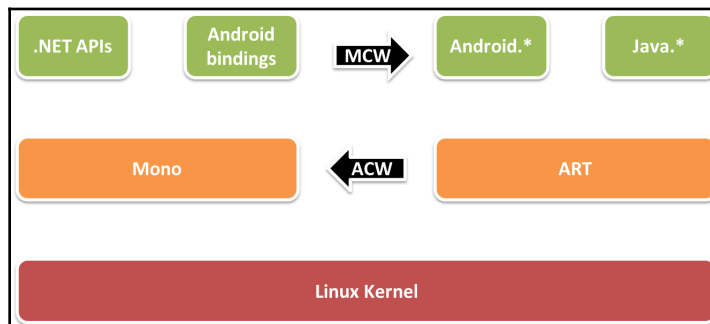
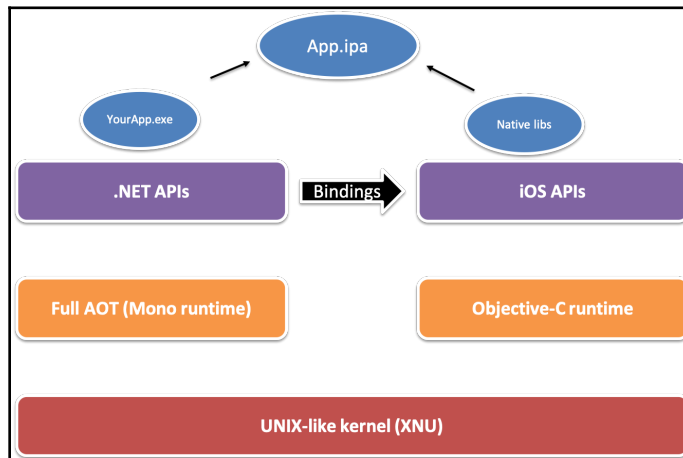
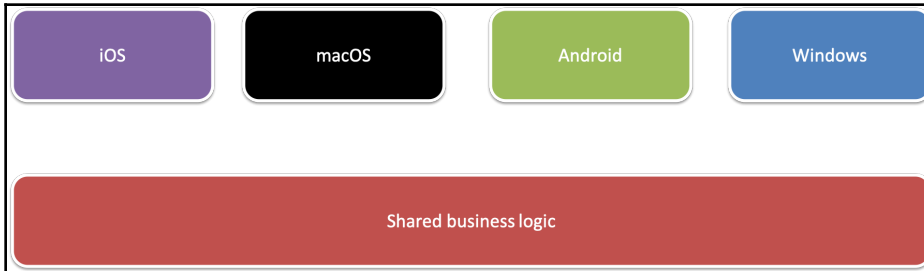
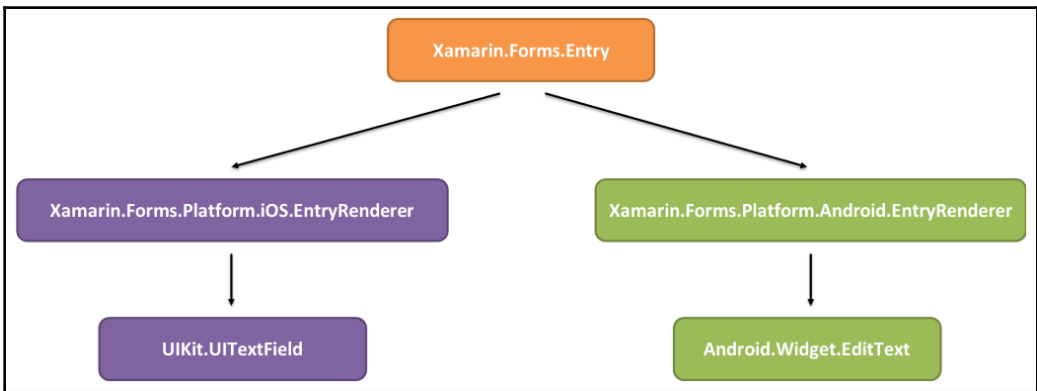
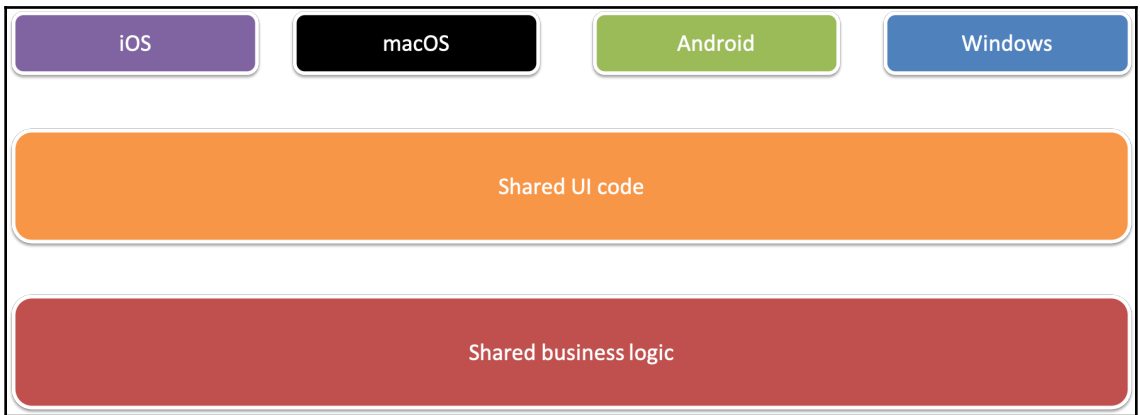
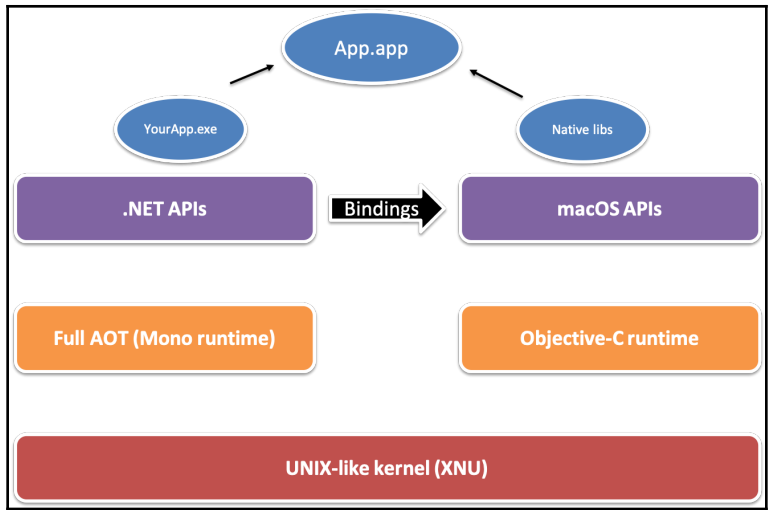
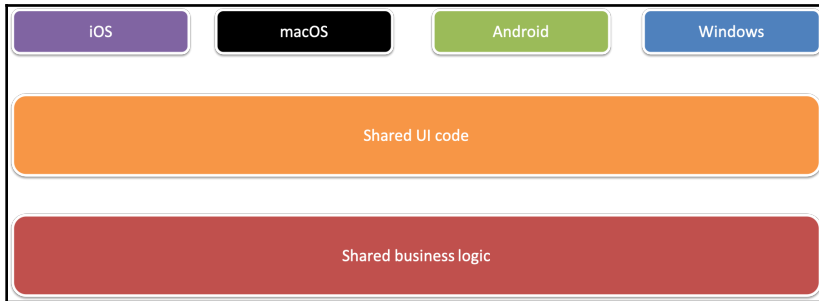
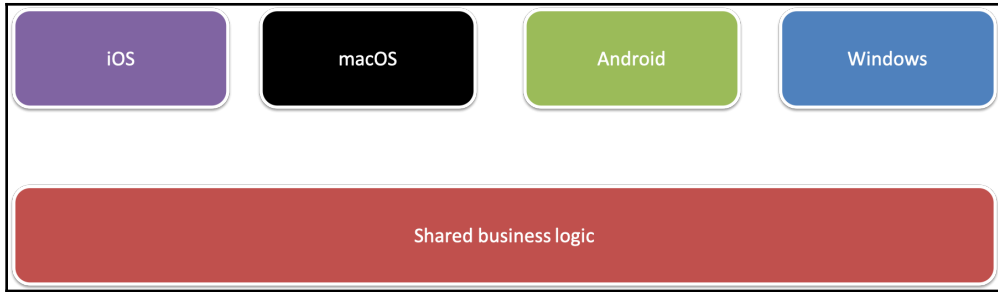
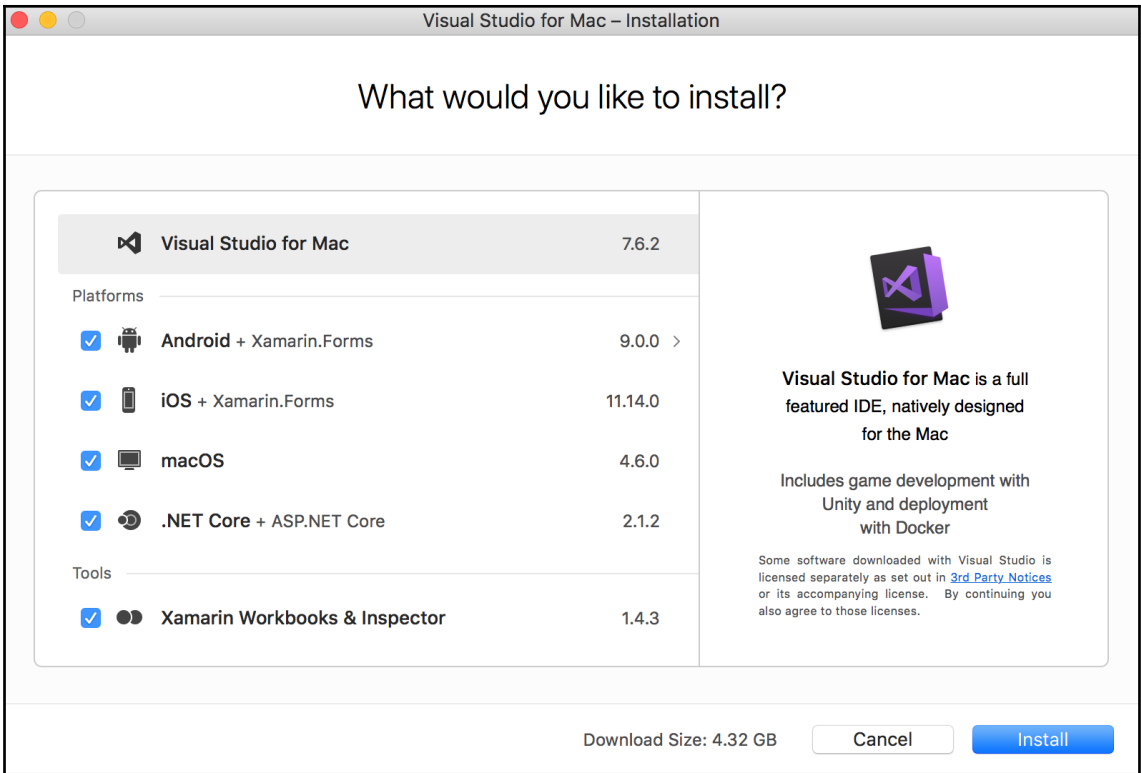


# Chapter 1: Introduction to Xamarin









---

## Android

Platforms Tools Locations

Check or uncheck items to install or remove.

| Name                                  |                            |
|---------------------------------------|----------------------------|
| ▶ <input checked="" type="checkbox"/> | Android SDK Tools          |
| <input checked="" type="checkbox"/>   | Android SDK Platform-Tools |
| ▶ <input type="checkbox"/>            | Android SDK Build Tools    |
| <input checked="" type="checkbox"/>   | Android Emulator           |
| <input type="checkbox"/>              | CMake 3.6.4111459          |
| ▶ <input type="checkbox"/>            | LLDB                       |
| <input type="checkbox"/>              | NDK                        |
| ▶ <input type="checkbox"/>            | Extras                     |
| ▶ <input checked="" type="checkbox"/> | Other                      |

### Android







Platforms Tools Locations

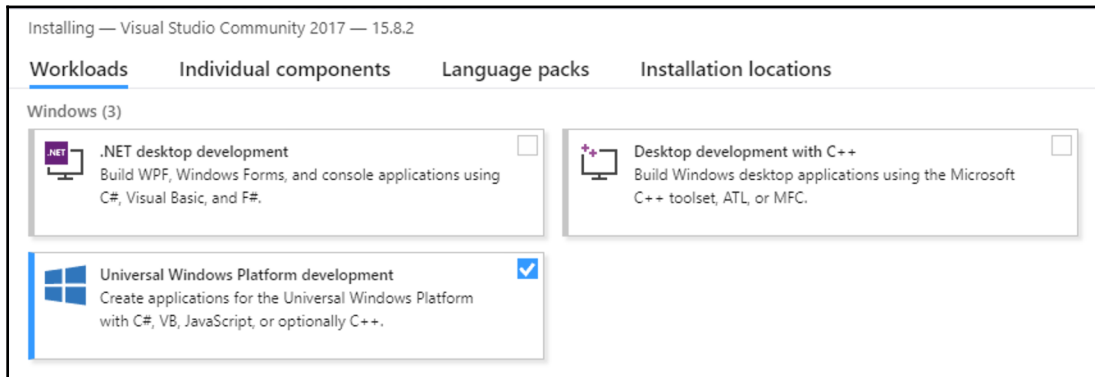
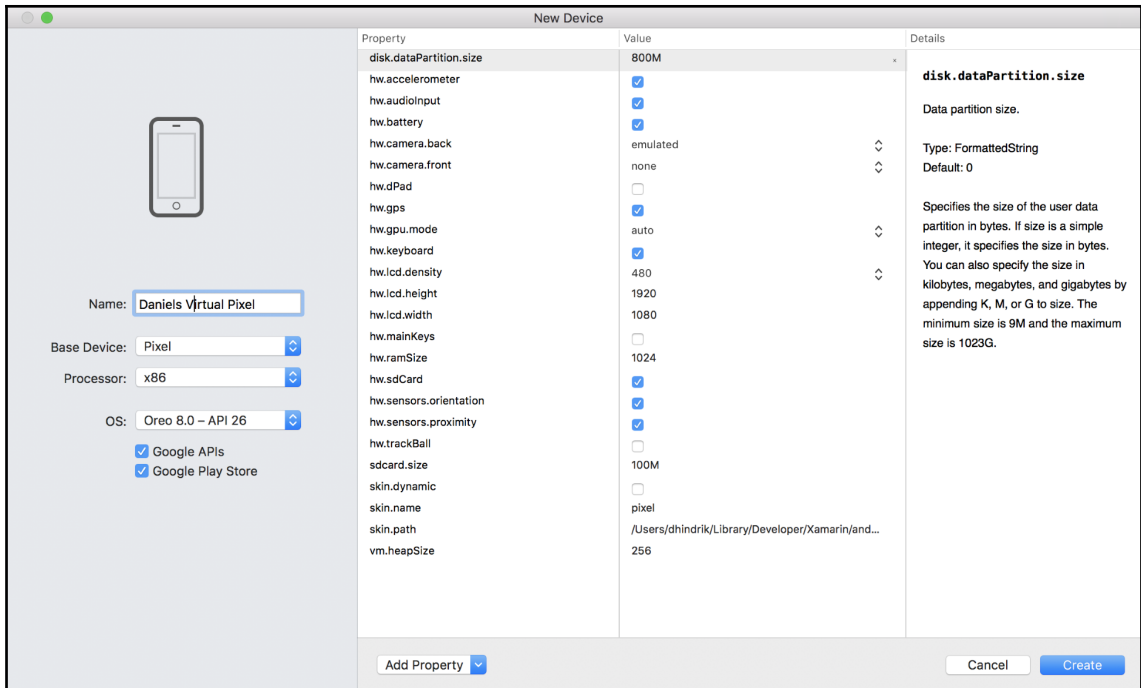
Check or uncheck items to install or remove.

