

AR 프로그래밍

이준

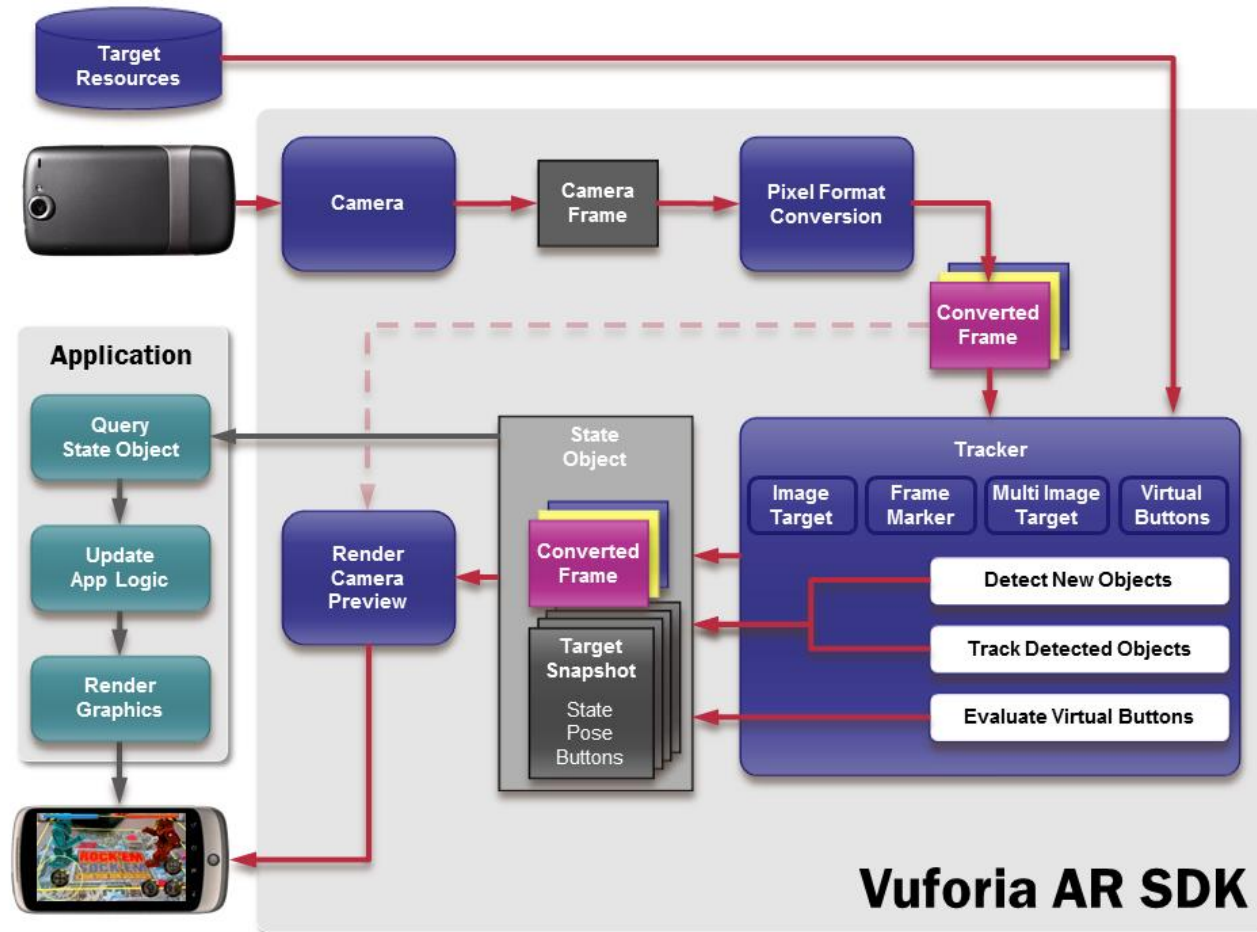
수업의 목표

- AR의 개념 및 최신 트렌드 살펴보기!
 - 킬러 VR/AR 프로그램을 만들기 위한 기획 과 설계를 할 수 있음
- 유니티를 통한 AR 프로그래밍 익히기 (2-3주간)
 - Vuforia를 사용한 AR 프로젝트 개발

뷰포리아란?

- Vuforia

- 퀄컴에서 개발된 증강현실 인식과 애플리케이션을 생성할 수 있는 모바일 장치용 증강현실 소프트웨어 개발 키트



뷰포리아란?

- Vuforia
 - 회원 가입을 만드시 해야함 (<https://developer.vuforia.com/>)

The screenshot shows the Vuforia Developer Portal login page. The browser address bar displays the URL: `developer.vuforia.com/vui/auth/login?url=%2Fdownloads%2Fsd%3Fd%3Dwindows-30-16-11133%26retU`. The page header features the Vuforia Engine Developer Portal logo and navigation links: Home, Pricing, Downloads, Library, Develop, Support, Log In, and Register. The main content area has a green background with the heading "Login" and the text: "Login with your Vuforia developer account to download software, get license keys and participate in the Vuforia community." Below this, there are two input fields: "Email Address" and "Password". The "Email Address" field has a red border and a message below it: "Not Registered? Create account now" and "Email Address is required". The "Password" field has a message below it: "Forgot password?". A "Login" button is positioned below the password field. The footer contains five columns of links: PTC, Inc. (Latest News, Blog, Careers at PTC, Contact Us), Resources (Support, Developer Library, Pricing Request, Downloads), Community (Developer Portal, Forums, Announcements, Events), AR Products (Overview, Vuforia Engine, Vuforia Studio, Vuforia Chalk), and a newsletter sign-up section with the text "Stay cutting edge. Get the Vuforia newsletter." and a form with an "Email" input and an "Add" button. A disclaimer below the newsletter form states: "* PTC's privacy policy will apply. You can unsubscribe to this newsletter at any time." Social media icons for Facebook, Twitter, LinkedIn, YouTube, and Instagram are at the bottom right.

developer.vuforia.com/vui/auth/login?url=%2Fdownloads%2Fsd%3Fd%3Dwindows-30-16-11133%26retU

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Home Pricing Downloads Library Develop Support Log In Register

Login

Login with your Vuforia developer account to download software,
get license keys and participate in the Vuforia community.

Email Address

Not Registered? Create account now
Email Address is required

Password

Forgot password?

Login

PTC, Inc.

Latest News
Blog
Careers at PTC
Contact Us

Resources

Support
Developer Library
Pricing Request
Downloads

Community

Developer Portal
Forums
Announcements
Events

AR Products

Overview
Vuforia Engine
Vuforia Studio
Vuforia Chalk

Stay cutting edge. Get the Vuforia newsletter.

Email Add

* PTC's privacy policy will apply. You can unsubscribe to this newsletter at any time.

f t in y i

뷰포리아설치

- 유니티 설치

- 최신 버전 중에서는 2019.4 버전이 지원함
- external 로 존재! (<https://developer.vuforia.com/downloads/sdk>)
- 안드로이드 SDK는 설치를 해야 함!



Vuforia Engine 9.8

Use Vuforia Engine to build Augmented Reality Android, iOS, and UWP applications for mobile devices and AR glasses. Apps can be built with Unity, Android Studio, Xcode, and Visual Studio. Vuforia Engine can also be accessed through the Unity Package Manager by adding Vuforia's package repository with the script below. Please make sure that Git is installed before running the script.



Add Vuforia Engine to a Unity Project or upgrade to the latest version

add-vuforia-package-9-8-5.unitypackage (3.03 KB)



Download for Android

vuforia-sdk-android-9-8-5.zip (21.39 MB)



Download for iOS

vuforia-sdk-ios-9-8-5.zip (67.47 MB)



Download for UWP

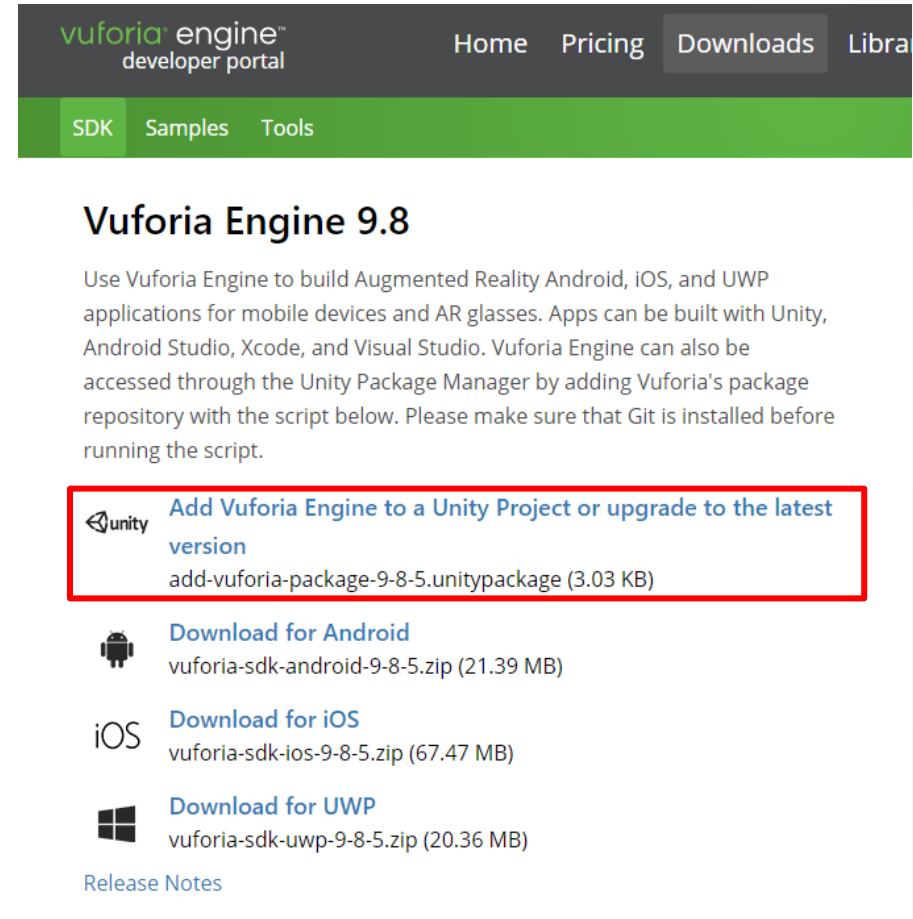
vuforia-sdk-uwp-9-8-5.zip (20.36 MB)

