



IT sector

Building an App for Android and iOS with Xamarin & C#

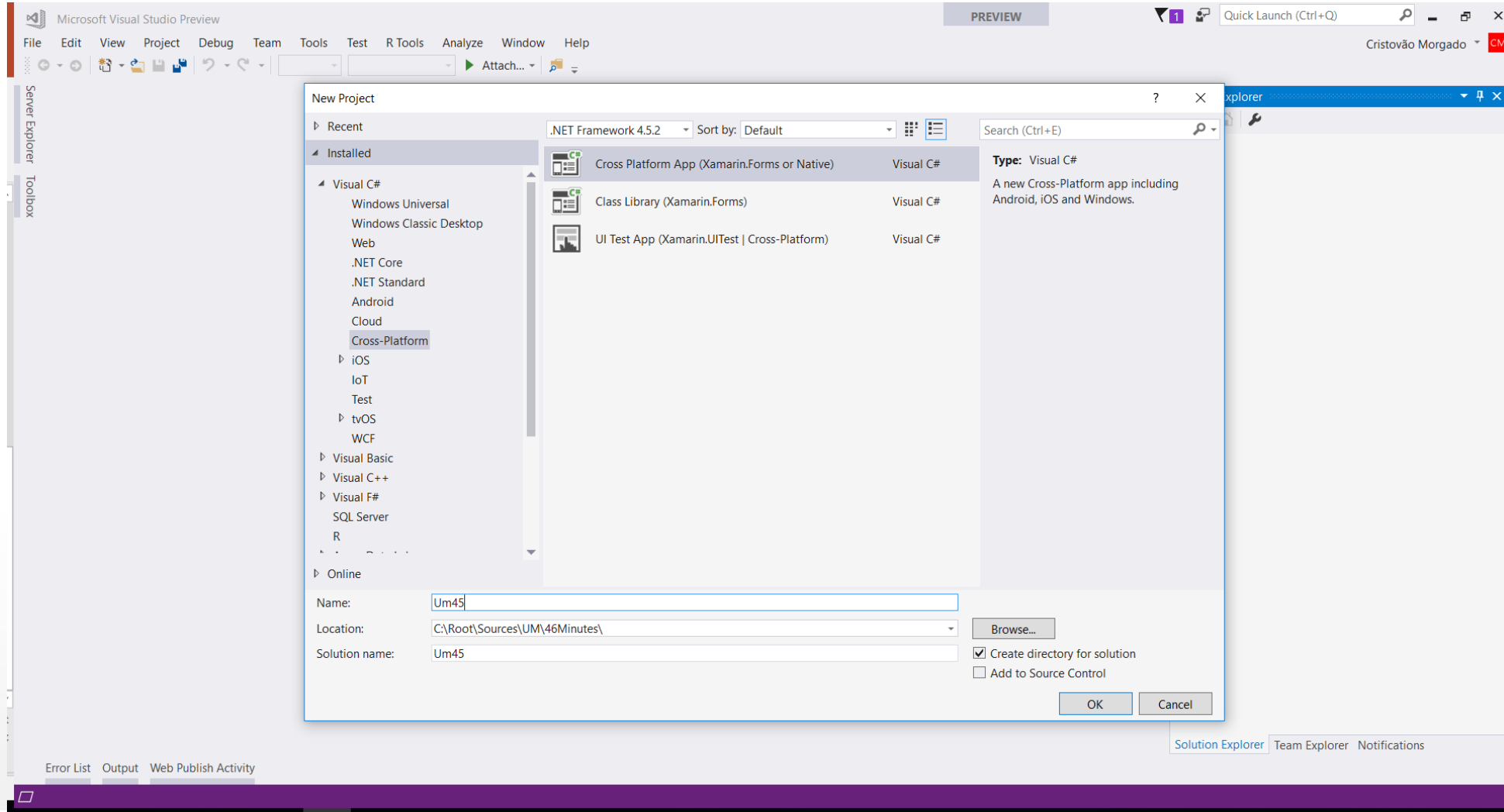
Under one hour!!

Cristóvão Morgado

Pre requisites

1. C# Know-how
2. Windows 10 Creators Update
3. Min 8Gb RAM
4. Visual Studio 2017 Preview (15.3 (>26510.0-Preview))
 1. Xamarin


Choosing the right project template




The barebone template

New Cross Platform App - Um45

Select a template:


Blank App


Master Detail

A cross-platform template for building cross-platform, native mobile apps for iOS, Android, and Universal Windows Platform.

Use the native user interface approach to create UIs for each platform, or use Xamarin.Forms to create cross-platform, native UIs in XAML.

UI Technology

☒ Xamarin.Forms

☐ Native

Code Sharing Strategy ?