| Name  | API Level | Version |
|---|-----------|---------|
| ▶ <input type="checkbox"/> Android SDK Platform 28                          | 28        |         |
| ▼ <input type="checkbox"/> Android 8.1 – Oreo                               | 27        |         |
| <input checked="" type="checkbox"/> Android SDK Platform 27                 |           | 3       |
| <input checked="" type="checkbox"/> Sources for Android 27                  |           | 1       |
| <input type="checkbox"/> Intel x86 Atom System Image                        |           | 1       |
| <input type="checkbox"/> Intel x86 Atom_64 System Image                     |           | 1       |
| <input type="checkbox"/> Android TV Intel x86 Atom System Image             |           | 5       |
| <input type="checkbox"/> Google APIs Intel x86 Atom System Image            |           | 7       |
| <input checked="" type="checkbox"/> Google Play Intel x86 Atom System Image |           | 3       |
| ▶ <input type="checkbox"/> Android 8.0 – Oreo                               | 26        |         |
| ▶ <input type="checkbox"/> Android 7.1 – Nougat                             | 25        |         |
| ▶ <input type="checkbox"/> Android 7.0 – Nougat                             | 24        |         |
| ▶ <input type="checkbox"/> Android 6.0 – Marshmallow                        | 23        |         |
| ▶ <input type="checkbox"/> Android 5.1 – Lollipop                           | 22        |         |
| ▶ <input type="checkbox"/> Android 5.0 – Lollipop                           | 21        |         |
| ▶ <input type="checkbox"/> Android 4.4.87 – Kit Kat + Wear support          | 20        |         |
| ▶ <input type="checkbox"/> Android 4.4 – Kit Kat                            | 19        |         |

Android Device Manager

+ New Device

| Name   | OS                       | Processor | Memory | Resolution  |   |
|--|--------------------------|-----------|--------|-------------|---|
|  Galaxy Nexus API 23<br>+ Google APIs | Marshmallow 6.0 – API 23 | x86_64    | 1 GB   | 720 x 1280  |   |
|  Nexus 5 API 21<br>+ Google APIs      | Lollipop 5.0 – API 21    | x86       | 1 GB   | 1080 x 1920 |   |
|  Pixel 2 API 26<br>+ Google APIs      | Oreo 8.0 – API 26        | x86       | 1 GB   | 1080 x 1920 |   |
|  Tab S2 API 24<br>+ Google APIs       | Nougat 7.0 – API 24      | x86       | 1 GB   | 1080 x 1920 |   |



Mobile & Gaming (5)

- Mobile development with .NET**  
 Build cross-platform applications for iOS, Android or Windows using Xamarin.
- Game development with Unity**  
 Create 2D and 3D games with Unity, a powerful cross-platform development environment.
- Mobile development with JavaScript**  
 Build Android, iOS and UWP apps using Tools for Apache Cordova.
- Mobile development with C++**  
 Build cross-platform applications for iOS, Android or Windows using C++.
- Game development with C++**  
 Use the full power of C++ to build professional games powered by DirectX, Unreal, or Cocos2d.

Sharing

Computer Name: Daniel's Mac

Computers on your local network can access your computer at: Daniels-Mac.local Edit...

| On                                  | Service             |
|-------------------------------------|---------------------|
| <input type="checkbox"/>            | DVD or CD Sharing   |
| <input type="checkbox"/>            | Screen Sharing      |
| <input type="checkbox"/>            | File Sharing        |
| <input type="checkbox"/>            | Printer Sharing     |
| <input checked="" type="checkbox"/> | Remote Login        |
| <input type="checkbox"/>            | Remote Management   |
| <input type="checkbox"/>            | Remote Apple Events |
| <input type="checkbox"/>            | Internet Sharing    |
| <input type="checkbox"/>            | Content Caching     |

Remote Login: On

To log in to this computer remotely, type "ssh daniel@daniels-mac.lan".

Allow access for:  All users  Only these users:

- Administrators
- Daniel

+ -

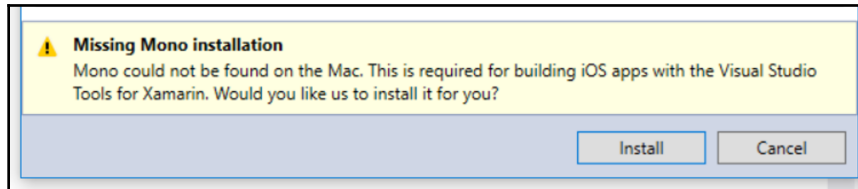
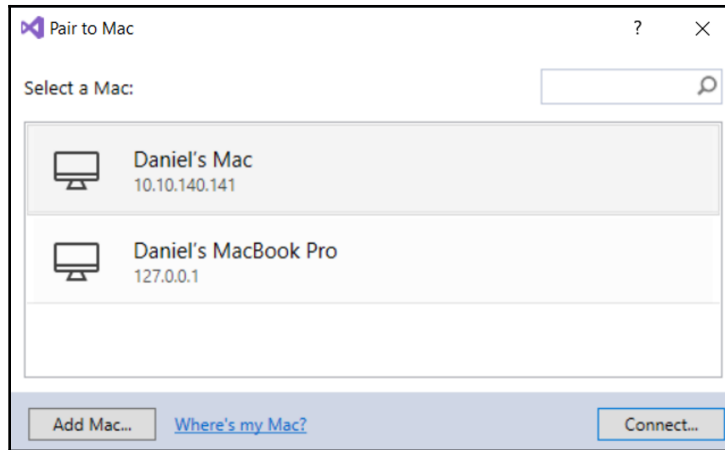
Start

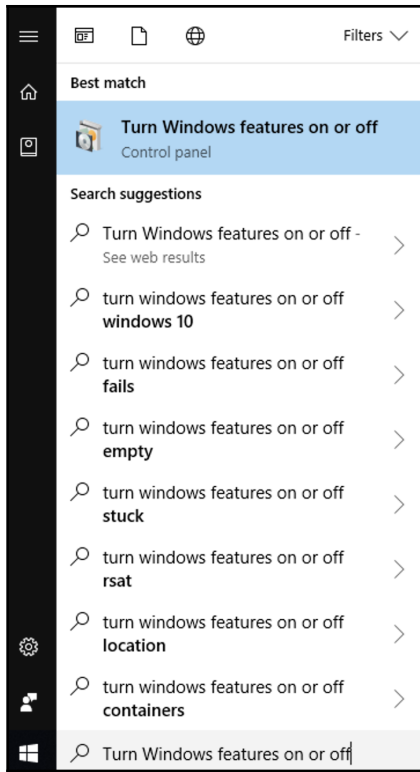
Pair to Mac - Disconnected

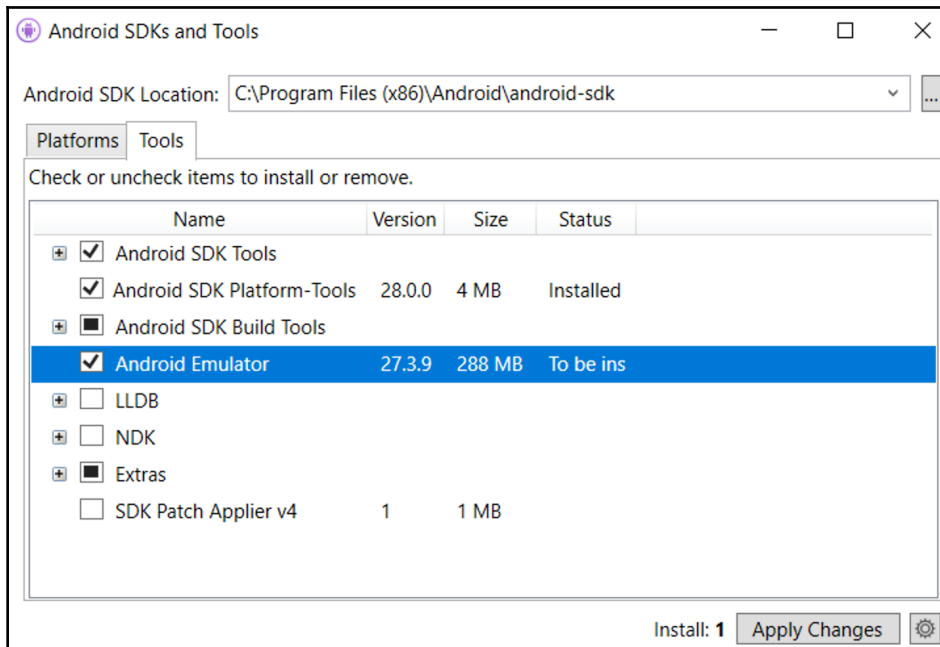
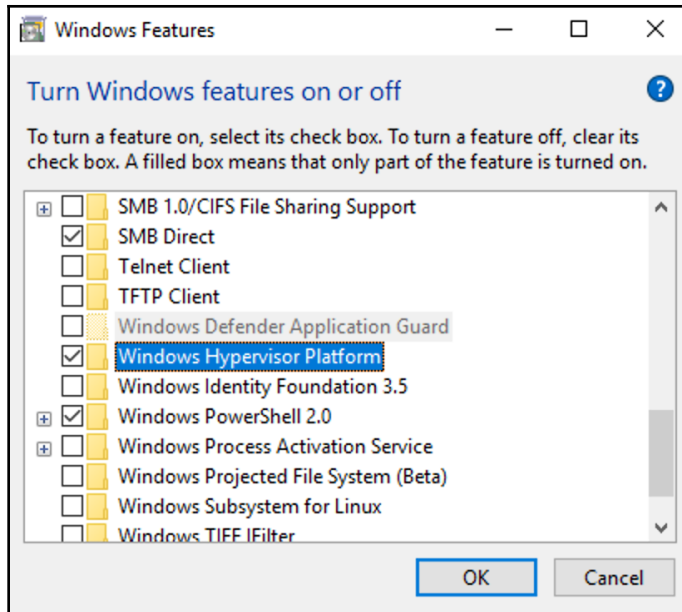
Solution Explorer

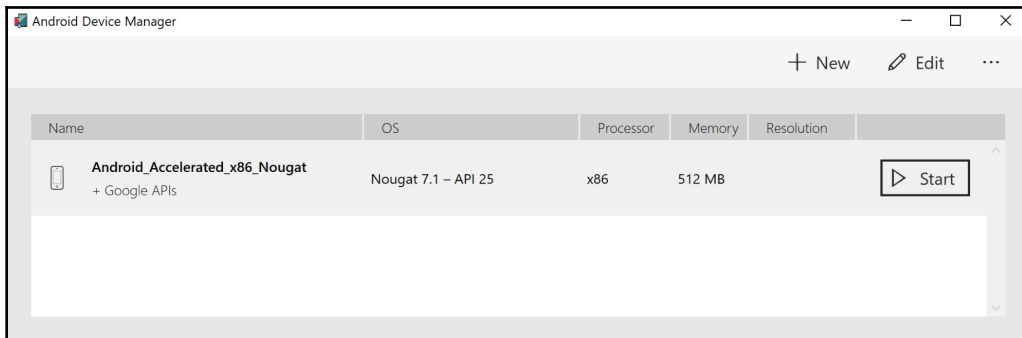
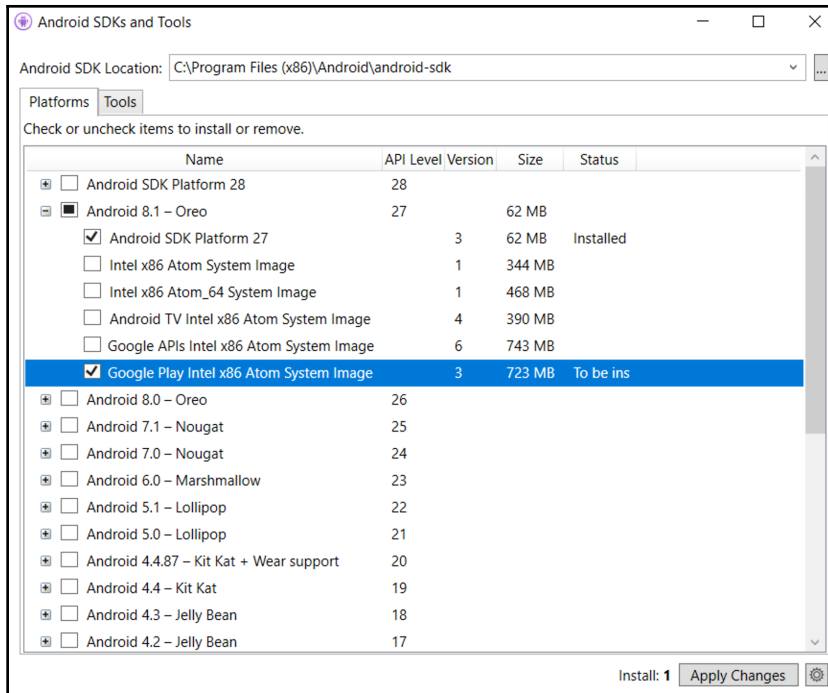
Search Solution Explorer (Ctrl+)












New Device \*
— □ ×



Name:

Base Device:

Processor:

OS:

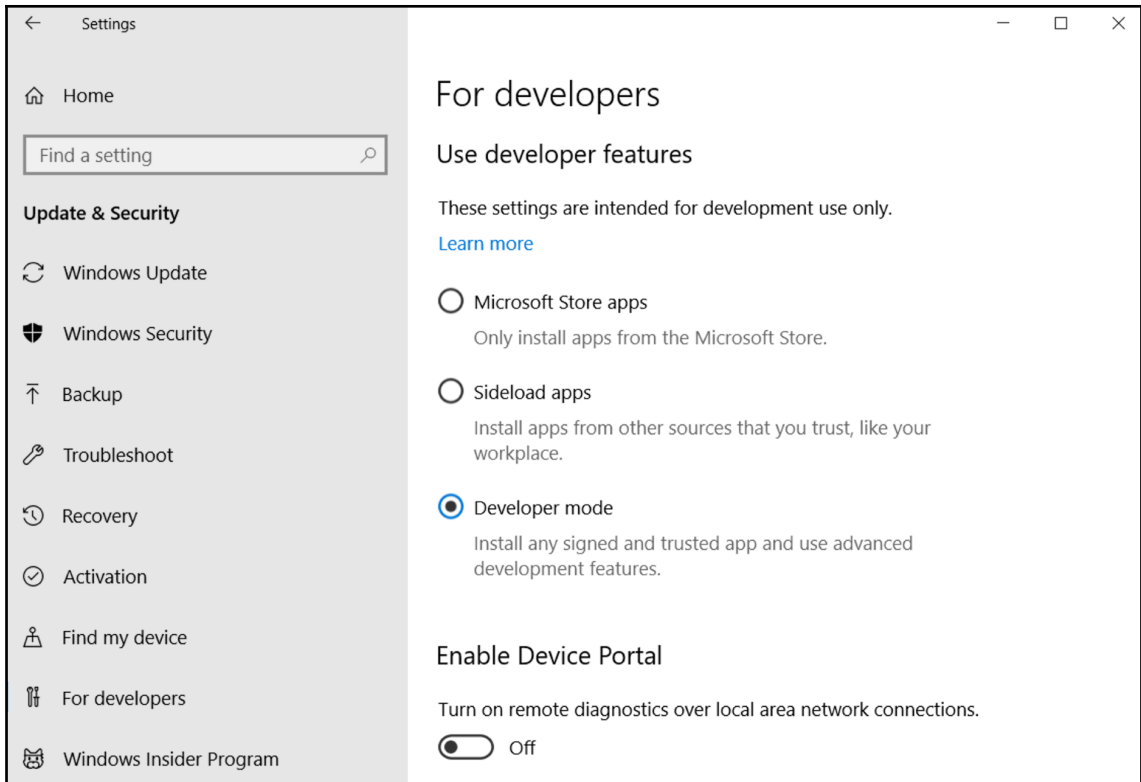
Google APIs

Google Play Store

| Property               | Value                               | Details |
|------------------------|-------------------------------------|---------|
| hw.accelerometer       | <input checked="" type="checkbox"/> |         |
| hw.audioInput          | <input checked="" type="checkbox"/> |         |
| hw.battery             | <input checked="" type="checkbox"/> |         |
| hw.camera.back         | emulated                            | ▼       |
| hw.camera.front        | none                                | ▼       |
| hw.dPad                | <input type="checkbox"/>            |         |
| hw.gps                 | <input checked="" type="checkbox"/> |         |
| hw.gpu.mode            | auto                                | ▼       |
| hw.keyboard            | <input checked="" type="checkbox"/> |         |
| hw.lcd.density         | 480                                 | ▼       |
| hw.lcd.height          | 1920                                |         |
| hw.lcd.width           | 1080                                |         |
| hw.mainKeys            | <input type="checkbox"/>            |         |
| hw.ramSize             | 1024                                |         |
| hw.sdCard              | <input checked="" type="checkbox"/> |         |
| hw.sensors.orientation | <input checked="" type="checkbox"/> |         |
| hw.sensors.proximity   | <input checked="" type="checkbox"/> |         |
| hw.trackBall           | <input type="checkbox"/>            |         |
| sdcard.size            | 100M                                |         |
| skin.dynamic           | <input checked="" type="checkbox"/> |         |
| skin.name              | 1080x1920                           |         |