[Release Notes](#)

뷰포리아 설치

- Vuforia 설치

- <https://developer.vuforia.com/> 방문




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SDK Samples Tools


Vuforia Engine 9.8

Use Vuforia Engine to build Augmented Reality Android, iOS, and UWP applications for mobile devices and AR glasses. Apps can be built with Unity, Android Studio, Xcode, and Visual Studio. Vuforia Engine can also be accessed through the Unity Package Manager by adding Vuforia's package repository with the script below. Please make sure that Git is installed before running the script.

 [Add Vuforia Engine to a Unity Project or upgrade to the latest version](#)
add-vuforia-package-9-8-5.unpackage (3.03 KB)

 [Download for Android](#)
vuforia-sdk-android-9-8-5.zip (21.39 MB)

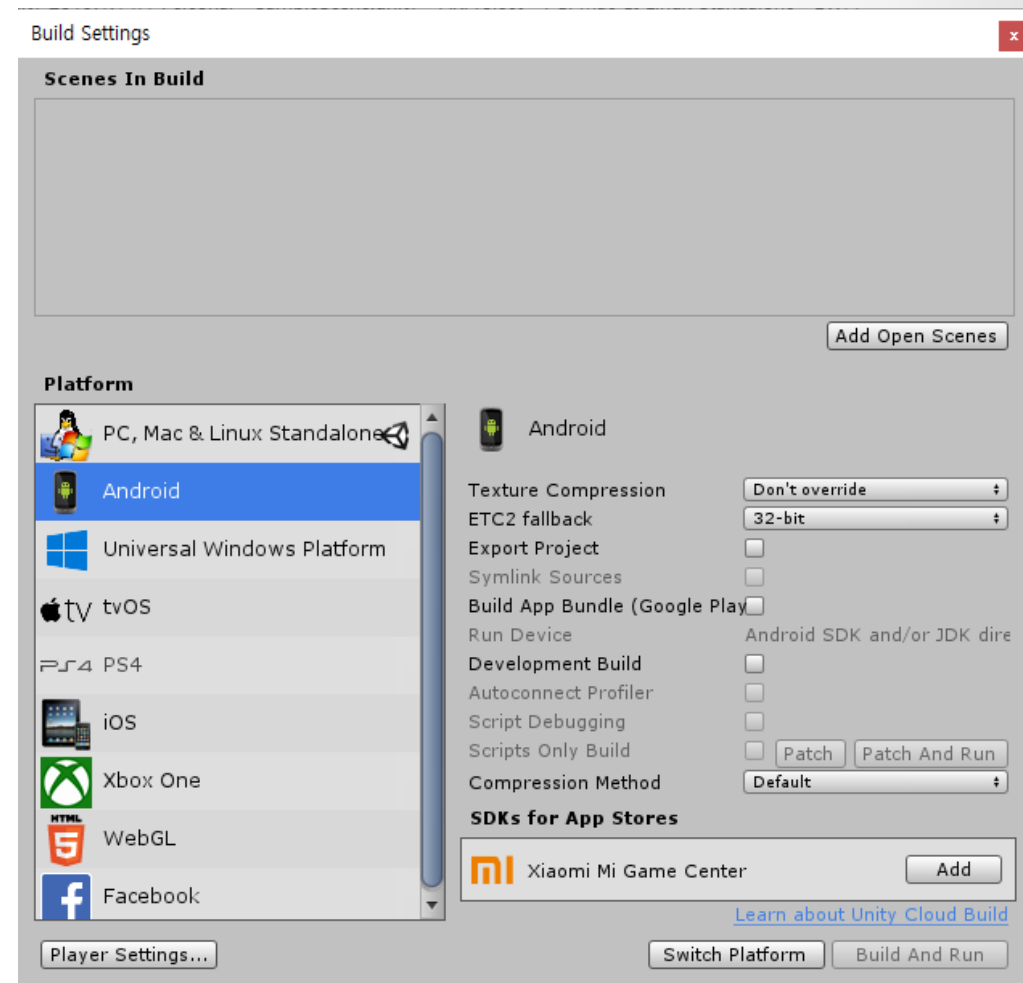
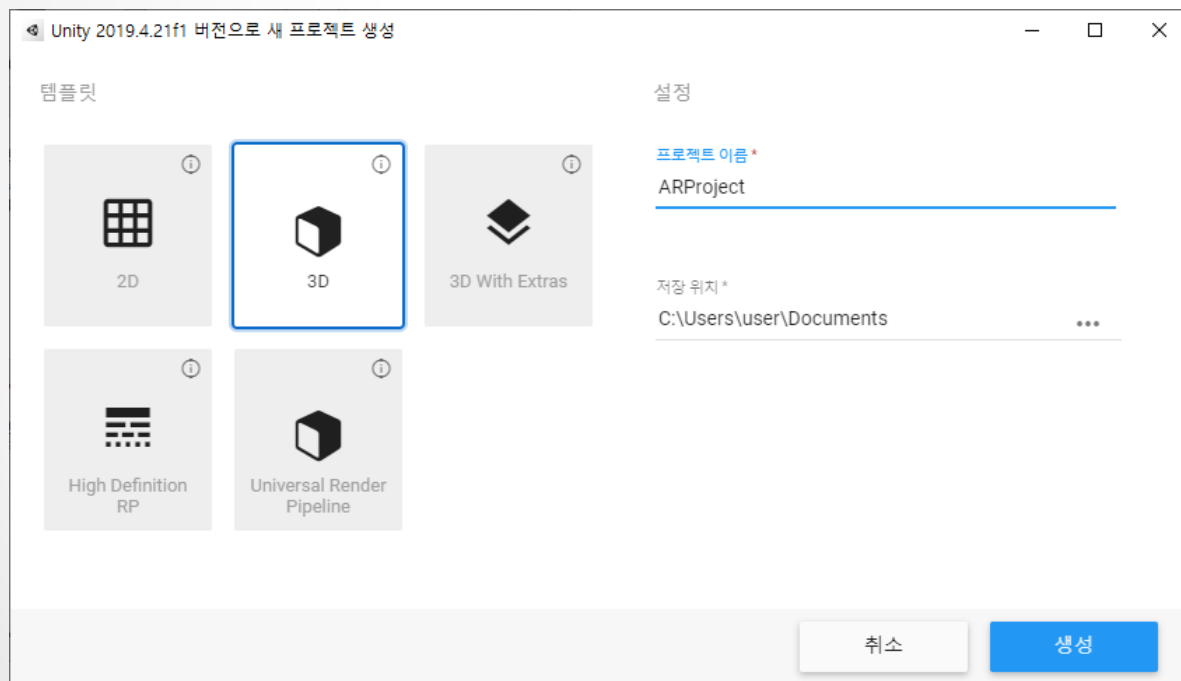
iOS [Download for iOS](#)
vuforia-sdk-ios-9-8-5.zip (67.47 MB)

 [Download for UWP](#)
vuforia-sdk-uwp-9-8-5.zip (20.36 MB)

[Release Notes](#)

