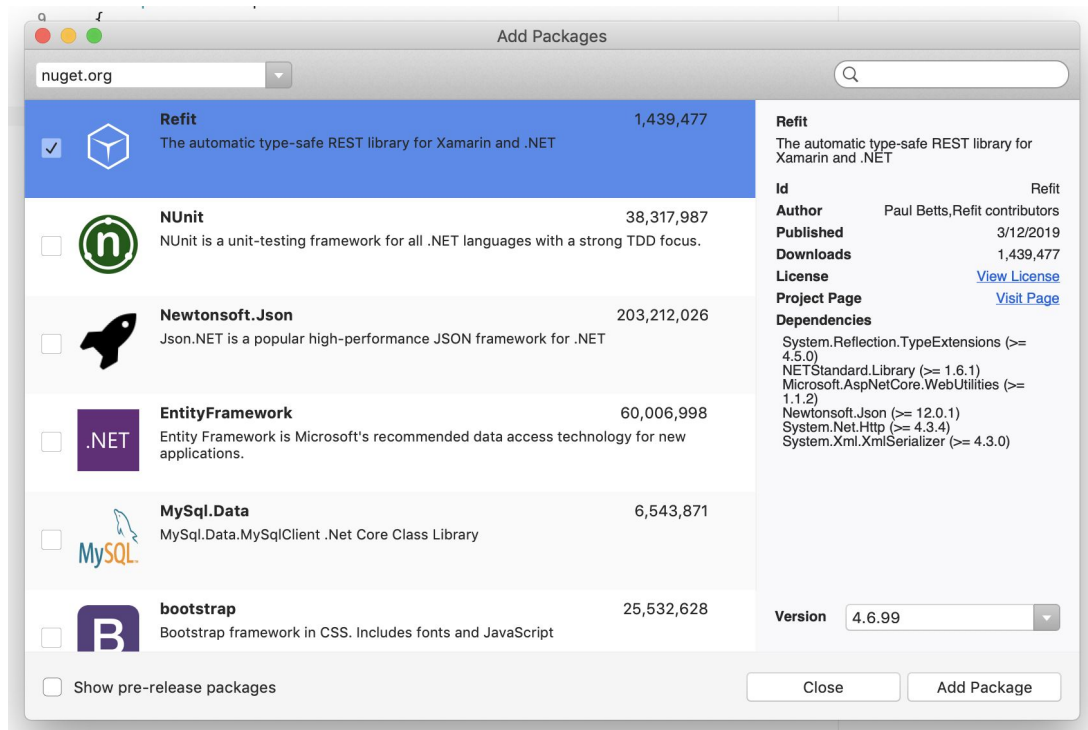
Github:

https://github.com/paulcbetts/refit

How to Set Up?

Install Nuget Package

Add Packages

nuget.org

Refit — 1,439,477
The automatic type-safe REST library for Xamarin and .NET

NUnit — 38,317,987
NUnit is a unit-testing framework for all .NET languages with a strong TDD focus.

Newtonsoft.Json — 203,212,026
Json.NET is a popular high-performance JSON framework for .NET

EntityFramework — 60,006,998
Entity Framework is Microsoft's recommended data access technology for new applications.

MySql.Data — 6,543,871
MySql.Data.MySqlClient .Net Core Class Library

bootstrap — 25,532,628
Bootstrap framework in CSS. Includes fonts and JavaScript

Refit
The automatic type-safe REST library for Xamarin and .NET

Id	Refit
Author	Paul Betts,Refit contributors
Published	3/12/2019
Downloads	1,439,477
License	View License
Project Page	Visit Page

Dependencies
System.Reflection.TypeExtensions (>= 4.5.0)
NETStandard.Library (>= 1.6.1)
Microsoft.AspNetCore.WebUtilities (>= 1.1.2)
Newtonsoft.Json (>= 12.0.1)
System.Net.Http (>= 4.3.4)
System.Xml.XmlSerializer (>= 4.3.0)

Version 4.6.99

Show pre-release packages

Close   Add Package

Choose an API to Consume

Makeup API:
https://makeup-api.herokuapp.com/
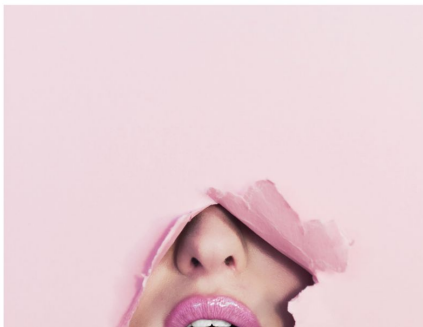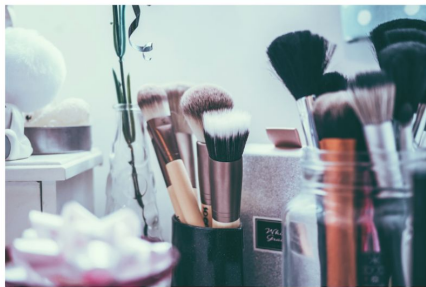
Makeup API

Lorem ipsum dolor sit amet, consectetur adipisicing elit. Quisquam cum illum soluta reprehenderit earum totam reiciendis natus non officiis doloremque ex, quae iste, eos doloribus.

