

CROSS PLATFORM DEVELOPMENT

Course: **Mobile Application**

Instructor:

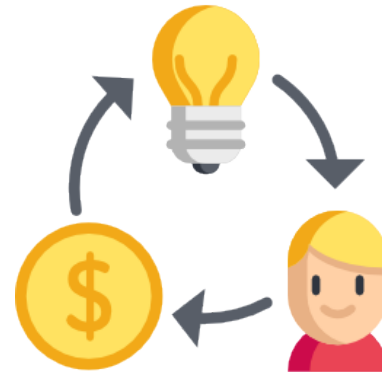
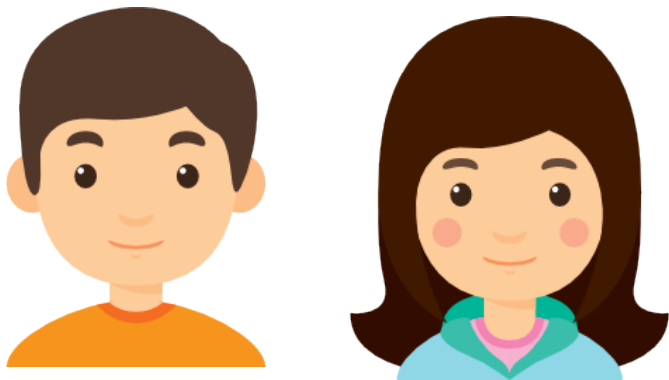
- 1. Suryo Adhi Wibowo, S.T., M.T., Ph.D.**
- 2. Rissa Rahmania, S.T., M.T.**
- 3. Gelar Budiman, S.T., M.T.**

Research Center for Advanced Wireless Technologies (AdWiTech),
School of Electrical Engineering, Telkom University



- Selecting **Platform** is the importance role!!!

Users target?



How much invest?

Expectation an experience



Payment

- Selecting **Platform** is the importance role!!!

Keep down cost development?

Maintenance system?



How many development team?

• Cross-platform development used to definitely be "**cheap**" and "**quick**"... and definitely not "**good**"



- Bad performance and user interface
- Too large files or binaries
- Platform holders weren't a big fan of it



- We can create native UIs/custom in each platform
- Toolchains can be used: Android Studio, Xcode
- Using tools easier

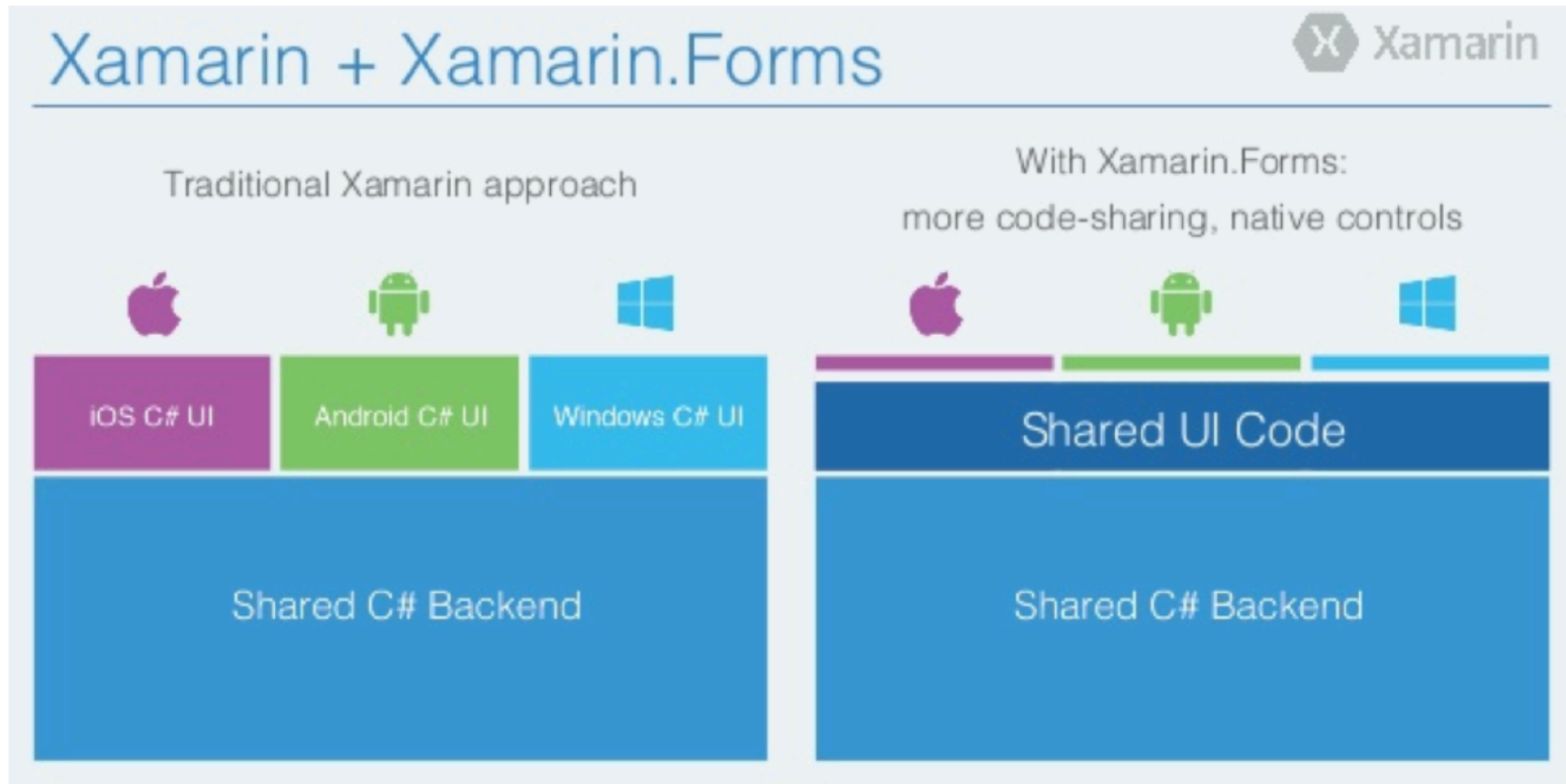
- There are two approaches:
 - Build with an API/toolchain (C# with Xamarin)
 - Build a hybrid HTML5 web app (Apache Cordova)