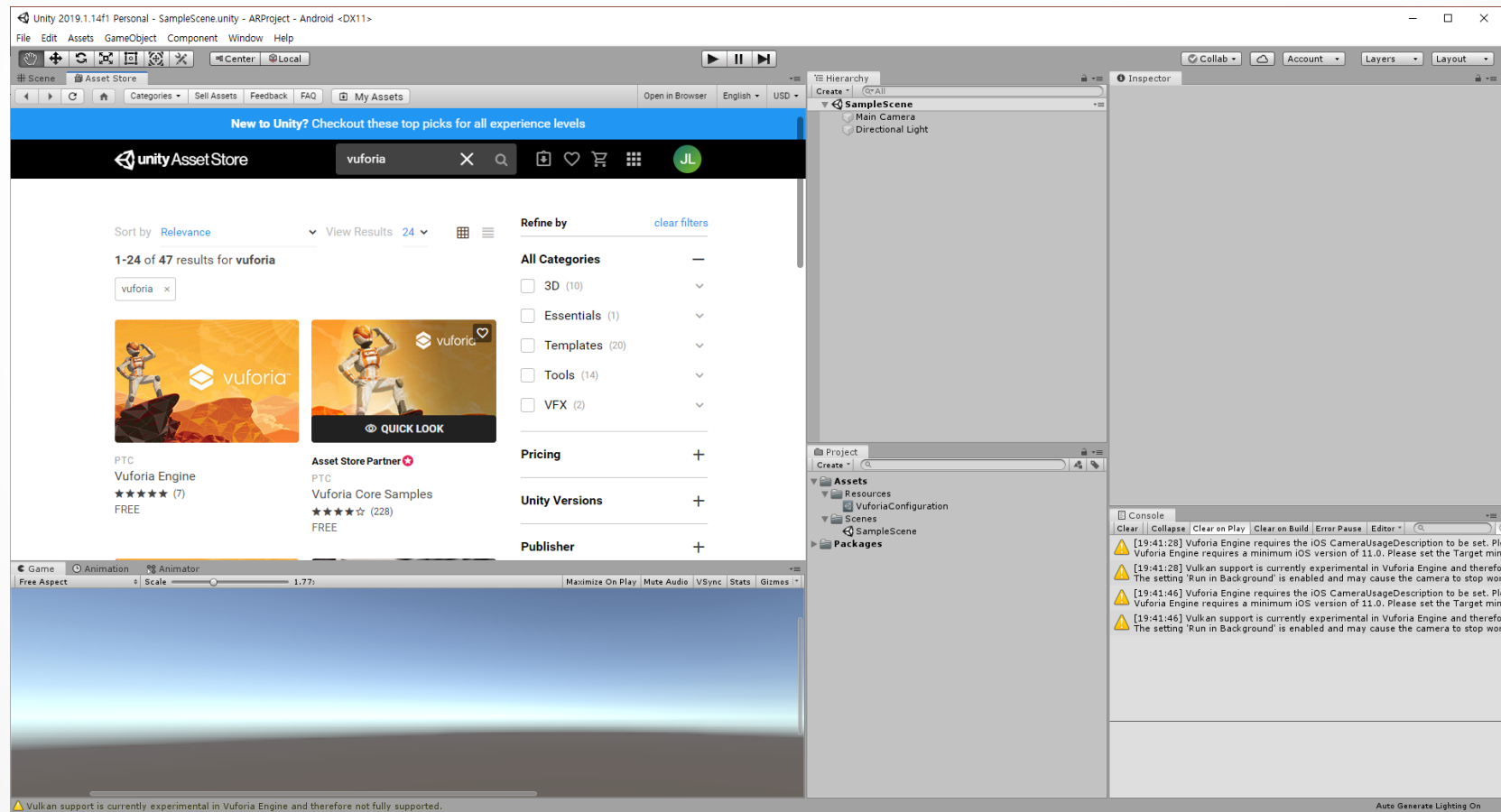
뷰포리아 설치

- 유니티 프로젝트 실행
- 빌드 셋팅 - 안드로이드로 전환!



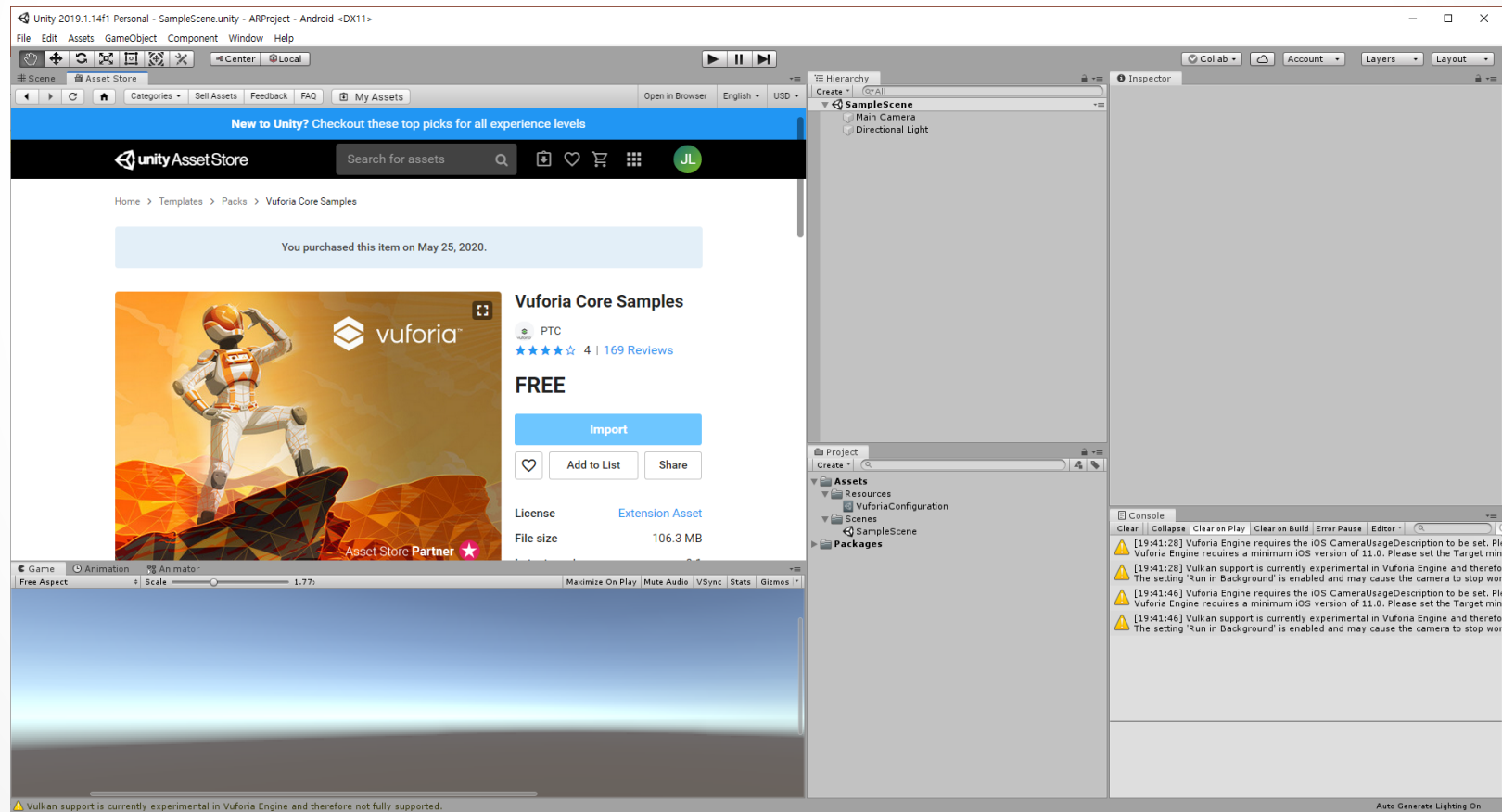
뷰포리아 설치

- 애셋 스토어에서 뷰포리아 코어 샘플 다운로드!



