

Daydreaming about Cardboards

Virtual Reality in Android



- 🔑: headless CMS: contentful.com
- 🐦: [@MarioBodemann](https://twitter.com/MarioBodemann)
- 📄: bit.ly/mbvrberlin
 - Please interrupt 🚫 🗑️ !

Agenda

Daydreaming about Cardboards
Virtual Reality in Android

contentful

- [CMS: contentful.com](#)
- [@MarioBodermann](#)
- [bit.ly/mvrbberlin](#)
- Please interrupt

Cardboard

Google Cardboard

- easy to produce
- available from different companies
- in different styles/interactions
- You just need a phone™

How does Cardboard work?

- use 3D data and movement to draw two images
 - one for the left and right eye
- contains Lenses to move things away
- brain combines image to 3D scene

How do I write a Unity App?

Prerequisites

- clone Googles github for unity
<https://github.com/googlevr/gvr-unity-sdk> repository
- install and open Unity
 - <https://store.unity.com/>
 - <http://forum.unity3d.com/threads/unity-on-linux-release-notes-and-known-issues.350256/>

Daydream

New SDK features

- Controlling the controller
 - orientation/acceleration
 - input (Clickpad: xy, clicked, App Button, Vol+/-)
- spatial audio engine
- VR View



Cardboard

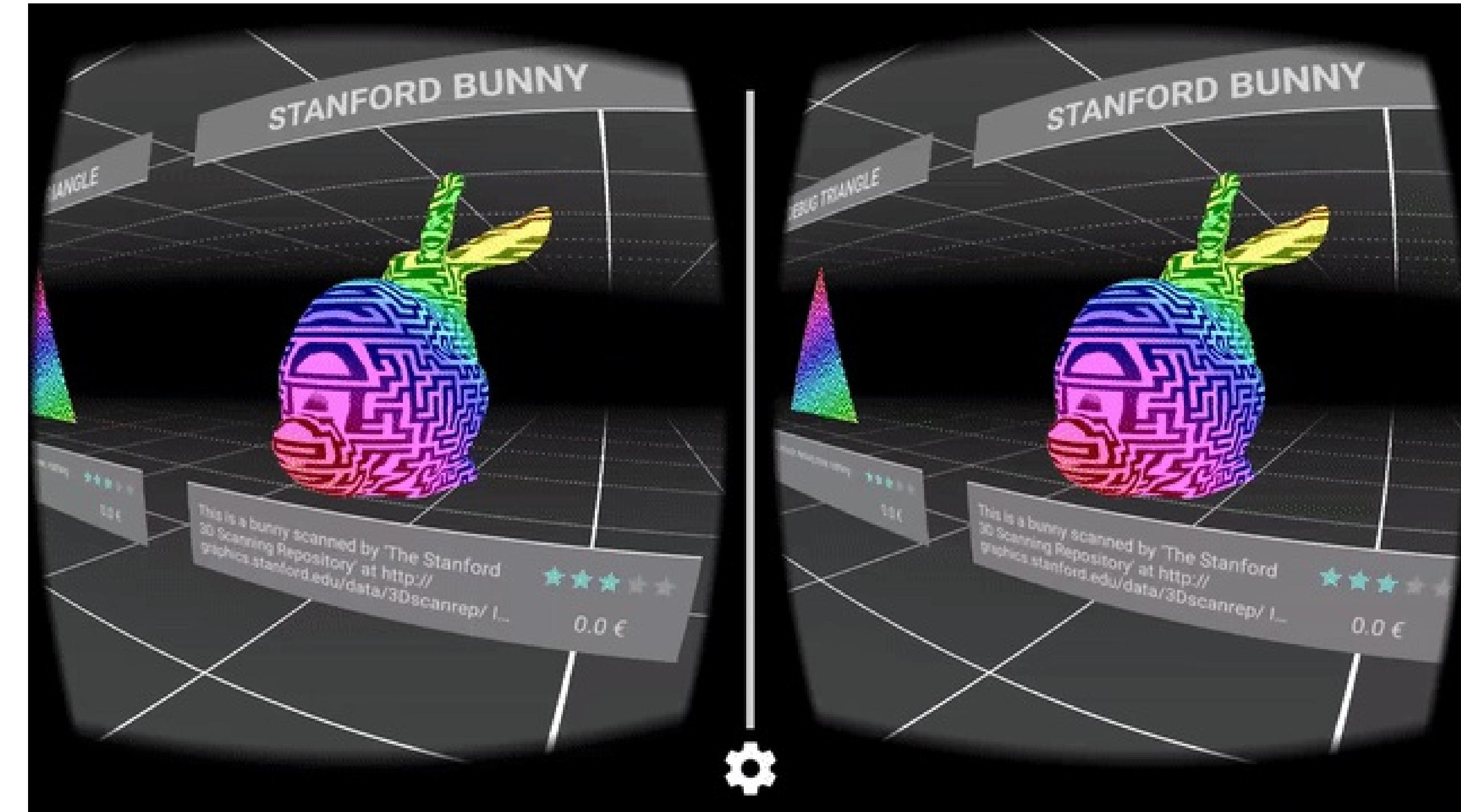
Google Cardboard

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How does Cardboard work?

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- brain combines image to 3D scene



How do you program for it?

Googles SDK are available for

- Android (OpenGL)
- IOS (Objective C)
- Unity Engine (C# /JS) x ( , G,  , )

What do those SDKs provide?

- lens distortion correction
- spatial audio
- head tracking
- 3D calibration
- side-by-side rendering

What else do they provide?

- stereo geometry configuration
- user input event handling
- see developer.google.com/vr/android/

How do I write a Unity App?



Prerequisites

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 -  / https://store.unity.com/
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Home



Projects

Getting started



NEW



OPEN



MY ACCOUNT

Create a project

New project

Home X

Projects Getting started [!\[\]\(ba218b8bc7f0c42a9b13f44068c96eb1_img.jpg\) NEW](#) [!\[\]\(0fed360cfcf5740e19977519b65dbe34_img.jpg\) OPEN](#) [!\[\]\(87a34fc17dd3210c87169e511b89bf86_img.jpg\) MY ACCOUNT](#)

Project name* 3D 2D [Add Asset Package](#)

Location* [ON](#) [Enable Unity Analytics](#) 

Organization* [Cancel](#) [Create project](#)

File Edit Assets GameObject Component Help Window



Hierarchy

Create Untitled
Main Camera
Directional Light



Scene Game Asset Store

Shaded 2D 3D Audio

Gizmos

Cloud Account Layers Layout

i Inspector Services

Go to Dashboard



Cardboard Sample

SERVICES

Unity provides you a suite of integrated services for creating games, increasing productivity and managing your audience.

[SERVICES](#) [MEMBERS](#) [AGE DESIGNATION](#) [SETTINGS](#)

Collaborate

Create together seamlessly

In-App Purchasing

Simplify cross-platform IAP

Ads

Monetize your games

Multiplayer

Easily implement multiplayer

Analytics

Discover player insights

Performance Reporting

Discover app errors

Cloud Build

Build games faster

Project Console

Create

Favorites

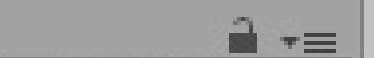
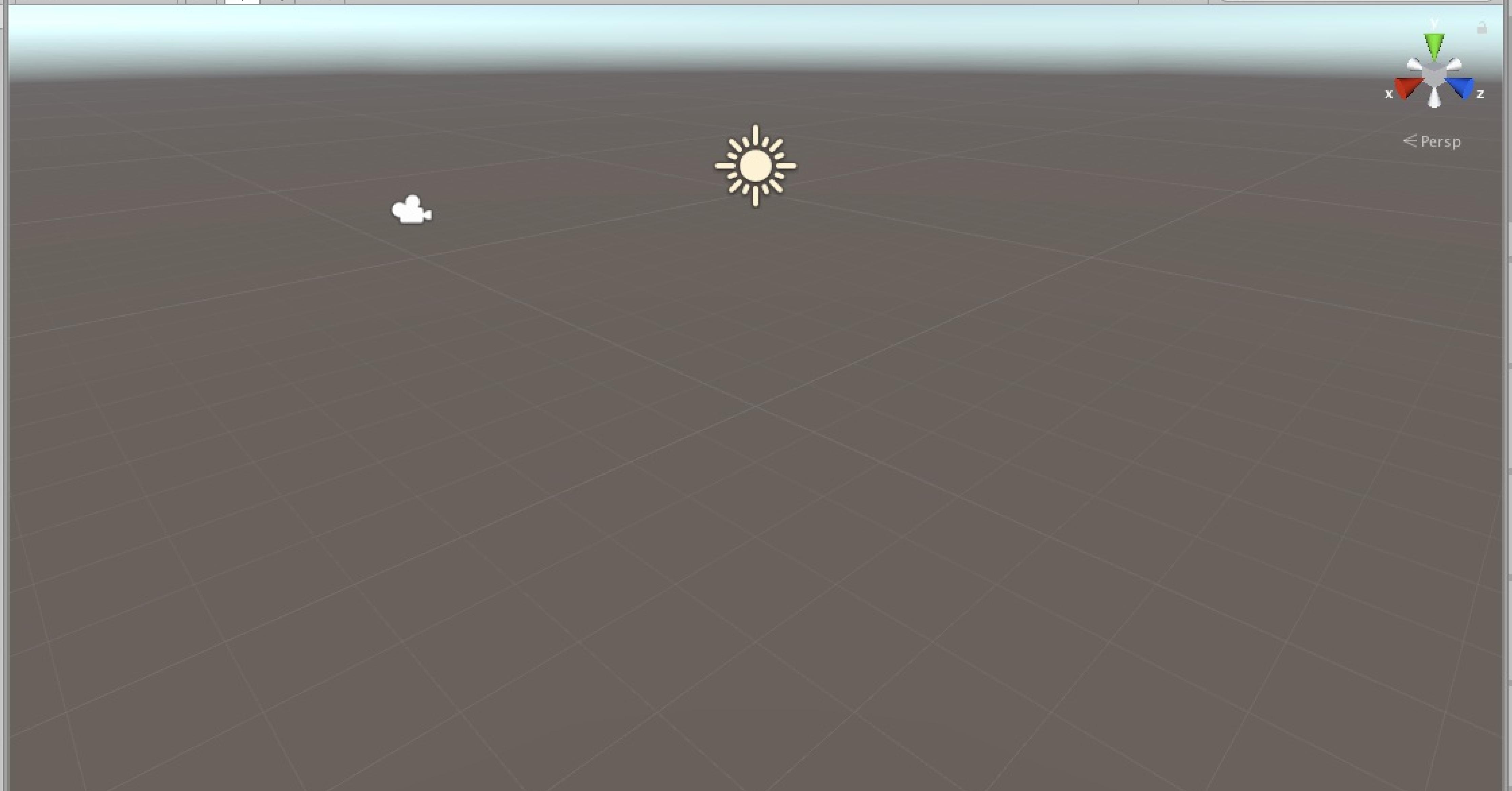
- All Materials
- All Models
- All Prefabs
- All Scripts

Assets

This folder is empty

Assets

Shaded | 2D | ☼ | ⌛ | 🔍 | Gizmos | Qt All



This folder is empty

Cardbo SERVICES

Unity provides you
increasing productivit

SERVICES

Collaborate
Create together se

In-App Purchases
Simplify cross-plat

Ads
Monetize your game

Multiplayer
Easily implement m

Analytics
Discover player ins

Performance
Discover app errors

Cloud Bu

File Edit Assets GameObject Component Help Window

Create Empty Shift+Ctrl+N
Create Empty Child Shift+Alt+N
3D Object
2D Object
Light
Audio
UI
Particle System
Camera
Center On Children
Make Parent
Clear Parent
Apply Changes To Prefab
Break Prefab Instance
Set as first sibling
Set as last sibling
Move To View Ctrl+Alt+F
Align With View Shift+Ctrl+F
Align View to Selected
Toggle Active State Shift+Alt+A

GameObject menu open, showing options for creating 3D objects like Cube, Sphere, Capsule, Cylinder, Plane, Quad, Ragdoll..., Terrain, Tree, Wind Zone, and 3D Text. The "Plane" option is selected.

Game View: A 3D scene with a sun icon, a small white cloud, and a camera icon with a coordinate system. The view mode is set to Perspective (Persp).

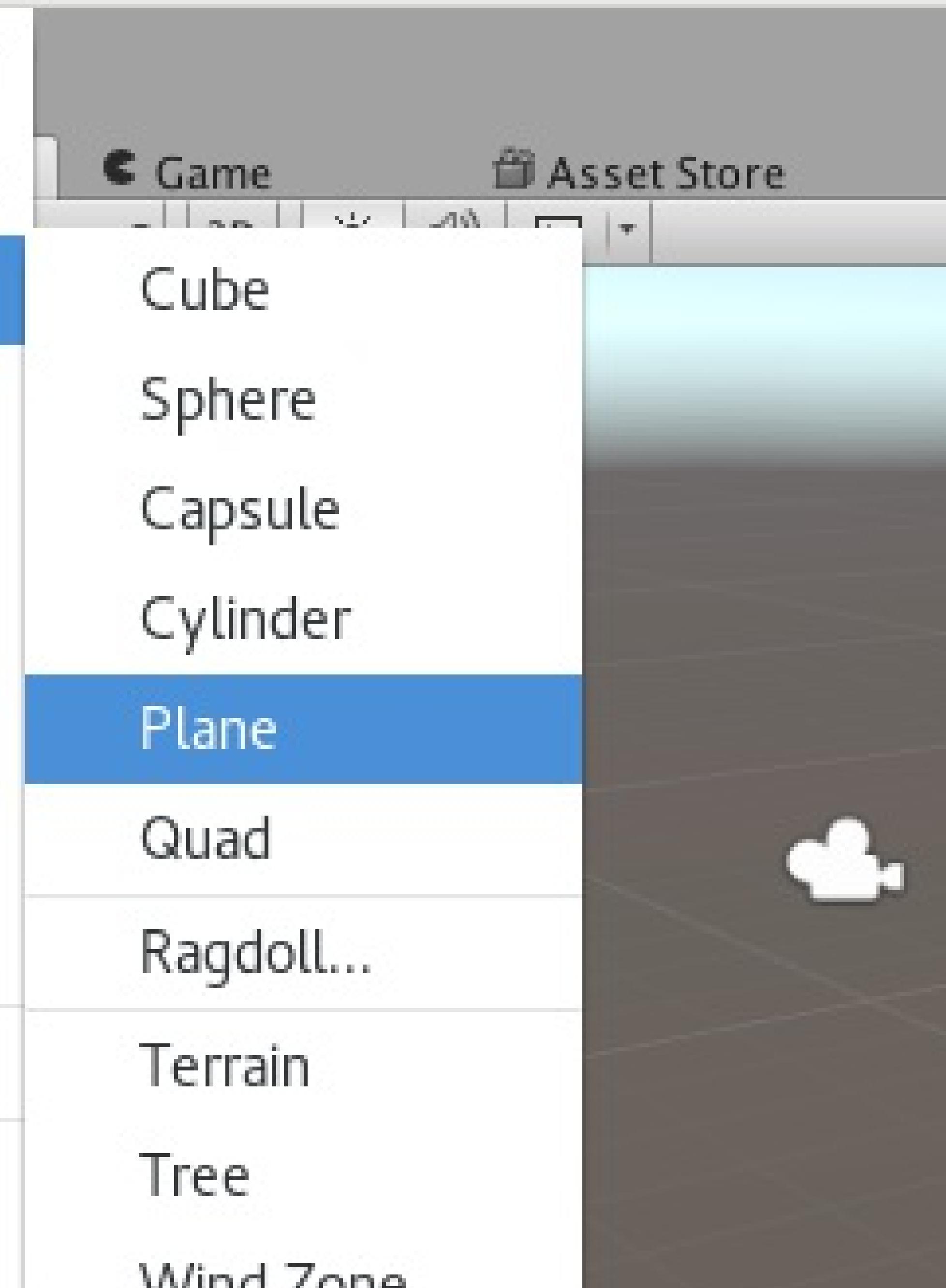
Project View: Shows a folder structure with Favorites, Assets, and a subfolder Assets. The Assets folder is empty, indicated by the message "This folder is empty".