SDK API Xamarin



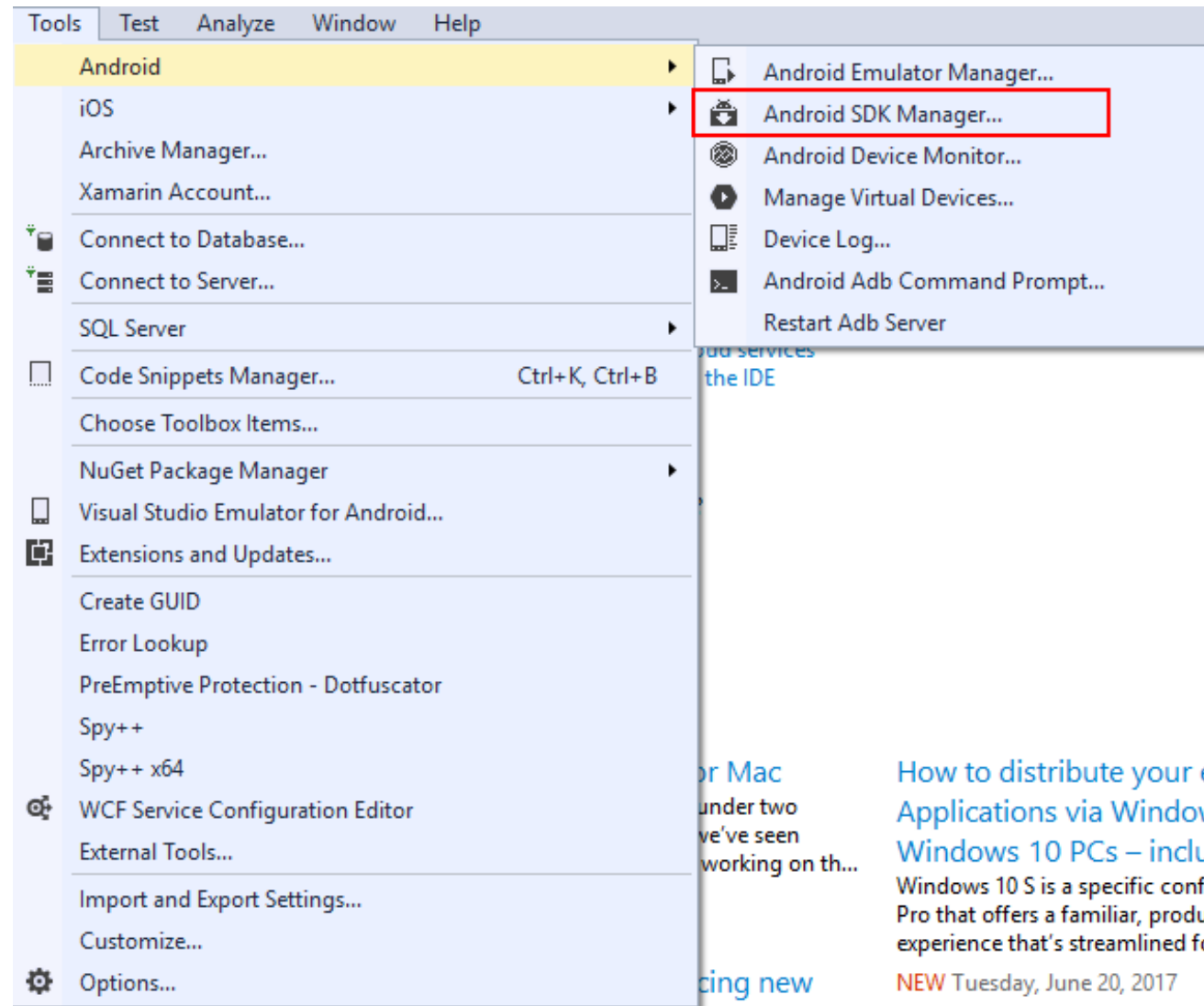
APACHE CORDOVA



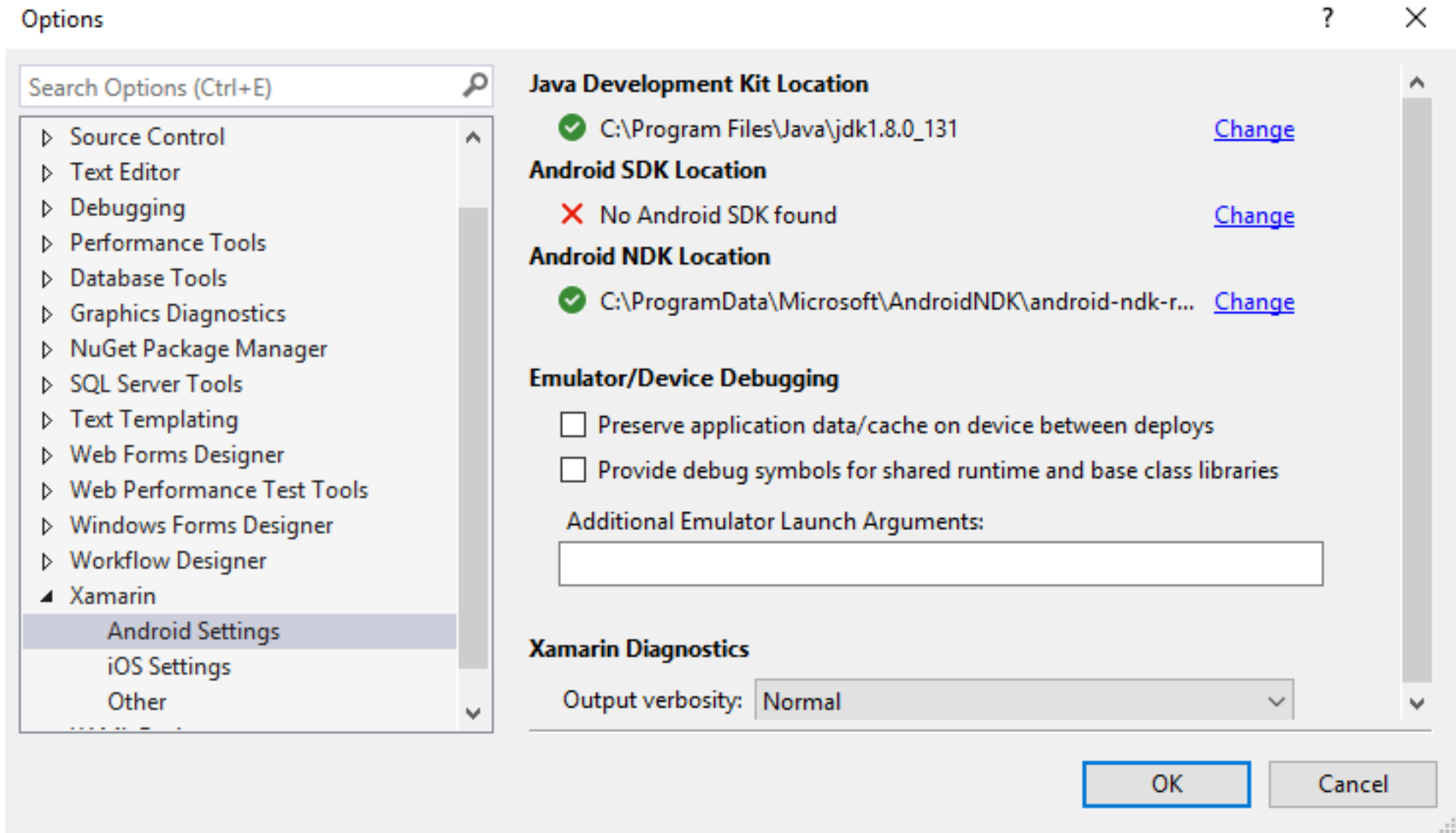
Xamarin vs Xamarin.Forms

- Xamarin is a Microsoft owned company.
- It can write native:
 - Android
 - iOS
 - Windows Apps
 - UIs
- It uses C#/.NET codebase:
 - Visual Studio
 - Xamarin Studio.