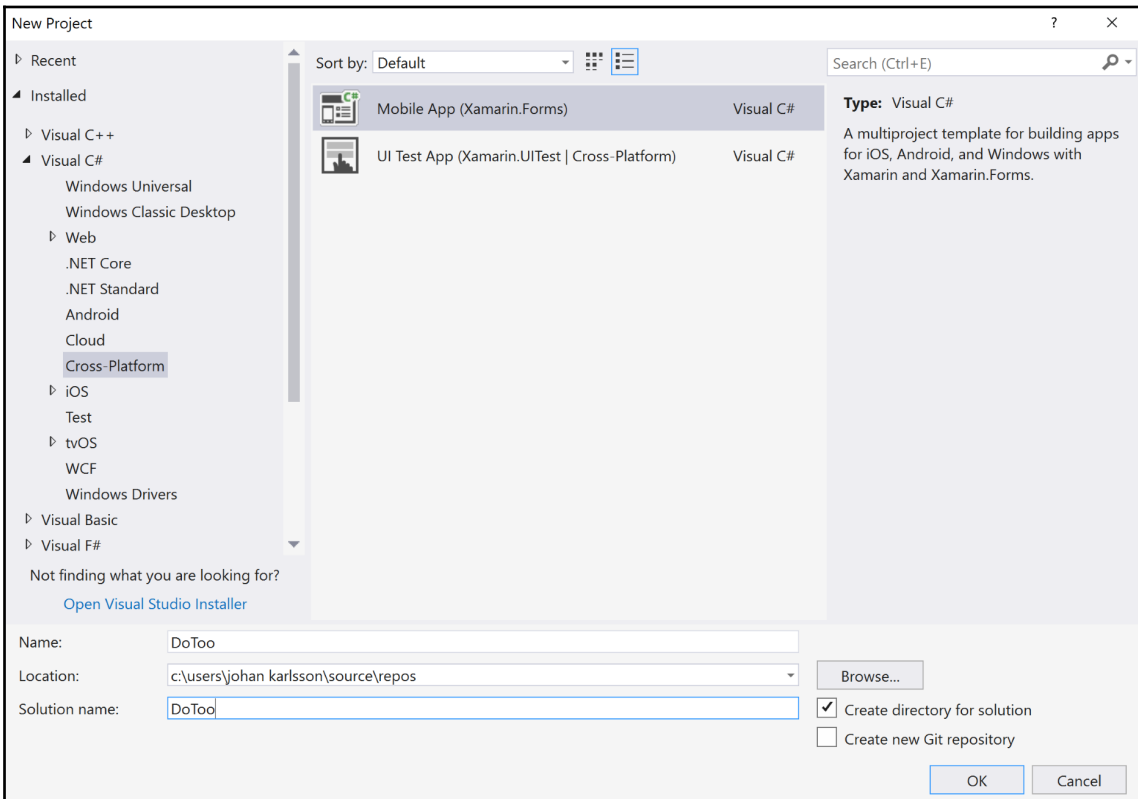
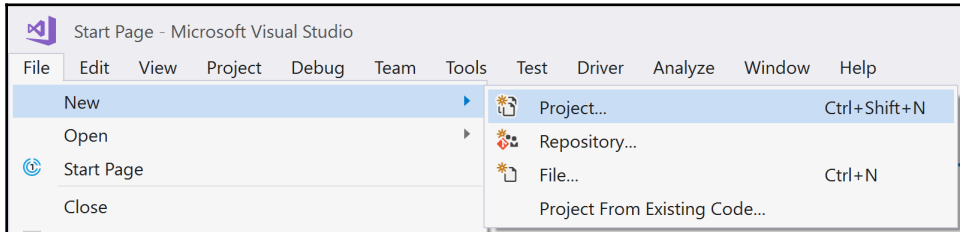
Add Property ▼

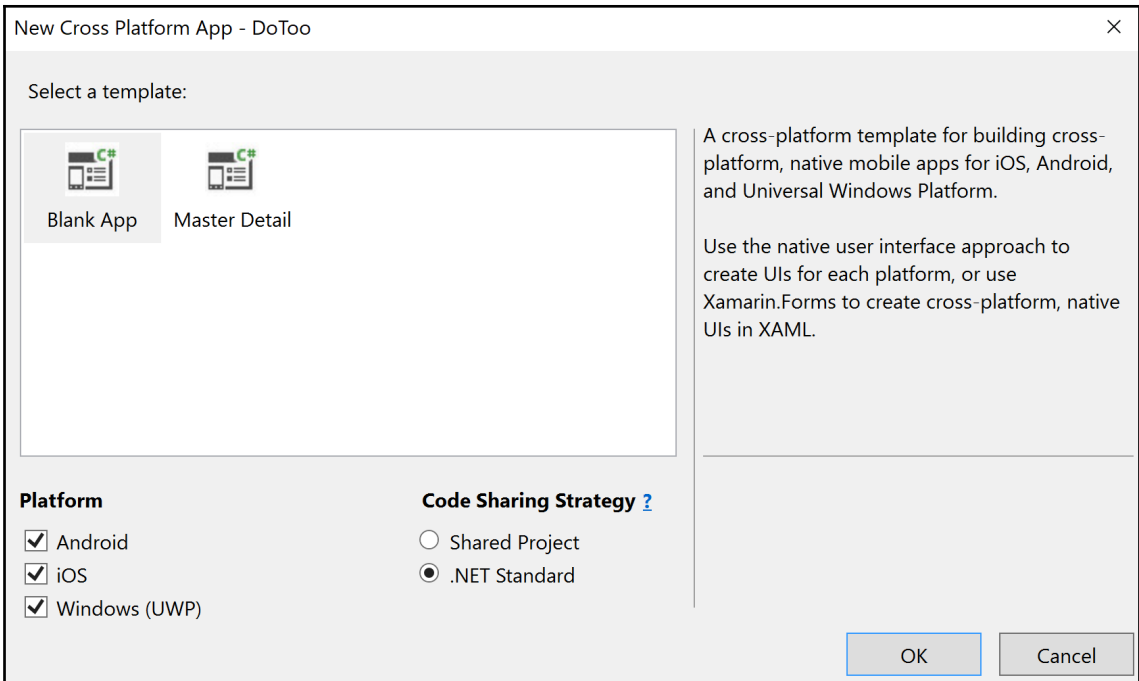
A new device image will be downloaded.



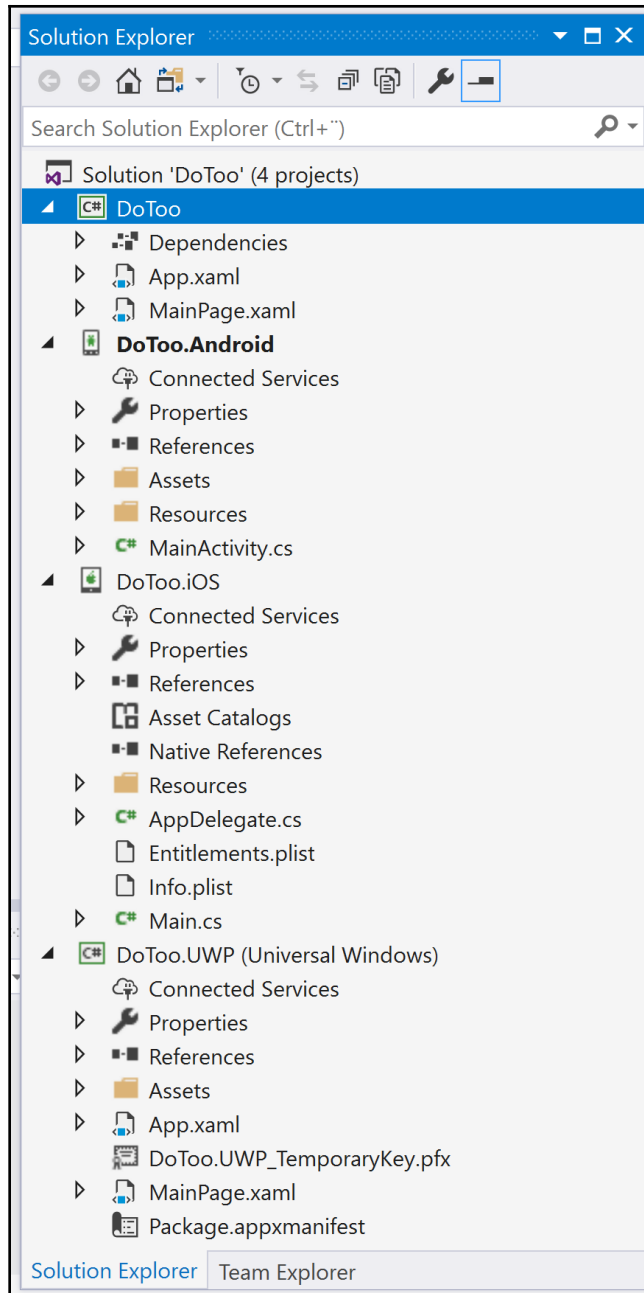
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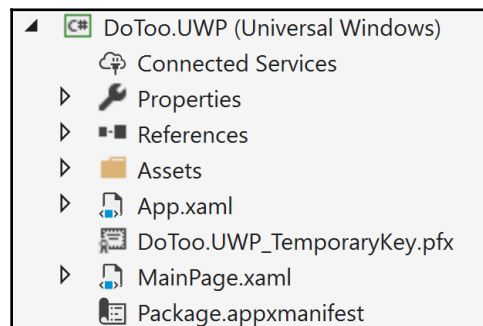
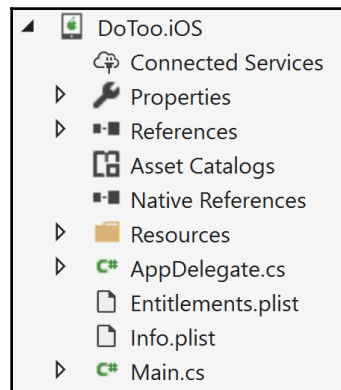
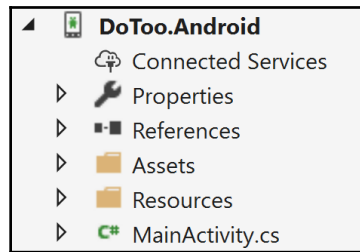
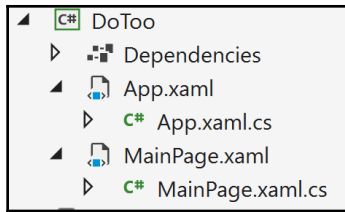
# Chapter 2: Building Our First Xamarin.Forms App

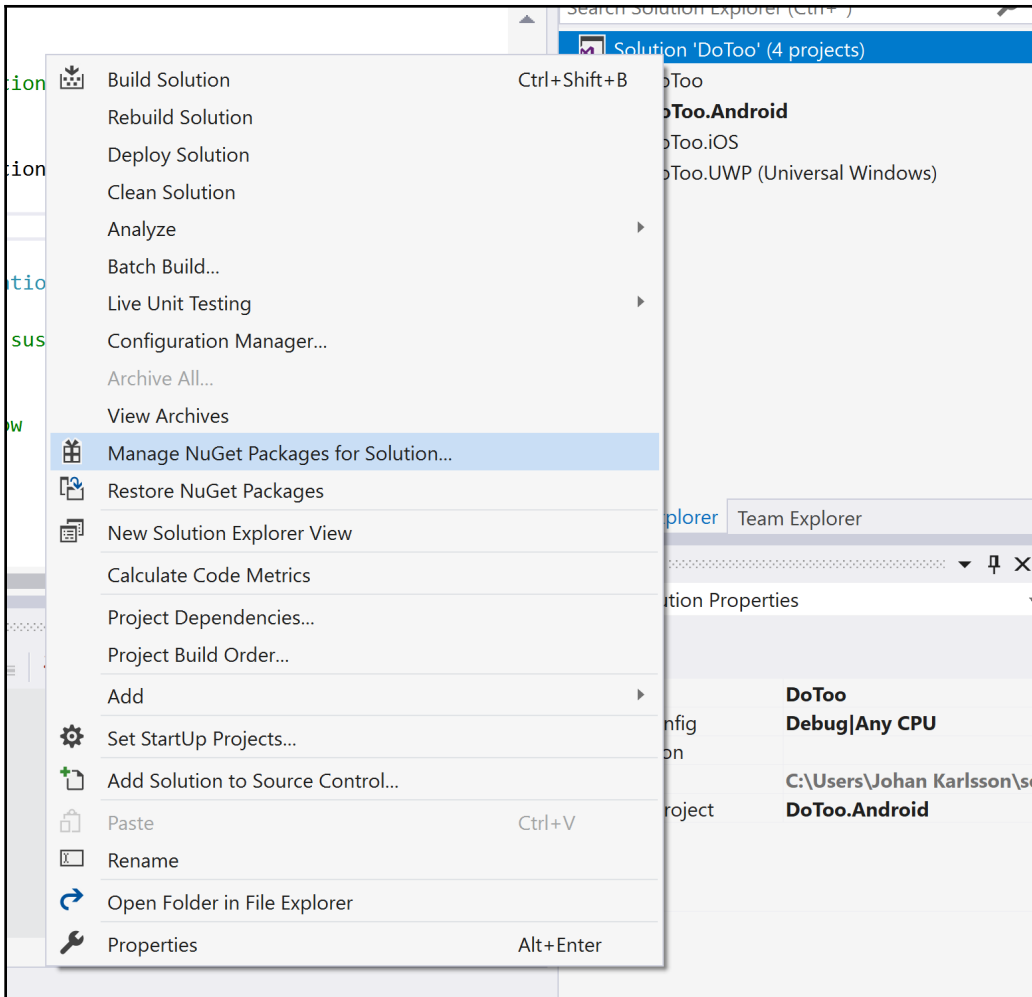


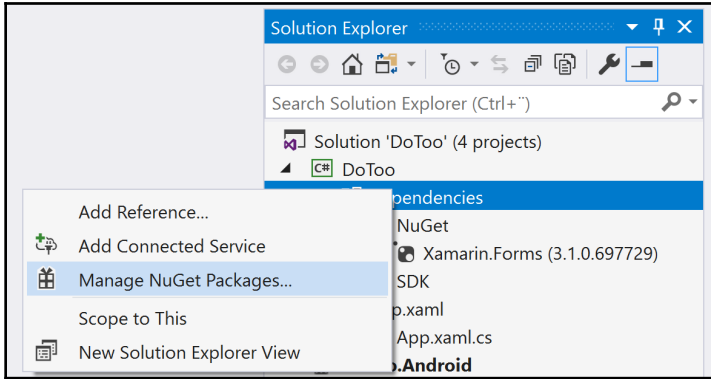
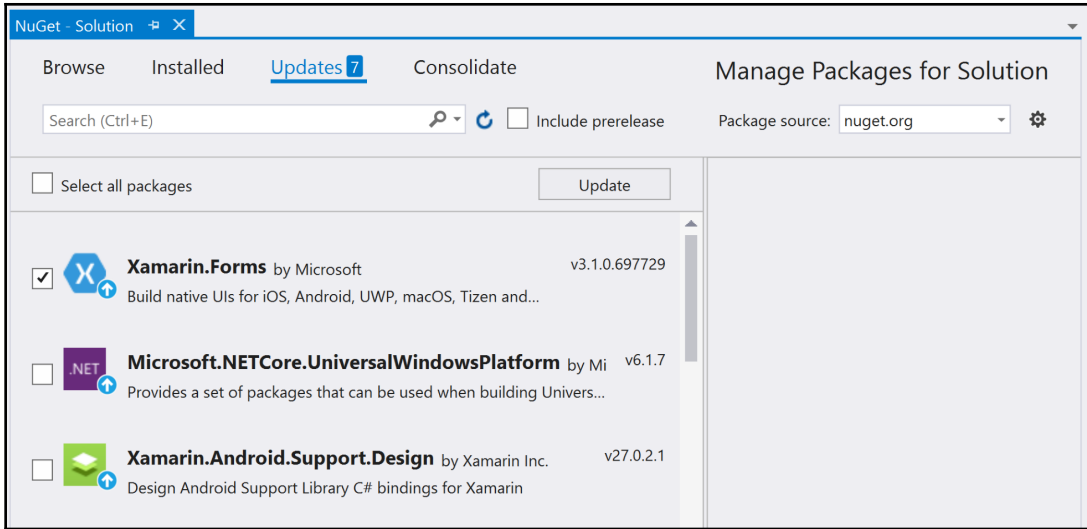