☐ Shared Project

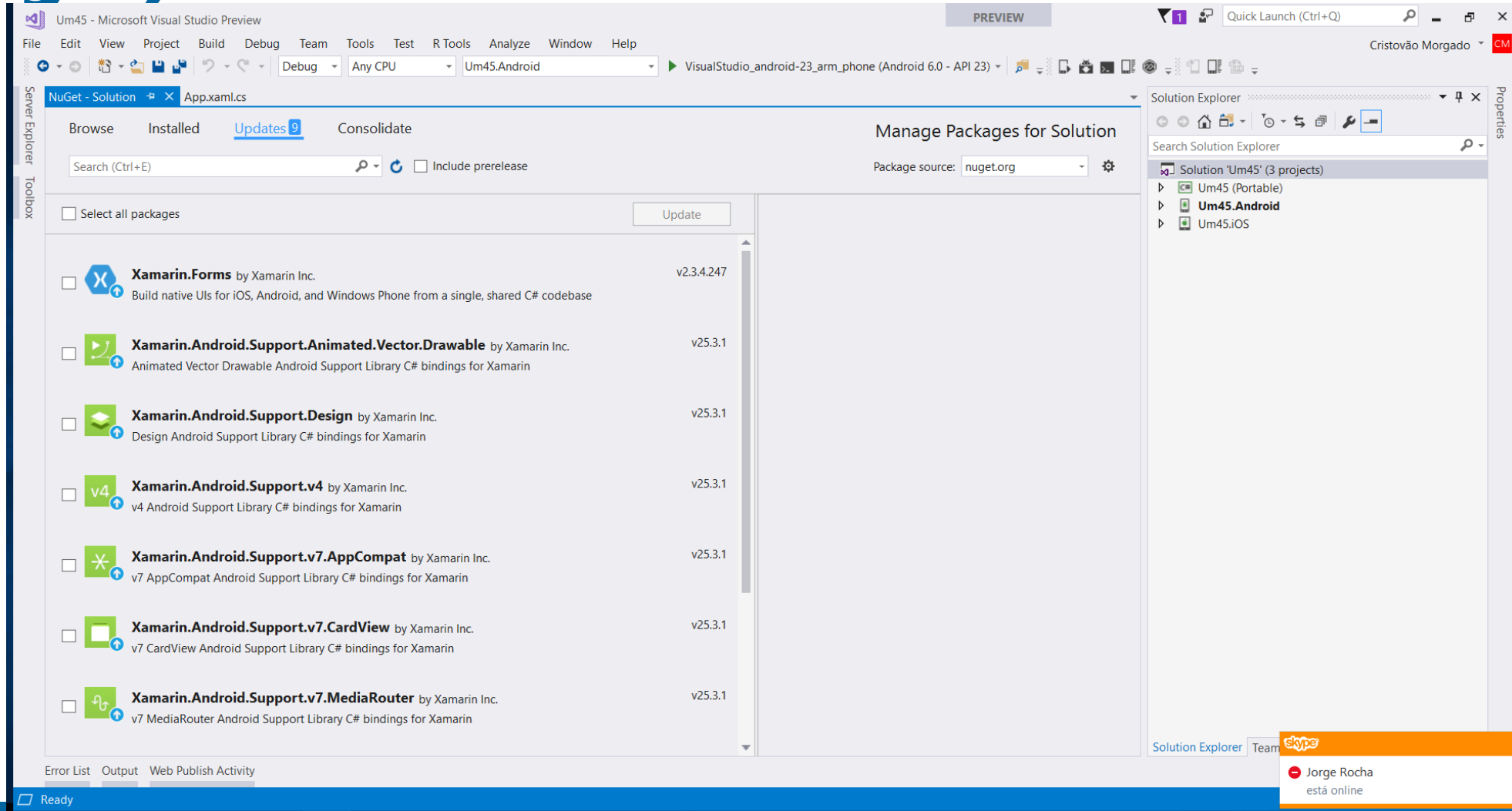
☒ Portable Class Library (PCL)