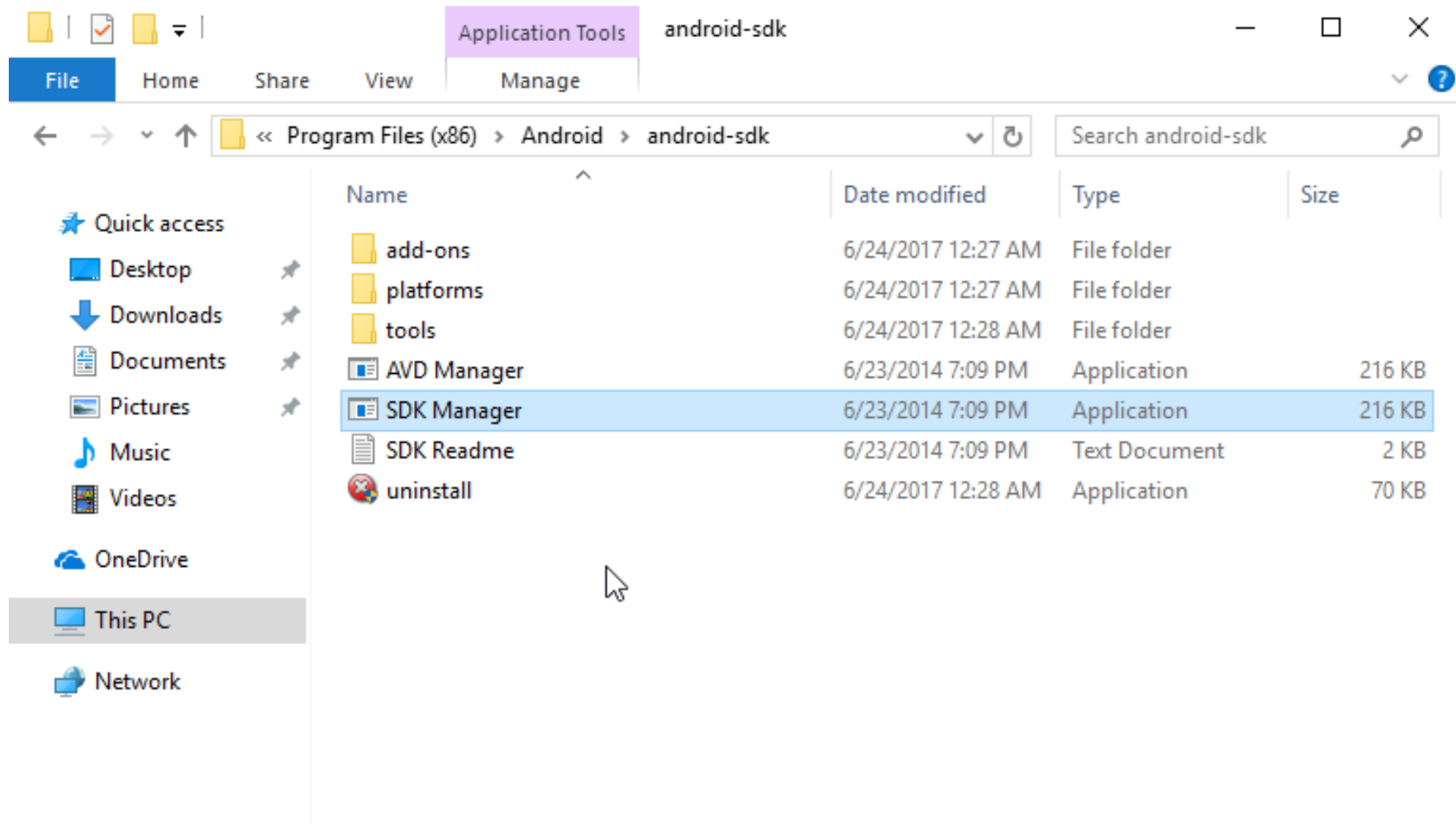
- Xamarin is a Microsoft owned company.
- It can write native:
 - Android
 - iOS
 - Windows Apps
 - UIs
- It uses C#/.NET codebase:
 - Visual Studio
 - Xamarin Studio.



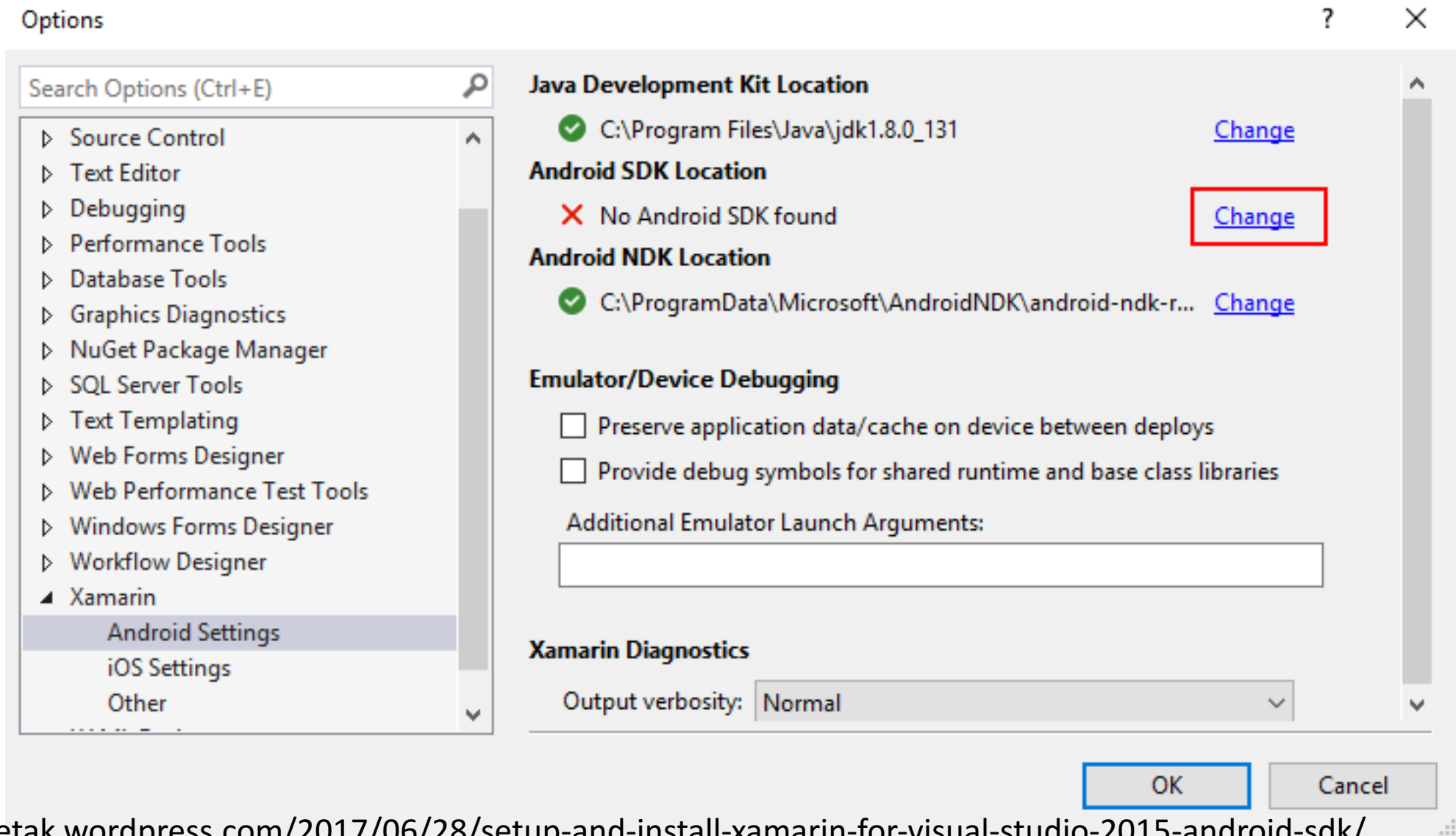
<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>