Asset Store: A search bar and a list of items including Game, Asset Store, and Gizmos.

Inspector: Shows the "Cardboard Sample" service. It includes sections for SERVICES, MEMBERS, AGE DESIGNATION, and SETTINGS. Services listed are Collaborate (OFF), In-App Purchasing (OFF), Ads (OFF), Multiplayer (ON), Analytics (ON), Performance Reporting (OFF), and Cloud Build (OFF). Unity provides a suite of integrated services for creating games, increasing productivity and managing your audience.



- Create Empty Shift+Ctrl+N
- Create Empty Child Shift+Alt+N
- 3D Object**
- 2D Object
- Light
- Audio
- UI
- Particle System
- Camera
- Center On Children
- Make Parent
- Clear Parent



File Edit Assets GameObject Component Help Window



Hierarchy
Create (Q+All)
Untitled*
Main Camera
Directional Light
Plane



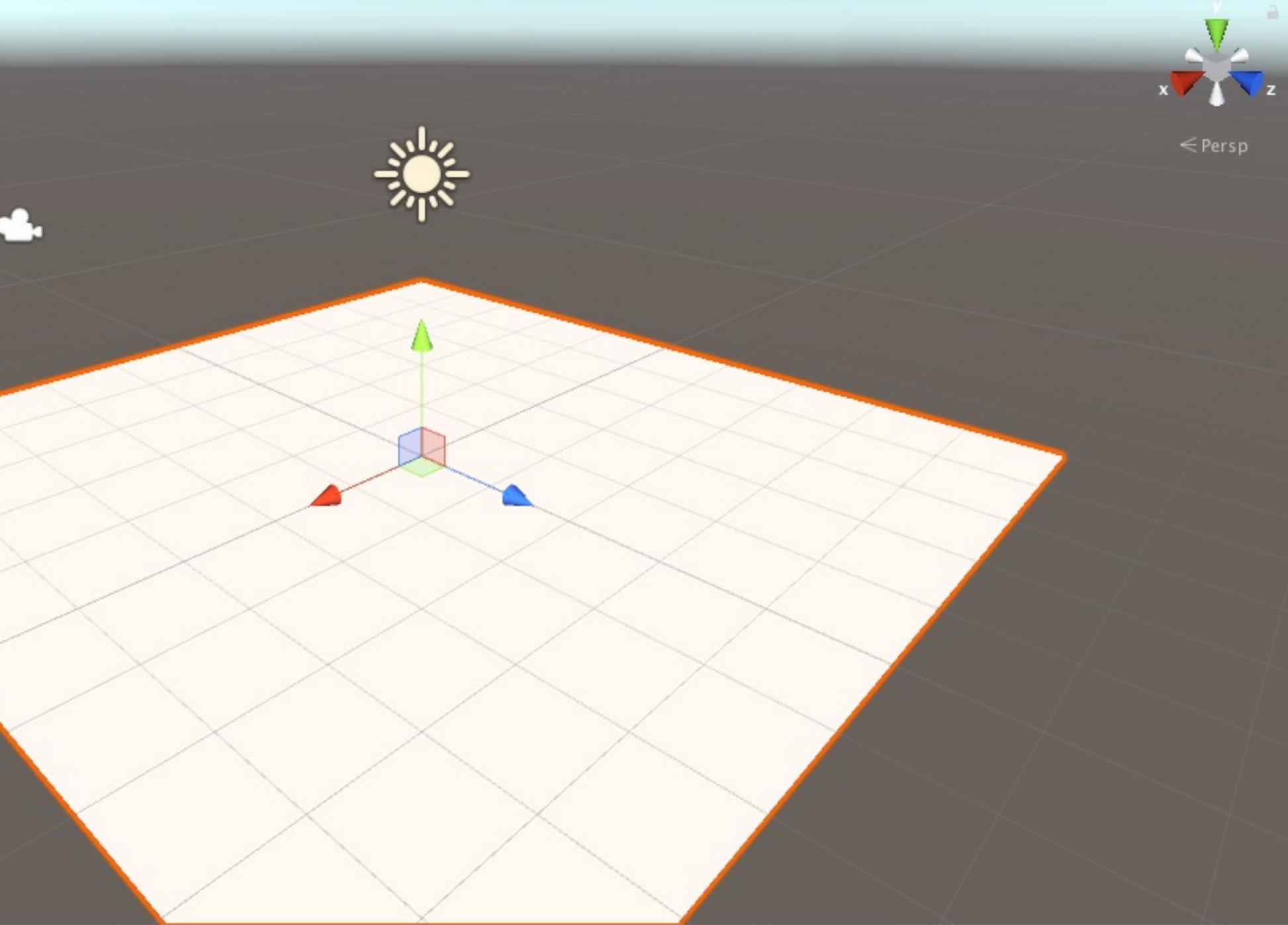
Scene Game Asset Store

Gizmos (Q+All)



Inspector Services

Go to Dashboard



Cardboard Sample

SERVICES

Unity provides you a suite of integrated services for creating games, increasing productivity and managing your audience.

SERVICES MEMBERS AGE DESIGNATION SETTINGS

Collaborate Create together seamlessly

In-App Purchasing Simplify cross-platform IAP

Ads Monetize your games

Multiplayer Easily implement multiplayer

Analytics Discover player insights

Performance Reporting Discover app errors

Cloud Build Build games faster

Project Console

Create

Favorites
All Materials
All Models
All Prefabs
All Scripts

Assets

This folder is empty

Assets

File Edit Assets GameObject Component Help Window



Center Local



Cloud Account Layers Layout

Hierarchy

Create

Q All

Untitled*

Main Camera

Directional Light

Plane

Scene

Game

Asset Store

Gizmos

Q All

Shaded

2D

Lights

Audio

Image

Model

Script

Material

Texture

Font

Light

Effect

Shader

Animation

Sound

Movie

Object

Folder

Link

Resource

Placeholder

Empty

Scriptable Object

Editor Script

Editor Placeholder

Editor Resource

Editor Empty

Editor Scriptable Object

Editor Placeholder

Editor Resource

Editor Empty

Editor Scriptable Object

Editor Placeholder

Editor Resource

Editor Empty

Editor Scriptable Object

Editor Placeholder

Editor Resource

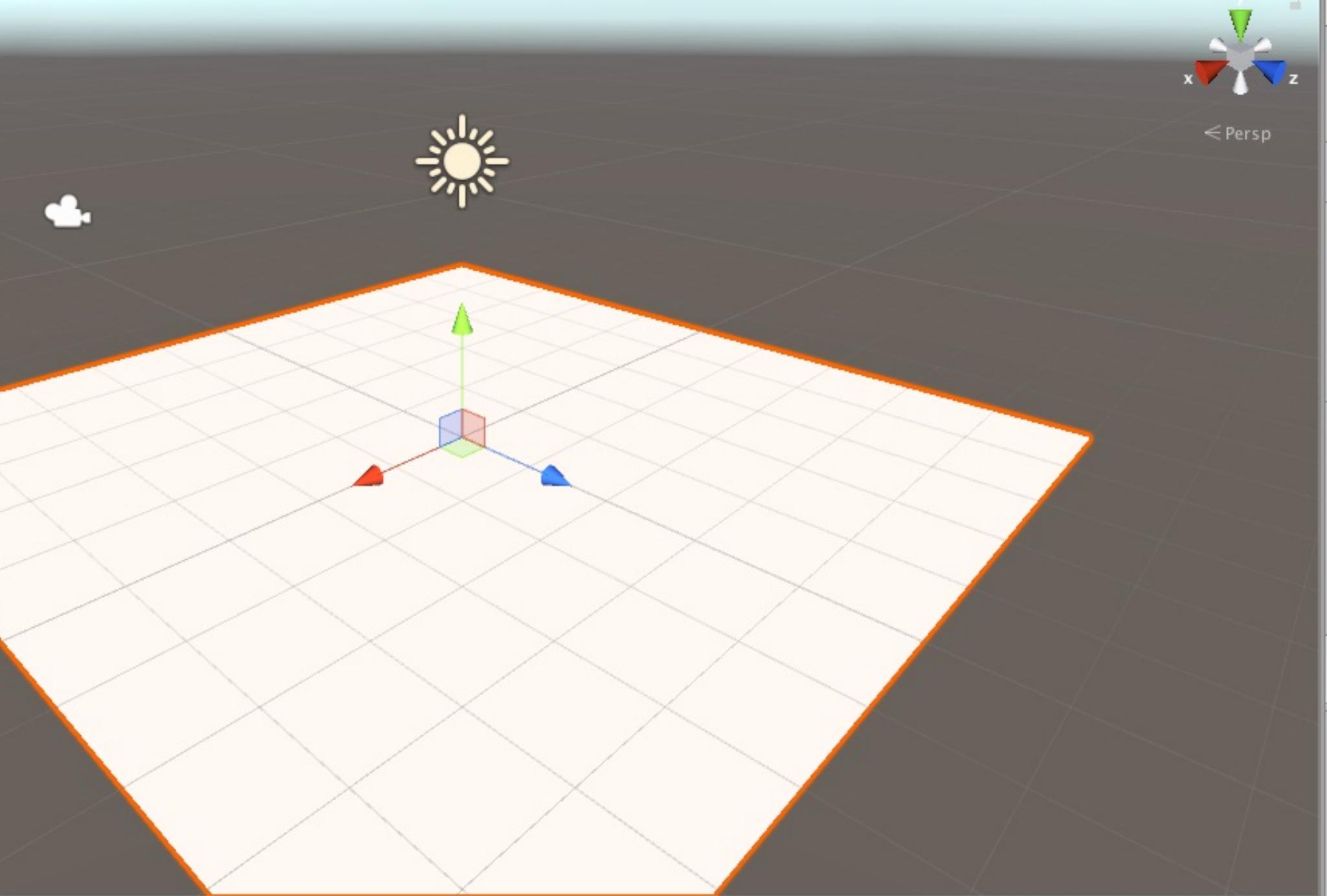
Editor Empty

Editor Scriptable Object

Editor Placeholder

Editor Resource

Editor Empty



Inspector Services

Plane

Tag Untagged

Layer Default

Transform

Position X 0 Y 0 Z 0

Rotation X 0 Y 0 Z 0

Scale X 1 Y 1 Z 1

Plane (Mesh Filter)

Mesh Plane

Mesh Collider

Convex

Inflate Mesh

Skin Width 0.01

Is Trigger

Material None (Physic Material)

Mesh Plane

Mesh Renderer

Cast Shadows On

Receive Shadows

Motion Vectors Per Object Motion

Materials

Light Probes Blend Probes

Reflection Probes Blend Probes

Anchor Override None (Transform)

Default-Material

Shader Standard

Add Component

Project Console

Create

Favorites

All Materials

All Models

All Prefabs

All Scripts

Assets

Assets

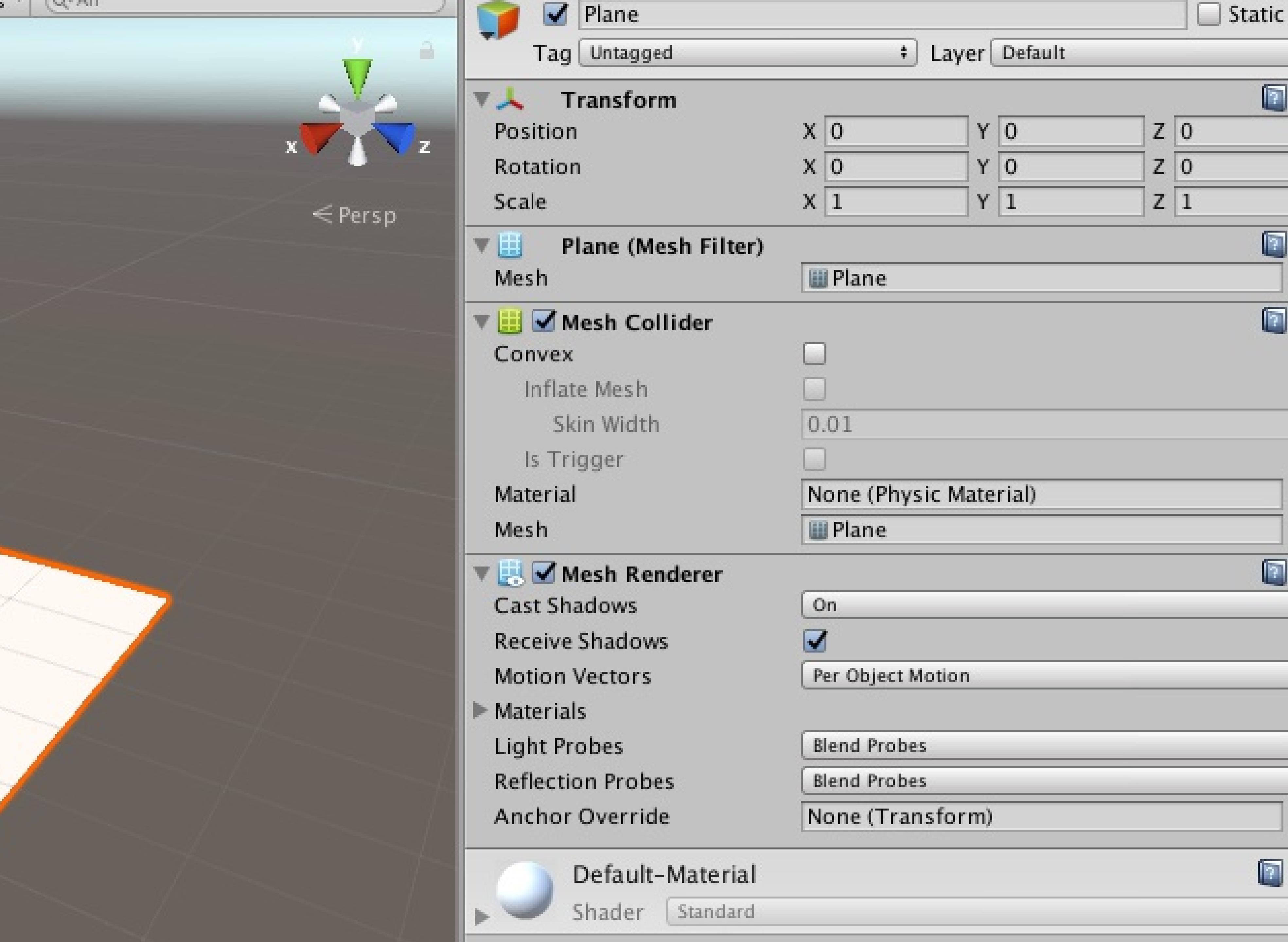
This folder is empty

Search

Filter

Sort

Star



File Edit Assets GameObject Component Help Window



Center Local



Cloud Account Layers Layout

Hierarchy

Create Q All

Untitled*

Main Camera

Directional Light

Plane

Scene Game Asset Store

Shaded 2D

Gizmos

Q All

2D

3D

Light

Audio

Image

Model

Prefab

Script

Shader

Material

Component

Editor

Resource

Scene

Project

Library

Assets

Find

Help

Window



Inspector Services

Plane

Tag Untagged

Layer Default

Static

Transform

Position X 0 Y 0 Z 0

Rotation X 0 Y 0 Z 0

Scale X 10 Y 1 Z 10

Plane (Mesh Filter)

Mesh

Mesh Collider

Convex

Inflate Mesh

Skin Width

Is Trigger

Material

None (Physic Material)

Mesh

Mesh Renderer

Cast Shadows

Receive Shadows

Motion Vectors

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Light Probes

Reflection Probes

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Add Component

Project Console

Create

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All Models

All Prefabs

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Assets

Assets

This folder is empty

File Edit Assets **GameObject** Component Help Window

Create Empty Shift+Ctrl+N
Create Empty Child Shift+Alt+N
3D Object ►
Cube
Sphere
Capsule
Cylinder
Plane
2D Object
Light
Audio
UI
Particle System
Camera
Center On Children
Make Parent
Clear Parent
Apply Changes To Prefab
Break Prefab Instance
Set as first sibling
Set as last sibling
Move To View Ctrl+Alt+F
Align With View Shift+Ctrl+F
Align View to Selected
Toggle Active State Shift+Alt+A