Microsoft Azure

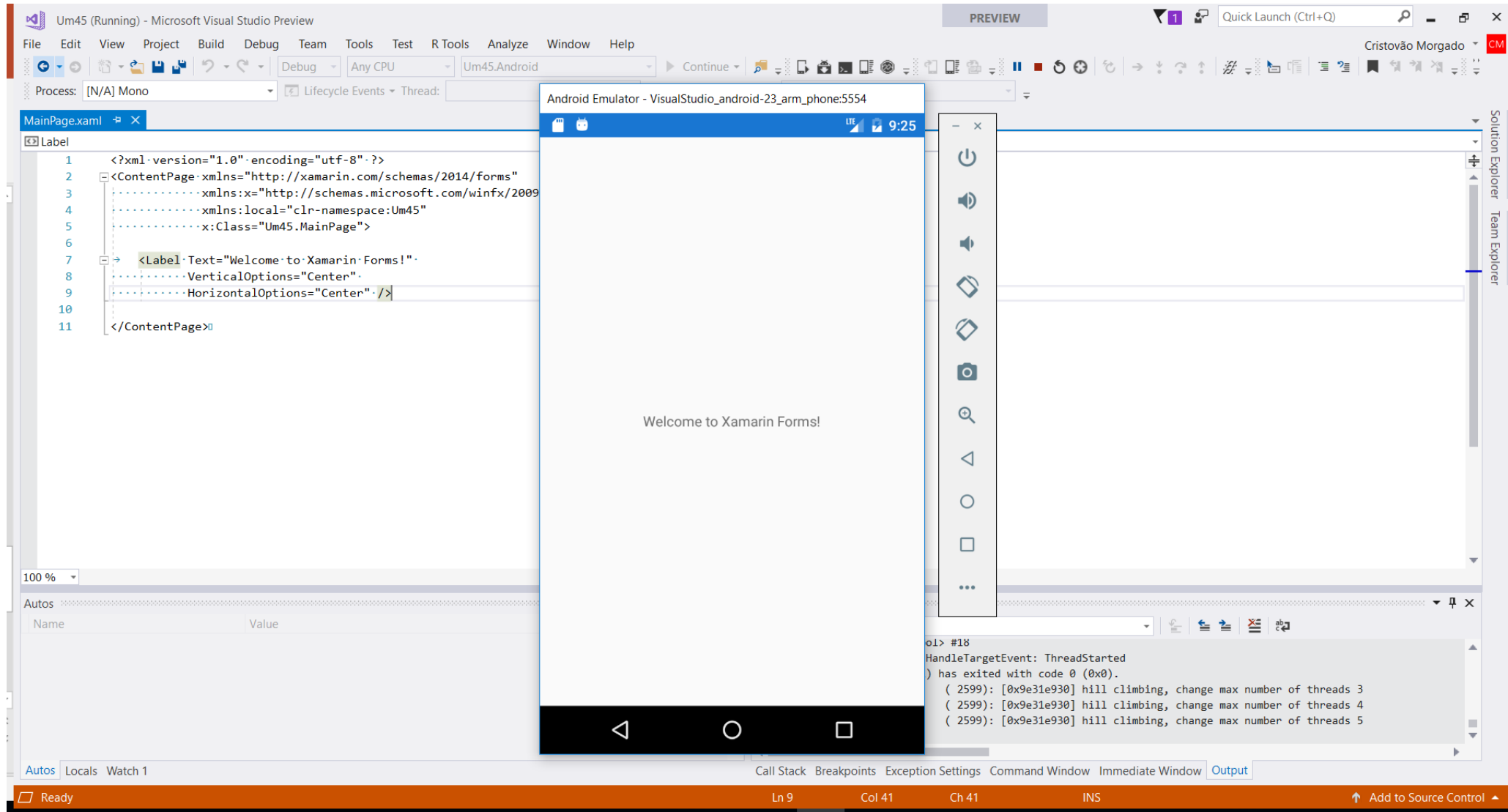
☐ Host in the cloud

OK Cancel

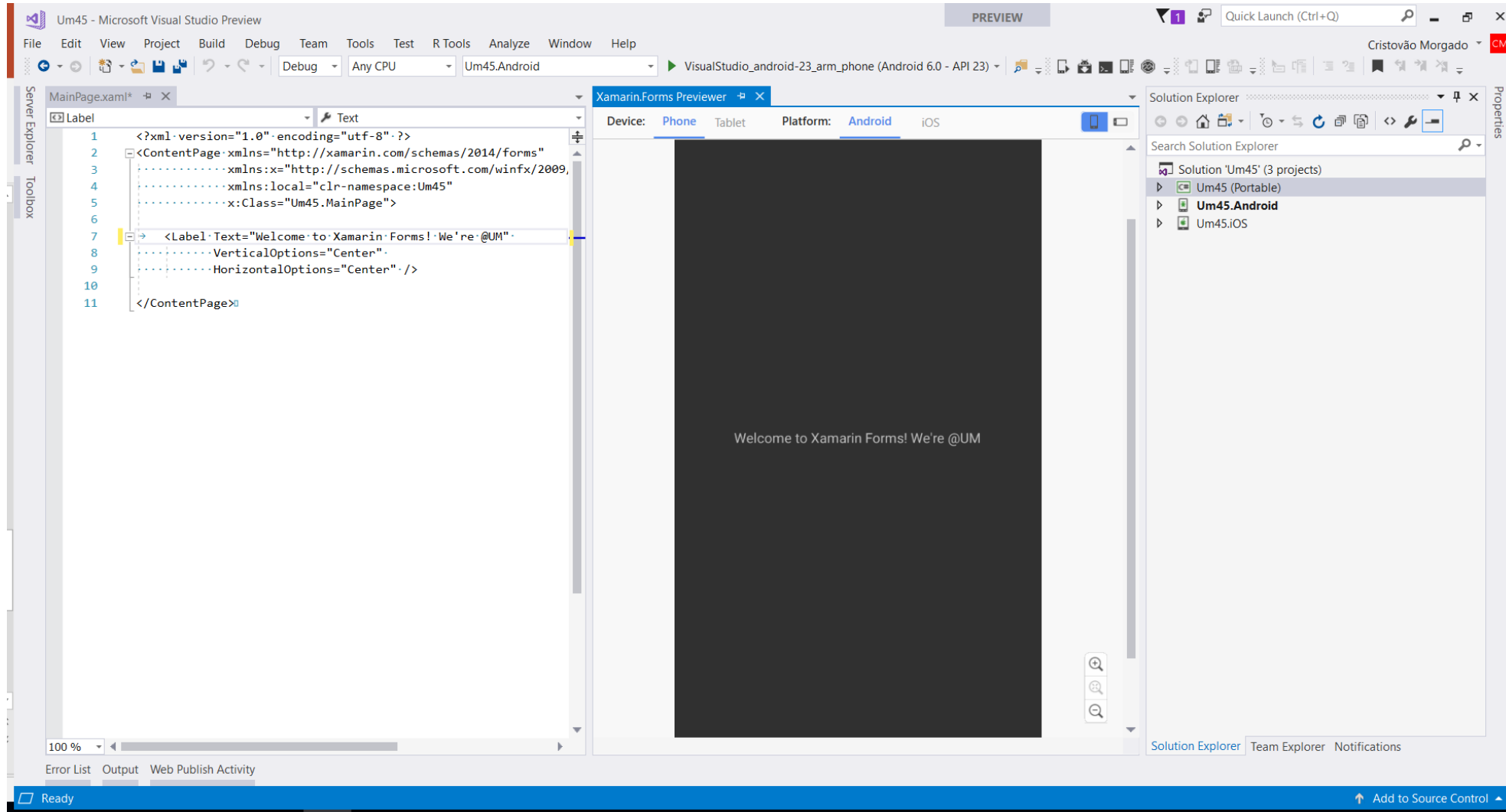
Before starting just update all dependencies (packages)



Let's run the barebone app in the Android Emulator



Using the Xamarin Forms Previewer



MVVM definition (source Wikipedia)

Model–view–viewmodel (MVVM) is a software [architectural pattern](#).

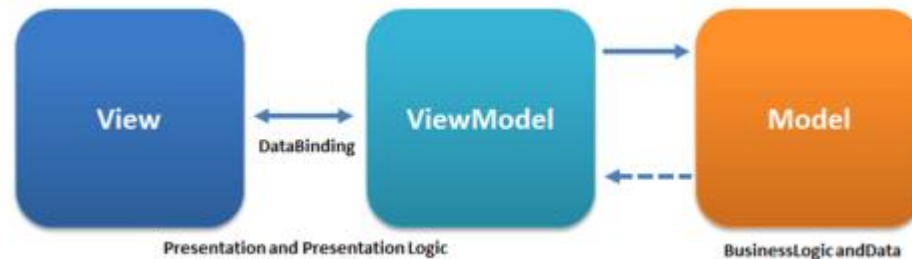
MVVM facilitates a [separation](#) of development of the [graphical user interface](#) – be it via a [markup language](#) or GUI code – from development of the [business logic](#) or [back-end](#) logic (the *data model*).