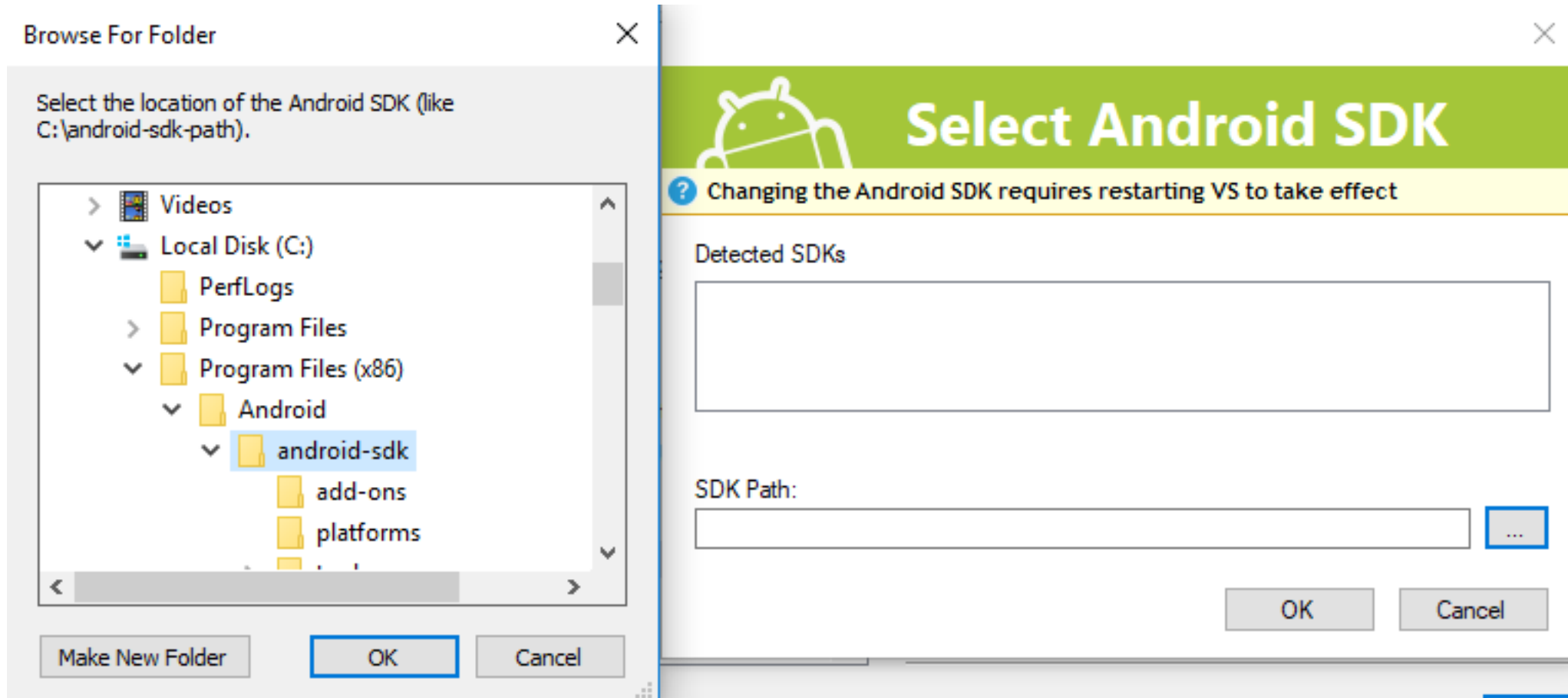
<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>