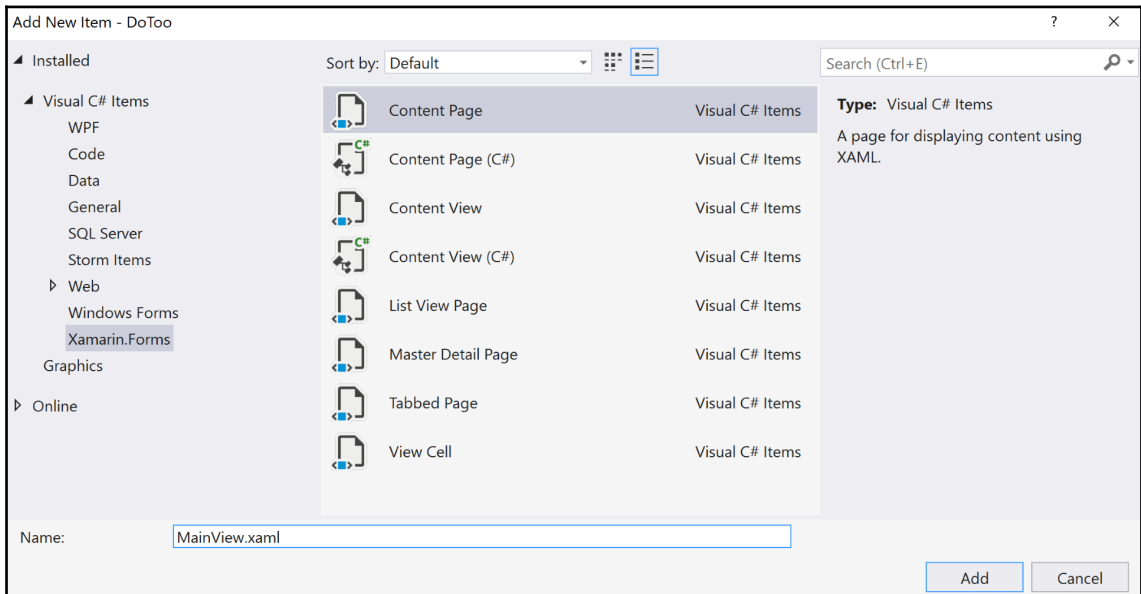
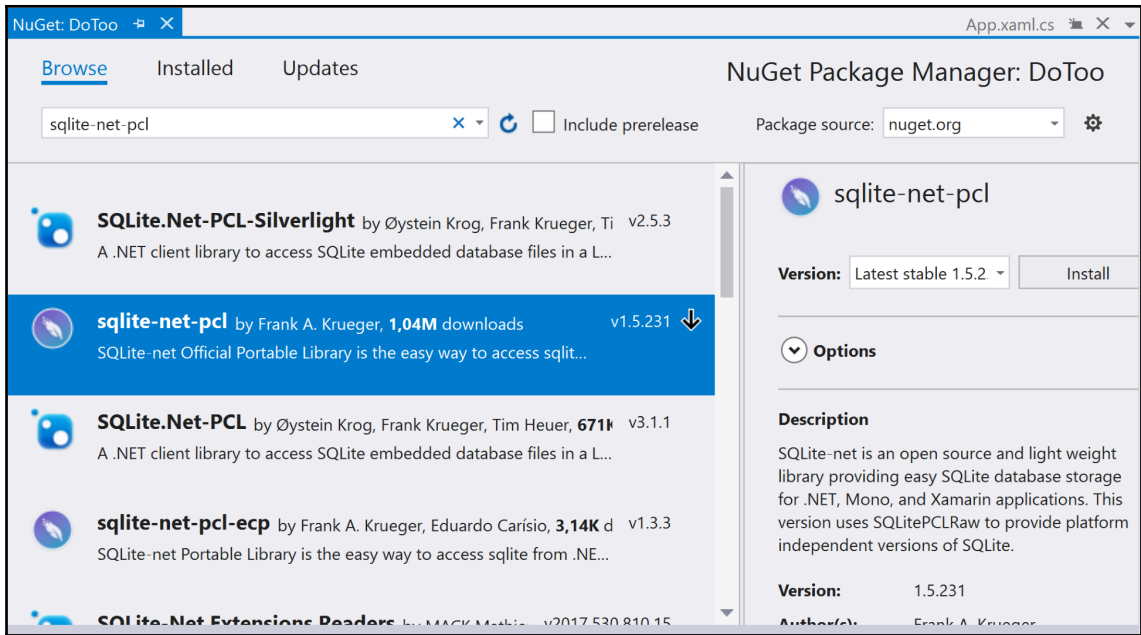


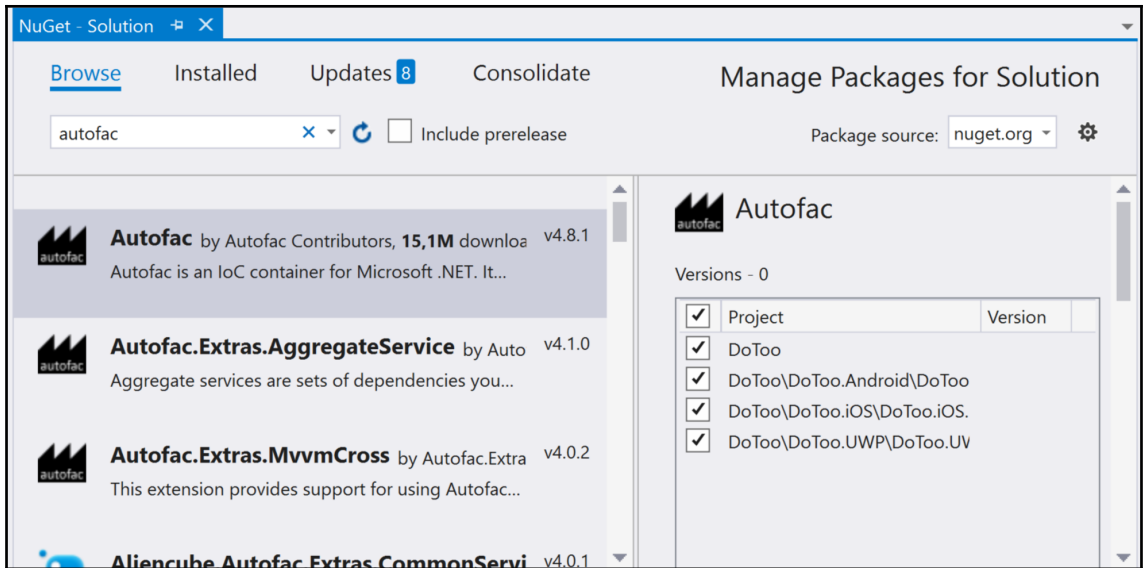








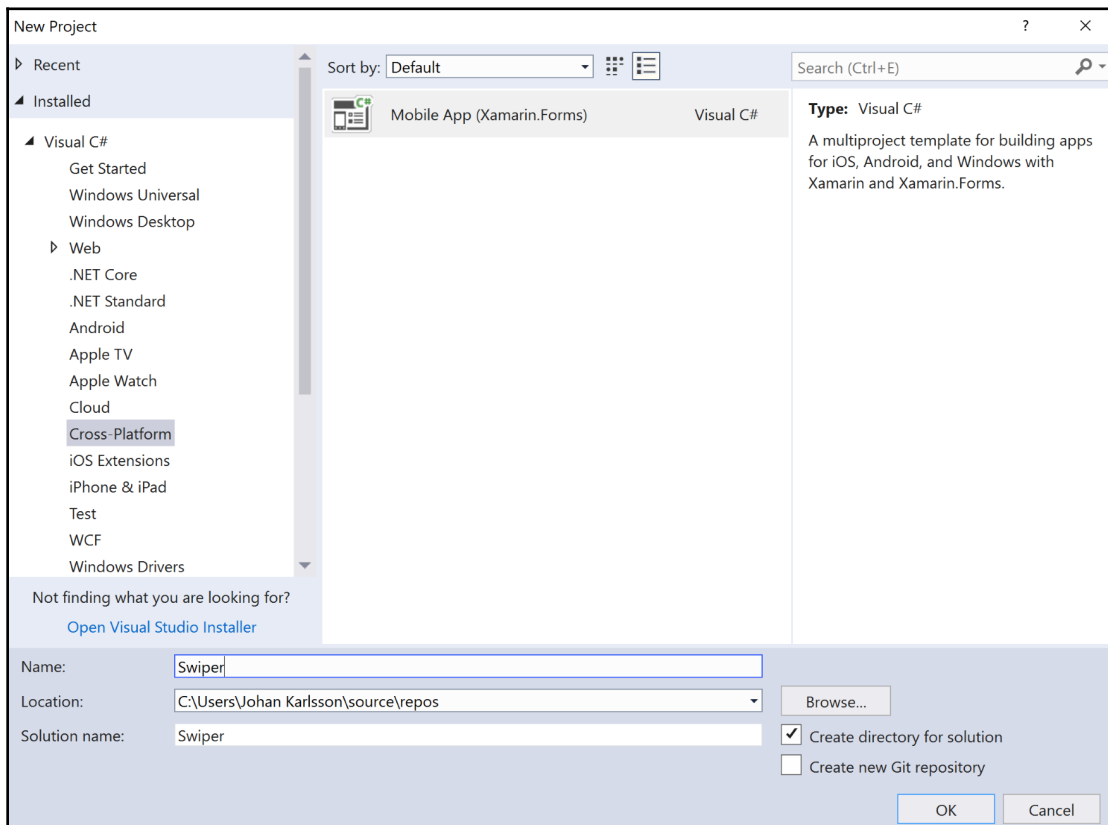
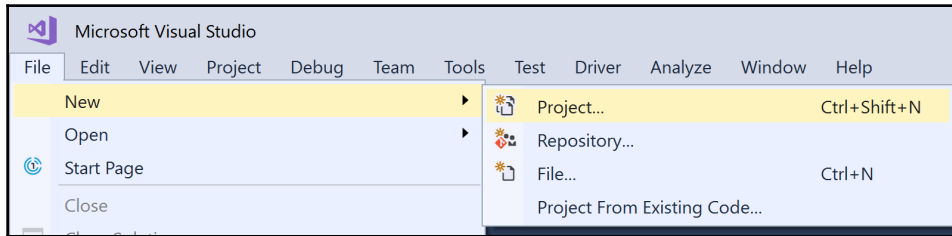