The *view model* of MVVM is a value converter;^[1] meaning the view model is responsible for exposing (converting) the [data objects](#) from the model in such a way that objects are easily managed and presented.

In this respect, the view model is more model than view, and handles most if not all of the view's display logic.^[1]

The view model may implement a [mediator pattern](#),

organizing access to the back-end logic around the set of [use cases](#) supported by the view.



The best library for MVVM ?! MVVM Light

Um45 - Microsoft Visual Studio Preview

File Edit View Project Build Debug Team Tools Test R Tools Analyze Window Help

Debug Any CPU Um45.Android VisualStudio_android-23_arm_phone (Android 6.0 - API 23)

NuGet: Um45 NuGet - Solution App.xaml.cs

Browse Installed Updates

mvvm light Include prerelease

MvvmLightLibs by Laurent Bugnion (GalaSoft), 1,14M downloads v5.3.0

The MVVM Light Toolkit is a set of components helping people to get started in the Model-View-ViewModel pattern in Silverlight, WPF, Windows Phone, Windows 10 UWP, Xamarin.Android, Xamarin.iOS,...

MvvmLight by Laurent Bugnion (GalaSoft), 639K downloads v5.3.0

The MVVM Light Toolkit is a set of components helping people to get started in the Model-View-ViewModel pattern in Silverlight, WPF, Windows Phone, Windows 10 UWP, Xamarin.Android, Xamarin.iOS,...

Portable.MvvmLightLibs by Laurent Bugnion (GalaSoft), 48,5K downloads v5.0.2

IMPORTANT: This package is discontinued. Use mvvmlightlibs instead.

MvvmLightAndroidSupport by Laurent Bugnion (GalaSoft), 2,25K downloads v5.3.0

The MVVM Light Toolkit is a set of components helping people to get started in the Model-View-ViewModel pattern in Silverlight, WPF, Windows Phone, Windows 10 UWP, Xamarin.Android, Xamarin.iOS,...

Mvvm by alexanderpo.com, 2,23K downloads v1.0.4

The mvvm pattern for wpf application.

MadProps.MvvmLight by Matt Hamilton, 1,91K downloads v2.0.1

A contrib project for MVVM Light, adding support for coroutines and a screen conductor.

NuGet Package Manager: Um45

Package source: nuget.org

MvvmLightLibs

Version: Latest stable 5.3.0 Install

Options

Description

The MVVM Light Toolkit is a set of components helping people to get started in the Model-View-ViewModel pattern in Silverlight, WPF, Windows Phone, Windows 10 UWP, Xamarin.Android, Xamarin.iOS, Xamarin.Forms. It is a light and pragmatic framework that allows you to pick which components you want to use. This version contains only the libraries and doesn't add any scaffolding to your application!

Version: 5.3.0

Author(s): Laurent Bugnion (GalaSoft)

License: <http://mvvmlight.codeplex.com/license>

Date published: Wednesday, April 27, 2016 (4/27/2016)

Project URL: <http://www.mvvmlight.net>

Report Abuse: <https://www.nuget.org/packages/MvvmLightLibs/5.3.0/ReportAbuse>

Tags: mvvmlight, mvvm, silverlight, windowsstore, winrt, win10, uwp, winstore, wpf, windowsphone, xamarin, windowsphone8, android, iOS, xamarinforms, pcl

Solution Explorer Search Solution Explorer

Solution 'Um45' (3 projects)

- Um45 (Portable)
- Um45.Android
- Um45.iOS

Solution Explorer Team Explorer Notifications

Ready Add to Source Control

INotifyPropertyChanged

```
using System;
using System.ComponentModel;
using System.Runtime.CompilerServices;

namespace Um45.Models
{
    2 references
    public class ModelBase : INotifyPropertyChanged
    {
        public event PropertyChangedEventHandler PropertyChanged;
        9 references
        public void NotifyPropertyChanged([CallerMemberName] string propertyName = null)
        {
            var handler = PropertyChanged;
            if (null == handler) return;
            try
            {
                handler(this, new PropertyChangedEventArgs(propertyName));
            }
            catch
            {
                // ignored
            }
        }
    }
}
```

Model

```
namespace Um45.Models
{
    13 references
    public class GitHubGuy : ModelBase
    {
        private string _name;
        7 references
        public string Name
        {
            get => _name;
            set
            {
                if (_name == value) return;
                _name = value;
                NotifyPropertyChanged();
            }
        }

        private string _avatar;
        7 references
        public string Avatar
        {
            get => _avatar;
            set
            {
                if (_avatar == value) return;
                _avatar = value;
                NotifyPropertyChanged();
            }
        }
    }
}
```

ViewModels

4 references

```
... public class HomeViewModel : BaseViewModel
```

```
... {
```

0 references

```
... public HomeViewModel(IConnectivityService connectivityService
```

```
... , IUiHelper uiHelper
```

```
... , INavigationService navigationService
```

```
... , ILogger logger) : base(connectivityService, uiHelper, navigationService, logger)
```

```
... {
```

```
... }
```

```
... }
```

```
... private ObservableCollection<GitHubGuy> _items = new ObservableCollection<GitHubGuy>();
```

2 references

```
... public ObservableCollection<GitHubGuy> Items
```

```
... {
```

```
... get => _items;
```

```
... set
```

```
... {
```

```
... if (_items == value) return;
```

```
... _items = value;
```

```
... NotifyPropertyChanged();
```

```
... }
```