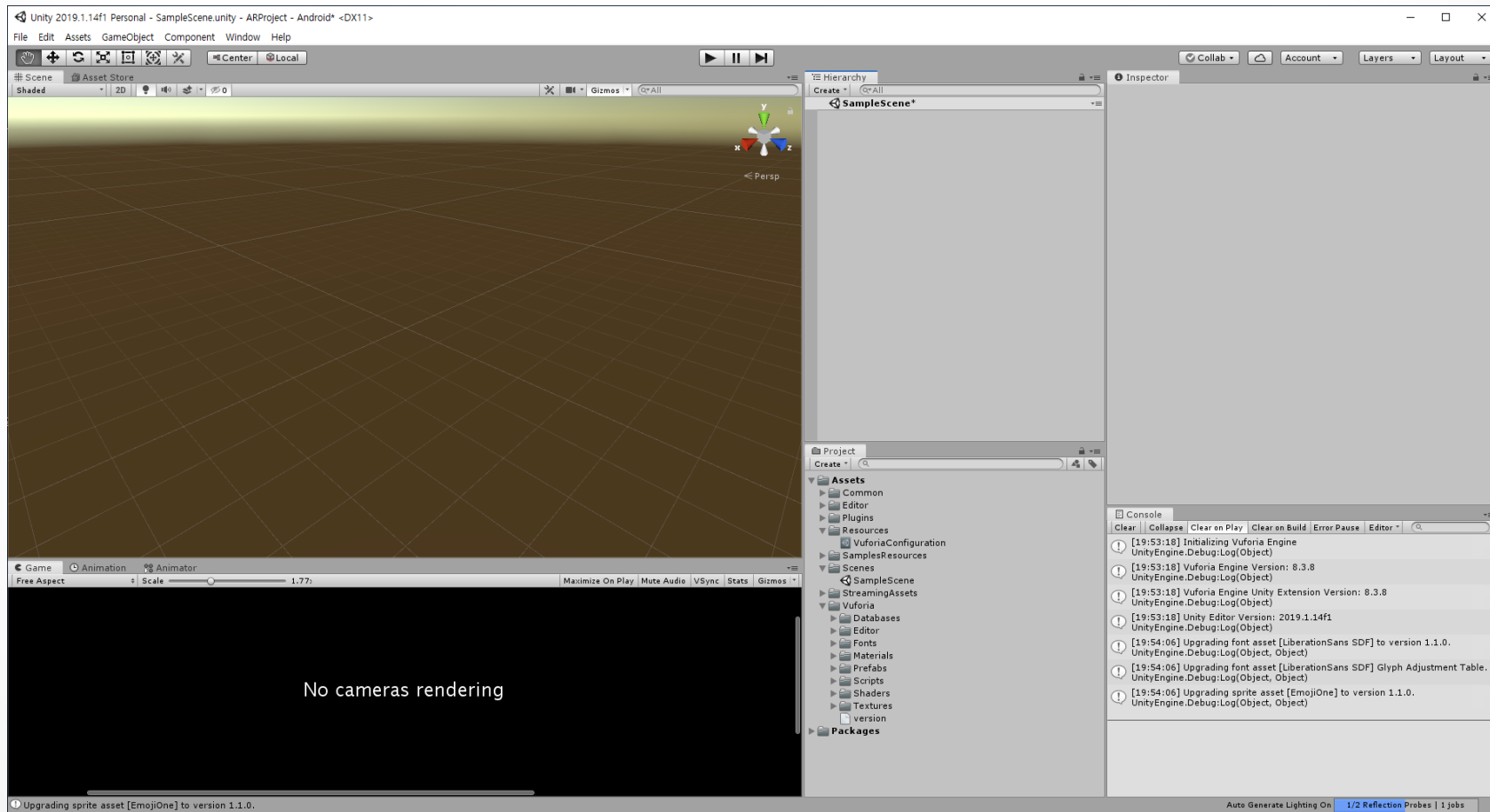
뷰포리아 설치

- 뷰포이라 코어 샘플 설치



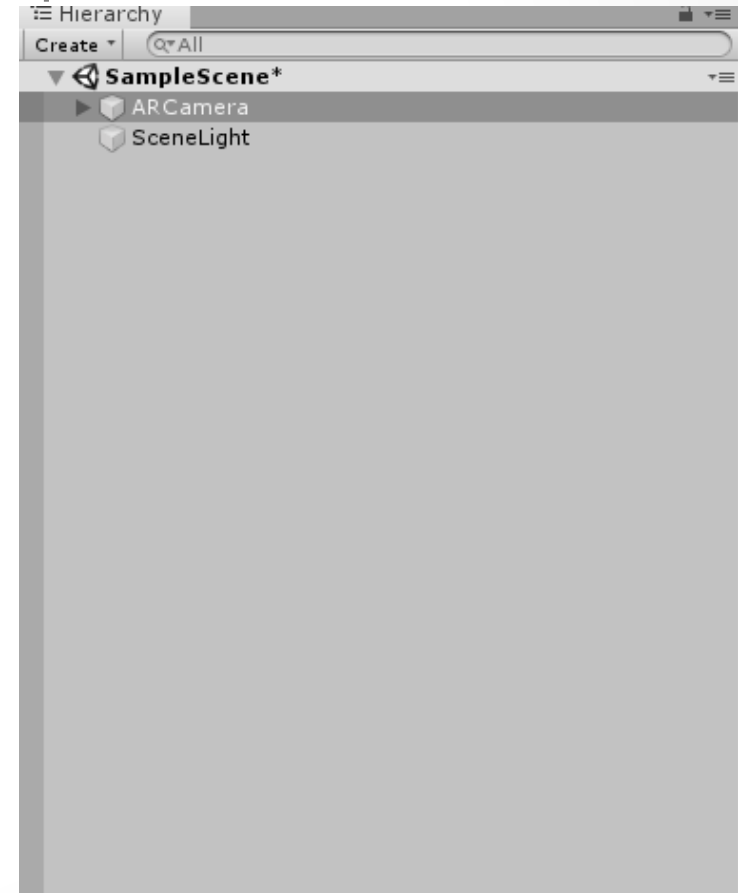
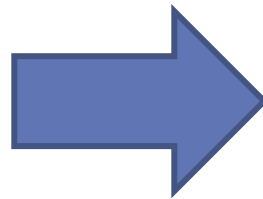
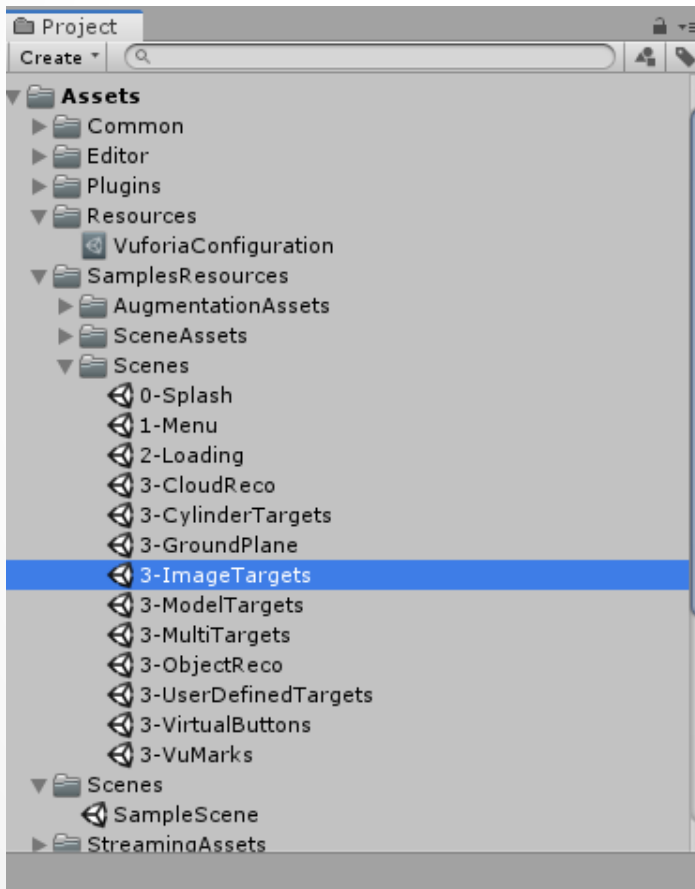
뷰포리아 개발

- 씬의 메인 카메라 및 조명 삭제!



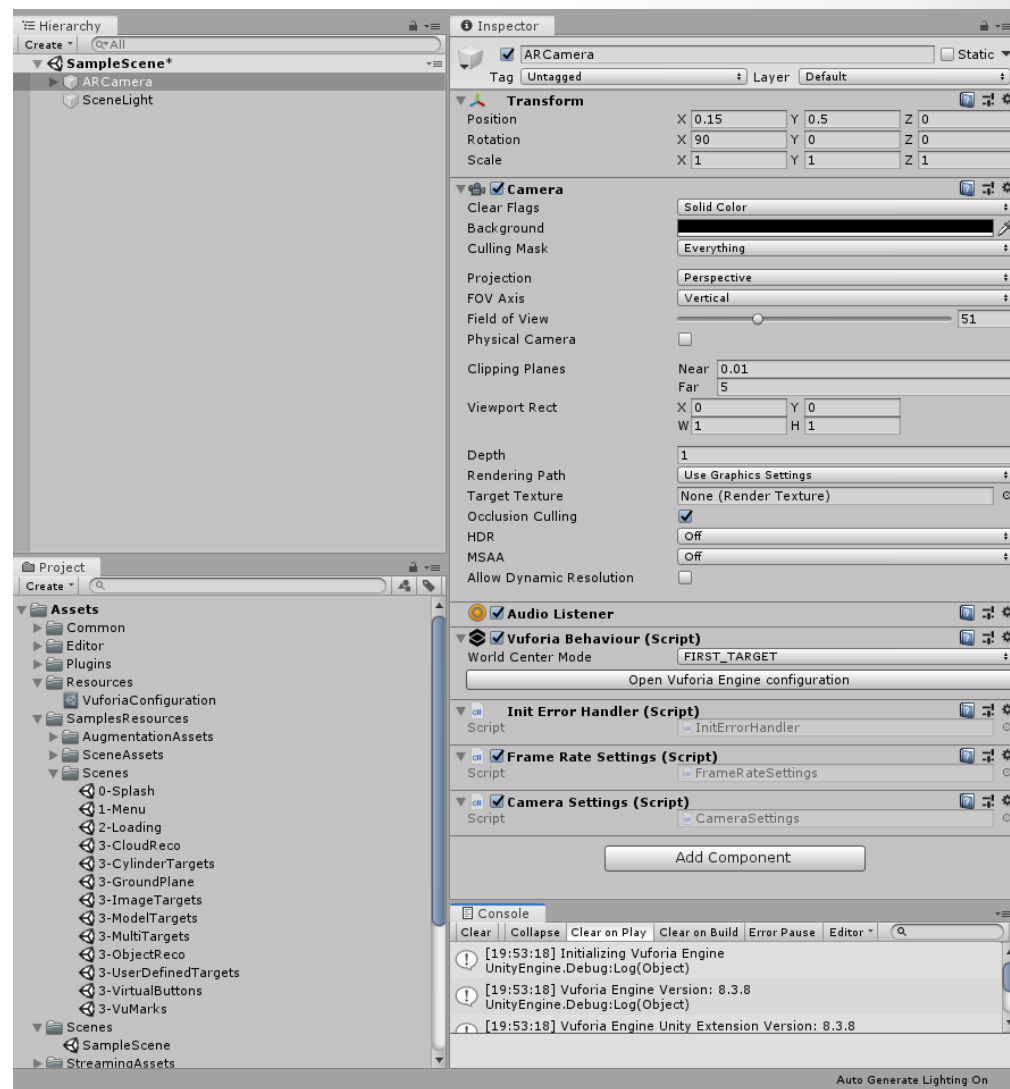
뷰포리아 개발

- 뷰포리아 씬에서 3-ImageTargets 씬 클릭!
- AR Camera 및 SceneLight 복사후 SampleScene으로 이동후 복사