Game Asset Store Gizmos Q>All Persp

Plane Tag Untagged Layer Default

Transform Position X 0 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 10 Y 1 Z 10

Plane (Mesh Filter) Mesh Plane

Mesh Collider Convex Inflat Mesh Skin Width 0.01 Is Trigger Material None (Physic Material) Mesh Plane

Mesh Renderer Cast Shadows On Receive Shadows Motion Vectors Per Object Motion Materials Light Probes Blend Probes Reflection Probes Blend Probes Anchor Override None (Transform)

Default-Material Shader Standard Add Component

Project Console

Favorites All Materials All Models All Prefabs All Scripts

Assets This folder is empty

File Edit Assets GameObject Component Help Window



Hierarchy

Untitled*

- Main Camera
- Directional Light
- Plane
- Cube

Scene

Shaded 2D



File Edit Assets GameObject Component Help Window



Center Local



Cloud Account Layers Layout

Hierarchy

Create Q All
Untitled*
Main Camera
Directional Light
Plane
Cube

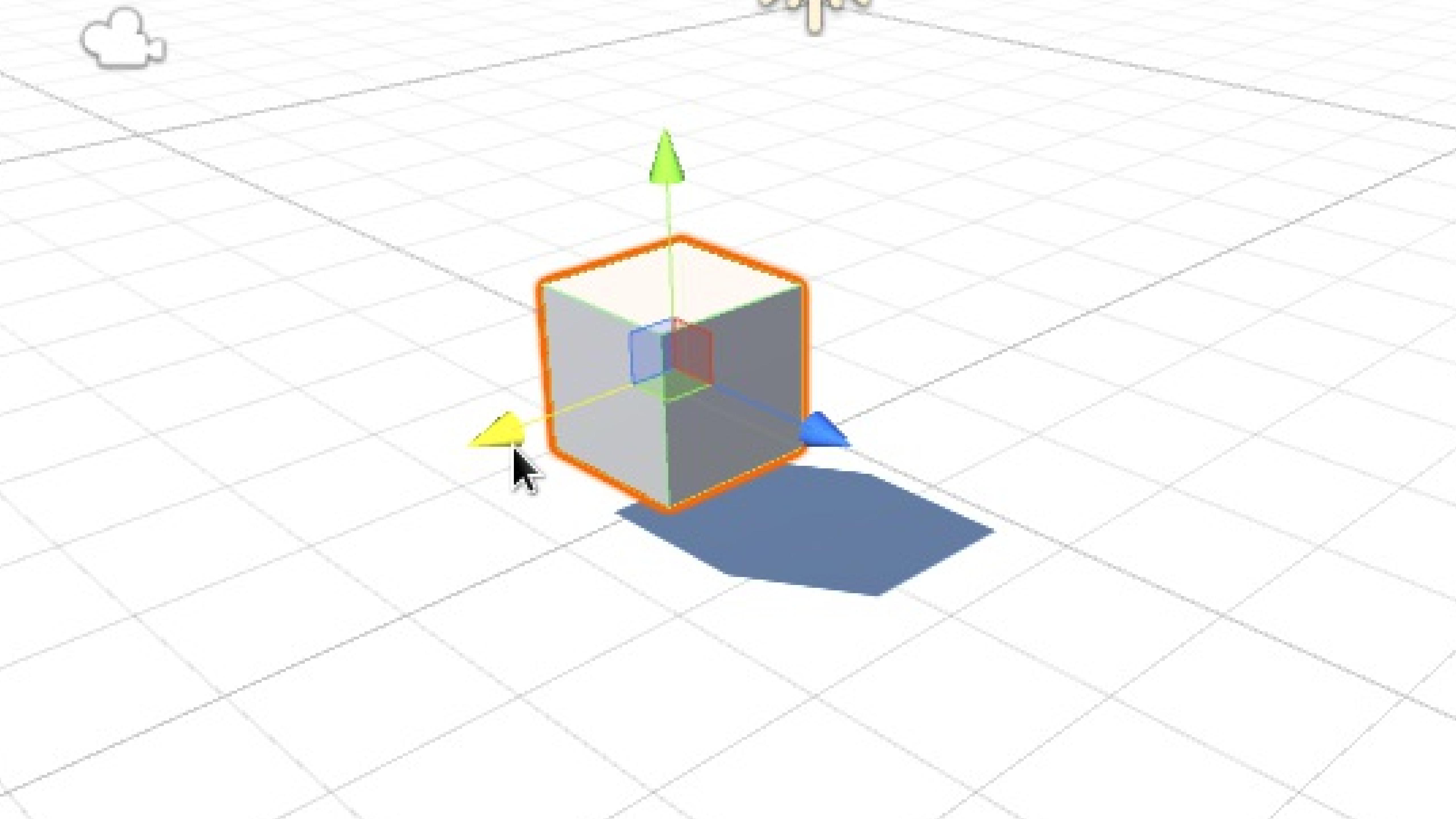
Scene Game Asset Store

Gizmos Q All

Shaded 2D 3D

2D 3D

3



File Edit Assets GameObject Component Help Window



Center Local



Cloud Account Layers Layout

Hierarchy

Create (Q) All Untitled*

Main Camera

- Directional Light
- Plane
- Cube
- Sphere
- Capsule
- Cylinder

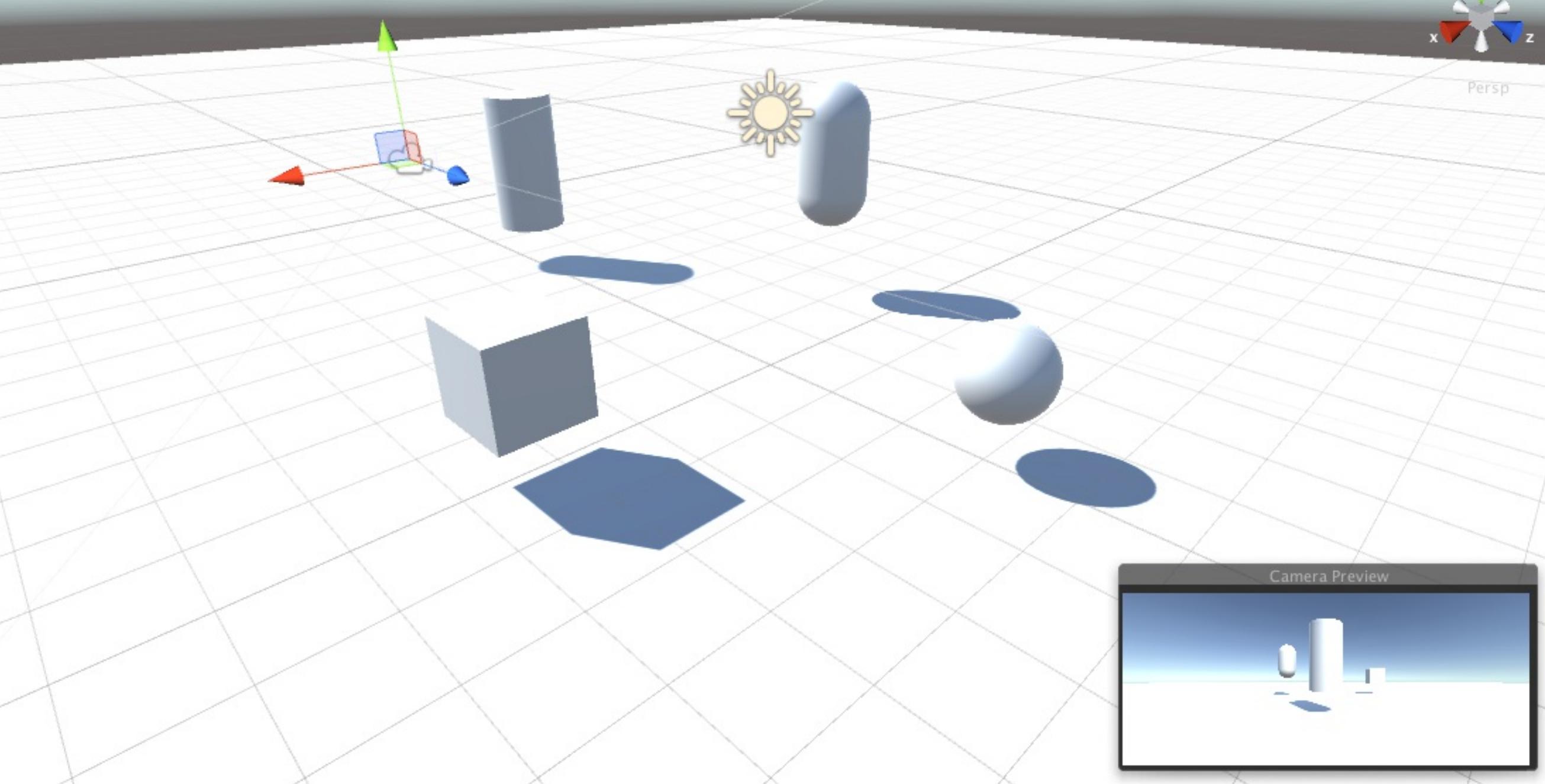
Scene

Game Asset Store

Shaded 2D (Q) All

Gizmos (Q) All

Persp



Inspector Services

Main Camera

Tag MainCamera

Layer Default

Transform

Position X 0 Y 1 Z -10
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

Camera

Skybox Everything
Background Perspective
Projection Field of View 60
Clipping Planes Near 0.3 Far 1000
Viewport Rect X 0 Y 0 W 1 H 1
Depth -1
Rendering Path Use Player Settings
Target Texture None (Render Texture)
Occlusion Culling
HDR
Target Display Display 1

GUI Layer

Flare Layer

Audio Listener

Add Component

Project Console

Create

Favorites

- All Materials
- All Models
- All Prefabs
- All Scripts

Assets

This folder is empty

Assets

Occclusion Culling

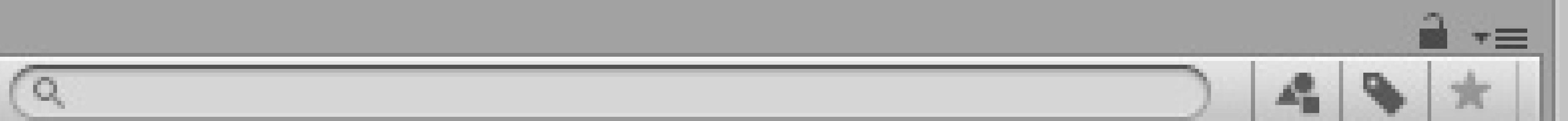
HDR

Target Display

GUI Layer

Flare Layer

Audio Listener



File Edit Assets GameObject Component Help Window

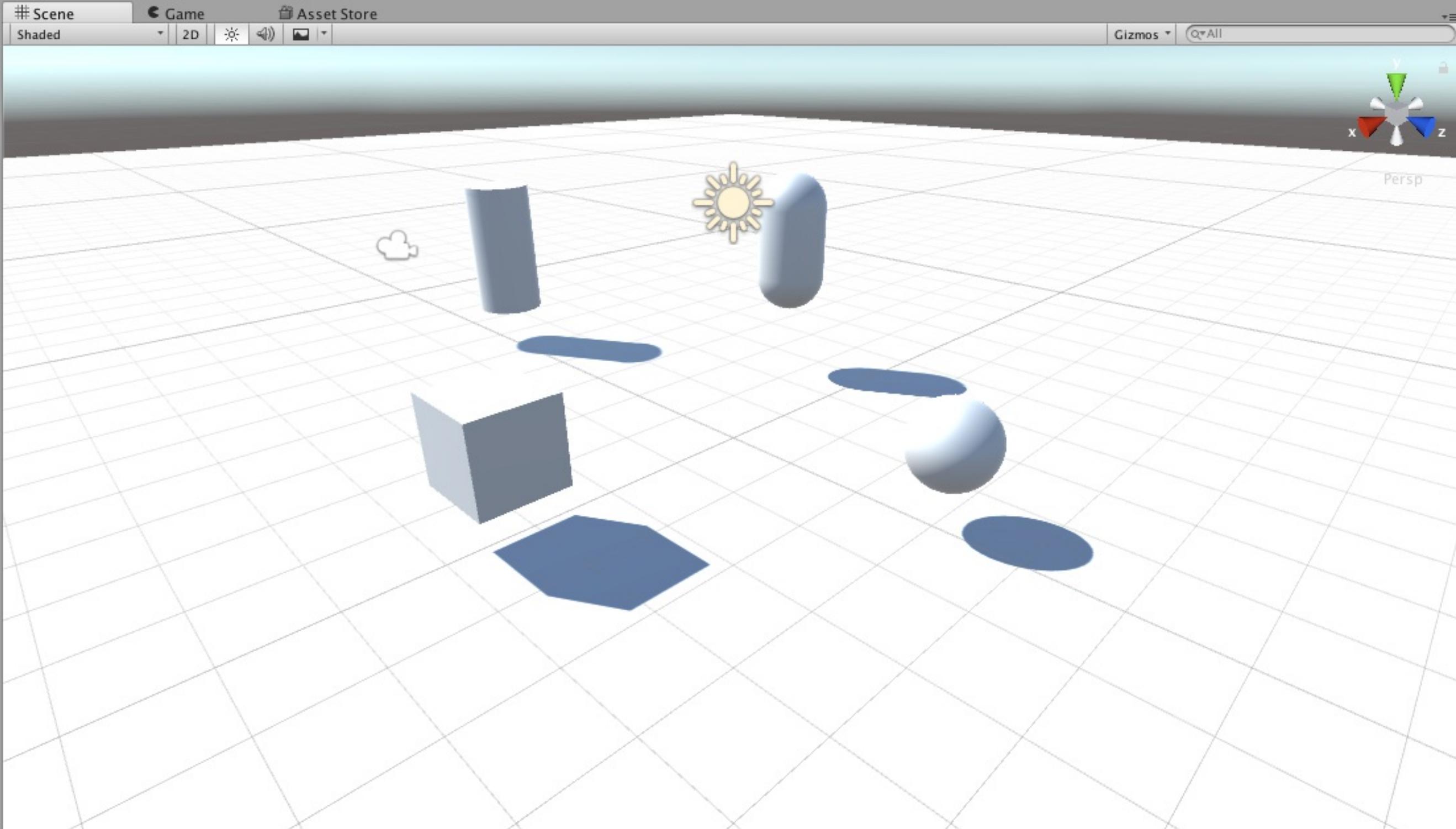


Cloud Account Layers Layout

Hierarchy

Create Untitled*

- Main Camera
- Directional Light
- Plane
- Cube
- Sphere
- Capsule
- Cylinder



Inspector

Asset Store: RedBeard_Bluestone WallV2.sbsar

Type	ProceduralMaterial
Part of package	
Name	Free Material 5 Pack
Version	1.0
Price	free
Rating	5 of 5
Size	559.74 KB
Asset count	8
Web page	http://u3d.as/r9x
Publisher	Russ Denny