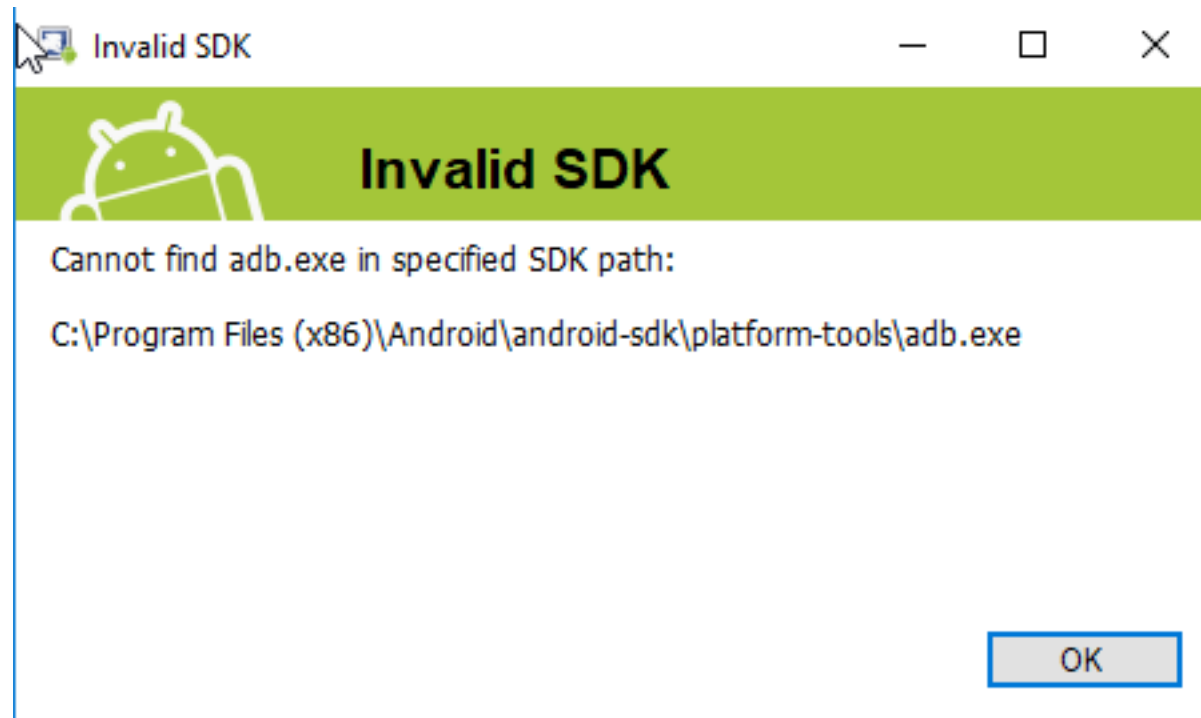


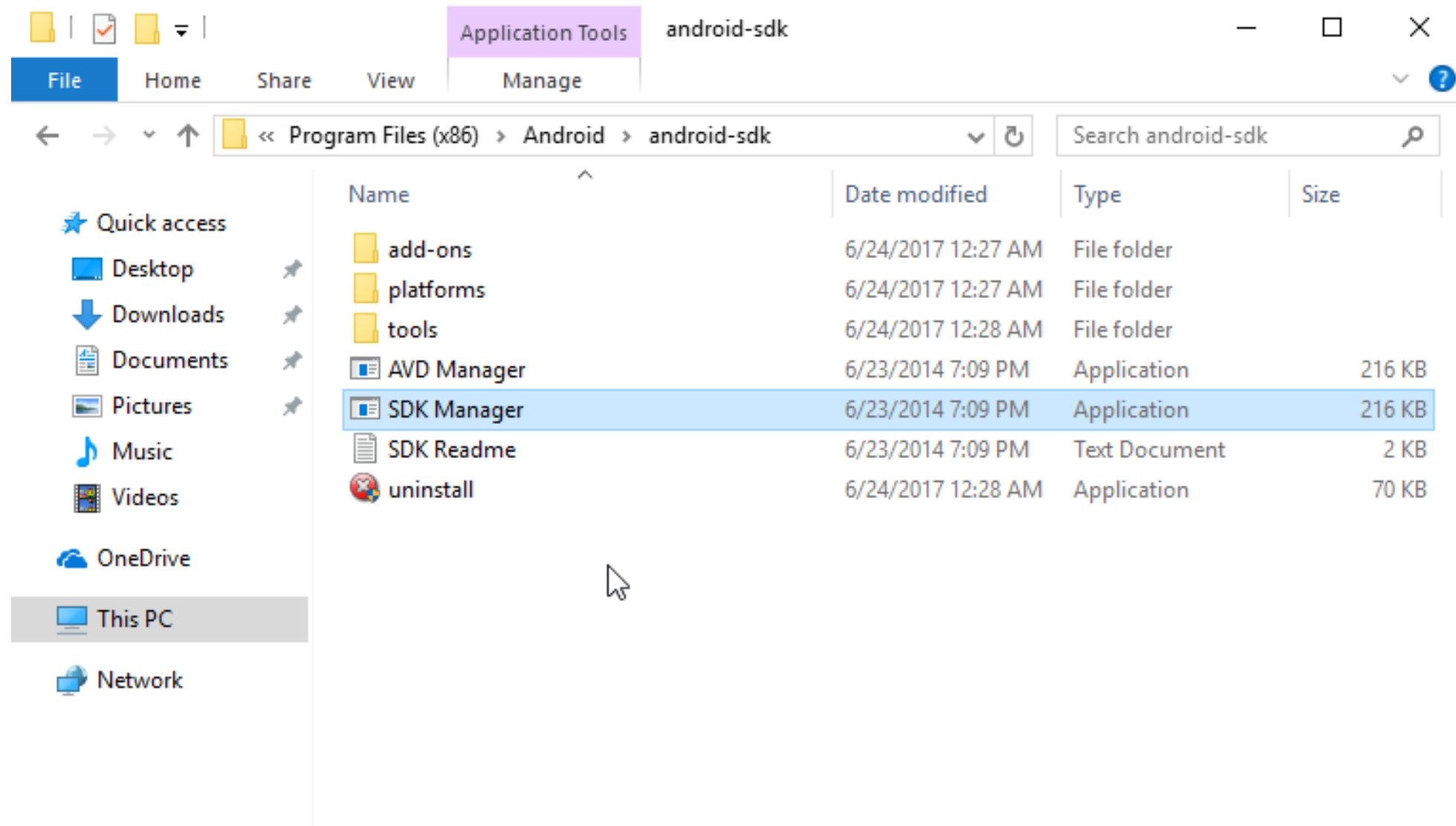
<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>



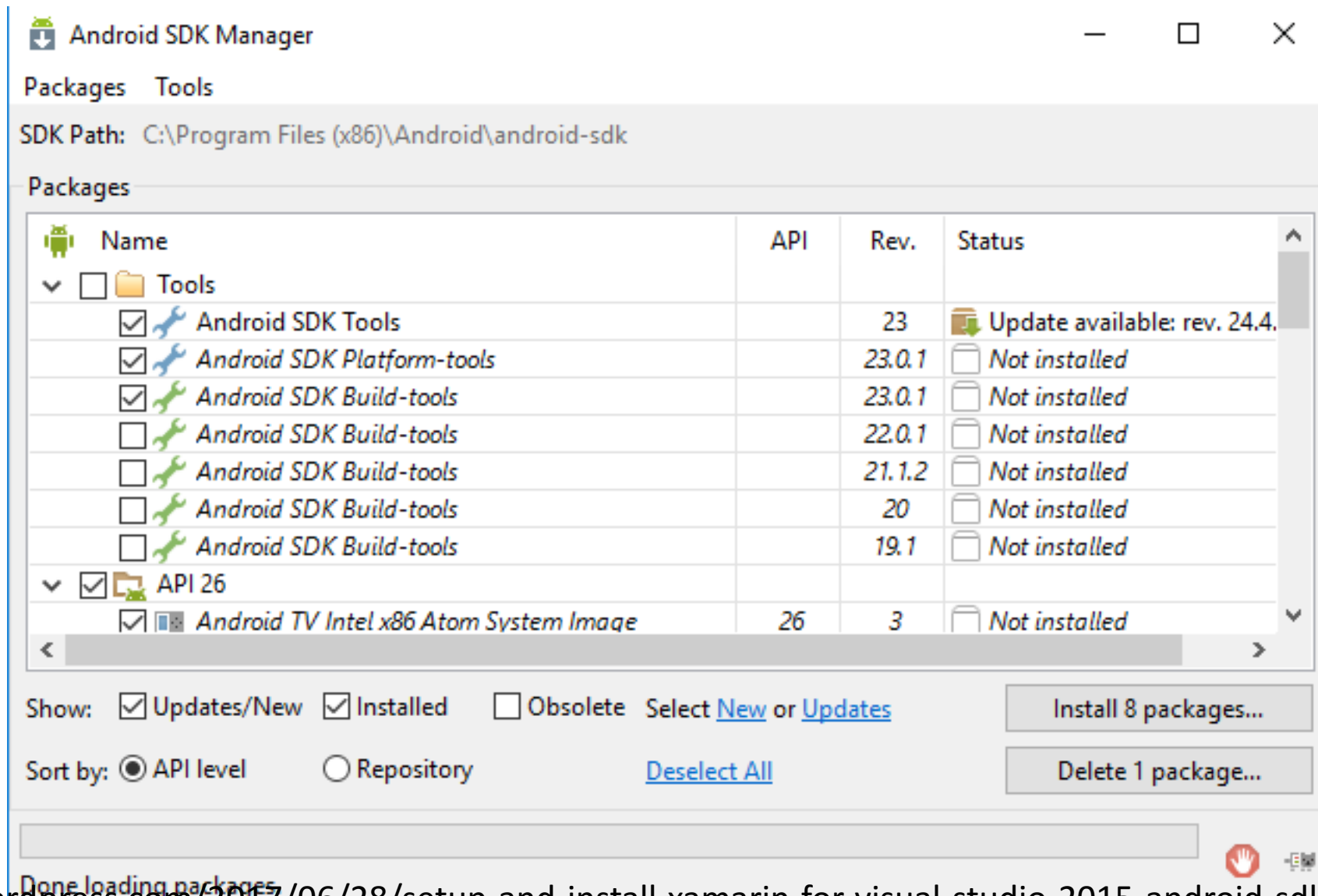
<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>