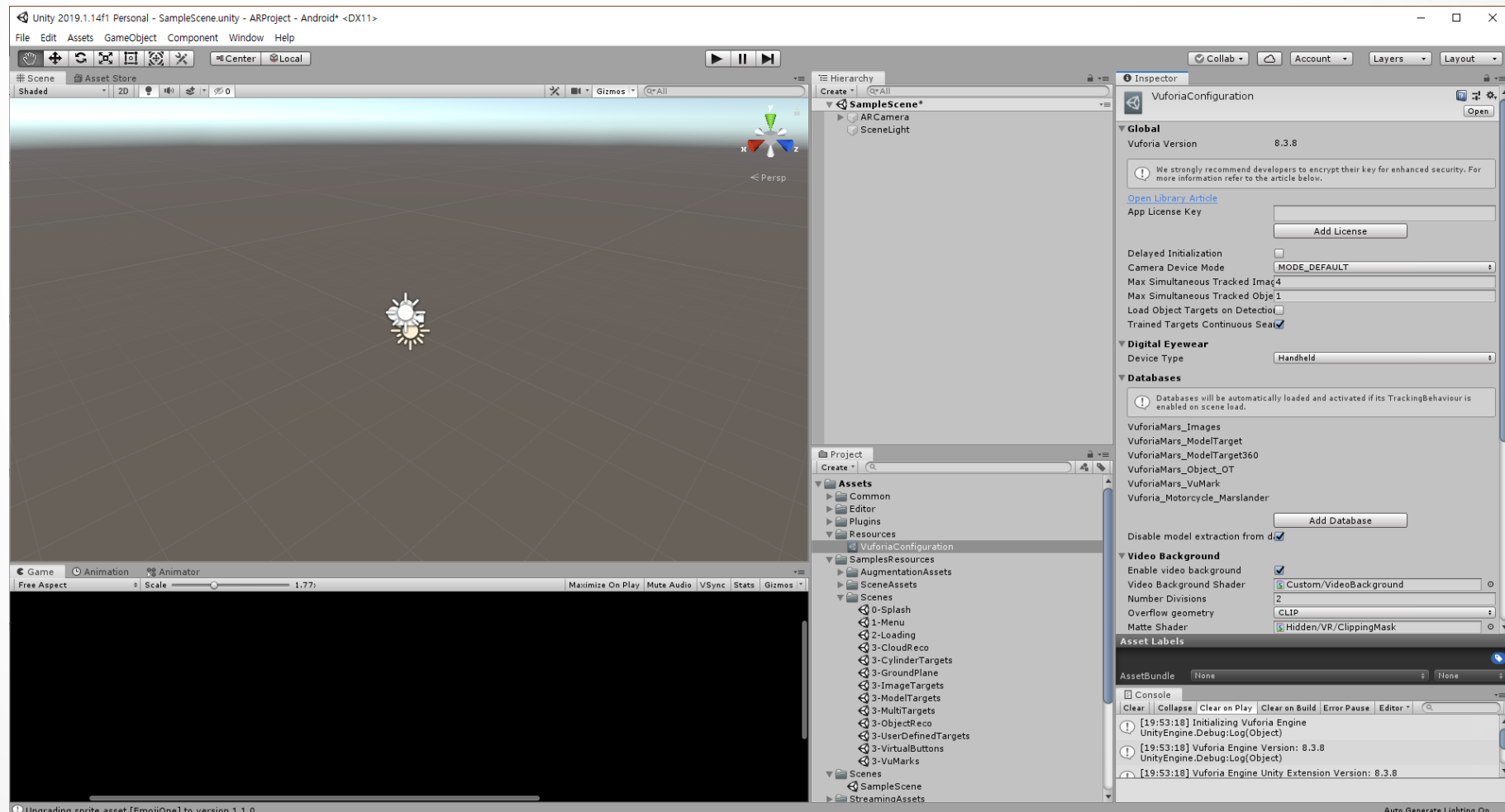
뷰포리아 개발

- 뷰포리아에서 라이선스 추가하기!



뷰포리아 개발

- Add License 클릭 (뷰포리아는 라이선스가 반드시 있어야함!)



뷰포리아 개발

- Add License 클릭 (뷰포리아는 라이선스가 반드시 있어야함!)

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[License Manager](#) [Target Manager](#)

License Manager

[Get Development Key](#) [Buy Deployment Key](#)

Create a license key for your application.

Name	Primary UUID ⓘ	Type	Status ▾	Date Modified
------	----------------	------	----------	---------------

25 per page ▾

<<< 1 >>>

뷰포리아 개발

- 이름을 ARTest 로 생성하고 버튼 클릭

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[License Manager](#) [Target Manager](#)

[Back To License Manager](#)

Add a free Development License Key

License Name *

ARTest

You can change this later

License Key

Develop

Price: No Charge

Reco Usage: 1,000 per month

Cloud Targets: 1,000

VuMark Templates: 1 Active

VuMarks: 100

☒ By checking this box, I acknowledge that this license key is subject to the terms and conditions of the [Vuforia Developer Agreement](#).

Cancel

Confirm

뷰포리아 개발

- ARTeset 라이선스 클릭!

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License Manager

[Get Development Key](#) [Buy Deployment Key](#)

Create a license key for your application.

Search

Name	Primary UUID ⓘ	Type	Status ▾	Date Modified
ARTeset	N/A	Develop	Active	May 25, 2020

뷰포리아 개발

- 라이센스키를 카피!(마우스 클릭하면 됨)

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HomePricingDownloadsLibraryDevelopSupport

License ManagerTarget Manager

License Manager > ARTest

ARTest

Edit NameDelete License Key

License Key

Usage

Please copy the license key below into your app

AeGReoL/////AAABmVLbNh+ZnUPi1WQbNUSq8W4fAS1C7LOPhVj2rRuaJ+Q21087uJ+YzFkHo9IeSGDV62kxnUMoMIJ8jsRMj6kXd1tv+w5LMPGSoMkPBk+kQet23Lfmr6j3/niXKoTVaHaRfuZgQm/2Kl16c8IN2zT4TfP5f3FiXiBw8ouYHmWj+1O6FzJe5RG5kRrNf61In6YQQzMjJLiQqi5/Vne8Z1ZA5gfbFTvGKs+5oOhd42zqBVzybHOeTAbs/w1HiDwxbmIp4tu0lrjsXtbl+XvWPGnfE4eVeNioXwn7yHaiVS9Kdszum/3SkovexHrc1NJxESaK2X4cvKFO9WG4nqCXhvMrP0vVwGTAjhToQTpujK/7qNq

Plan Type: Develop

Status: Active

Created: May 25, 2020 20:30

License UUID: e5db9b515f0f4fd2a2e8e3e69abd997e

Permissions:

Advanced Camera

External Camera

Model Targets

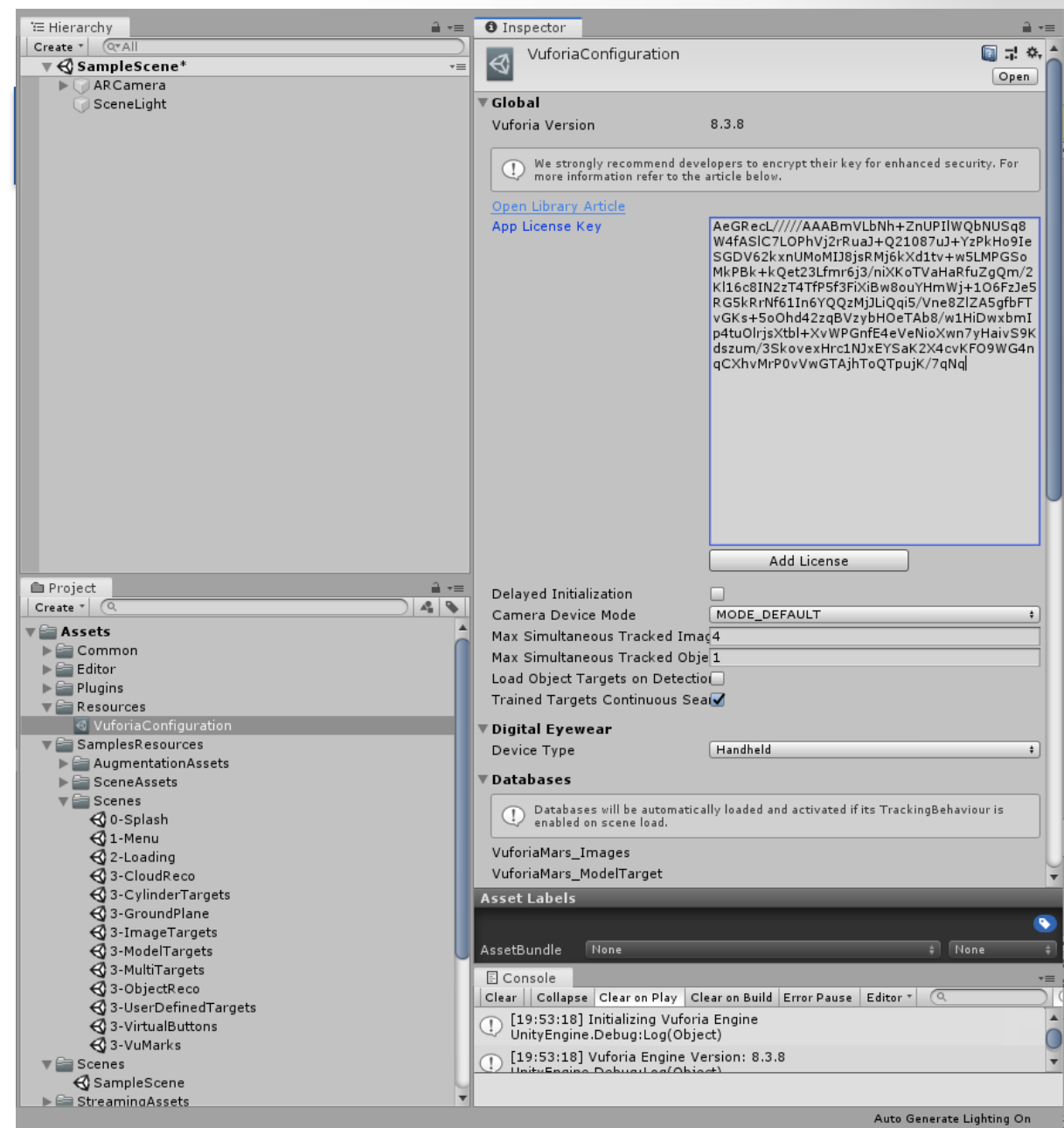
Watermark

History:

License Created - Today 20:30

뷰포리이

- 복사한 라이선스 키를 복사

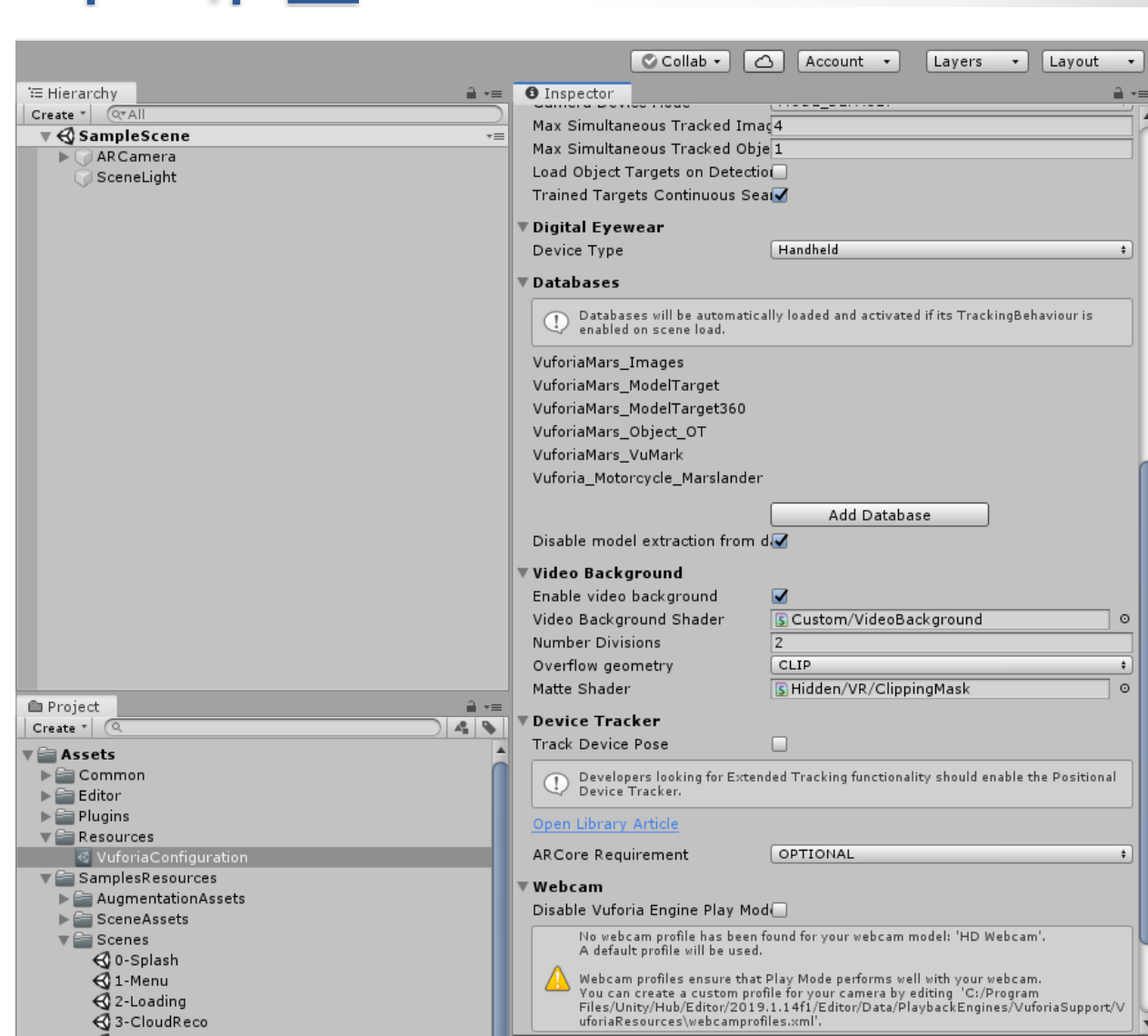


뷰포리아 개발

- 증강현실을 적용 하려면 마커를 사용해야 함!
- 뷰포리아에서는 이러한 마커 정보를 데이터 베이스로 관리!

뷰포리아 개발

- Add Database 클릭!



뷰포리아 개발

- Add Database 클릭!

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[License Manager](#) [Target Manager](#)

Target Manager

[Add Database](#)

Use the Target Manager to create and manage databases and targets.

Database	Type	Targets	Date Modified
----------	------	---------	---------------

Create Database

Type:

- ☒ Device
☐ Cloud
☐ VuMark

[Cancel](#)[Create](#)

뷰포리아 개발

- ARTest 클릭하자!

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[License Manager](#) [Target Manager](#)

Target Manager

Add Database

Use the Target Manager to create and manage databases and targets.

Search

Database	Type	Targets	Date Modified
ARTest	Device	0	May 25, 2020

뷰포리아 개발

- Add Target 클릭하기!

The screenshot shows the vuforia engine developer portal. The top navigation bar includes links for Home, Pricing, Downloads, Library, Develop (highlighted), and Support. A user profile 'Hello gmljun' and a 'Log Out' button are on the right. Below the navigation bar, there are tabs for 'License Manager' and 'Target Manager' (which is active). The main content area shows the 'Target Manager' for 'ARTest'. It includes a breadcrumb 'Target Manager > ARTest', the target name 'ARTest' with an 'Edit Name' link, and the type 'Type: Device'. There is a 'Targets (0)' box and an 'Add Target' button. A 'Download Database (All)' button is also present. At the bottom, there is a table header with columns: Target Name, Type, Rating (with an info icon), Status (with a dropdown arrow), and Date Modified.

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Home Pricing Downloads Library **Develop** Support

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License Manager Target Manager

Target Manager > ARTest

ARTest [Edit Name](#)
Type: Device

Targets (0)

Add Target

Download Database (All)


<input type="checkbox"/> Target Name	Type	Rating ⓘ	Status ▾	Date Modified
--------------------------------------	------	----------	----------	---------------


뷰포리아 개발


- Add Database 클릭!
 - File 선택 가능
 - Width :게임오브젝트 크기 1로 설정
 - Name : 타겟 이름 lion으로 설정


Add Target

Type:


Single Image


Cuboid


Cylinder


3D Object

File:

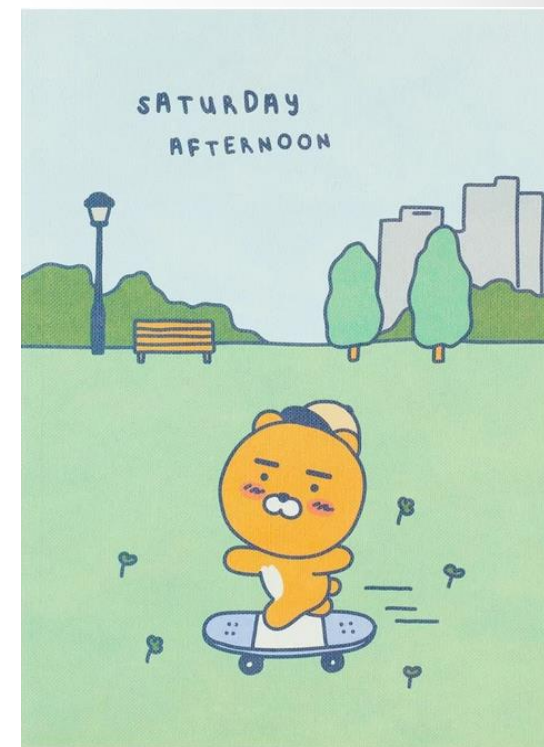
.jpg or .png (max file 2mb)

Width:

Enter the width of your target in scene units. The size of the target should be on the same scale as your augmented virtual content. Vuforia uses meters as the default unit scale. The target's height will be calculated when you upload your image.