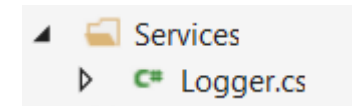
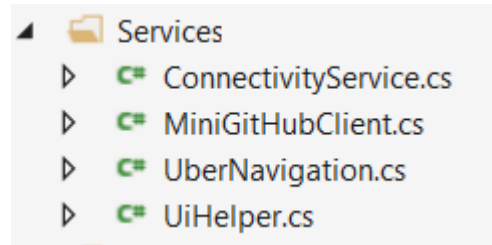
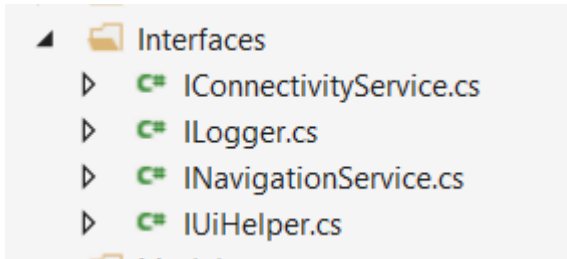
```
... }
```

Binding

```
...<Grid Grid.Row="1">
...<Grid.ColumnDefinitions>
...<ColumnDefinition Width="*"></ColumnDefinition>
...<ColumnDefinition Width="Auto"></ColumnDefinition>
...</Grid.ColumnDefinitions>
...<Entry Margin="10" HorizontalOptions="FillAndExpand" BackgroundColor="White"
...Text="{Binding SearchQuery, Mode=TwoWay}"></Entry>
...<Button Grid.Column="1" Text="Search"
...Command="{Binding DoSearch}"></Button>
...</Grid>
...<ListView Grid.Row="2" BackgroundColor="FloralWhite"
...VerticalOptions="Fill"
...HasUnevenRows="true"
...ItemsSource="{Binding Items}"
...IsGroupingEnabled="False"
...HorizontalOptions="Fill">
...<ListView.Behaviors>
...<behaviors:EventToCommandBehavior EventName="ItemSelected"
...Command="{Binding GoToDetails}"
...CommandParameter="{Binding Name}" />
...</ListView.Behaviors>
...<ListView.ItemTemplate>
```

Interface

Abstracting for platform specific features



Platform specific services

```
namespace Um45.Droid
{
    ... [Activity(Label = "Um45", Icon = "@drawable/icon", Theme =
        0 references | Cristovão Morgado, 14 minutes ago | 1 author, 1 change
    ... public class MainActivity : global::Xamarin.Forms.Platform
    ... {
        0 references | Cristovão Morgado, 14 minutes ago | 1 author, 1 change
    ... protected override void OnCreate(Bundle bundle)
    ... {
    ...     TabLayoutResource = Resource.Layout.Tabbar;
    ...     ToolbarResource = Resource.Layout.Toolbar;

    ...     base.OnCreate(bundle);
    ...     Code.RegisterServices.Init();
    ...     global::Xamarin.Forms.Forms.Init(this, bundle);
    ...     LoadApplication(new Um45.App());
    ... }
}
```

```
} namespace Um45.Droid.Code
{
    1 reference | Cristovão Morgado, 14 minutes ago | 1 author, 1 change
} ... public static class RegisterServices
    ... {
        1 reference | Cristovão Morgado, 14 minutes ago | 1 author, 1 change
    } ... public static void Init()
    ... {
    ...     if (!SimpleIoc.Default.IsRegistered<ILogger>())
    ...         SimpleIoc.Default.Register<ILogger>(() =>
    ...             new Um45.Droid.Services.Logger());
    ... }
}
```


Converters

namespace Um45.Controls.Converters

{

0 references | Cristovão Morgado, 15 minutes ago | 1 author, 1 change

····public class BooleanConverter : IValueConverter

····{

1 reference | Cristovão Morgado, 15 minutes ago | 1 author, 1 change

······public object Convert(object value, Type targetType, object parameter, CultureInfo culture)

······{

········var result = false;

········try

········{

··········result = (bool) value;

········}

········catch

········{

··········// ignored

········}

········return !result;

······}

1 reference | Cristovão Morgado, 15 minutes ago | 1 author, 1 change

······public object ConvertBack(object value, Type targetType, object parameter, CultureInfo culture)

······{

········return null;

······}

····}

}▢

Behaviors

```
..public class MinLengthBehavior : Behavior<Entry>
..{
..
..    5 references | 0 changes | 0 authors, 0 changes
..    ..protected override void OnAttachedTo(Entry bindable)
..    ..{
..    ..    ..bindable.TextChanged += OnTextChanged;
..
..    ..    ..base.OnAttachedTo(bindable);
..    ..}
..
..    2 references | 0 changes | 0 authors, 0 changes
..    ..void OnTextChanged(object sender, TextChangedEventArgs args)
..    ..{
..    ..    ..if (args.NewTextValue == null) return;
..
..    ..    ..var isValid = args.NewTextValue.Length > 3;
..
..    ..    ..((Entry) sender).TextColor = isValid ? Color.Default : Color.Red;
..    ..}
..
..    5 references | 0 changes | 0 authors, 0 changes
..    ..protected override void OnDetachingFrom(Entry bindable)
..    ..{
..    ..    ..bindable.TextChanged -= OnTextChanged;
..
..    ..    ..base.OnDetachingFrom(bindable);
..    ..}
..}
```

Behaviors

```
.....<Entry·Margin="10"·HorizontalOptions="FillAndExpand"·BackgroundColor="White"·  
.....Text="{Binding·SearchQuery,·Mode=TwoWay}">  
.....<Entry.Behaviors>  
.....<behaviors:MinLengthBehavior·>  
.....</behaviors:MinLengthBehavior>  
.....</Entry.Behaviors>  
.....</Entry>
```