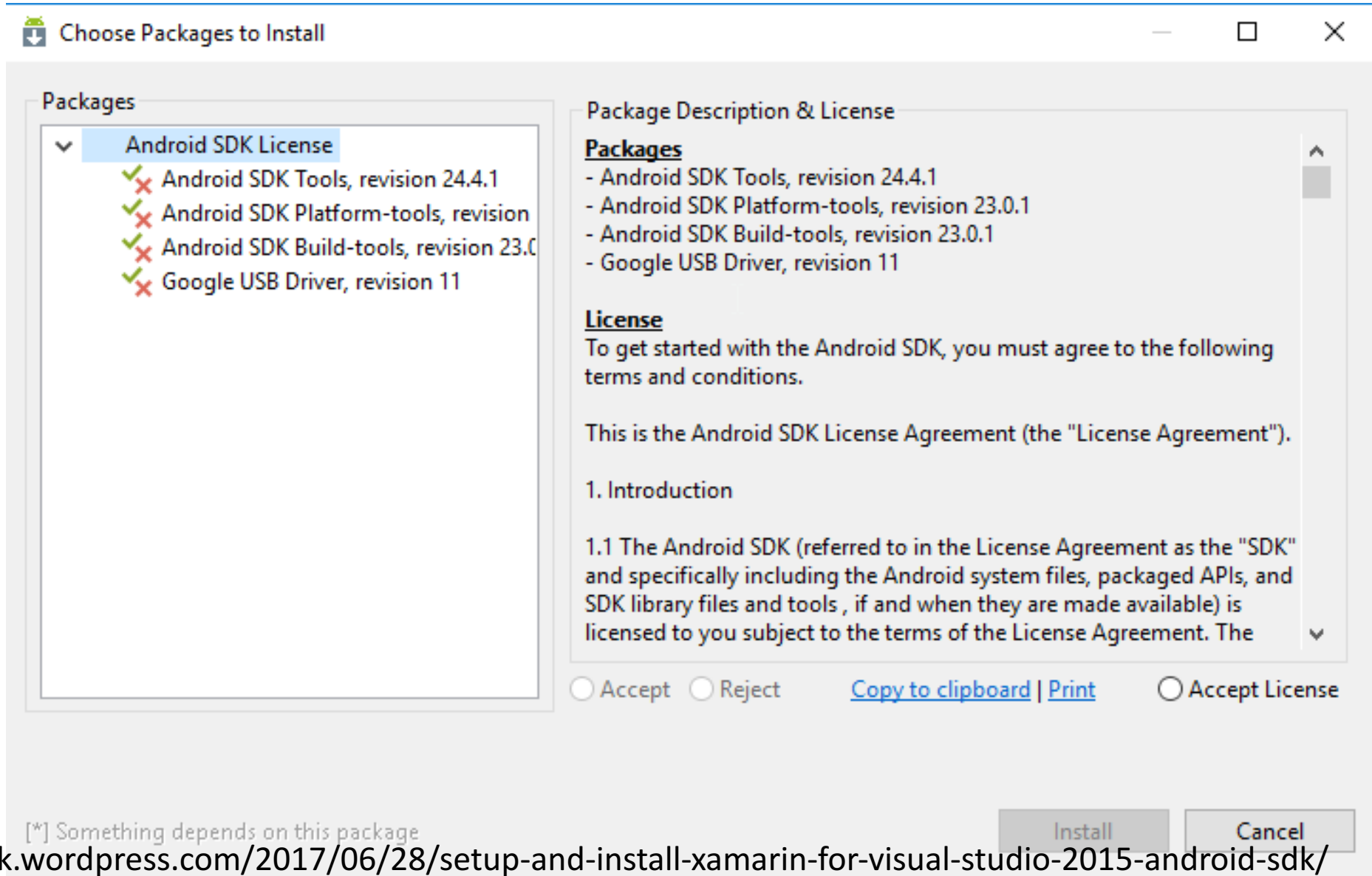




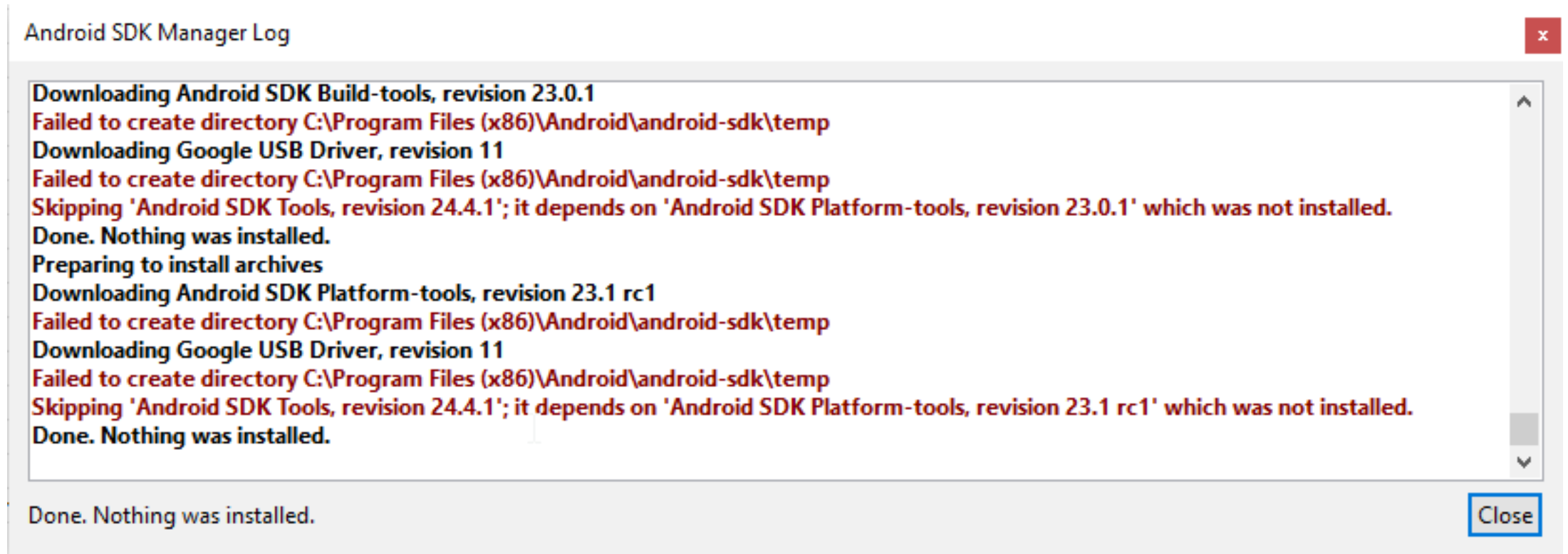
<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>



<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>



<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>



Android SDK Manager Log

```
Downloading Android SDK Build-tools, revision 23.0.1
Failed to create directory C:\Program Files (x86)\Android\android-sdk\temp
Downloading Google USB Driver, revision 11
Failed to create directory C:\Program Files (x86)\Android\android-sdk\temp
Skipping 'Android SDK Tools, revision 24.4.1'; it depends on 'Android SDK Platform-tools, revision 23.0.1' which was not installed.
Done. Nothing was installed.
Preparing to install archives
Downloading Android SDK Platform-tools, revision 23.1 rc1
Failed to create directory C:\Program Files (x86)\Android\android-sdk\temp
Downloading Google USB Driver, revision 11
Failed to create directory C:\Program Files (x86)\Android\android-sdk\temp
Skipping 'Android SDK Tools, revision 24.4.1'; it depends on 'Android SDK Platform-tools, revision 23.1 rc1' which was not installed.
Done. Nothing was installed.
```

Done. Nothing was installed.

Close

The screenshot shows the Android SDK Manager window. At the top, the SDK Path is C:\Users\xamarin\AppData\Local\Android\android-sdk. The main area is divided into two sections: a table of installed and available packages, and a log window.

| Name | API | Rev. | Status |
|---|-----|--------|--|
| <input type="checkbox"/> Android SDK Build-tools | | 21.1.2 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Android SDK Build-tools | | 20 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Android SDK Build-tools | | 19.1 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> API 26 | | | |
| <input type="checkbox"/> Android TV Intel x86 Atom System Image | 26 | 3 | <input type="checkbox"/> Not installed |