Name:

Name must be unique to a database. When a target is detected in your application, this will be reported in the API.



뷰포리아 개발

- ARTest 에서 다음의 타켓을 입력

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[License Manager](#) [Target Manager](#)

[Target Manager](#) > [ARTest](#)


ARTest

[Edit Name](#)
Type: Device

Targets (1)

Add Target

Download Database (All)

<input type="checkbox"/>	Target Name	Type	Rating ⓘ	Status ▾	Date Modified
<input type="checkbox"/>	 lion	Single Image	★★★★☆	Active	May 25, 2020 21:04

뷰포리아 개발

- Download Database 클릭!

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HomePricingDownloadsLibraryDevelopSupport

Hello gmljun | Log Out


License ManagerTarget Manager

Target Manager > ARTest

ARTest [Edit Name](#)
Type: Device

Targets (1)

Add TargetDownload Database (All)

<input type="checkbox"/>	Target Name	Type	Rating ⓘ	Status ▾	Date Modified
<input type="checkbox"/>	 lion	Single Image	★★★★☆	Active	May 25, 2020 21:04

Download Database

1 of 1 active targets will be downloaded

Name:
ARTest

Select a development platform:

- ☐ Android Studio, Xcode or Visual Studio
- ☒ Unity Editor

Cancel

Download

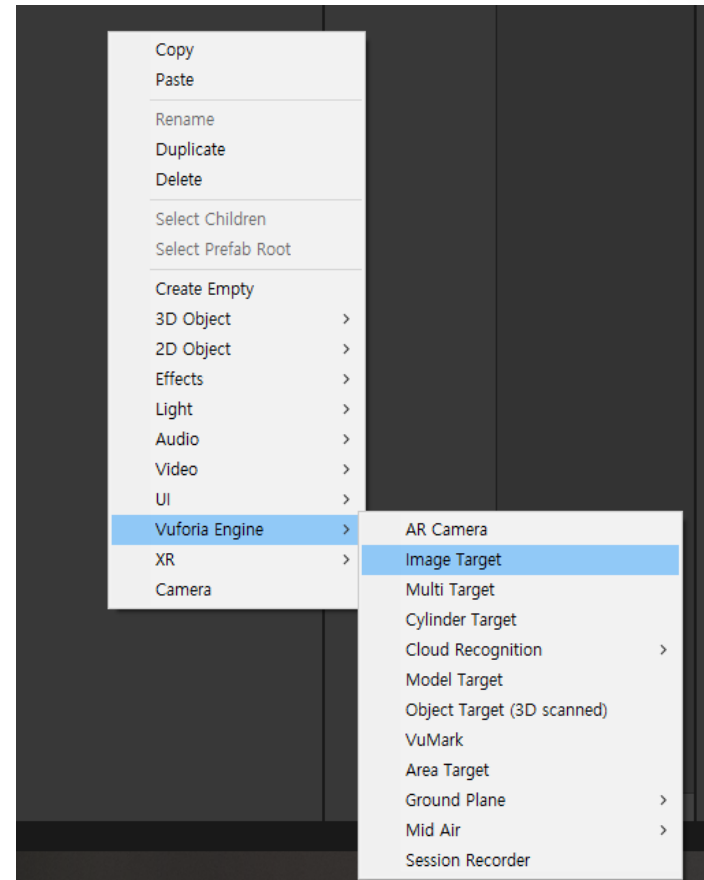
뷰포리아 개발

- 다운로드 받은 유니티 패키지를 임포트하기!