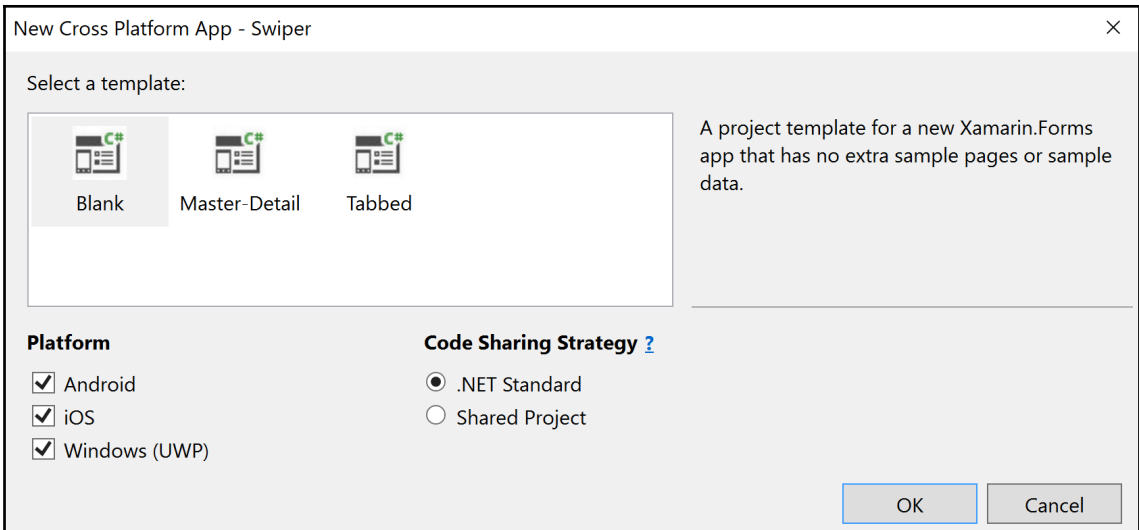


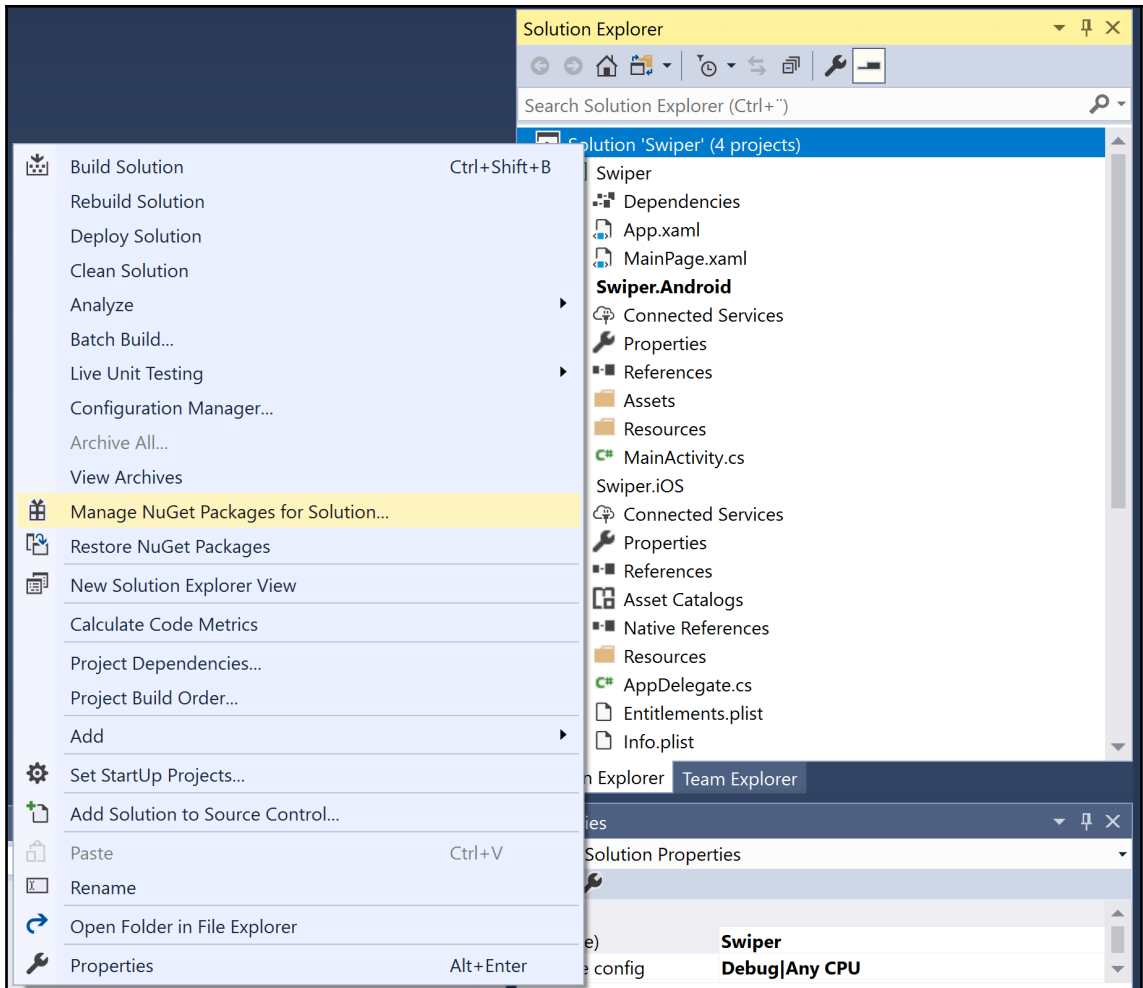
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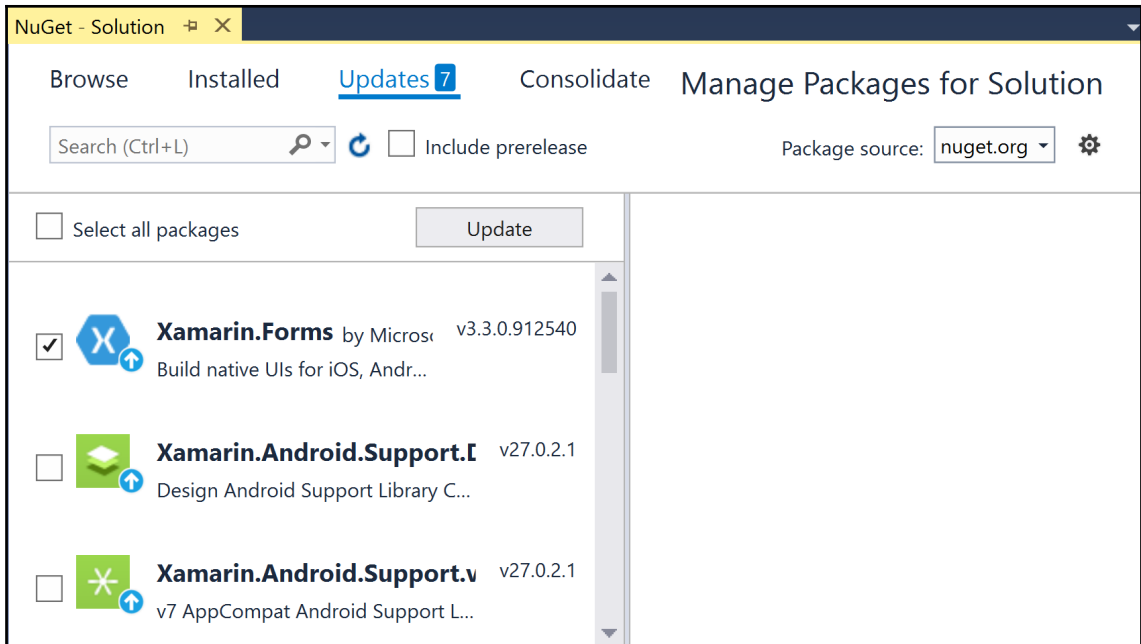
# Chapter 3: A Matchmaking App with a Rich UX Using Animations

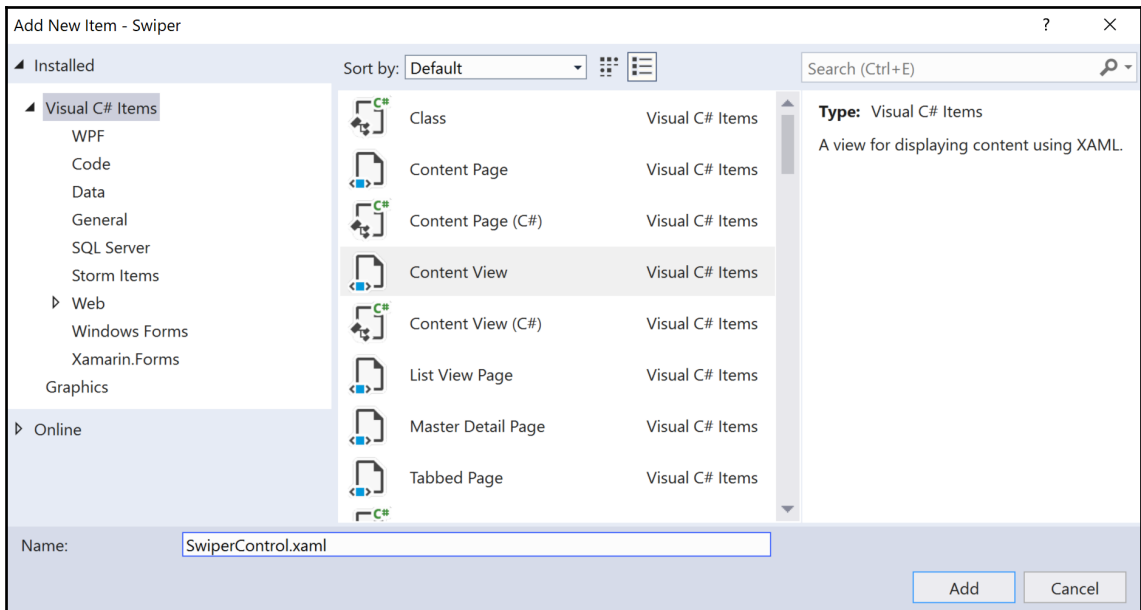


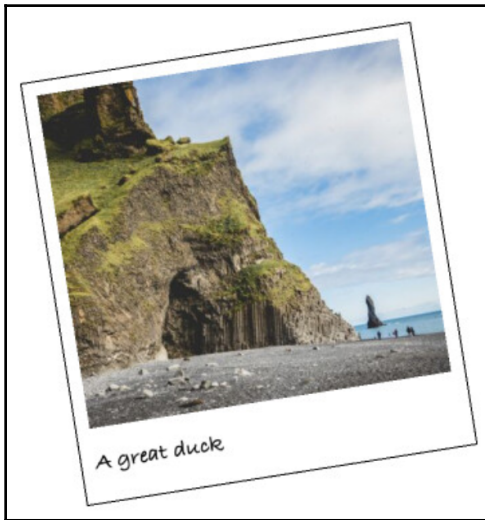
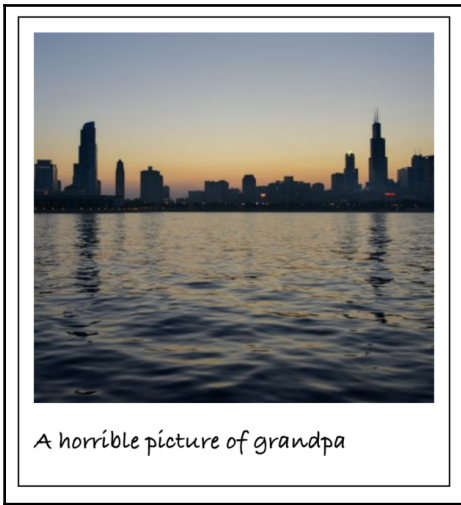
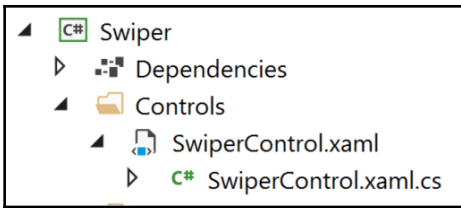






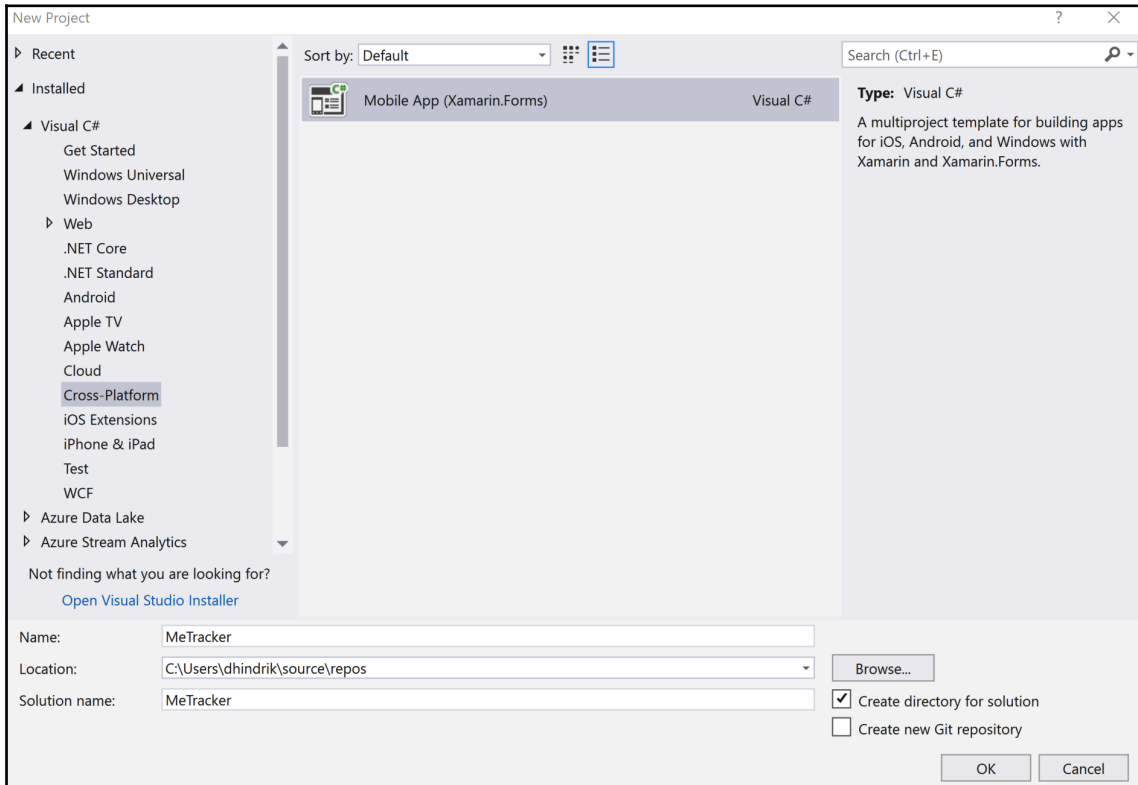


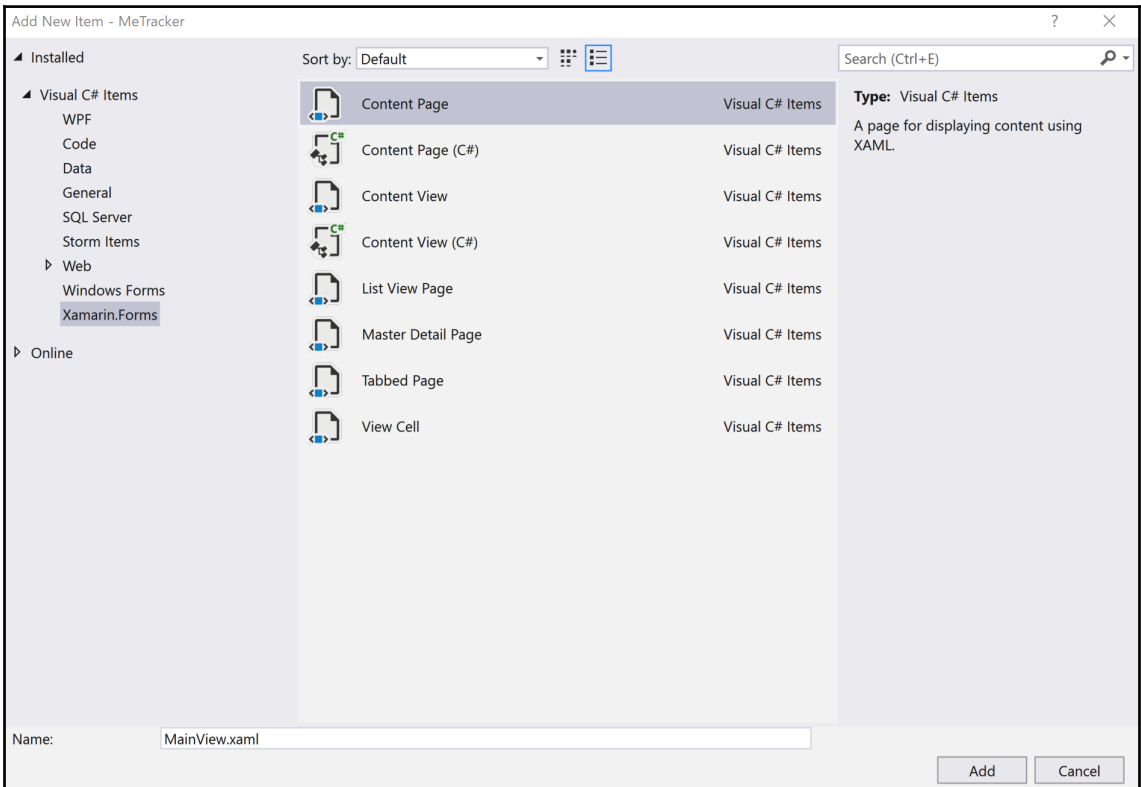
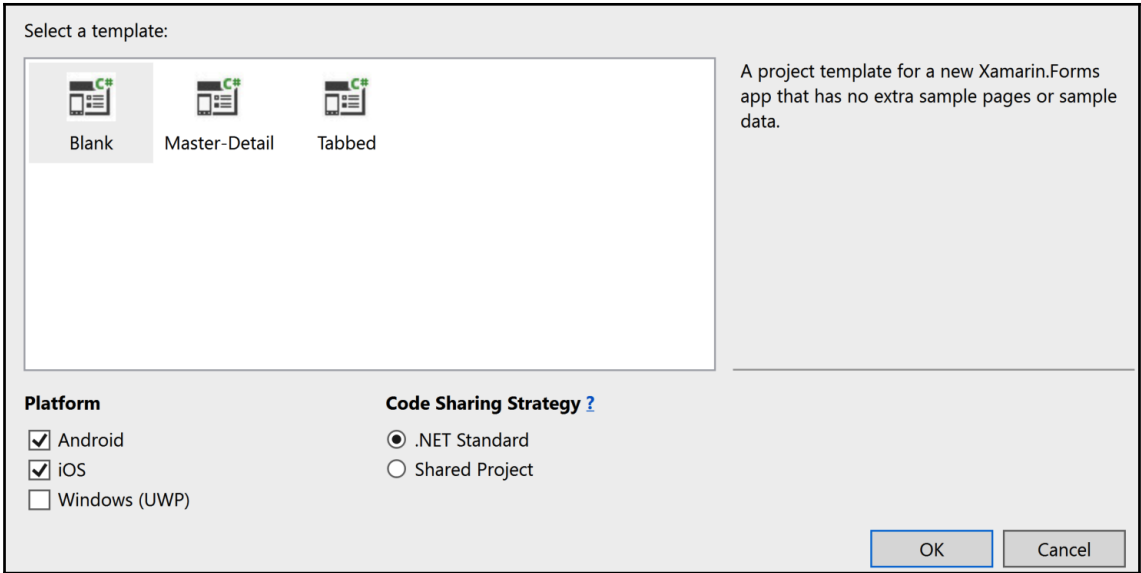




---

# Chapter 4: Building a Location Tracking App Using GPS and Maps





Application    Visual Assets    **Capabilities**    Advanced

**Capabilities:**

- Game Center
- Maps Integration
- Background Modes**

**Description:**

Background modes is a way to tell iOS which services must be allowed to continue running while your app is running in the background.