Import package

Open Asset Store

Project

Create

Console

Favorites

- All Materials
- All Models
- All Prefabs
- All Scripts

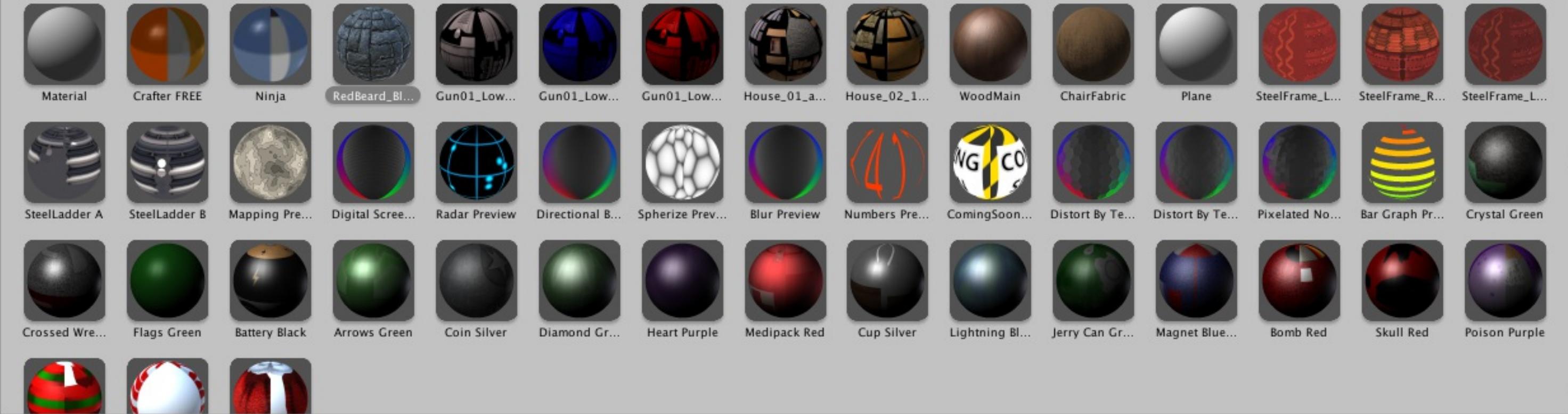
Assets

Selected folder

Asset Store: 999+ / 999+

Search: t:Material

16184 Total



Procedural Properties

Random Seed: Randomize 0
Randomizer: 1
Uniform / Random:

Generated Textures

Asset Store Preview



 Project

 Console

Create ▾

▼  Favorites

 All Materials

 All Models

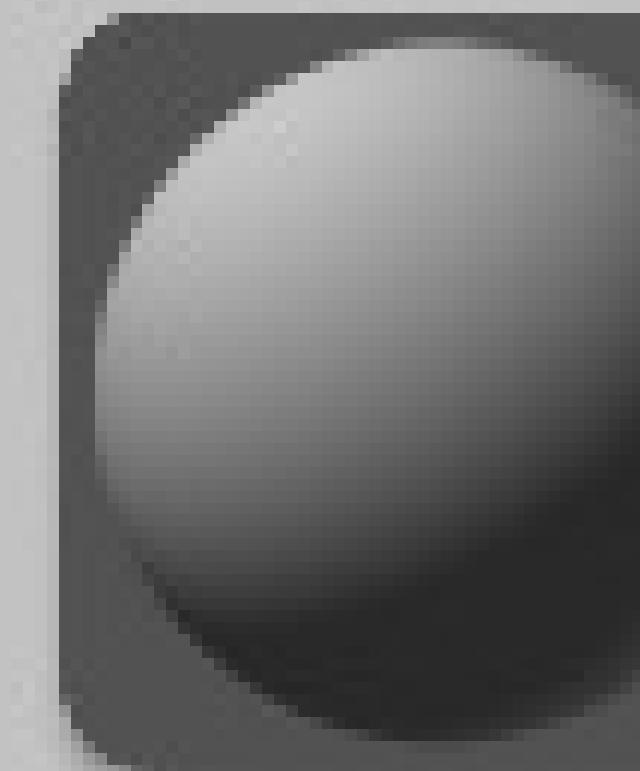
 All Prefabs

 All Scripts

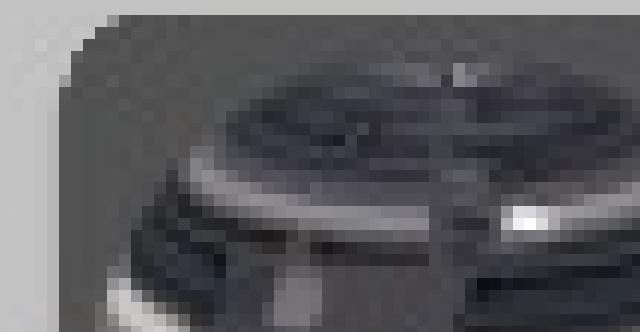
 Assets

Search: A

▼ Free Ass



Material



ected folder

Asset Store: 999+ / 999+





FREE



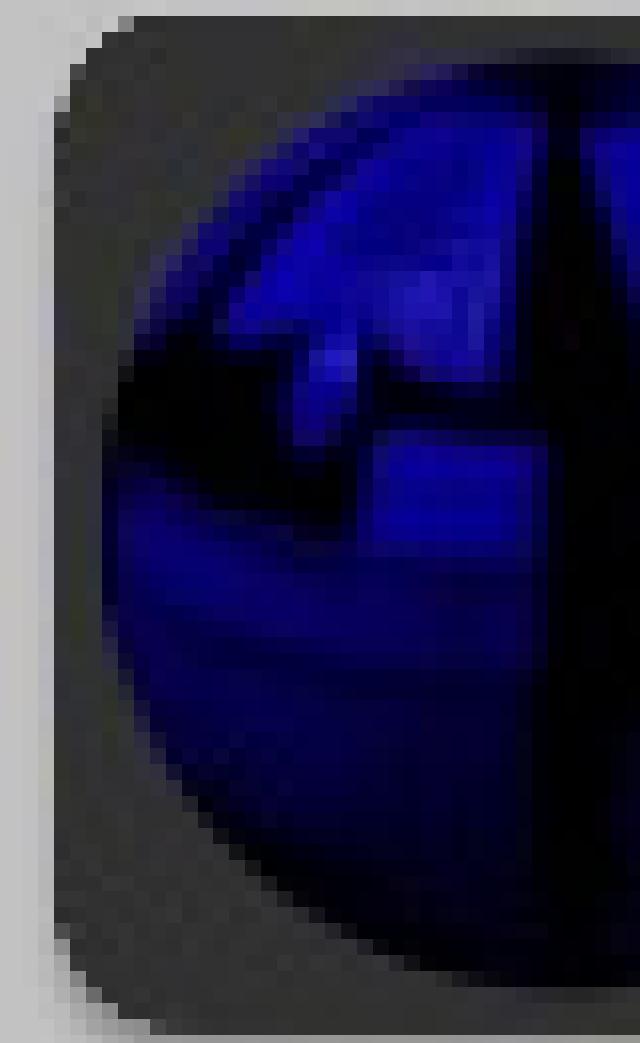
Ninja



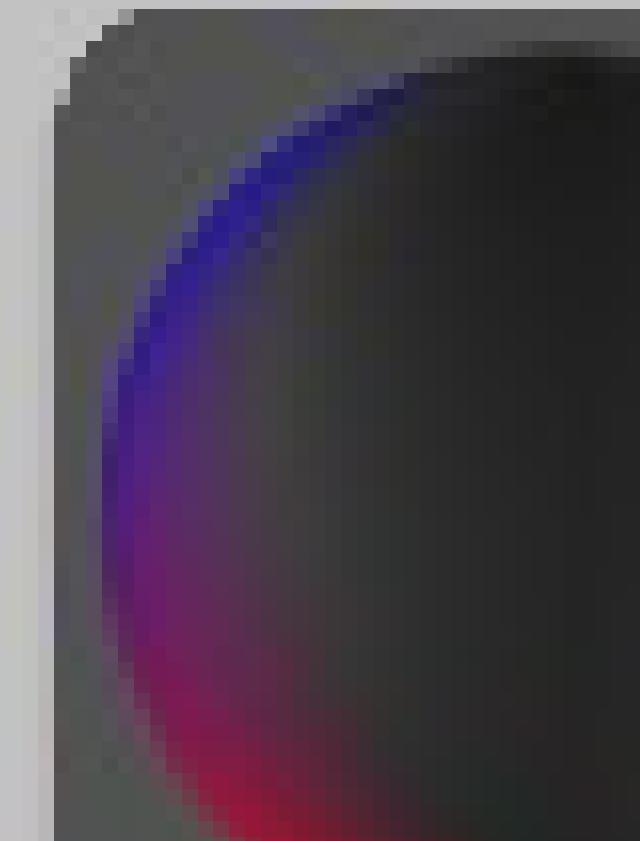
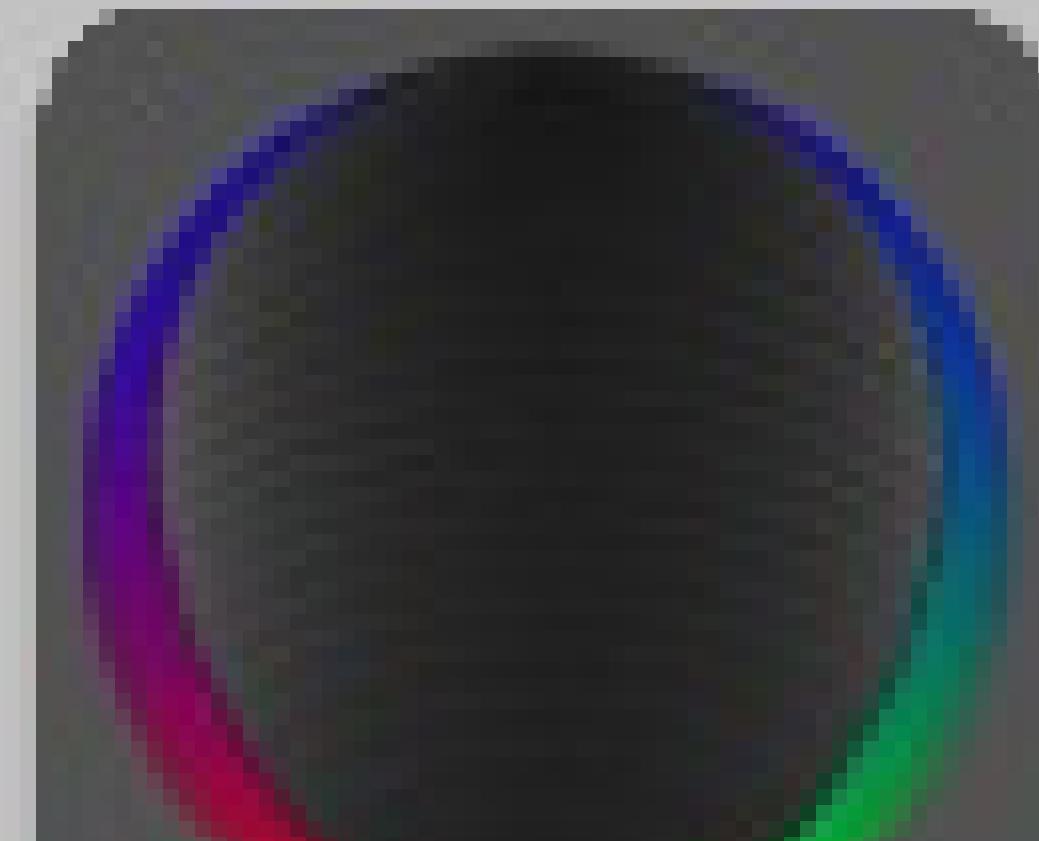
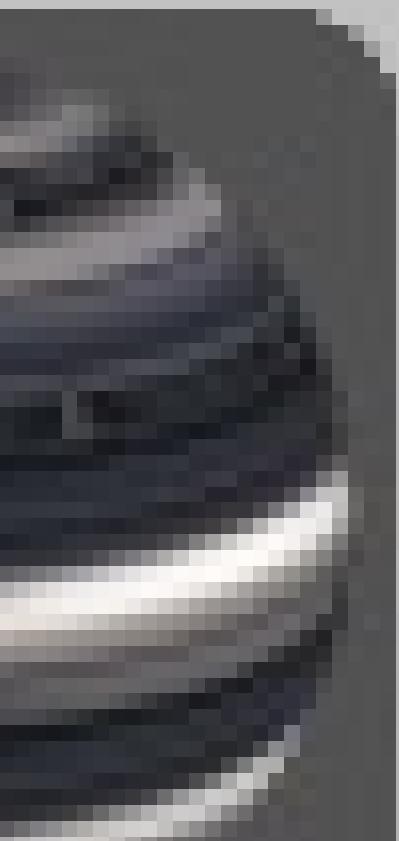
RedBeard_Blo...

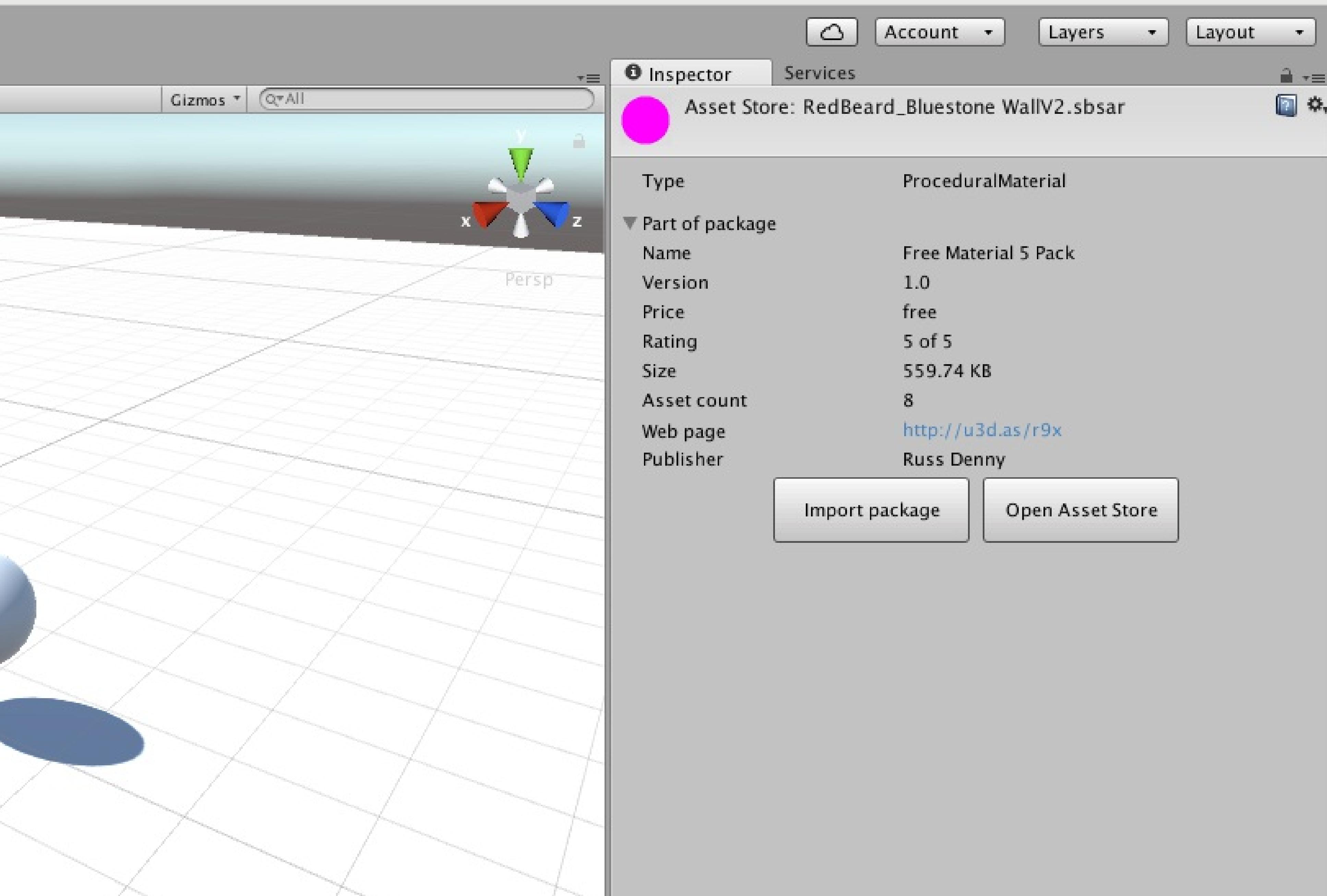


Gun01_Low...



Gun01_High...