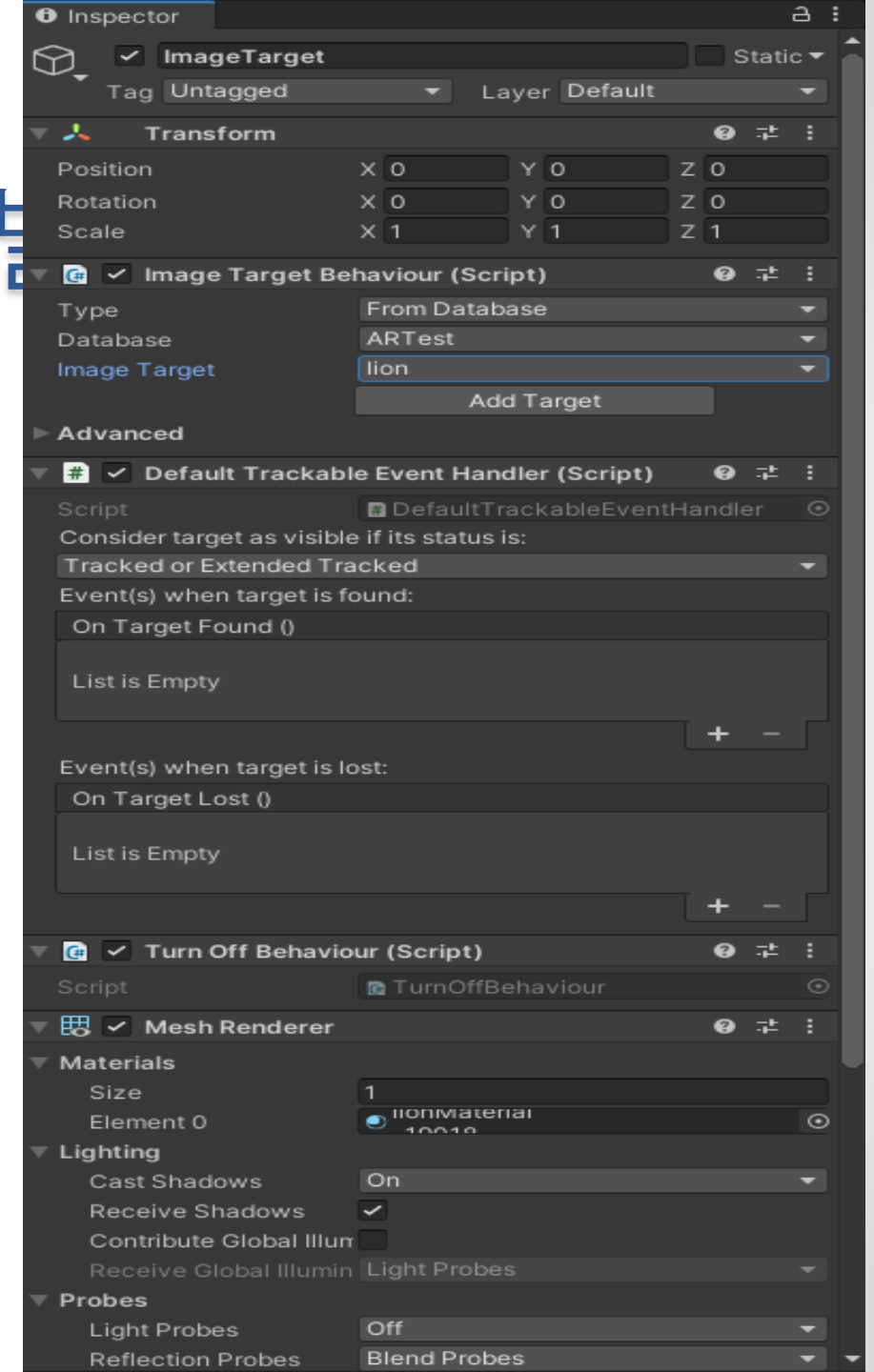
뷰포리아 개발

- 뷰포리아엔진-이미지타겟
선택



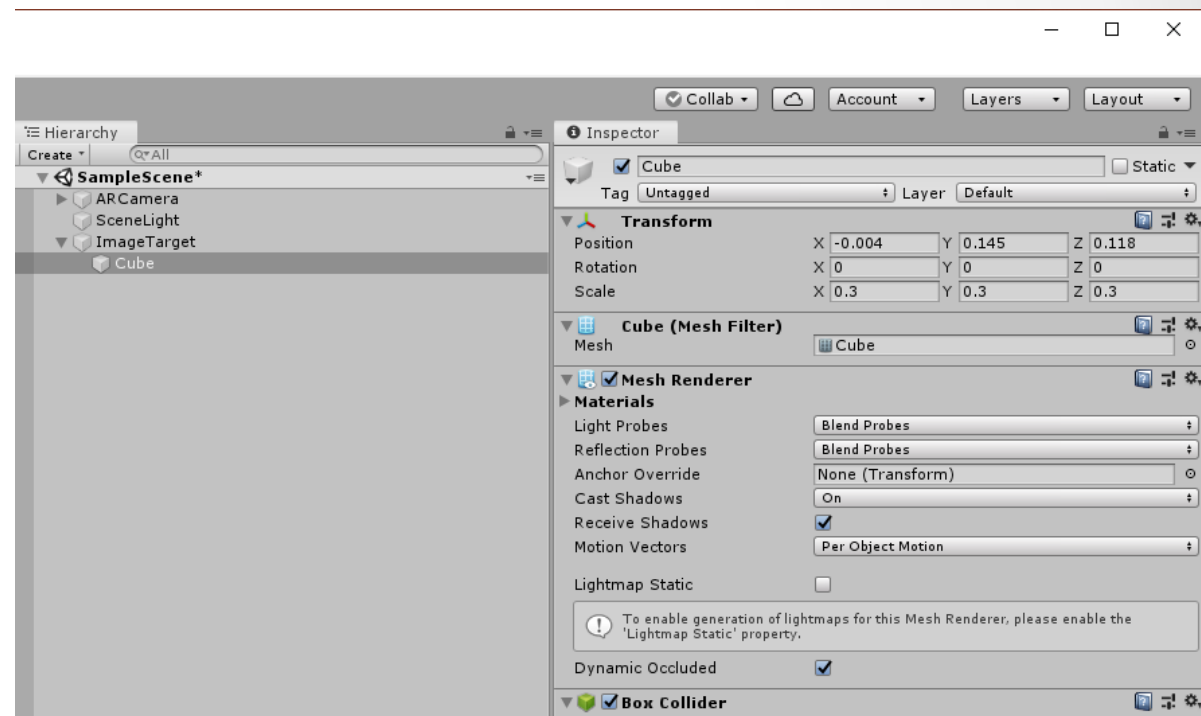
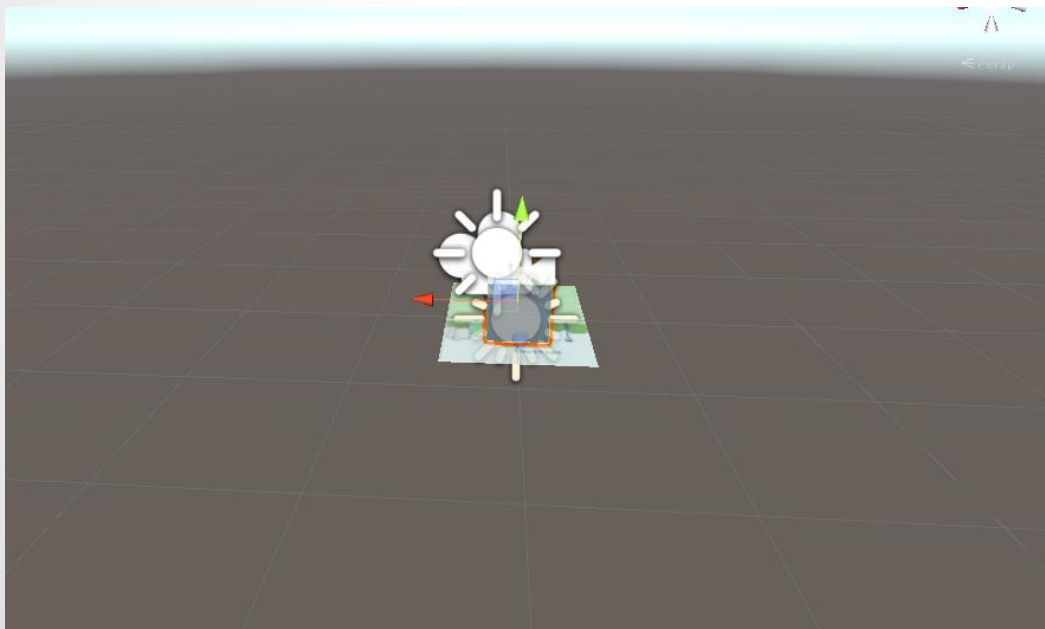
뷰포리아 개발

- Image Target Behaviour
 - Image Target Behavior 섹션에서 Database 옵션을 볼 수 있음
- Default Trackable Event Handler
- Turn Off Behaviour



뷰포리아 개발

- 이미지 타겟이 Cube 추가!
 - Cube를 자식노드로 만들고 위치값 수정
 - 스케일값도 같이 수정



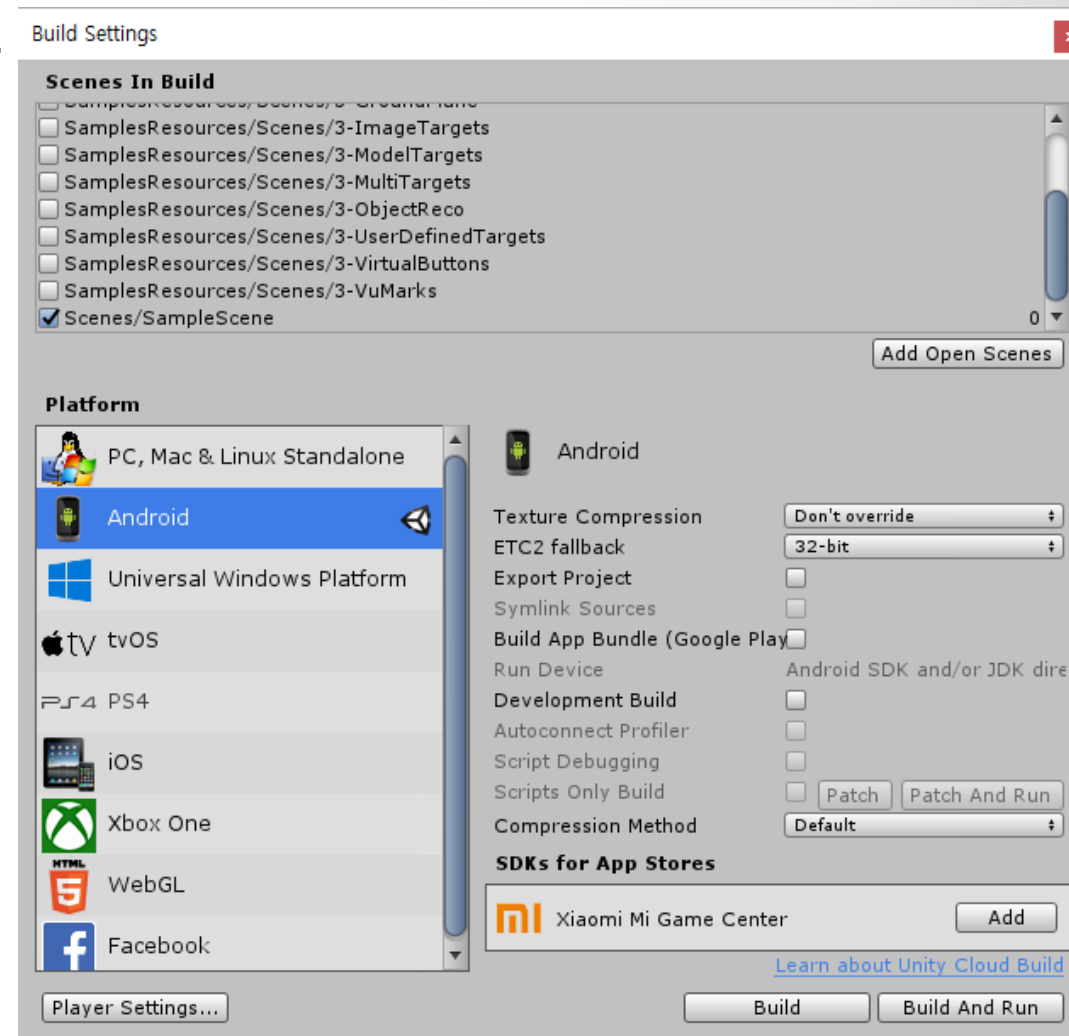
뷰포리아 개발

- 웹캠으로 테스트



뷰포리아 개발

- 안드로이드 폰으로 익스포트 하는 경우
- 빌드 셋팅에서 AddOpenScene 클릭
- 다른 씬들은 비활성화를 수행



뷰포리아 개발

- APK 빌드를 위해서는 안드로이드 스튜디오 설치가 필수!
- ARTest.apk 가 만들고 이것을 핸드폰에 직접 설치 (개발자모드)

- 여러분들은 다음의 이미지를 등록하고 C# 책 표지가 인식이 잘 되는지 확인해 보세요~
- C# 책 표지 이미지 다운로드하실려면 다음의 링크에서 받으세요~
- https://drive.google.com/file/d/1ShAZI_Rczee-PwacmSLrdr9cdPENEHaa/view?usp=sharing

이것이 C#이다

개정판



입문자에게 가장 탄탄한 기본기를 다져줄 C# 입문서

박상현 지음

Q&A 네이버
카페 운영

C# 9.0
버전 반영

유튜브 강의
제공