- Enable Background Modes
  - Audio, Airplay, and Picture in Picture
  - Voice over IP
  - External accessory communication
  - Acts as Bluetooth accessory
  - Remote notifications
- Location updates
- Newsstand downloads
- Uses Bluetooth LE accessory
- Background fetch

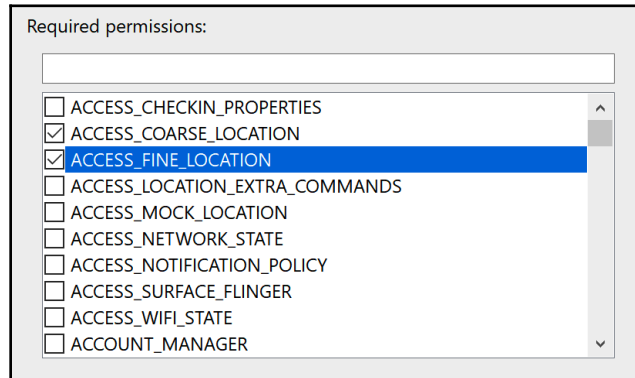
Required permissions:

- ACCESS\_CHECKIN\_PROPERTIES
- ACCESS\_COARSE\_LOCATION
- ACCESS\_FINE\_LOCATION
- ACCESS\_LOCATION\_EXTRA\_COMMANDS
- ACCESS\_MOCK\_LOCATION
- ACCESS\_NETWORK\_STATE
- ACCESS\_NOTIFICATION\_POLICY
- ACCESS\_SURFACE\_FLINGER
- ACCESS\_WIFI\_STATE
- ACCOUNT\_MANAGER
- ADD\_VOICEMAIL



---

# Chapter 5: Building a Weather App for Multiple Form Factors



Application   Visual Assets   Capabilities   Declarations   Content URIs   Packaging

Use this page to specify system features or devices that your app can use.

**Capabilities:**

- AllJoyn
- Appointments
- Background Media Playback
- Blocked Chat Messages
- Bluetooth
- Chat Message Access
- Code Generation
- Contacts
- Enterprise Authentication
- Internet (Client & Server)
- Internet (Client)
- Location
- Low Level
- Low Level Devices
- Microphone
- Music Library
- Objects 3D
- Offline Maps Management
- Phone Call

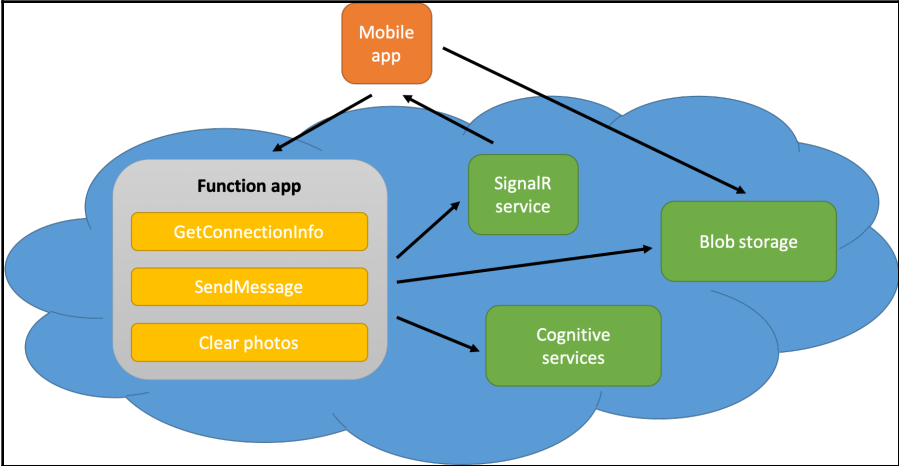
**Description:**

Provides access to the current location, which is obtained from dedicated hardware like a GPS sensor in the PC or derived from available network information.

[More information](#)

---

# Chapter 6: Setting up a Backend for a Chat App Using Azure Services



---

### SignalR

\* Resource Name  
xamarinchatapp ✓  
.service.signalr.net

\* Subscription  
MVP MSDN

\* Resource group  
(New) xamarinchatappresources  
[Create new](#)

\* Location  
West Europe

---

\* Pricing tier  
Free >

---

\* Unit count ⓘ  
1

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. [Learn more](#)

#### PROJECT DETAILS

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

\* Subscription

\* Resource group  [Create new](#)

#### INSTANCE DETAILS

The default deployment model is Resource Manager, which supports the latest Azure features. You may choose to deploy using the classic deployment model instead. [Choose classic deployment model](#)

\* Storage account name ⓘ  ✓

\* Location

Performance ⓘ  Standard  Premium

Account kind ⓘ

Replication ⓘ

Access tier (default) ⓘ  Cool  Hot

**xamarinchatapp - Blobs**  
Storage account

Search (Ctrl+/) <<

+ Container Refresh Delete

### New container

\* Name  
chatimages ✓

Public access level ⓘ  
Blob (anonymous read access for blobs only) ▾

OK Cancel

- Access keys
- CORS
- Configuration
- Encryption
- Shared access signature
- Firewalls and virtual networks
- Advanced Threat Protection (pr...
- Static website (preview)
- Properties
- Locks
- Automation script
- Blob service**
  - Blobs**
  - Custom domain
  - Soft delete
  - Azure CDN
  - Add Azure Search
  - Lifecycle Management (preview)

---

### Create

Custom Vision Prediction (preview)

\* Name  
chatappvision ✓

\* Subscription  
MVP MSDN ▾

\* Location  
South Central US ▾

\* Prediction pricing tier ([View full pricing details](#))  
F0 (2 Transactions per second, 10K Transa... ▾

\* Training pricing tier ([View full pricing details](#))  
F0 (2 Transactions per second, 2 Projects) ▾

\* Resource group  
xamarinchatappresources ▾

[Create new](#)

### Function App

Create

\* App name  
xamarinchatappfunctions ✓  
.azurewebsites.net

\* Subscription  
MVP MSDN

\* Resource Group ⓘ  
 Create new  Use existing  
xamarinchatappresources

\* OS  
Windows Linux (Preview)

\* Hosting Plan ⓘ  
Consumption Plan

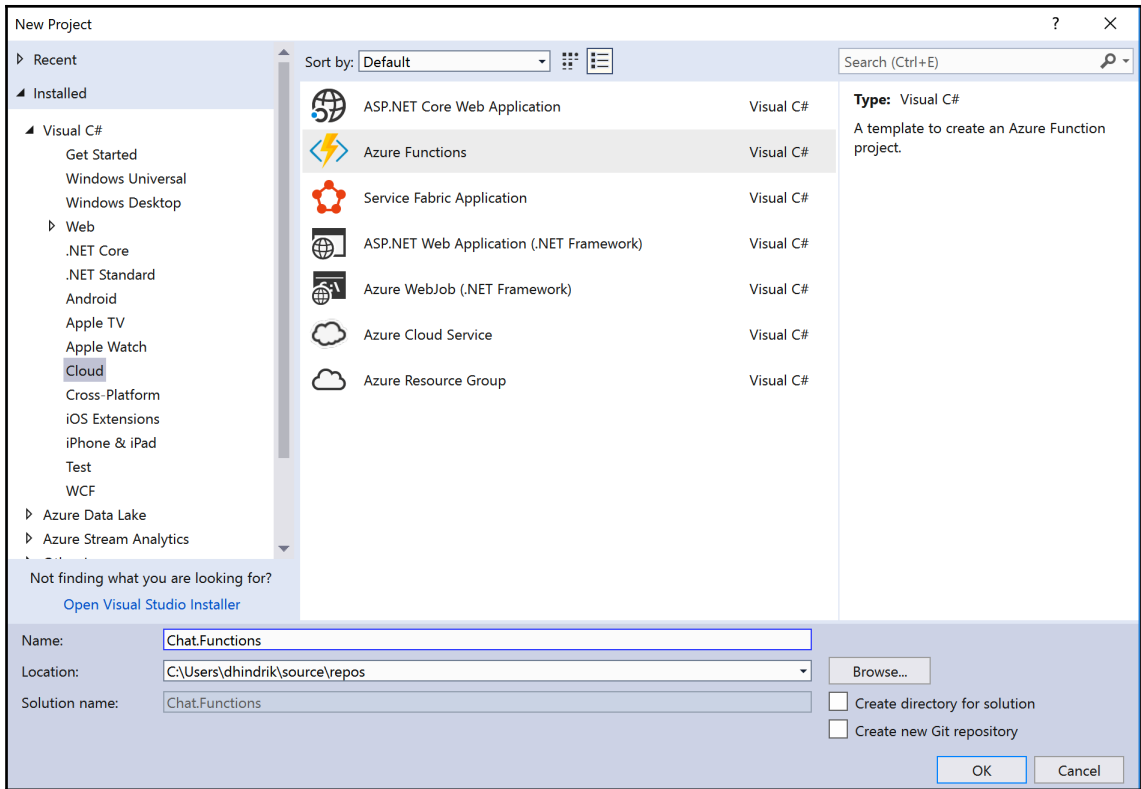
\* Location  
West Europe

\* Runtime Stack  
.NET

\* Storage ⓘ  
 Create new  Use existing  
xamarinchatapp

Application Insights ⓘ On Off

\* Application Insights Location ⓘ  
West Europe





**New Project - Chat.Functions** X

Azure Functions v2 (.NET Core) ▾

Empty    Blob trigger    Event Hub trigger

Http trigger    IoT Hub trigger    Queue trigger

Service Bus Queue trigger    Service Bus Topic trigger    Timer trigger

Storage Account (AzureWebJobsStorage)

Storage Emulator ▾

⚠ Some capabilities may require an Azure storage account.












Access rights

Admin ▾

Creates an Azure function project with an Http trigger.  
Additional triggers can be added during development

[Get started with Azure Functions](#) OK    Cancel

**New Azure Function - Message** ✕


-  Http trigger
-  Timer trigger
-  Queue trigger
-  Blob trigger
-  Event Grid trigger
-  Event Hub trigger
-  IoT Hub trigger
-  Service Bus Queue trigger
-  Service Bus Topic trigger
-  Durable Functions Orchestration
-  SendGrid

Schedule

## Publish


---

Publish your app to Azure or another host. [Learn more](#)


xamarinchatappfunctions - Zip Deploy
▼

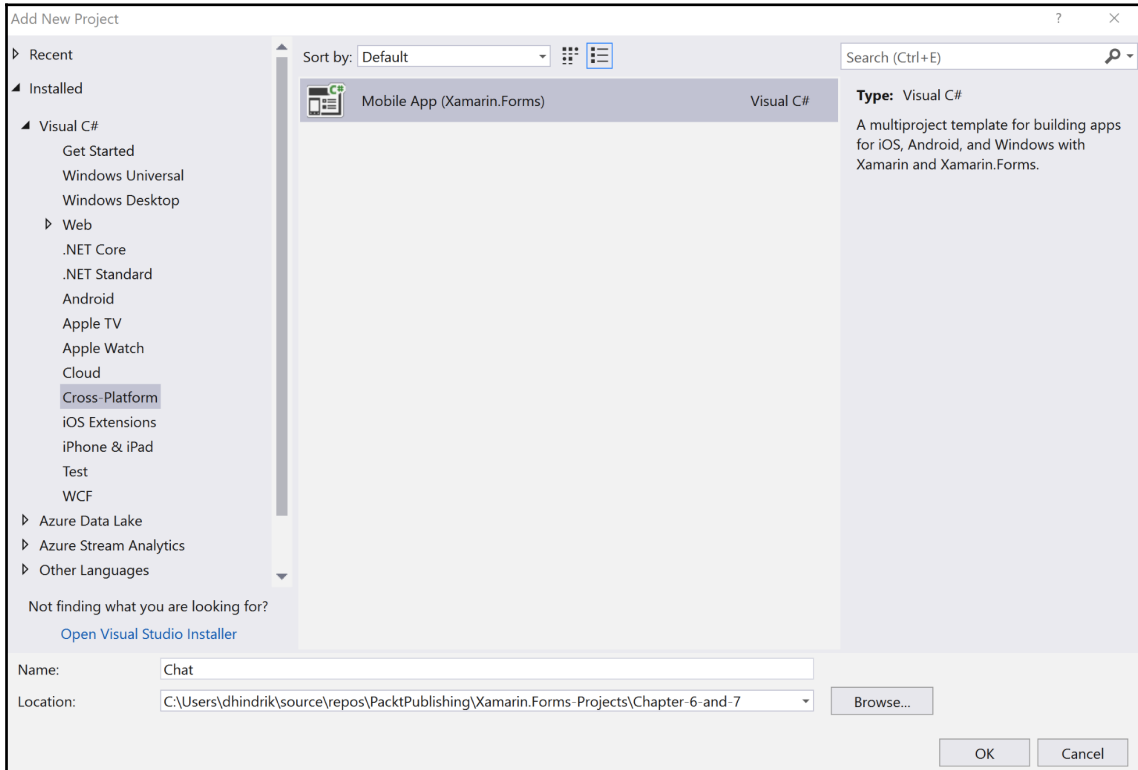
Publish

[New Profile...](#) Actions ▼

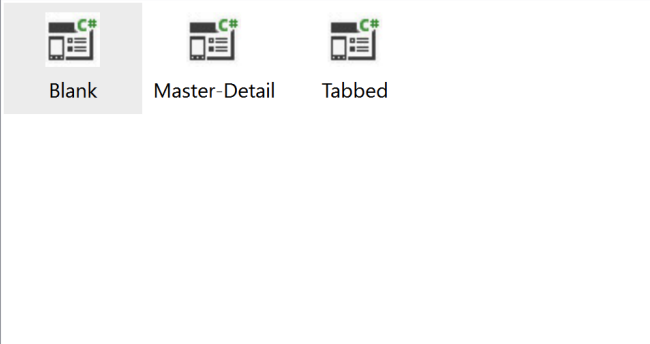
|               |   |  |
|---------------|---|--|
| Site URL      | <a href="http://xamarinchatappfun...">http://xamarinchatappfun...</a>  | <a href="#">Manage Application Settings...</a> |
| Configuration | Release   | <a href="#">Manage Profile Settings...</a>     |
| Username      | \$xamarinchatappfunctions   |  |
| Password      | *****   |  |

---

# Chapter 7: Building a Real-Time Chat Application



Select a template:



Blank      Master-Detail      Tabbed

A project template for a new Xamarin.Forms app that has no extra sample pages or sample data.