Import Unity Package



Free Material 5 Pack

<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Editor	NEW
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ScreenshotTaker.cs	NEW
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RedBeard Substance Pack.unity	NEW
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RedBeard_Bluestone WallV2.sbsar	NEW
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RedBeard_ConcreteV2.sbsar	NEW
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RedBeard_OldWoodV2.sbsar	NEW
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RedBeard_RockGroundV2.sbsar	NEW
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	RedBeard_TilesV2.sbsar	NEW

All

None

Cancel

Import

File Edit Assets GameObject Component Help Tools Window

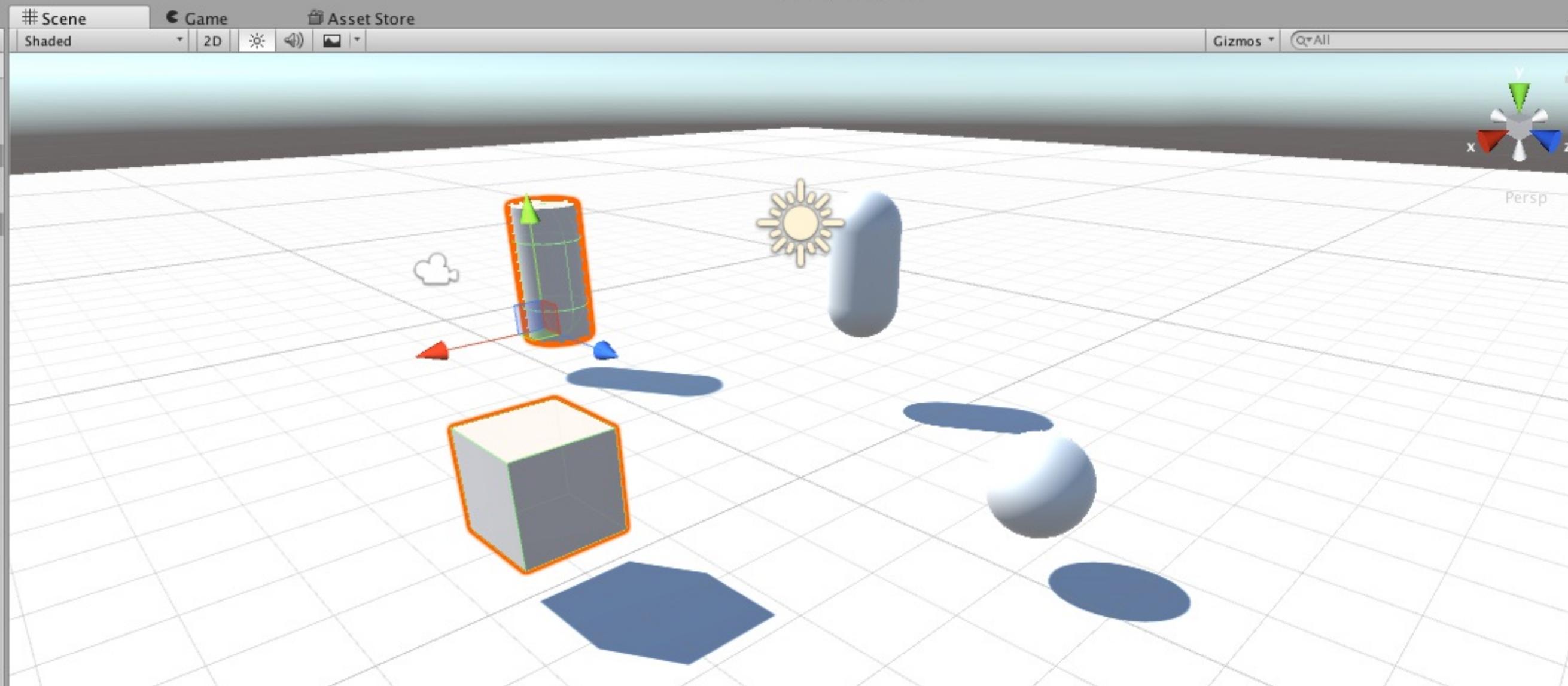


Hierarchy

Create (Q+All)

Untitled*

- Main Camera
- Directional Light
- Plane
- Cube
- Sphere
- Capsule
- Cylinder



Inspector

Services

Tag Untagged Layer Default

Transform

Position X: 0 Y: 0 Z: 0

Rotation X: 0 Y: 0 Z: 0

Scale X: 1 Y: 1 Z: 1

Cylinder (Mesh Filter)

Mesh

Mesh Renderer

Cast Shadows On

Receive Shadows

Motion Vectors Per Object Motion

Materials

Size 1

Element 0 Default-Material

Light Probes Blend Probes

Reflection Probes Blend Probes

Anchor Override None (Transform)

Default-Material

Shader Standard

Components that are only on some of the selected objects cannot be multi-edited.

Add Component

Select Mate... - □ ×

Assets Scene

None

RedBeard_BluestoneWall

RedBeard_Concrete

RedBeard_RockGround

RedBeard_Tiles

RedBeard_WoodWall

FrameDebuggerRenderTargetD

Default-Diffuse

Default-Material

Default-Particle

Default-Skybox

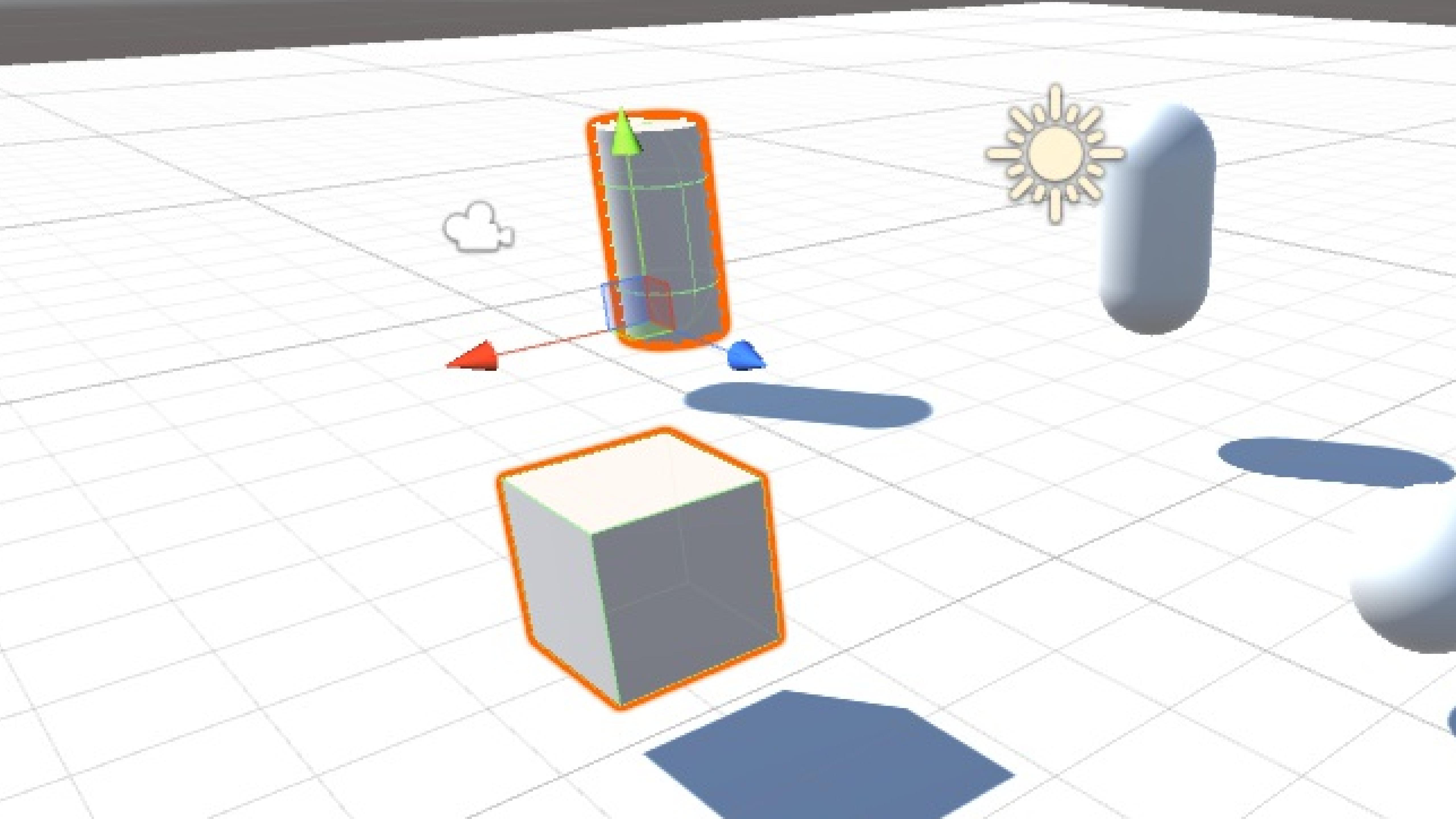
Sprites-Default

SpatialMappingOcclusion

SpatialMappingWireframe

Beard_B... RedBeard_B... RedBeard_B... RedBeard_B... RedBeard_B... RedBeard_C... RedBeard_O... RedBeard_Ro... RedBeard_Til... RedBeard_T... RedBeard_T...

Default-Material (Material) Res



Position

X —

Y —

Z —

Rotation

X 0

Y 0

Z 0

Scale

X 1

Y 1

Z 1

▼  Cylinder (Mesh Filter)  

Mesh

—

▼  Mesh Renderer  

Cast Shadows

On

Receive Shadows

Motion Vectors

Per Object Motion

▼ Materials

Size

1

Element 0

 Default-Material 

Light Probes

Blend Probes

Reflection Probes

Blend Probes

Anchor Override

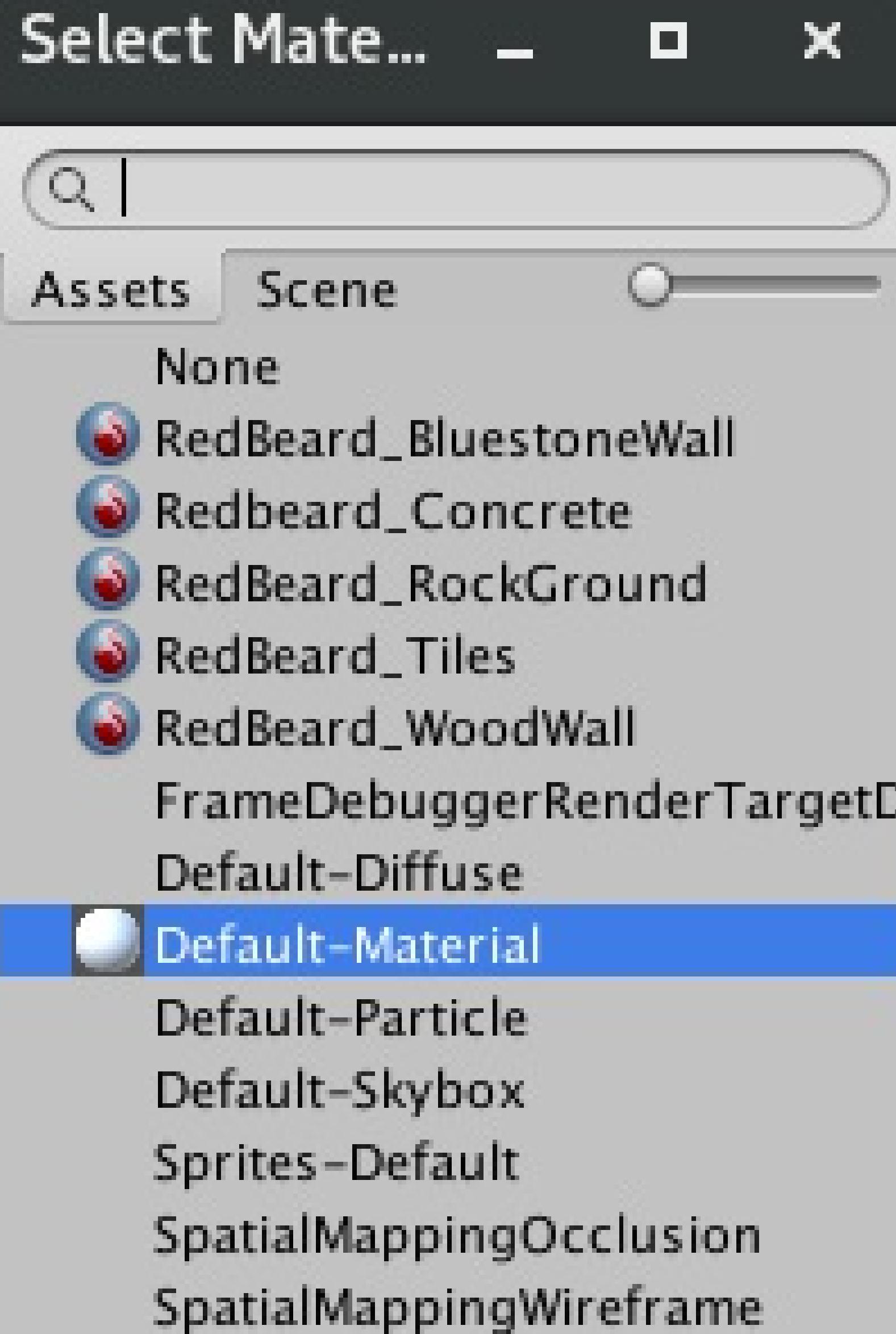
None (Transform) 

Default-Material



Shader Standard

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File Edit Assets GameObject Component Help Tools Window



Hierarchy

Untitled*

- Main Camera
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- Plane
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- Capsule
- Cylinder

Scene

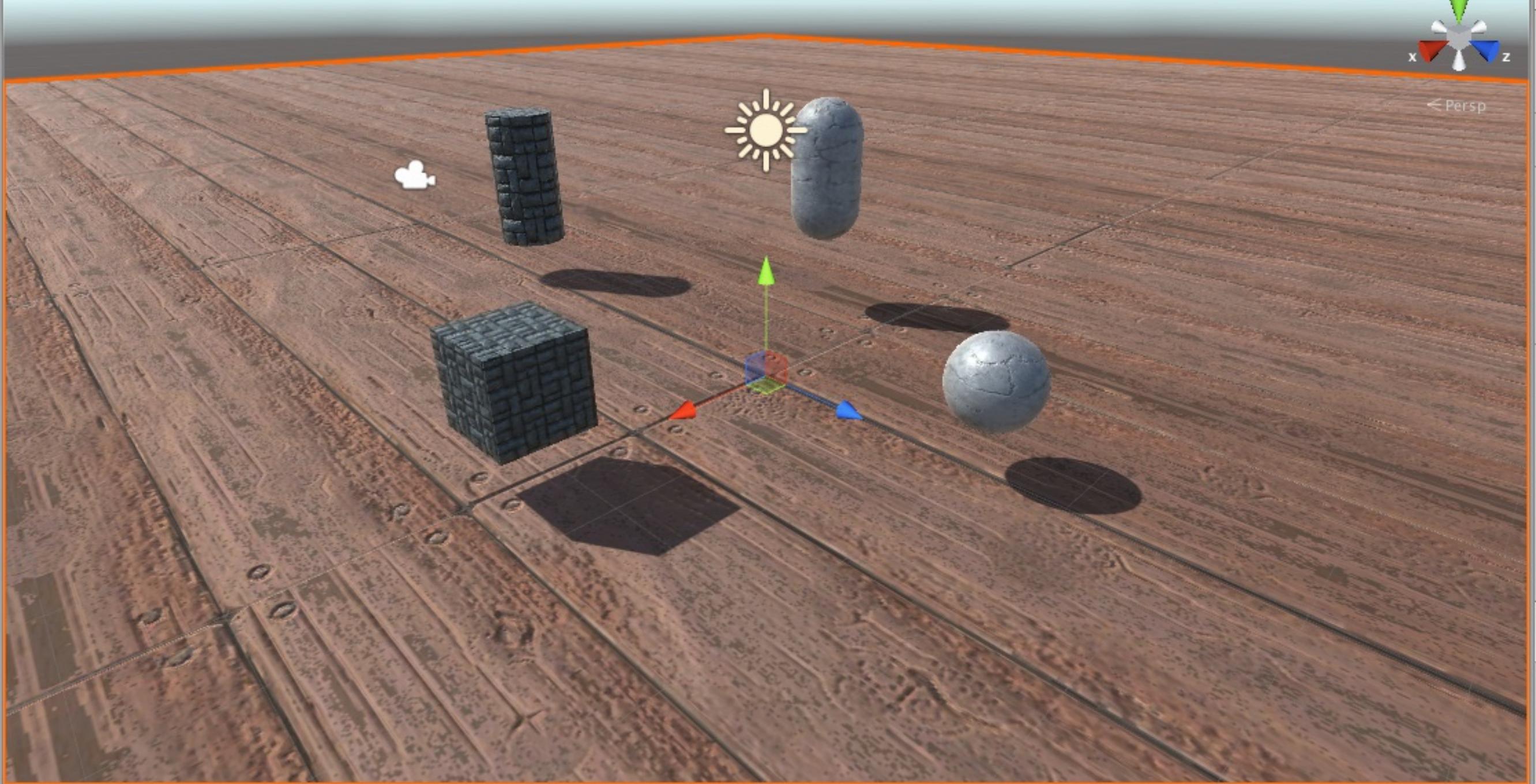
Shaded 2D

Gizmos

Asset Store



Cloud Account Layers Layout



Inspector

Plane

Tag Untagged

Layer Default

Transform

Position X 0 Y 0 Z 0

Rotation X 0 Y 0 Z 0

Scale X 10 Y 1 Z 10

Plane (Mesh Filter)