Android SDK Manager Log

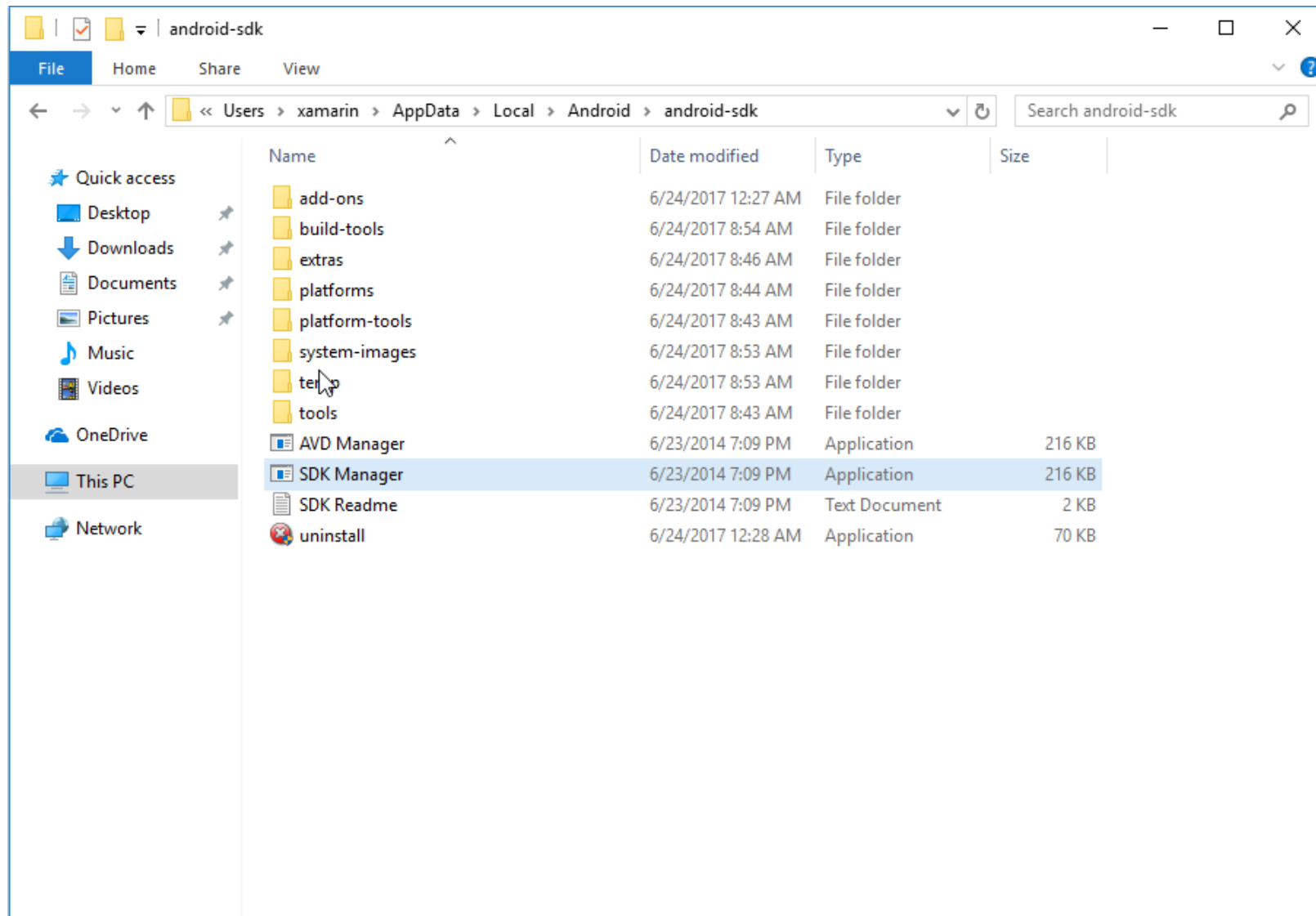
```
Done loading packages.
Preparing to install archives
Downloading Android SDK Platform-tools, revision 23.0.1
Installing Android SDK Platform-tools, revision 23.0.1
Stopping ADB server failed (code -1).
Installed Android SDK Platform-tools, revision 23.0.1
Downloading Android SDK Build-tools, revision 23.0.1
Installing Android SDK Build-tools, revision 23.0.1
Installed Android SDK Build-tools, revision 23.0.1
Downloading Google USB Driver, revision 11
Installing Google USB Driver, revision 11
Installed Google USB Driver, revision 11
Downloading Android SDK Tools, revision 24.4.1
```

Downloading Android SDK Tools, revision 24.4.1 (91%, 3679 KiB/s, 4 seconds left)

| Name | API | Rev. | Status |
|--|-----|-------|---|
| <input type="checkbox"/> Extras | | | |
| <input type="checkbox"/> Android Support Repository | | 47 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Android Auto Desktop Head Unit emulator | | 1.1 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Google Play services | | 41 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Instant Apps Development SDK | | 1 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Google Repository | | 53 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Google Play APK Expansion library | | 1 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Google Play Licensing Library | | 1 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Google Play Billing Library | | 5 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Android Auto API Simulators | | 1 | <input type="checkbox"/> Not installed |
| <input checked="" type="checkbox"/> Google USB Driver | | 11 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Google Web Driver | | 2 | <input type="checkbox"/> Not installed |
| <input type="checkbox"/> Intel x86 Emulator Accelerator (HAXM installer) | | 6.1.1 | <input checked="" type="checkbox"/> Not compatible with Windows |

At the bottom, there are filters for 'Show' (Updates/New, Installed, Obsolete) and 'Sort by' (API level, Repository). Buttons for 'Install 4 packages...' and 'Delete 1 package...' are visible on the right.

<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>



<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>

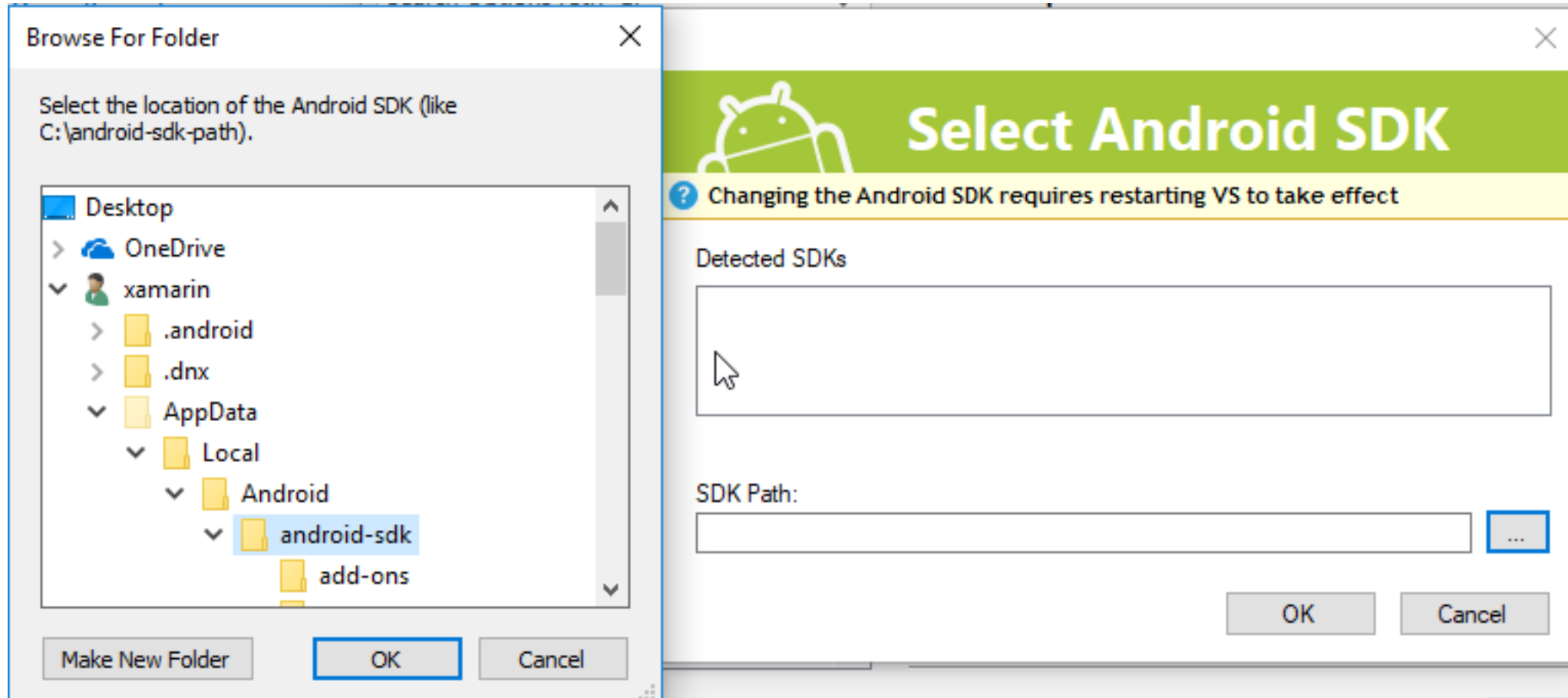
The screenshot shows the Android SDK Manager interface. The title bar reads "Android SDK Manager". Below the title bar, there are tabs for "Packages" and "Tools". The "SDK Path" is displayed as "C:\Users\xamarin\AppData\Local\Android\android-sdk".