**Platform**

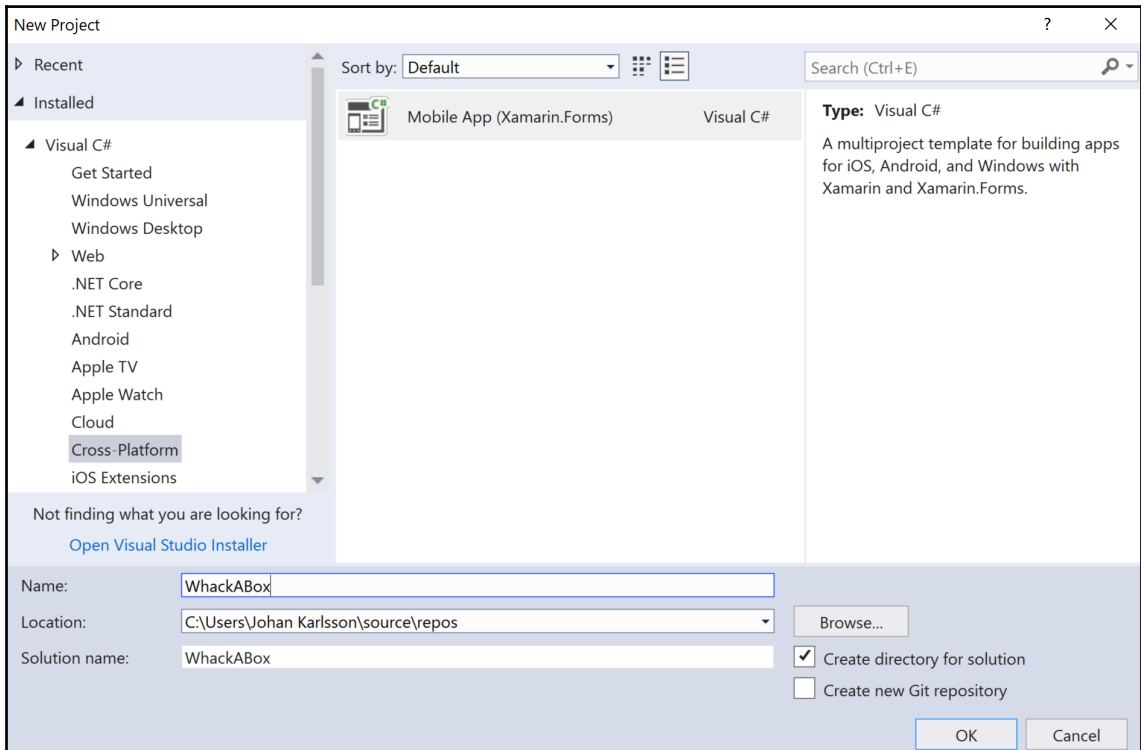
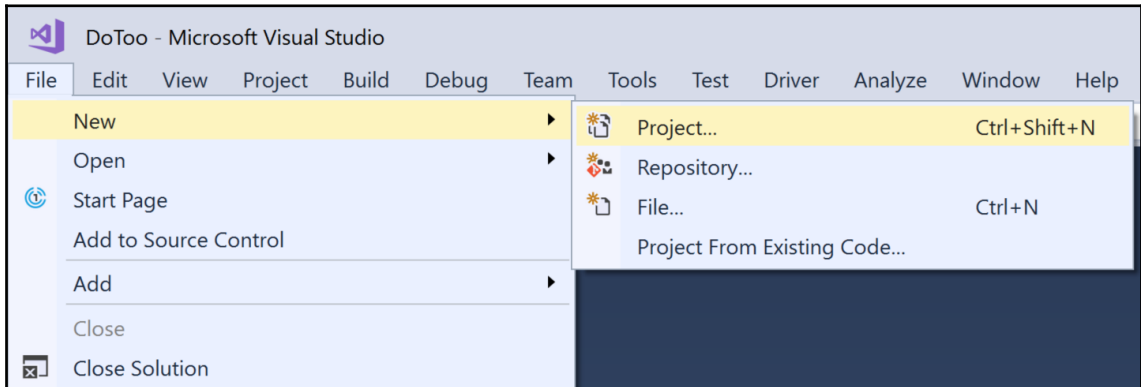
- Android
- iOS
- Windows (UWP)

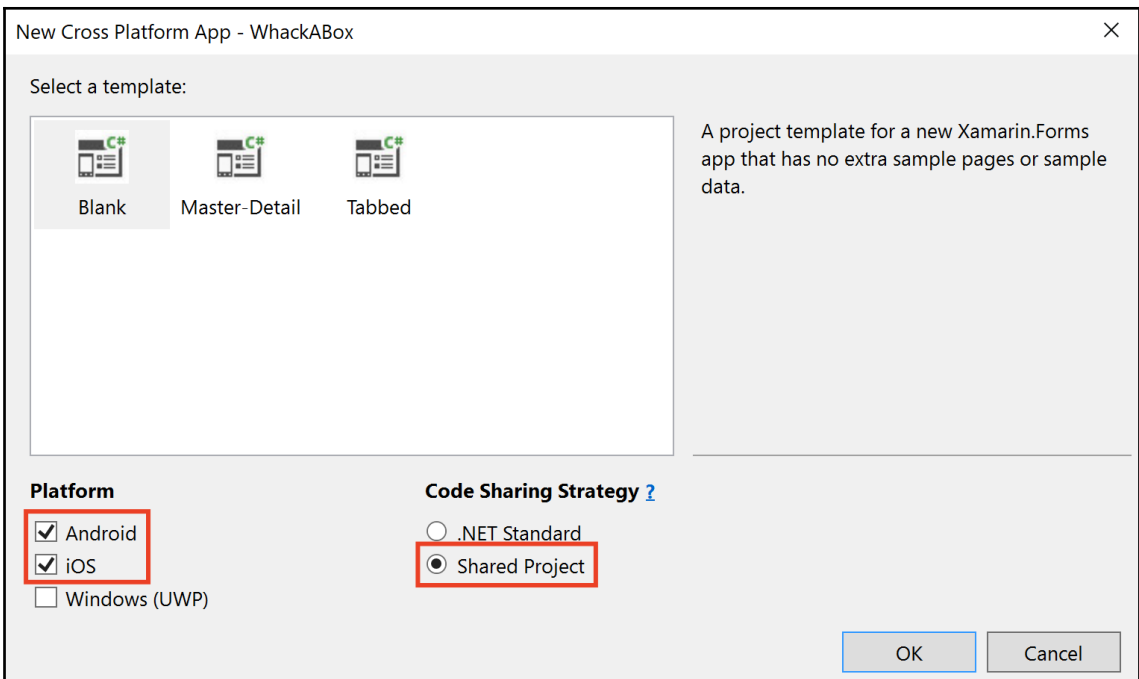
**Code Sharing Strategy ?**

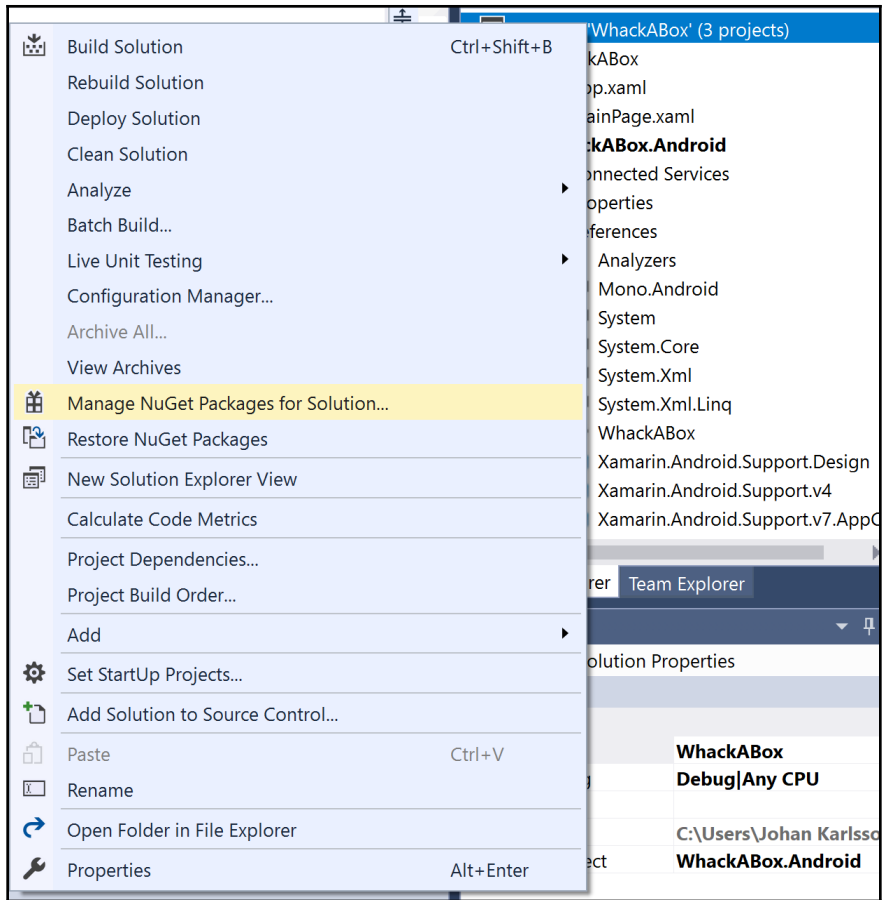
- .NET Standard
- Shared Project

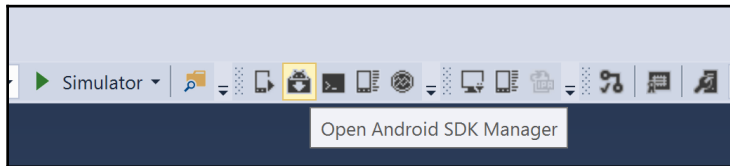
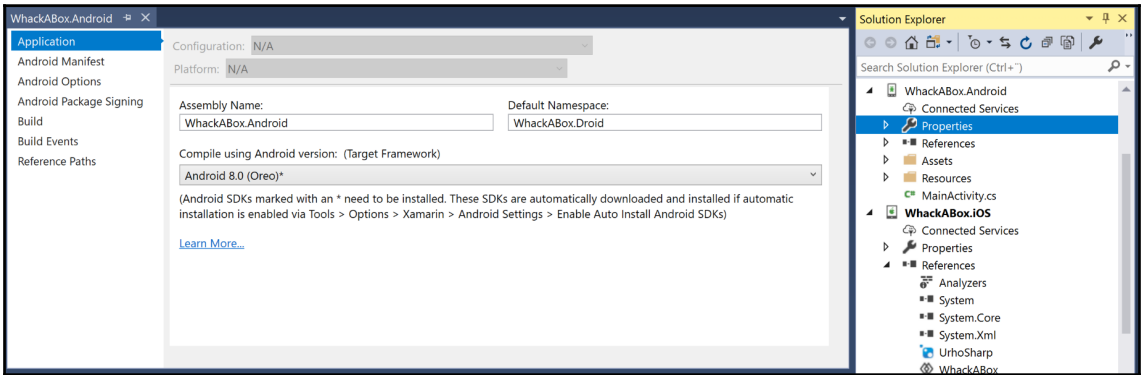
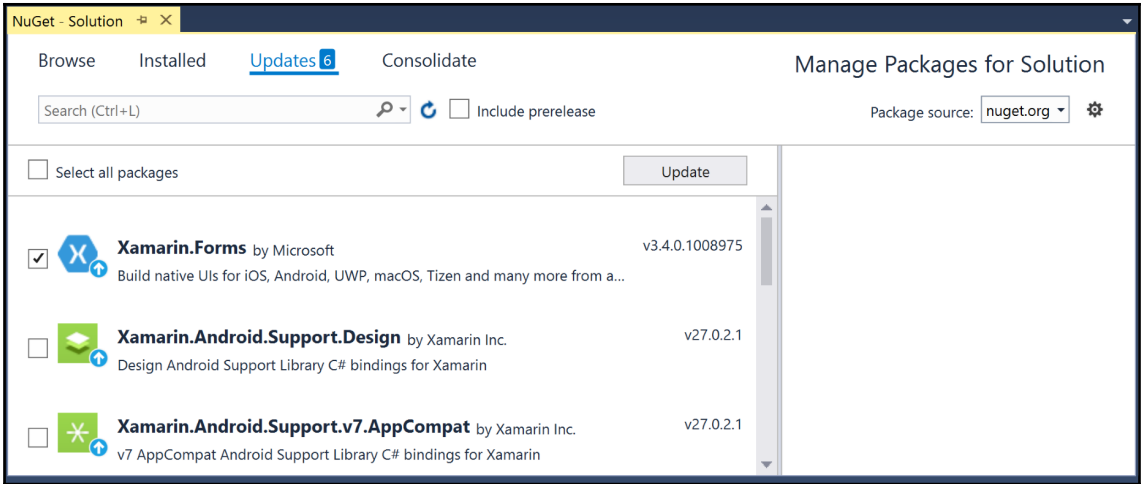
OK      Cancel

# Chapter 8: Creating an Augmented-Reality Game

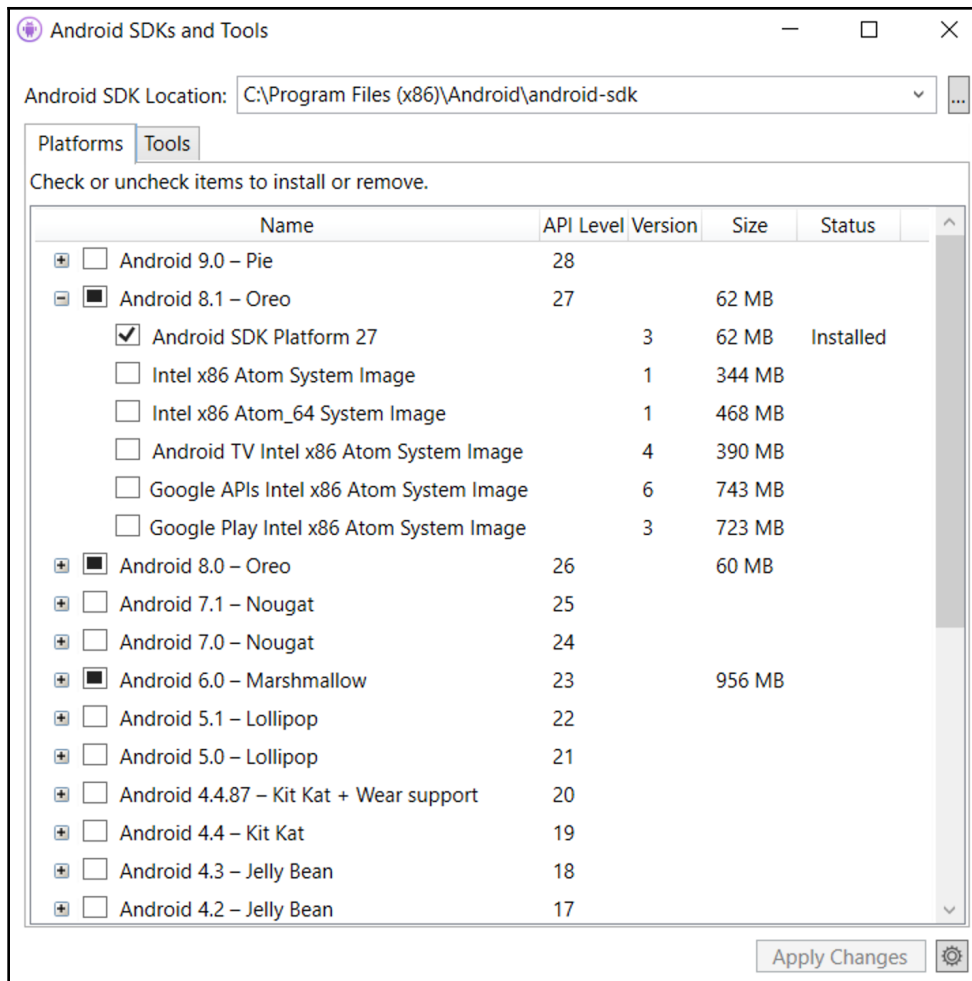


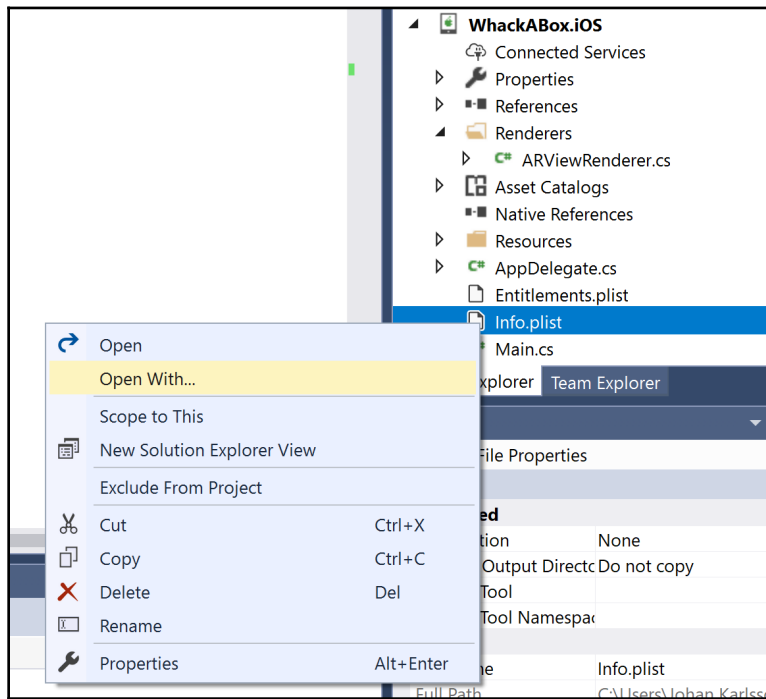
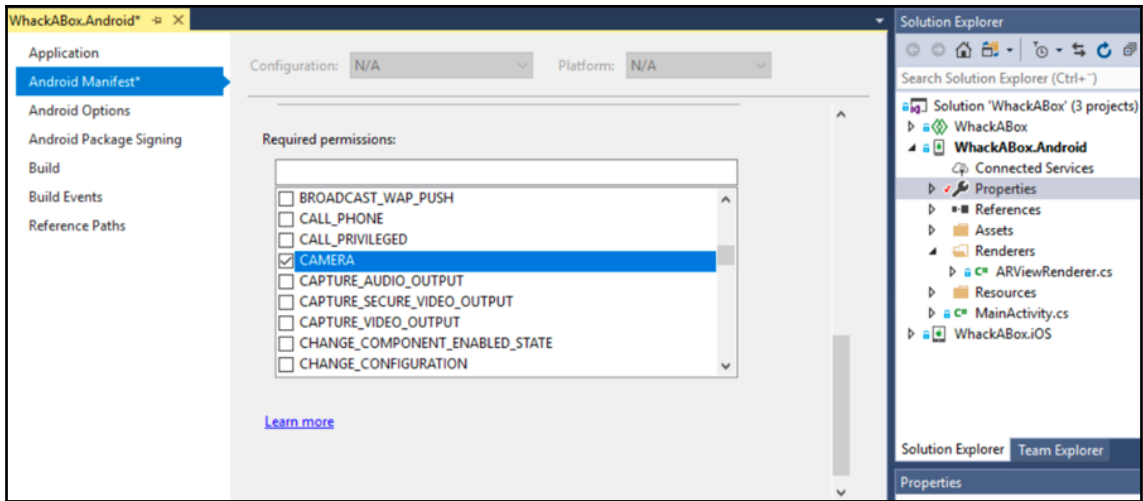