Mesh Plane

Mesh Collider

Convex

Inflate Mesh

Skin Width 0.01

Is Trigger

Material None (Physic Material)

Mesh Plane

Mesh Renderer

Cast Shadows On

Receive Shadows

Motion Vectors Per Object Motion

Materials

Size 1

Element 0 RedBeard_WoodWall

Light Probes Blend Probes

Reflection Probes Blend Probes

Anchor Override None (Transform)

RedBeard_WoodWall

Shader Standard

Rendering Mode

Opaque

Main Maps

Albedo

Metallic

Smoothness

Source

Normal Map

Height Map

Occlusion

Emission

Global Illumination Realtime

Detail Mask

Tiling X 10

Offset X 0

Secondary Maps

Detail Albedo x2

Normal Map

Tiling X 1

Offset X 0

UV Set UV0

Forward Rendering Options

Specular Highlights

Reflections

Procedural Properties

Generate all outputs

Generate Min Maps

Project

Create

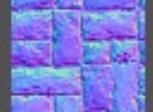
Console

Favorites

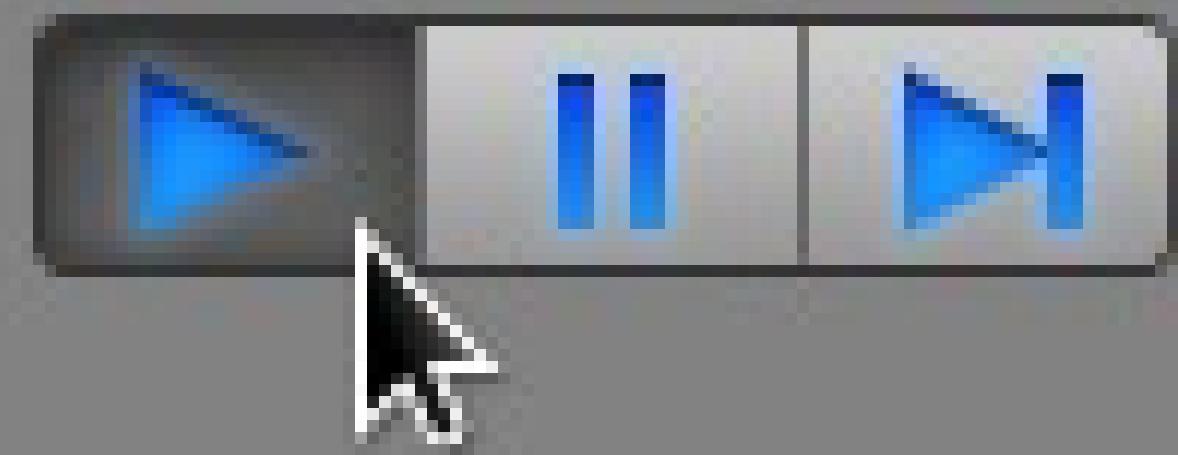
- All Materials
- All Models
- All Prefabs
- All Scripts

Assets

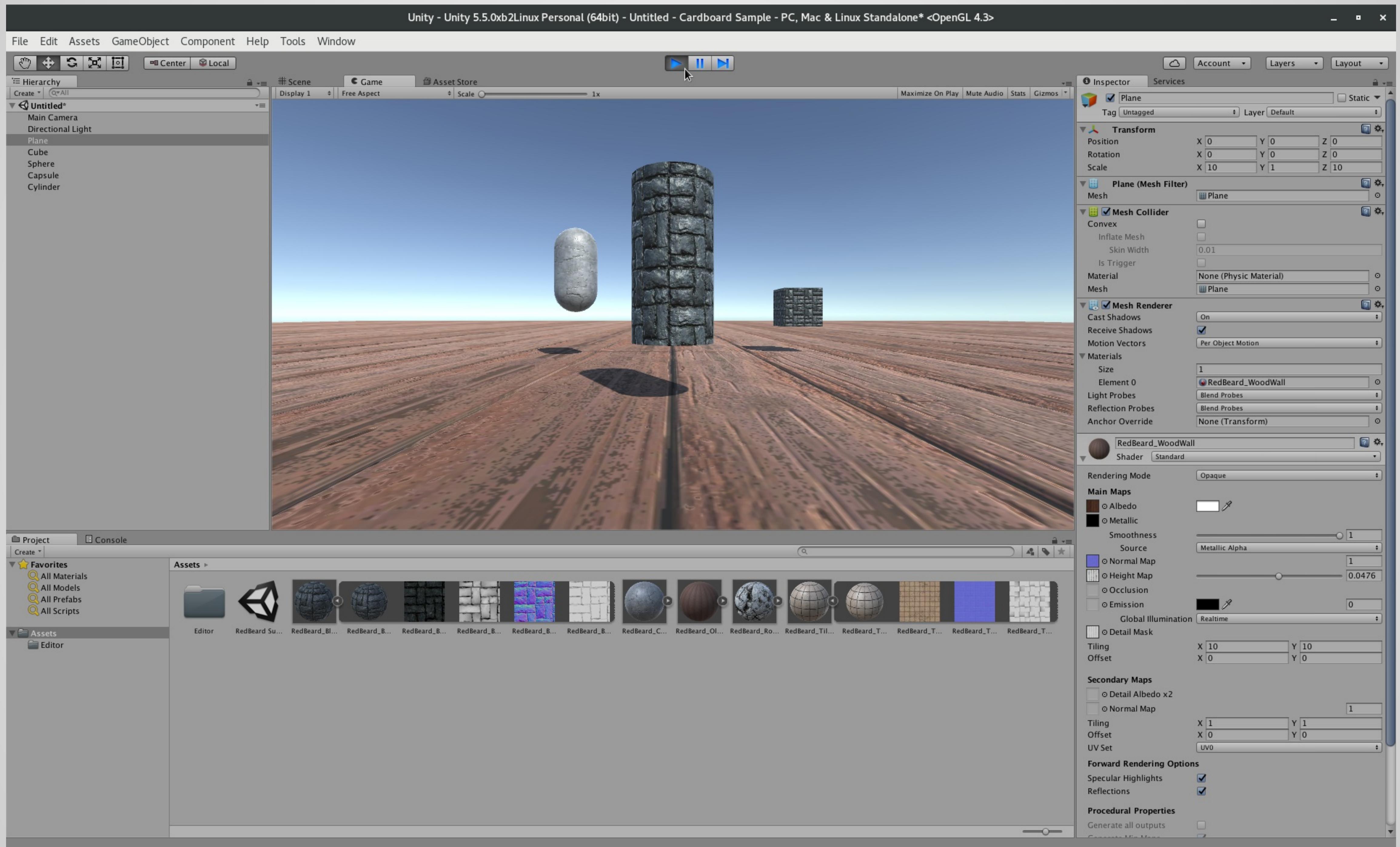
Editor



x Personal (64bit) - Untitled - Cardboard Sample - PC, Mac & Li



→ 1x



File Edit Assets GameObject Component Help Tools Window

Add... Shift+Ctrl+A

Hierarchy The tool handle is placed at the center of the selected object.

Create **Q+All**

Untitled*

- Main Camera
- Directional Light
- Plane
- Cube
- Sphere
- Capsule
- Cylinder

Physics Rigidbody

- Character Controller
- Box Collider
- Sphere Collider
- Capsule Collider
- Mesh Collider
- Wheel Collider
- Terrain Collider
- Cloth
- Hinge Joint
- Fixed Joint
- Spring Joint
- Character Joint
- Configurable Joint
- Constant Force

Asset Store

Gizmos **Gizmos** **Q+All**

Inspector Services

Tag Untagged **Layer** Default

Transform

Position	X	—	Y	—	Z	—
Rotation	X	0	Y	0	Z	0
Scale	X	1	Y	1	Z	1

Cylinder (Mesh Filter)

Mesh

Mesh Renderer

- Cast Shadows
- Receive Shadows
- Motion Vectors

Materials

- Size: 1
- Element 0
- Light Probes: Blend Probes
- Reflection Probes: Blend Probes
- Anchor Override: None (Transform)

Components that are only on some of the selected objects cannot be multi-edited.

Add Component

Project **Console**

Create

Favorites

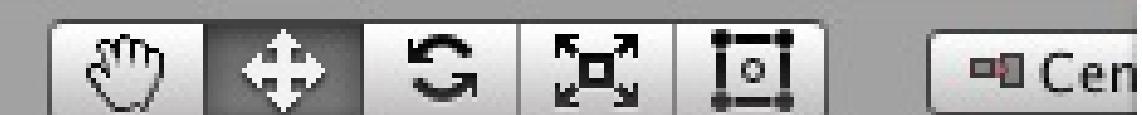
- All Materials
- All Models
- All Prefabs
- All Scripts

Assets

Editor RedBeard_Su... RedBeard_B... RedBeard_B... RedBeard_B... RedBeard_B... RedBeard_B... RedBeard_C... RedBeard_Ol... RedBeard_Ro... RedBeard_Til... RedBeard_T... RedBeard_T... RedBeard_T...



File Edit Assets GameObject Component Help Tools Window



Hierarchy The tool handle is placed at the selected object's center.
Create ▾ Q+A