The ViewModelLocator

```
using GalaSoft.MvvmLight.Ioc;
using Microsoft.Practices.ServiceLocation;

namespace Um45.ViewModels
{
    4 references | Cristovão Morgado, 11 minutes ago | 1 author, 1 change
    ... public class ViewModelLocator
    ... {
        1 reference | Cristovão Morgado, 11 minutes ago | 1 author, 1 change
        ... public ViewModelLocator()
        ... {
            ... ServiceLocator.SetLocatorProvider(() => SimpleIoc.Default);
            ... SimpleIoc.Default.Register<HomeViewModel>();
            ... SimpleIoc.Default.Register<DetailsViewModel>();
        }
        ...

        1 reference | Cristovão Morgado, 11 minutes ago | 1 author, 1 change
        ... public HomeViewModel Home => ServiceLocator.Current.GetInstance<HomeViewModel>();

        0 references | Cristovão Morgado, 11 minutes ago | 1 author, 1 change
        ... public DetailsViewModel Details => ServiceLocator.Current.GetInstance<DetailsViewModel>();
    }
}
```

Using the ViewModelLocator

```
| namespace Um45
| {
|     6 references | Cristovão Morgado, 40 minutes ago | 1 author, 1 change
| } ... public partial class App : Application
| {
|     ... private static ViewModelLocator _locator;
|         1 reference | Cristovão Morgado, 40 minutes ago | 1 author, 1 change
|     ... public static ViewModelLocator Locator => _locator ?? (_locator = new ViewModelLocator());
| }
```

```
namespace Um45.Views
{
    5 references | Cristovão Morgado, 40 minutes ago | 1 author, 1 change
    ... public partial class MainPage : ContentPage
    ... {
    ...     1 reference | Cristovão Morgado, 40 minutes ago | 1 author, 1 change
    ...     public MainPage()
    ...     {
    ...         InitializeComponent();
    ...         BindingContext = App.Locator.Home;
    ...     }
    ... }
}
```

Dependency Injection – Boot Forms (App.cs)

```
namespace Um45
{
    4 references | Cristovão Morgado, 12 minutes ago | 1 author, 1 change
    ... public partial class App : Application
    ... {
    ...     private static ViewModelLocator _locator;
    ...         1 reference | Cristovão Morgado, 12 minutes ago | 1 author, 1 change
    ...         public static ViewModelLocator Locator => _locator ?? (_locator = new ViewModelLocator());

    ...         1 reference | Cristovão Morgado, 12 minutes ago | 1 author, 1 change
    ...         public static Page Page { get; private set; }
    ...             2 references | Cristovão Morgado, 12 minutes ago | 1 author, 1 change
    ...         public App()
    ...         {
    ...             InitializeComponent();

    ...             if (!SimpleIoc.Default.IsRegistered<INavigationService>())
    ...                 SimpleIoc.Default.Register<INavigationService>(() => new Um45.Services.UberNavigation());

    ...             if (!SimpleIoc.Default.IsRegistered<IUiHelper>())
    ...                 SimpleIoc.Default.Register<IUiHelper>(() => new Um45.Services.UiHelper());

    ...             if (!SimpleIoc.Default.IsRegistered<IConnectivityService>())
    ...                 SimpleIoc.Default.Register<IConnectivityService>(() => new Um45.Services.ConnectivityService());

    ...             MainPage = new MainPage();
    ...             Page = MainPage;
    ...         }
}
```

Let's get data from GitHub API

<https://developer.github.com/v3/>

GitHub Developer

GraphQL API v4

REST API v3

Apps

Blog

Early Access

Support

Search...

REST API v3

Reference

Guides

Libraries

Webhooks

Overview

This describes the resources that make up the official GitHub REST API v3. If you have any problems or requests please contact [support](#).

- i. [Current Version](#)
- ii. [Schema](#)
- iii. [Parameters](#)
- iv. [Root Endpoint](#)
- v. [Client Errors](#)
- vi. [HTTP Redirects](#)
- vii. [HTTP Verbs](#)
- viii. [Authentication](#)
- ix. [Hypermedia](#)
- x. [Pagination](#)
- xi. [Rate Limiting](#)
- xii. [User Agent Required](#)
- xiii. [Conditional requests](#)
- xiv. [Cross Origin Resource Sharing](#)

▼ Overview

[Media Types](#)

[OAuth Authorizations API](#)

[Other Authentication Methods](#)

[Troubleshooting](#)

[Pre-release Program](#)

[API Previews](#)

[Versions](#)

▶ Activity

▶ Gists

▶ Git Data

▶ Apps

▶ Issues

We need a HTTP Client

The screenshot shows the Visual Studio interface with the NuGet Package Manager open. The 'Browse' tab is active, showing a search for 'httpclient'. The 'Microsoft.Net.Http' package is selected, and its details are shown on the right. The 'Output' window at the bottom displays the installation logs for 'Microsoft.Net.Http.2.2.29'.

NuGet Package Manager: Um45

Package source: nuget.org

Microsoft.Net.Http by Microsoft, 18,9M downloads, v2.2.29
This package provides a programming interface for modern HTTP/REST based applications.

Microsoft.AspNet.WebApi.Client by Microsoft, 24,6M downloads, v5.2.3
This package adds support for formatting and content negotiation to System.Net.Http.

System.Net.Http by Microsoft, 9,75M downloads, v4.3.2
Provides a programming interface for modern HTTP applications, including HTTP client components that allow applications to consume web services over HTTP and HTTP components that can be used by both cl...