The main area contains a table of packages with columns for Name, API, Rev., and Status. The packages are grouped into folders like "Tools", "Tools (Preview Channel)", "Android 8.0.0 (API 26)", and "Android 7.1.1 (API 25)".

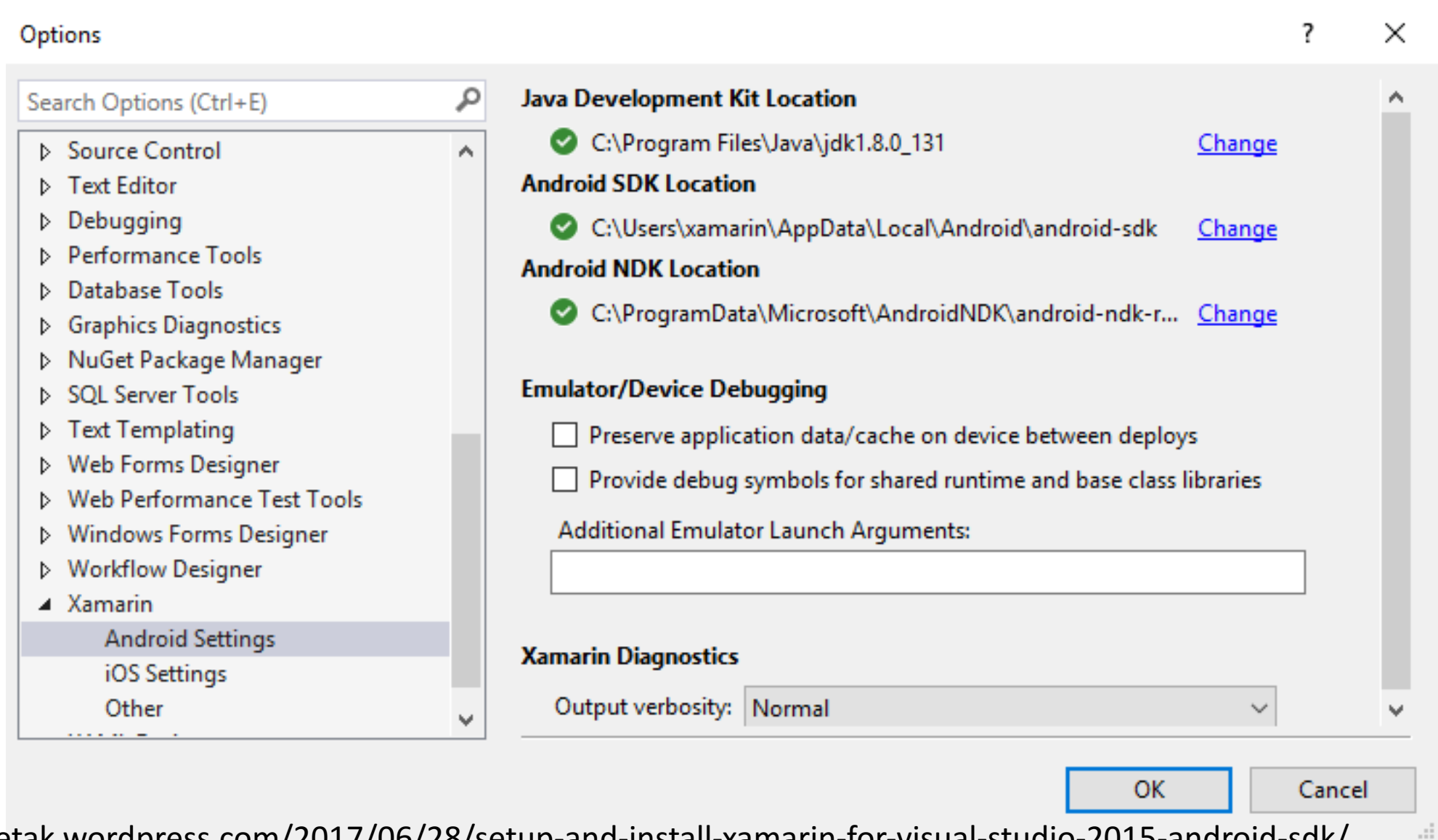
| Name | API | Rev. | Status |
|--|-----|--------|-------------------------------|
| Tools | | | |
| Android SDK Tools | | 24.4.1 | Update available: rev. 25.2.5 |
| Android SDK Platform-tools | | 23.0.1 | Update available: rev. 26 |
| Android SDK Build-tools | | 26 | Not installed |
| Android SDK Build-tools | | 25.0.3 | Not installed |
| Android SDK Build-tools | | 25.0.2 | Not installed |
| Android SDK Build-tools | | 25.0.1 | Not installed |
| Android SDK Build-tools | | 25 | Not installed |
| Android SDK Build-tools | | 24.0.3 | Not installed |
| Android SDK Build-tools | | 24.0.2 | Not installed |
| Android SDK Build-tools | | 24.0.1 | Not installed |
| Android SDK Build-tools | | 24 | Not installed |
| Android SDK Build-tools | | 23.0.3 | Not installed |
| Android SDK Build-tools | | 23.0.2 | Not installed |
| Android SDK Build-tools | | 23.0.1 | Installed |
| Android SDK Build-tools | | 22.0.1 | Not installed |
| Android SDK Build-tools | | 21.1.2 | Not installed |
| Android SDK Build-tools | | 20 | Not installed |
| Android SDK Build-tools | | 19.1 | Not installed |
| Tools (Preview Channel) | | | |
| Android 8.0.0 (API 26) | | | |
| SDK Platform | 26 | 1 | Not installed |
| Android TV Intel x86 Atom System Image | 26 | 3 | Not installed |
| Android Wear Intel x86 Atom System Image | 26 | 1 | Not installed |
| Google Play Intel x86 Atom System Image | 26 | 4 | Not installed |
| Google APIs Intel x86 Atom System Image | 26 | 4 | Not installed |
| Android 7.1.1 (API 25) | | | |
| SDK Platform | 25 | 3 | Not installed |
| Android TV Intel x86 Atom System Image | 25 | 4 | Not installed |
| Android Wear ARM EABI v7a System Image | 25 | 3 | Not installed |
| Android Wear Intel x86 Atom System Image | 25 | 3 | Not installed |
| Google APIs ARM EABI v7a System Image | 25 | 5 | Not installed |
| Google APIs Intel x86 Atom_64 System Image | 25 | 5 | Not installed |
| Google APIs Intel x86 Atom System Image | 25 | 5 | Not installed |
| Sources for Android SDK | 25 | 1 | Not installed |

At the bottom of the window, there are filter options: "Show: Updates/New Installed Select [New](#) or [Updates](#). There are also buttons for "Install 7 packages..." and "Delete 2 packages...".

<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>



<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>



<https://lowleetak.wordpress.com/2017/06/28/setup-and-install-xamarin-for-visual-studio-2015-android-sdk/>

THANK YOU!!!