Untitled*

- Main Camera
- Directional Light
- Plane
- Cube
- Sphere
- Capsule
- Cylinder

Add... Shift+Ctrl+A

Mesh ► Scene Asset Store

Effects ►

Physics ► Rigidbody

Physics 2D ► Character Controller

Navigation ► Box Collider

Audio ► Sphere Collider

Rendering ► Capsule Collider

Layout ► Mesh Collider

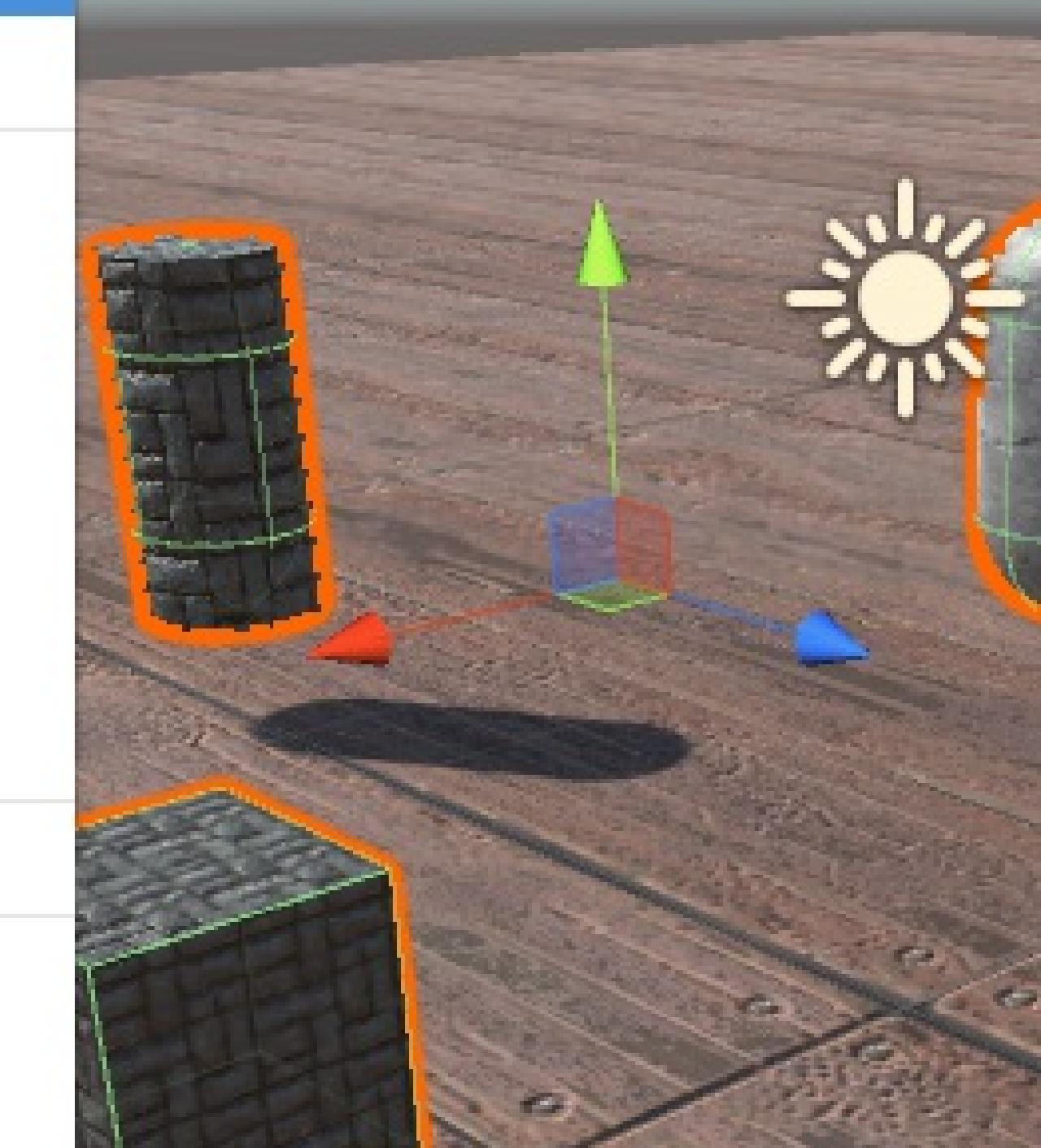
Miscellaneous ► Wheel Collider

Scripts ► Terrain Collider

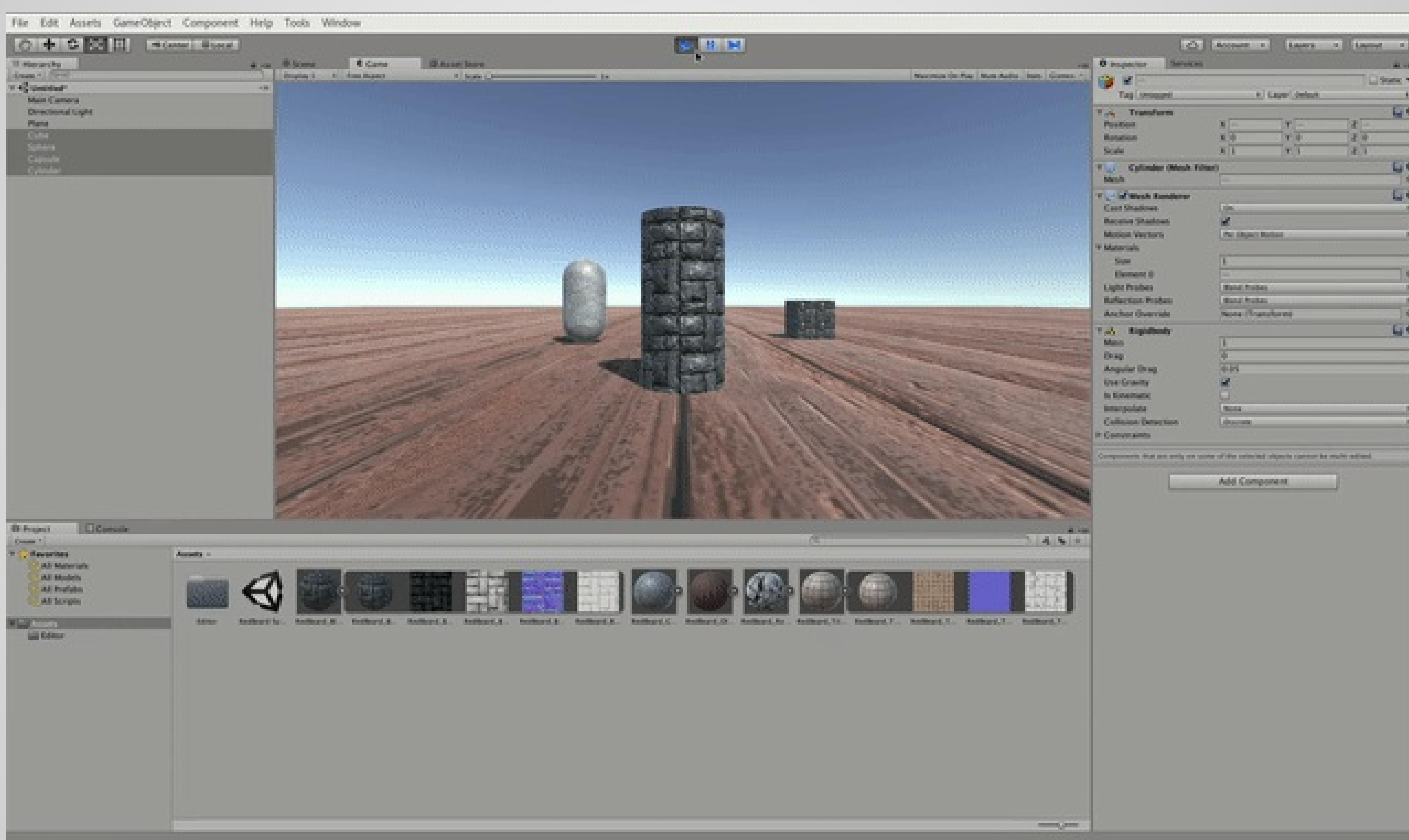
Analytics ► Cloth

Event ► Hinge Joint

Network ► Fixed Joint







File Edit Assets GameObject Component Help Tools Window



Center Local



Cloud Account Layers Layout

Hierarchy

Create (Q>All)
Untitled*
Main Camera
Directional Light
Plane
Cube
Sphere
Capsule
Cylinder
Cylinder (1)
Capsule (1)
Sphere (1)
Cube (1)
Capsule (2)
Capsule (3)
Cylinder (2)
Cube (2)
Cube (3)
Sphere (2)
Sphere (3)
Sphere (4)
Sphere (5)
Sphere (6)
Cube (4)
Cube (5)

Scene Game Asset Store

Shaded 2D

Gizmos (Q>All)

Persp

x y z

<Persp

← Persp

x y z

<Persp

File Edit Assets GameObject Component Help Tools Window



Hierarchy

Assets

Main Camera

Directional Light

Plane

Cube

Sphere

Capsule

Cylinder

Cube (1)

Capsule (1)

Sphere (1)

Cube (2)

Capsule (2)

Cylinder (2)

Cube (3)

Capsule (3)

Cylinder (3)

Cube (4)

Capsule (4)

Cylinder (4)

Cube (5)

Capsule (5)

Cylinder (5)

Cube (6)

Capsule (6)

Cylinder (6)

Cube (7)

Capsule (7)

Cylinder (7)

Cube (8)

Capsule (8)

Cylinder (8)

Cube (9)

Capsule (9)

Cylinder (9)

Cube (10)

Capsule (10)

Cylinder (10)

Cube (11)

Capsule (11)

Cylinder (11)

Cube (12)

Capsule (12)

Cylinder (12)

Cube (13)

Capsule (13)

Cylinder (13)

Cube (14)

Capsule (14)

Cylinder (14)

Cube (15)

Capsule (15)

Cylinder (15)

Cube (16)

Capsule (16)

Cylinder (16)

Cube (17)

Capsule (17)

Cylinder (17)

Cube (18)

Capsule (18)

Cylinder (18)

Cube (19)

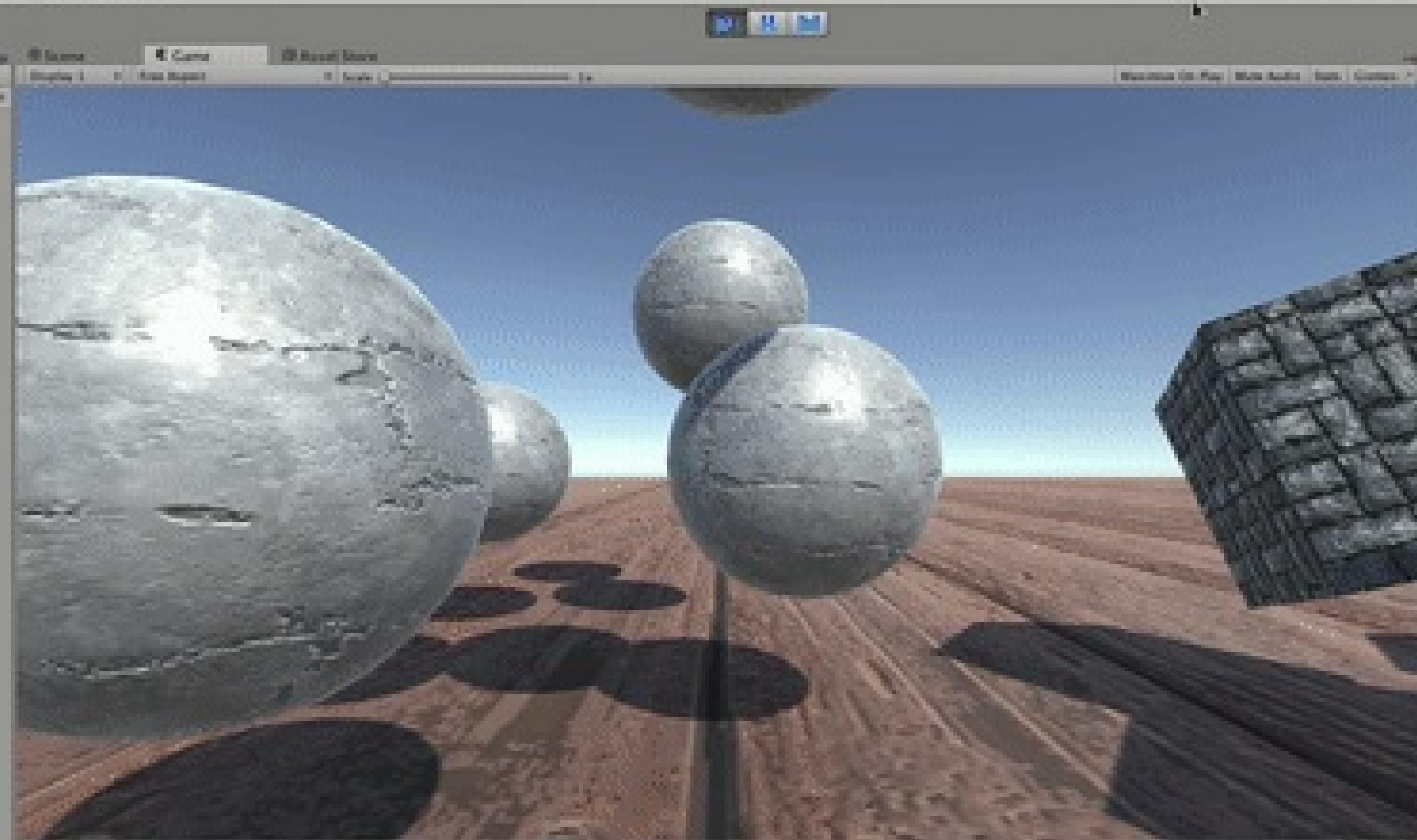
Capsule (19)

Cylinder (19)

Cube (20)

Capsule (20)

Cylinder (20)



Project

Assets

All Materials

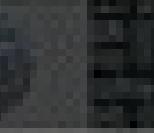
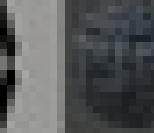
All Models

All Profiles

All Scripts



Editor



Cardboard_1

Cardboard_2

Cardboard_3

Cardboard_4

Cardboard_5

Cardboard_6

Cardboard_7

Cardboard_8

Cardboard_9

Cardboard_10

Cardboard_11

Cardboard_12

Cardboard_13

Cardboard_14

Cardboard_15

Cardboard_16

Cardboard_17

Cardboard_18

Cardboard_19

Cardboard_20

Cardboard_21

Cardboard_22

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Cardboard_110

Cardboard_111

Cardboard_112

Cardboard_113

Cardboard_114

Cardboard_115

Cardboard_116

Cardboard_117

Cardboard_118

Cardboard_119

File Edit **Assets** GameObject Component Help Tools Window

Create Open Containing Folder Open Open in Look Dev Delete Open Scene Additive Import New Asset... **Import Package** Custom Package... Export Package... Find References In Scene Select Dependencies Refresh Ctrl+R Reimport Reimport All Reimport All Run API Updater... Open C# Project

Scene Game Asset Store Shaded 2D Gizmos All Persp

Project Console

Favorites All Materials All Models All Prefabs All Scripts

Assets Editor RedBeard Su... RedBeard_Bl... RedBeard_C... RedBeard_Ol... RedBeard_Ro... RedBeard_Til... sample-scene

Assets Editor

Assets/Editor/ScreenshotTaker.cs(17,7): warning CS0414: The private field `Screenshot.showPreview' is assigned but its value is never used

File Edit **Assets** GameObject Component Help Tools Window



Create

Open Containing Folder

Open

Open in Look Dev

Delete

Open Scene Additive

Import New Asset...

Import Package

Export Package...

Find References In Scene

Capsule (1)

Cylinder (1)

Refresh

Ctrl+R

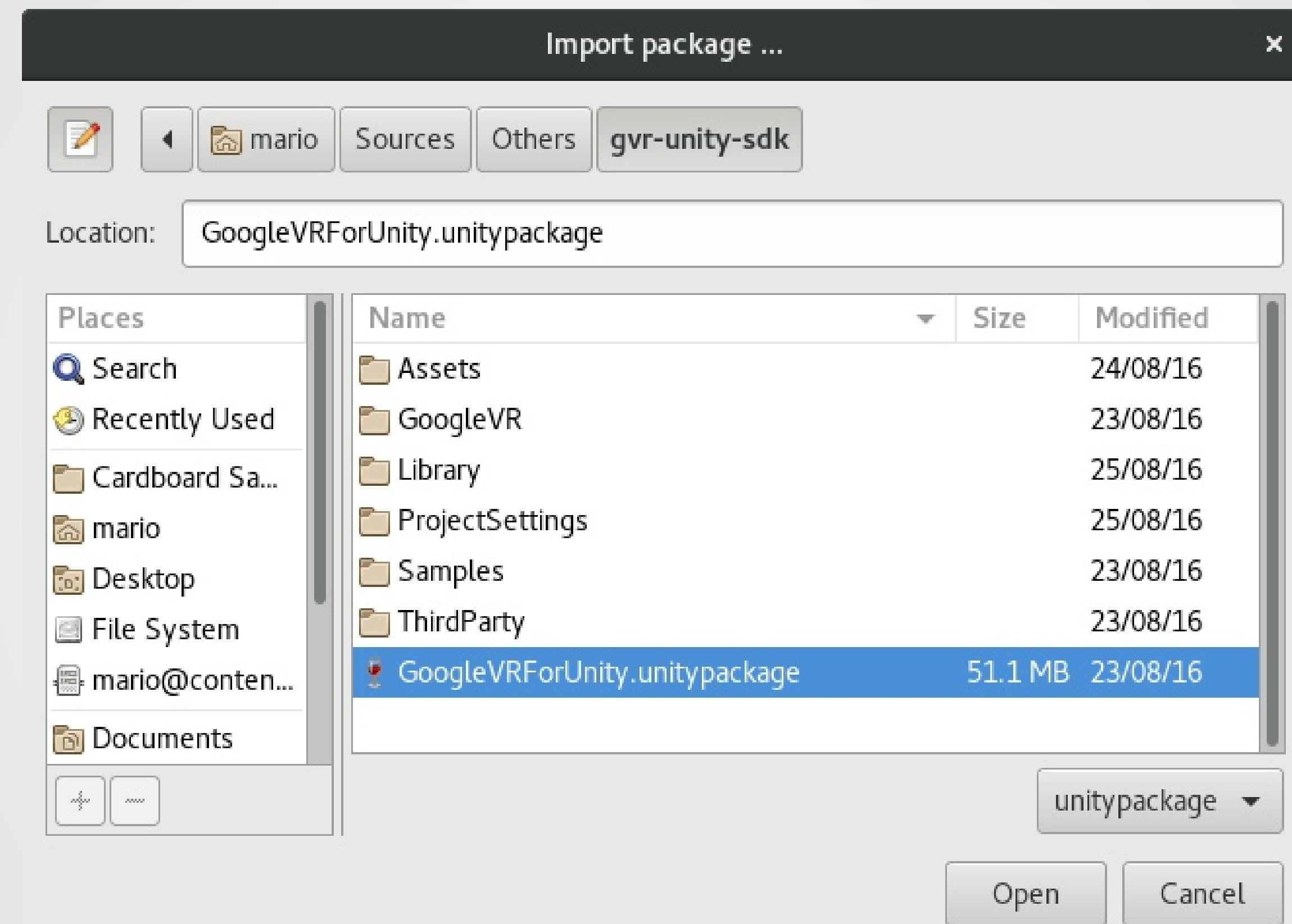
Reimport

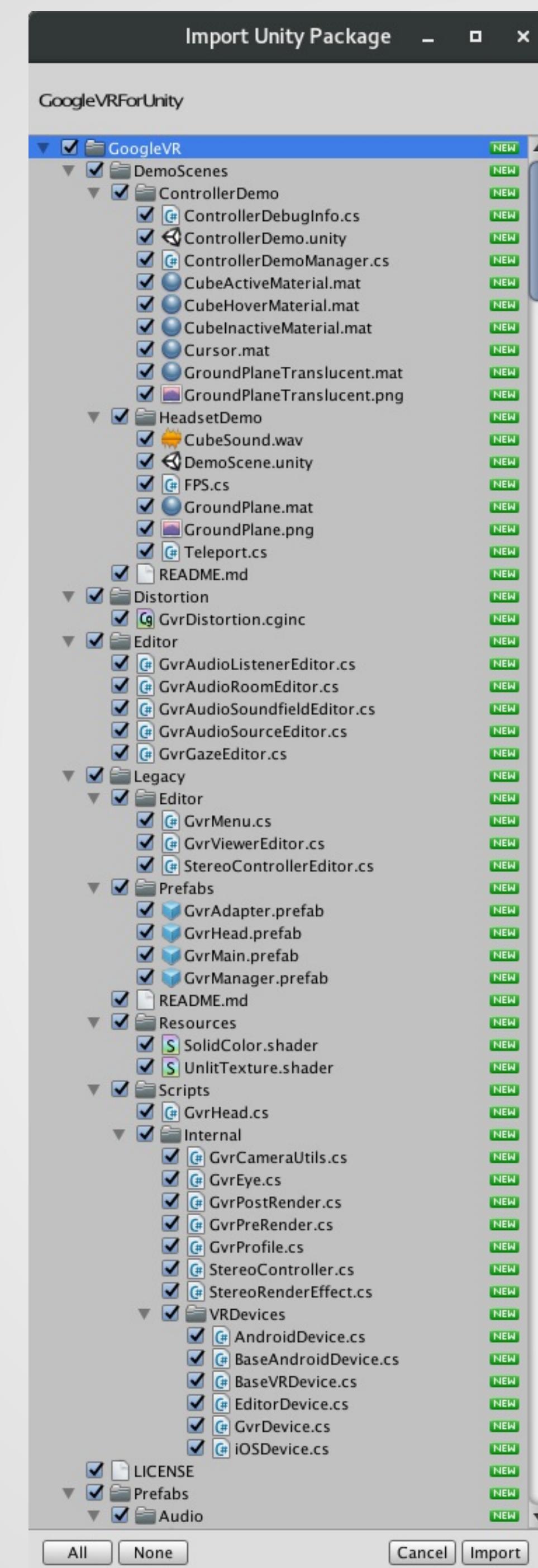
Reimport All

Run API Updater...