ServiceStack.HttpClient.Core by Service Stack, 2,05K downloads, v1.0.42
ISOM ServiceClient implementation based on .NET's HttpClient

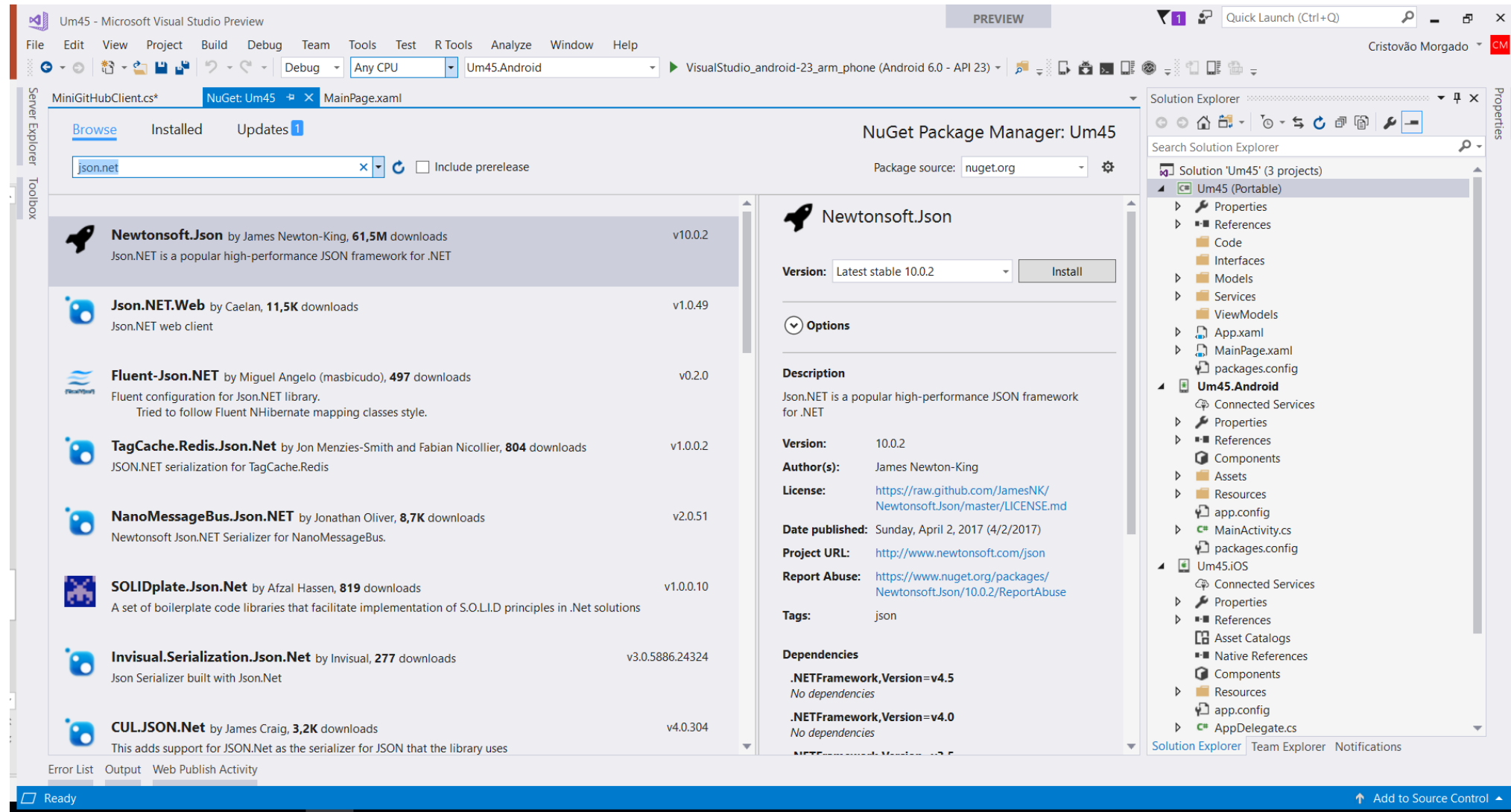
Options

Description
This package includes HttpClient for sending requests over HTTP, as well as HttpRequestMessage and HttpResponseMessage for processing HTTP messages.
This package is not supported in Visual Studio 2010, and is only

Output
Show output from: Package Manager

```
Attempting to gather dependency information for package 'Microsoft.Net.Http.2.2.29' with respect to project 'Um45', targeting '.NETPortable,Version=v4.5,Profile=Profile259'
Gathering dependency information took 1,08 sec
Attempting to resolve dependencies for package 'Microsoft.Net.Http.2.2.29' with DependencyBehavior 'Lowest'
Resolving dependency information took 0 ms
Resolving actions to install package 'Microsoft.Net.Http.2.2.29'
Resolved actions to install package 'Microsoft.Net.Http.2.2.29'
Time Elapsed: 00:00:01.3099107
===== Finished =====
```


We need some way to deal with JSON: JSON.Net



We have JSON, now we have C# POCO's

The screenshot shows a REST client interface with the following details:

- URL Bar:** Contains `https://api.github.com` and `https://api.github.com/user` with a plus sign to add more.
- Method and URL:** `GET` `https://api.github.com/search/users?q=cris`
- Buttons:** `Params` and `Send`
- Tabs:** `Authorization`, `Headers`, `Body`, `Pre-request Script`, `Tests`
- Type:** `No Auth`
- Response Status:** `Status: 200 OK`
- Response Body:** `JSON` (selected), `Pretty`, `Raw`, `Preview`
- JSON Response:**

```
1 {
2   "total_count": 14290,
3   "incomplete_results": false,
4   "items": [
5     {
6       "login": "cris",
7       "id": 3313,
8       "avatar_url": "https://avatars1.githubusercontent.com/u/3313?v=3",
9       "gravatar_id": "",
10      "url": "https://api.github.com/users/cris",
11      "html_url": "https://github.com/cris",
12      "followers_url": "https://api.github.com/users/cris/followers",
13      "following_url": "https://api.github.com/users/cris/following{/other_user}",
14      "gists_url": "https://api.github.com/users/cris/gists{/gist_id}",
15      "starred_url": "https://api.github.com/users/cris/starred{/owner}/{repo}",
16      "subscriptions_url": "https://api.github.com/users/cris/subscriptions",
17      "organizations_url": "https://api.github.com/users/cris/orgs",
18      "repos_url": "https://api.github.com/users/cris/repos",
```