Android Platform Setup - Permissions

Internet Permission - AndroidManifest.xml

Required permissions

- InstallShortcut
- InstantAppForegroundService
- InternalSystemWindow
- ✓ Internet
- KillBackgroundProcesses
- LocationHardware
- ManageAccounts
- ManageAppTokens
- ManageDocuments

Filter Permissions

Learn more about AndroidManifest.xml

iOS Platform Setup - Allow HTTP ClearText

NSAppTransportSecurity - Info.plist

Bundle identifier	String	com.crossgeeks.CodeCampDemo
Bundle version	String	1.0
▼ NSAppTransportSecurity	Dictionary	(1 item)
NSAllowsArbitraryLoads	⊗ Boolean	Yes
Add new entry		
Add new entry		

Create an Interface

```csharp
namespace CodeCampDemo.Services
{
    public interface IMakeUpApi
    {
        [Get("/api/v1/products.json?brand=maybelline")]
        Task<string> GetMakeUps();
    }
}
```
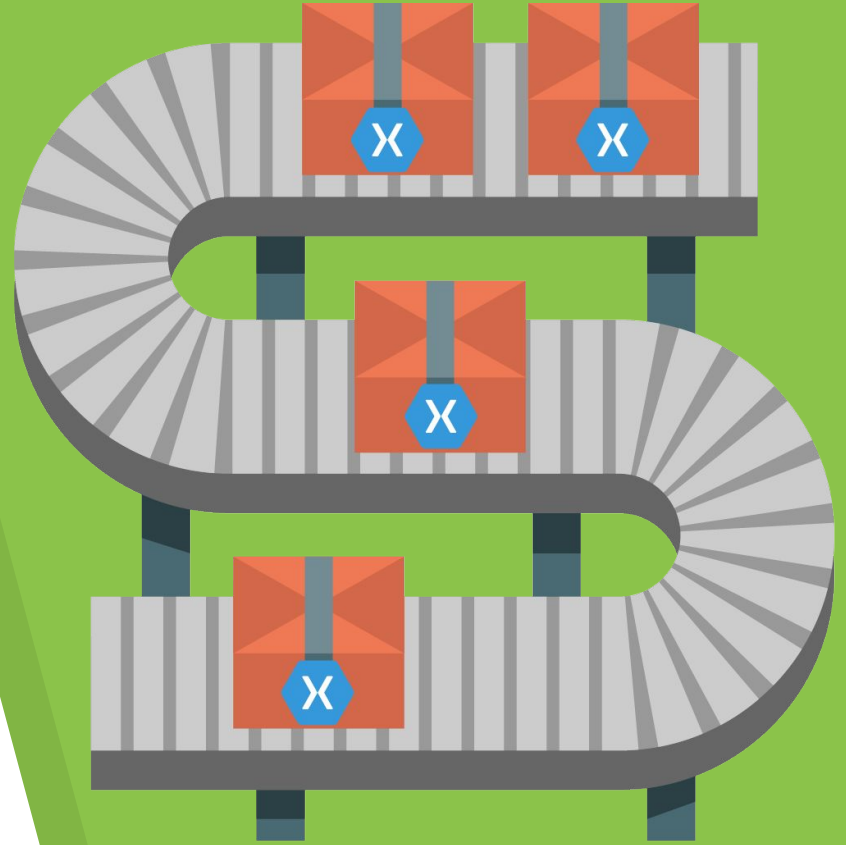
Project Structure

Getting Started

Dependencies

Controls

Helpers

Managers

Models

Services

ViewModels

Views

App.xaml

AppConstants.cs

AppResources.resx

Config.cs

FodyWeavers.xml

NavigationConstants.cs

Production?

Production

IAPIManager, IAPIService

AcrUserDialogs Plugin

Fusillade

Polly

Connectivity Plugin

THANKS!

Any questions?

You can find me at @pujolsluis

References

- XamGirl Refit Guides:

    https://xamgirl.com/consuming-a-restful-web-service-in-xamarin-forms-using-refit-part-1/

- Refit Github Repo:

    https://github.com/reactiveui/refit

- Demo Project Github Repo:

    https://github.com/CrossGeeks/RefitXamarinFormsSample