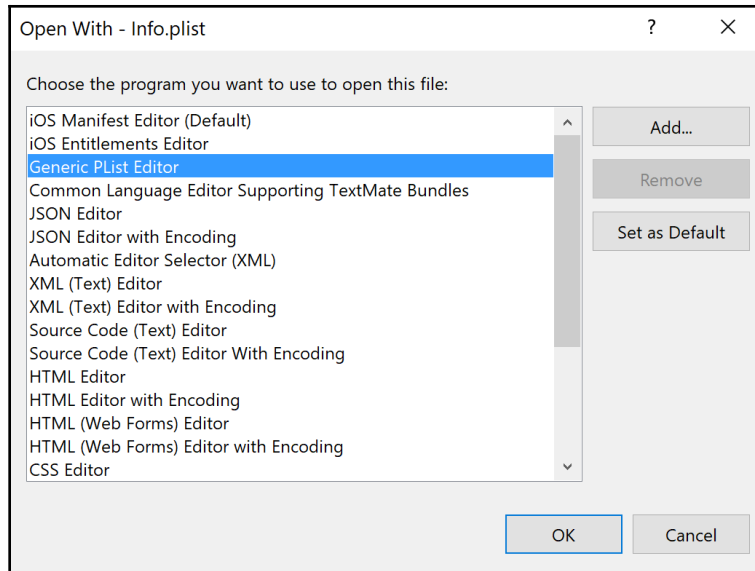






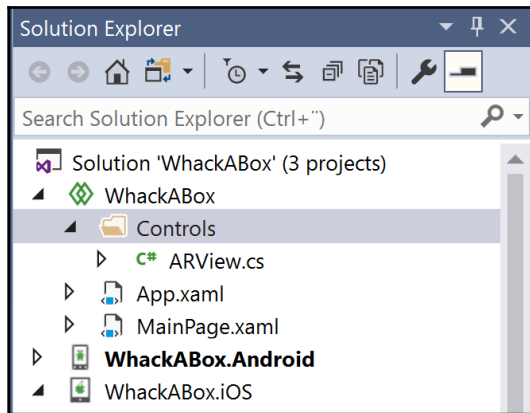


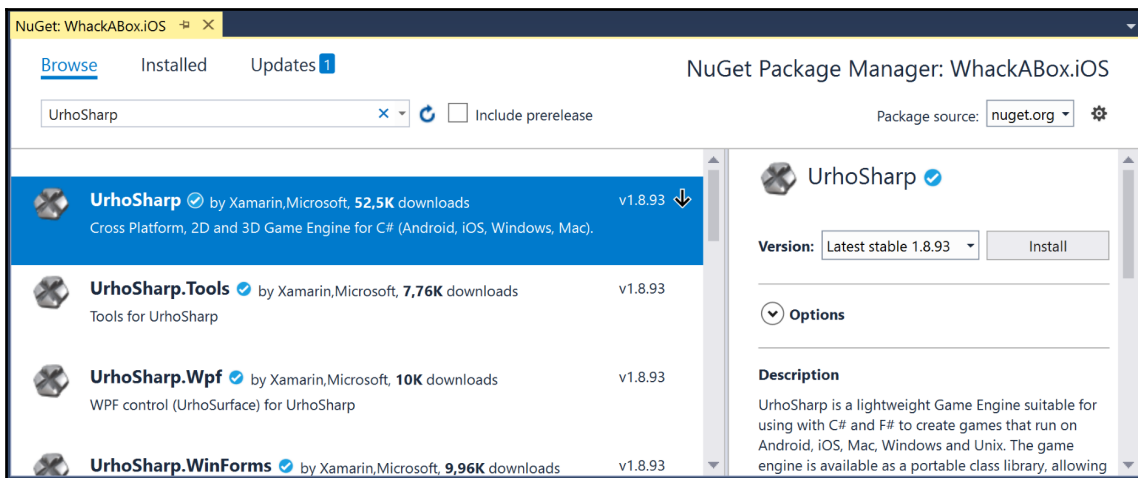
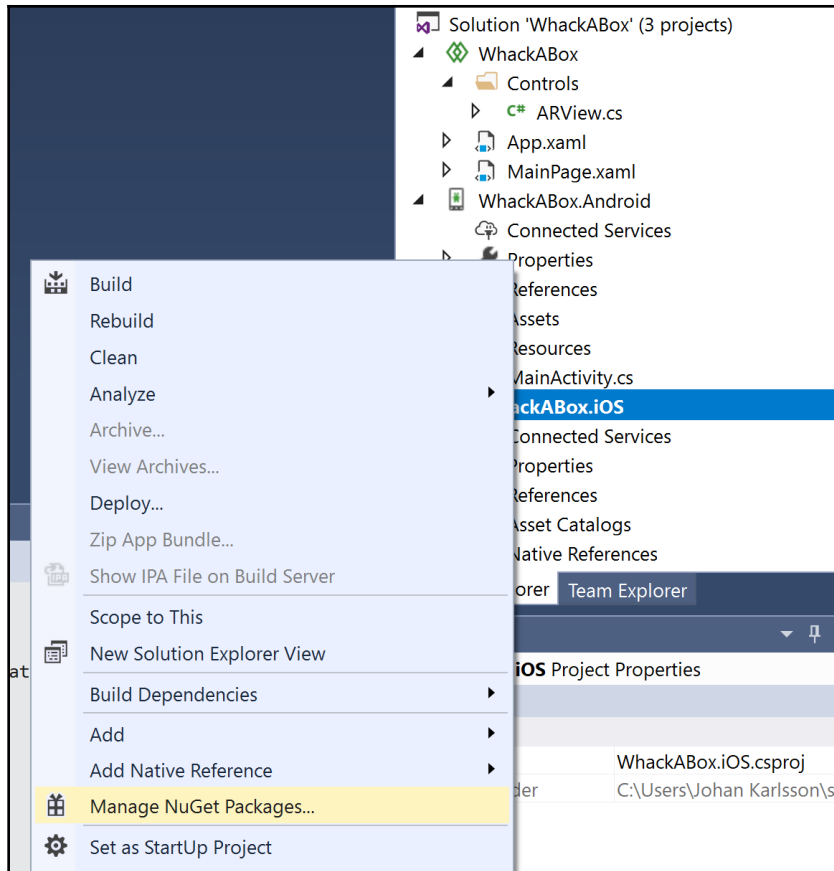


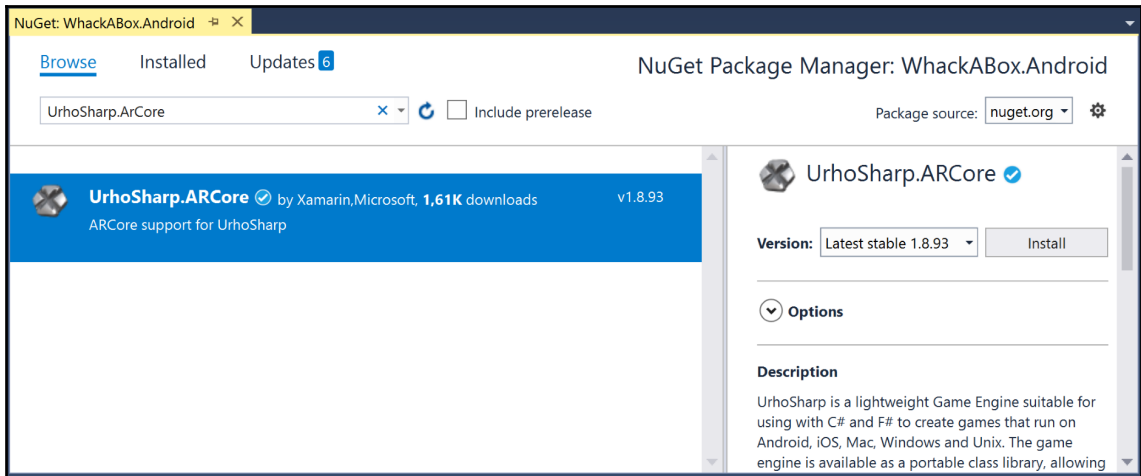
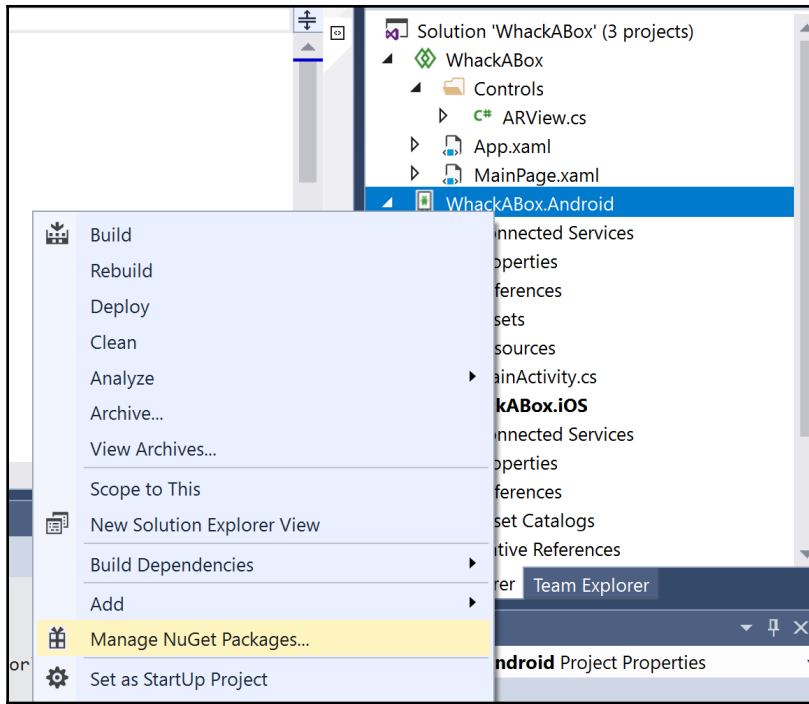


| Property                                | Type   | Value                              |
|---|--------|------------------------------------|
| Targeted device family                  | Array  | (2 items)                          |
|   | Number | iPhone/iPod touch                  |
|   | Number | iPad                               |
| Supported interface orientations        | Array  | (3 items)                          |
| Supported interface orientations (iPad) | Array  | (4 items)                          |
| Minimum system version                  | String | 8.0                                |
| Bundle display name                     | String | WhackABox                          |
| Bundle identifier                       | String | com.companyname.WhackABox          |
| Bundle version                          | String | 1.0                                |
| Launch screen interface file base name  | String | LaunchScreen                       |
| Bundle name                             | String | WhackABox                          |
| XSApplconAssets                         | String | Assets.xcassets/Applcon.appiconset |

|   |        |                                 |
|---|--------|---------------------------------|
| Minimum system version                    | String | 8.0                             |
| Bundle display name                       | String | WhackABox                       |
| Bundle identifier                         | String | com.companyname.WhackABox       |
| Bundle version                            | String | 1.0                             |
| Launch screen interface file base name    | String | LaunchScreen                    |
| Bundle name                               | String | WhackABox                       |
| XSAplIconAssets                           | String | Assets.xcassets/Icon.appiconset |
| Privacy - Camera Usage Description        | String | For augmented-reality!          |
| Privacy - Camera Usage Description        |        |                                 |
| Privacy - Contacts Usage Description      |        |                                 |
| Privacy - Health Share Usage Description  |        |                                 |
| Privacy - Health Update Usage Description |        |                                 |









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# Chapter 9: Hot Dog or Not Hot Dog Using Machine Learning

Create new project ✕

**Name\***

**Description**

**Project Types** ⓘ

Classification

Object Detection (preview)

**Classification Types** ⓘ

Multilabel (Multiple tags per image)

Multiclass (Single tag per image)

**Domains** ⓘ

General

Food

Landmarks

Retail

Adult

General (compact)

Landmarks (compact)


Retail (compact)



Image upload ✕

○ ● ●

Add Tags      Uploading      Summary



4 images will be added...

Add some tags to this batch of images...

My Tags


hotdog ✕

Upload 4 files

Image upload ✕

○ ● ●

Add Tags      Uploading      Summary



5 images will be added...

Add some tags to this batch of images...

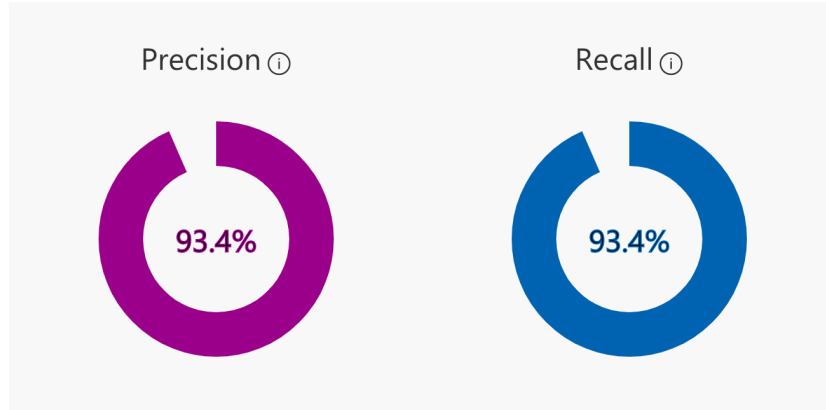
My Tags

not-hotdog ✕

Upload 5 files

## Iteration 11

Finished training on **28/11/2018, 12:24:48** using **General (compact)** domain  
Classification type: **Multiclass (Single tag per image)**



### Performance Per Tag

| Tag        | Precision | ^ | Recall | Image count | ▲                                |
|------------|-----------|---|--------|-------------|----------------------------------|
| not-hotdog | 96.7%     |   | 94.4%  | 180         | <div style="width: 100%;"></div> |
| hotdog     | 84.3%     |   | 90.9%  | 60          | <div style="width: 25%;"></div>  |