We have JSON, now we have C# POCO's

```
namespace Um45.Models.Rest
{
    2 references | Cristovão Morgado, 47 minutes ago | 1 author, 1 change
    ...public class SearchResults
    ...{
    ...    [JsonProperty(PropertyName = "total_count")]
    ...    1 reference | Cristovão Morgado, 47 minutes ago | 1 author, 1 change
    ...    public int TotalCount { get; set; }

    ...    [JsonProperty(PropertyName = "incomplete_results")]
    ...    0 references | Cristovão Morgado, 47 minutes ago | 1 author, 1 change
    ...    public bool IncompleteResults { get; set; }

    ...    [JsonProperty(PropertyName = "items")]
    ...    1 reference | Cristovão Morgado, 47 minutes ago | 1 author, 1 change
    ...    public Item[] Items { get; set; }
    ...}
}
```

```
using Newtonsoft.Json;
```

```
namespace Um45.Models.Rest
{
    1 reference | Cristovão Morgado, 45 minutes ago | 1 author, 1 change
    ...public class Item
    ...{
    ...    [JsonProperty(PropertyName = "login")]
    ...    1 reference | Cristovão Morgado, 45 minutes ago | 1 author, 1 change
    ...    public string Login { get; set; }

    ...    [JsonProperty(PropertyName = "id")]
    ...    0 references | Cristovão Morgado, 45 minutes ago | 1 author, 1 change
    ...    public int Id { get; set; }

    ...    [JsonProperty(PropertyName = "avatar_url")]
    ...    1 reference | Cristovão Morgado, 45 minutes ago | 1 author, 1 change
    ...    public string AvatarUrl { get; set; }

    ...    [JsonProperty(PropertyName = "gravatar_id")]
    ...    0 references | Cristovão Morgado, 45 minutes ago | 1 author, 1 change
    ...    public string GravatarId { get; set; }

    ...    [JsonProperty(PropertyName = "url")]
    ...    0 references | Cristovão Morgado, 45 minutes ago | 1 author, 1 change
    ...    public string Url { get; set; }

    ...    [JsonProperty(PropertyName = "html_url")]
    ...    0 references | Cristovão Morgado, 45 minutes ago | 1 author, 1 change
    ...    public string HtmlUrl { get; set; }

    ...    [JsonProperty(PropertyName = "followers_url")]
    ...    0 references | Cristovão Morgado, 45 minutes ago | 1 author, 1 change
    ...    public string FollowersUrl { get; set; }
}
```

A simple HTTP Client for github

```
public class MiniGitHubClient
{
    private readonly HttpClient _client = new HttpClient();
    public string BaseUrl { get; set; } = "https://api.github.com";

    public MiniGitHubClient()
    {
        _client.DefaultRequestHeaders.Add("User-Agent", "xamarin-um45");
    }

    public async Task<RestResult<SearchResults>> Search(string query)
    {
        return await DoHttpGet<SearchResults>($"search/users?q={query}");
    }

    public async Task<RestResult<UserDetails>> UserDetails(string login)
    {
        return await DoHttpGet<UserDetails>($"users/{login}");
    }

    private async Task<RestResult<T>> DoHttpGet<T>(string url)
    {
        var r = new RestResult<T>();
    }
}
```

Now a walktrought

We have a running App!

The screenshot displays the Visual Studio IDE with the 'Um45' project running on an Android emulator. The main window shows the 'Xamarin Forms! We're @UM' app interface, which includes a search bar with the text 'john' and a 'SEARCH' button. Below the search bar, a list of user profiles is displayed, each with a circular profile picture and a name: 'john', 'jr0cket', 'johndrinkwater', 'johnantoni', 'JohnSundell', and 'jmhobbs'. The bottom of the emulator shows the Android navigation bar with the back, home, and recent apps buttons.

The background shows the Visual Studio code editor with the 'HomeViewModel.cs' file open. The code includes a 'GotoDetails' method that uses 'await' and 'finally' blocks to handle asynchronous operations and update a 'LoadingCounter'.

```
86 .....Logger.Log(ex);
87 .....await UiHelper.ShowAlert("DefaultErrorMessage");
88 .....}
89 .....finally
90 .....{
91 .....    LoadingCounter--;
92 .....}
93 .....}));
94 .....}
95 .....}
96 .....}
97 .....private RelayCommand<string> _gotoDetails;
98 .....
99 .....0 references
100 .....public RelayCommand<string> GotoDetails
101 .....{
102 .....    get
103 .....    {
104 .....        return _gotoDetails ?? (_gotoDetails = new RelayCommand<string>{
105 .....            async(id) =>
106 .....            {
107 .....                try
108 .....                {
109 .....                    LoadingCounter++;
110 .....                }
111 .....            }
112 .....        });
113 .....    }
114 .....}
```

The Solution Explorer on the right shows the project structure for 'Um45 (Portable)', including folders for 'Properties', 'References', 'bin', 'Code', 'Controls', 'Behaviors', 'Converters', 'CustomRenderer', 'Effects', 'Interfaces', 'Models', 'obj', 'Services', and 'ViewModels'. The 'ViewModels' folder is expanded, showing 'Common', 'MockData', 'DetailsViewModel.cs', and 'HomeViewModel.cs'.

The Output window at the bottom shows the following log messages:

```
Show output from: De
InspectorDebugSess
The thread 'Unknow
Thread finished: <
InspectorDebugSess
06-12 10:12:38.299
The thread 'Unknow (0x7) has exited with code 0 (0x0).
```

Links

This presentation source code

<https://github.com/cmorgado/Um45>

Some of the best plugins

<https://github.com/jamesmontemagno/Xamarin.Plugins>

Get the tools

www.visualstudio.com

Nice Feed of development related news, tips, etc.

<http://allaboutxamarin.com/>

<https://xamarinhelp.com/>

<http://www.Xamarin.com/>



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