Scene Game Asset Store
Shaded 2D









API Update Required



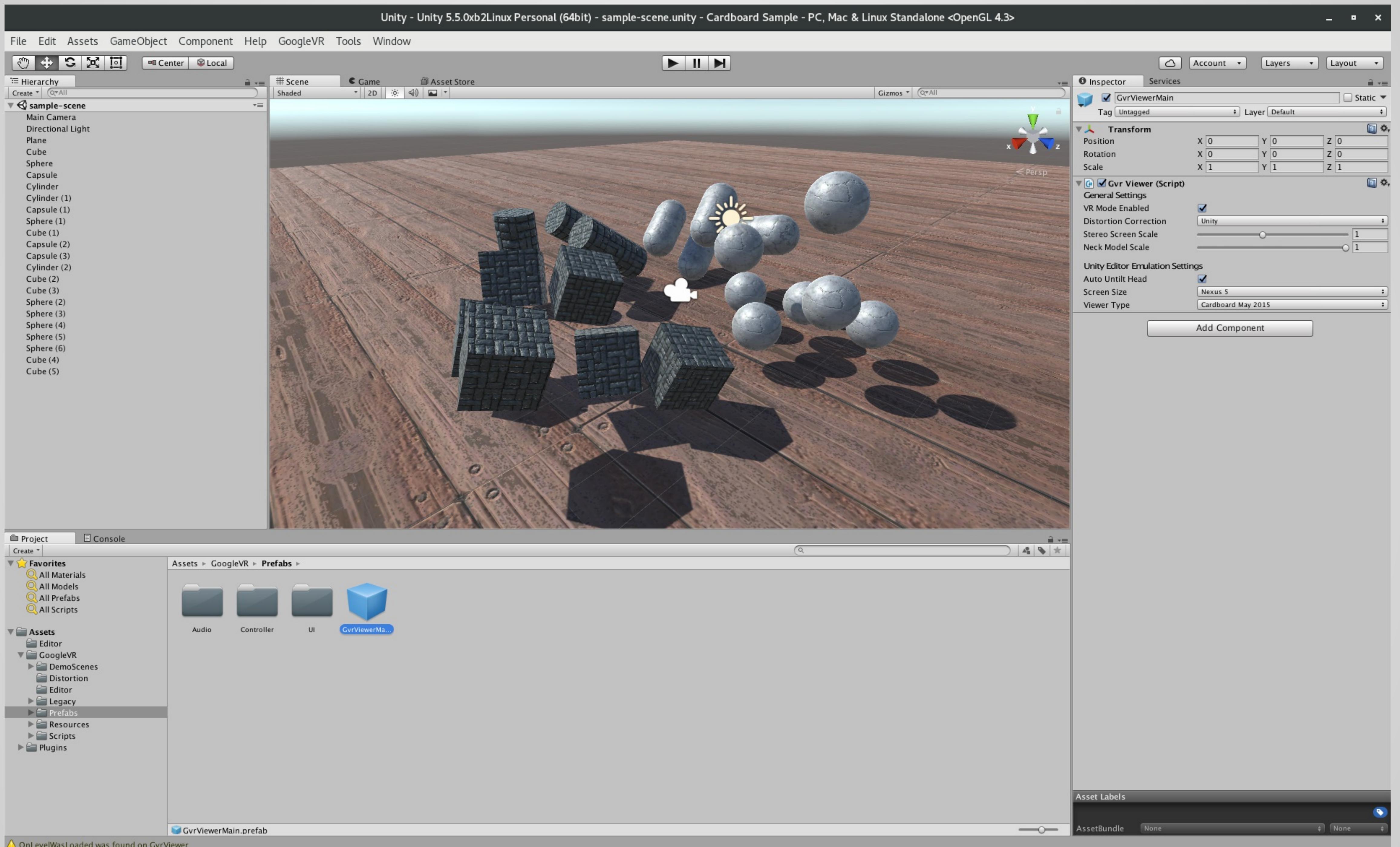
This project contains scripts and/or assemblies that use obsolete APIs.

If you choose 'Go Ahead', Unity will automatically upgrade any scripts/assemblies in the Assets folder found using the old APIs. You should make a backup before proceeding.

(You can always run the API Updater manually via the 'Assets/Run API Updater' menu command.)

I Made a Backup. Go Ahead!

No Thanks



Create ▾

▼ ★ Favorites

- 🔍 All Materials
- 🔍 All Models
- 🔍 All Prefabs
- 🔍 All Scripts

▼ Assets

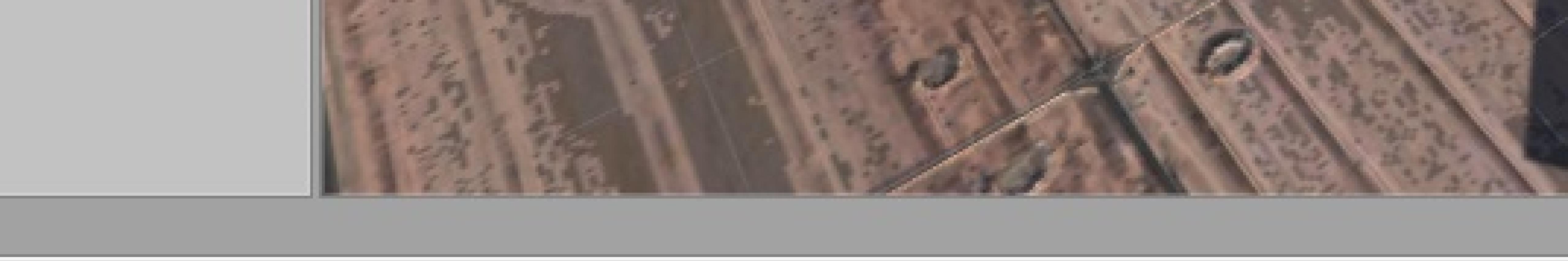
- 📁 Editor
- ▼ GoogleVR
 - ▶ DemoScenes
 - ▶ Distortion
 - ▶ Editor
 - ▶ Legacy
 - ▶ Prefabs
 - ▶ Resources
 - ▶ Scripts
 - ▶ Plugins

Assets ➔ GoogleVR ➔ Prefabs



Audio

Controller



Assets ▶ GoogleVR ▶ Prefabs ▶



Audio



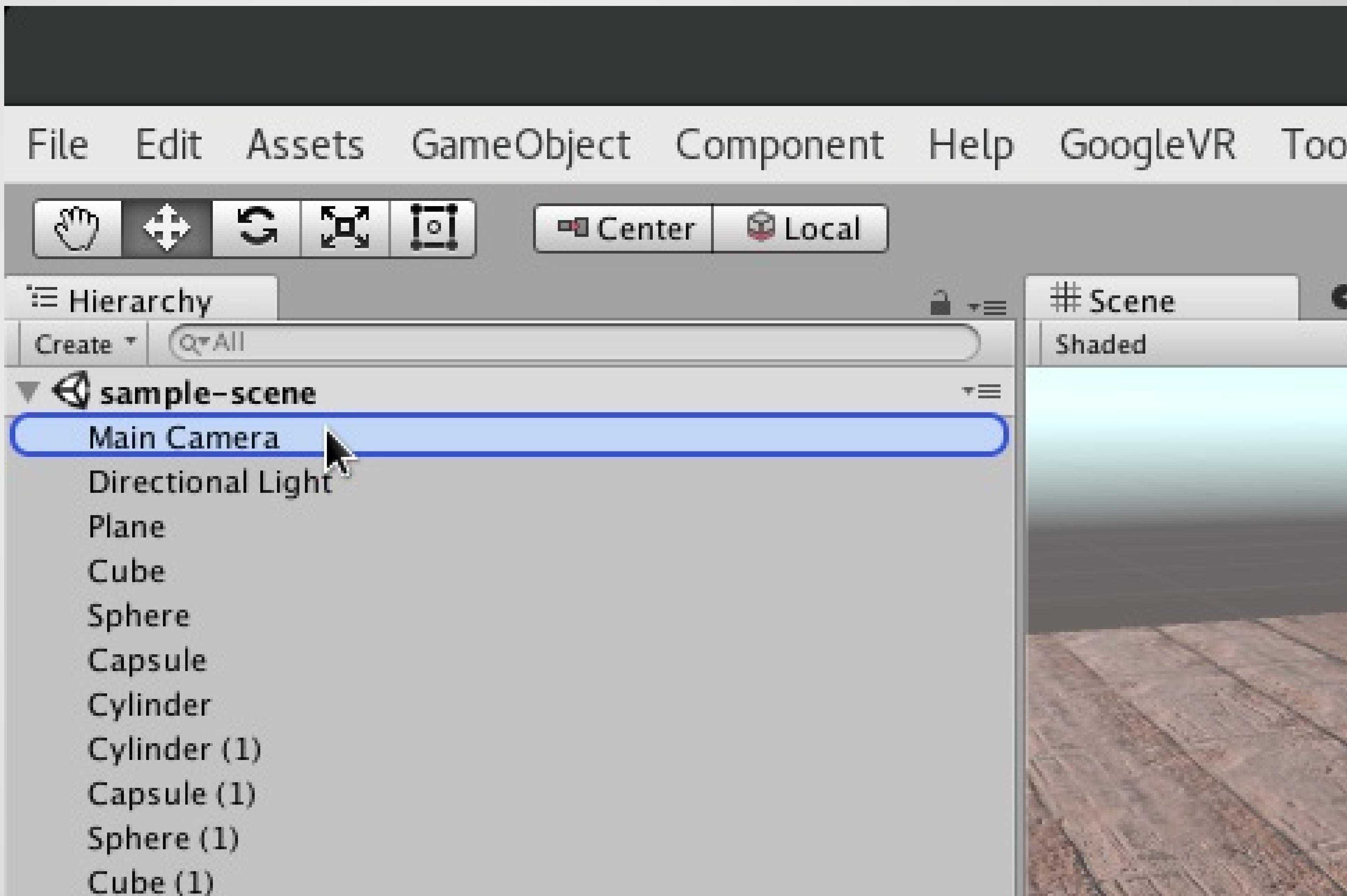
Controller



UI



GvrViewerMa...



File Edit Assets GameObject Component Help GoogleVR Tools Window



Center Local



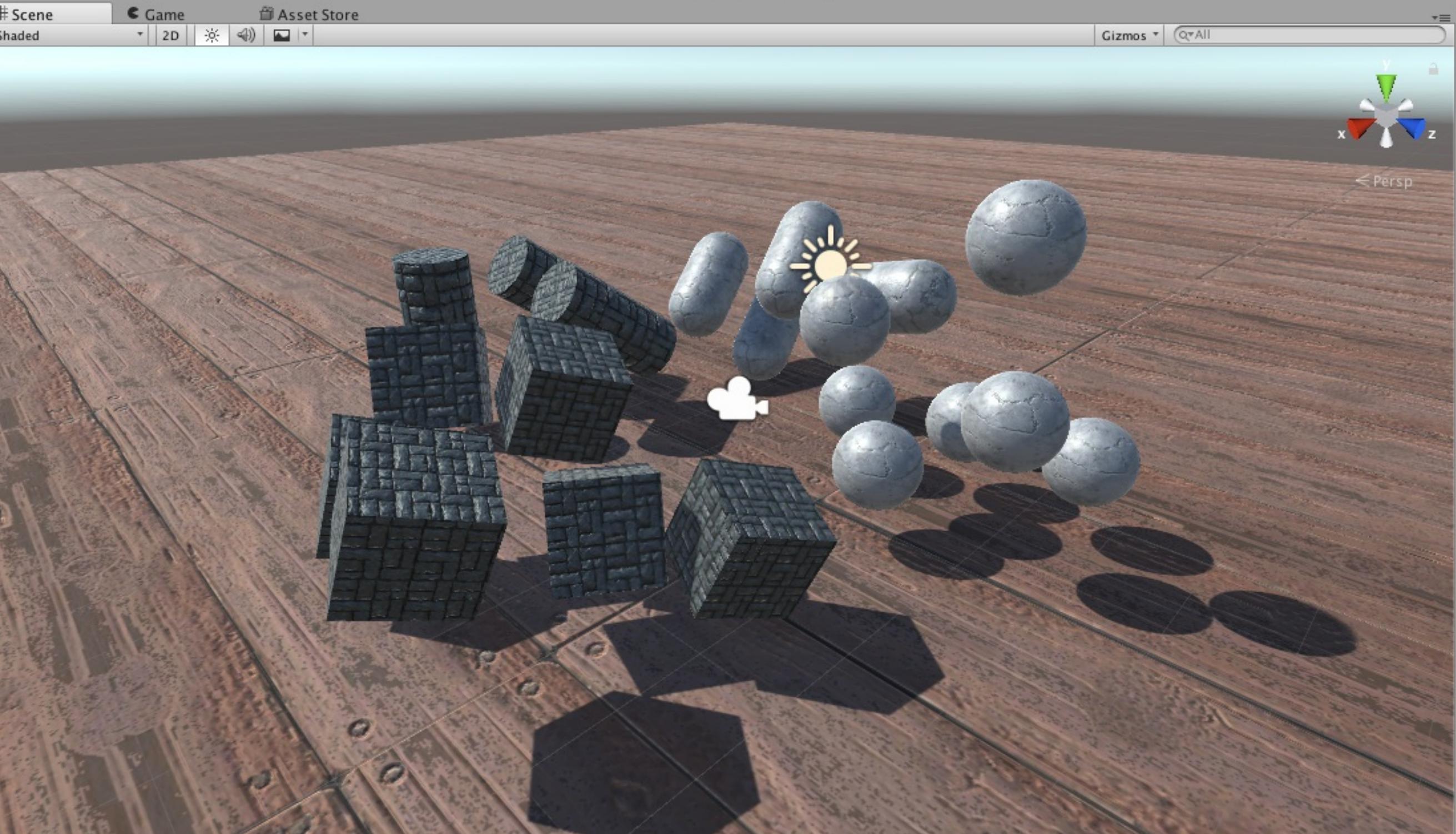
Cloud Account Layers Layout

Hierarchy

Create (All)

sample-scene

- Main Camera
- Directional Light
- Plane
- Cube
- Sphere
- Capsule
- Cylinder
- Cylinder (1)
- Capsule (1)
- Sphere (1)
- Cube (1)
- Capsule (2)
- Capsule (3)
- Cylinder (2)
- Cube (2)
- Cube (3)
- Sphere (2)
- Sphere (3)
- Sphere (4)
- Sphere (5)
- Sphere (6)
- Cube (4)
- Cube (5)



Inspector Services

GvrViewerMain

Tag Untagged Layer Default

Transform

Position	X 0	Y 0	Z 0
Rotation	X 0	Y 0	Z 0
Scale	X 1	Y 1	Z 1

Gvr Viewer (Script)

General Settings

VR Mode Enabled

Distortion Correction

Stereo Screen Scale

Neck Model Scale

Unity Editor Emulation Settings

Auto Until Head

Screen Size

Viewer Type

Add Component

Project Console

Create

Favorites

- All Materials
- All Models
- All Prefabs
- All Scripts

Assets

- Editor
- GoogleVR
- DemoScenes
- Editor
- Legacy
- Prefabs
- Resources
- Scripts
- Plugins

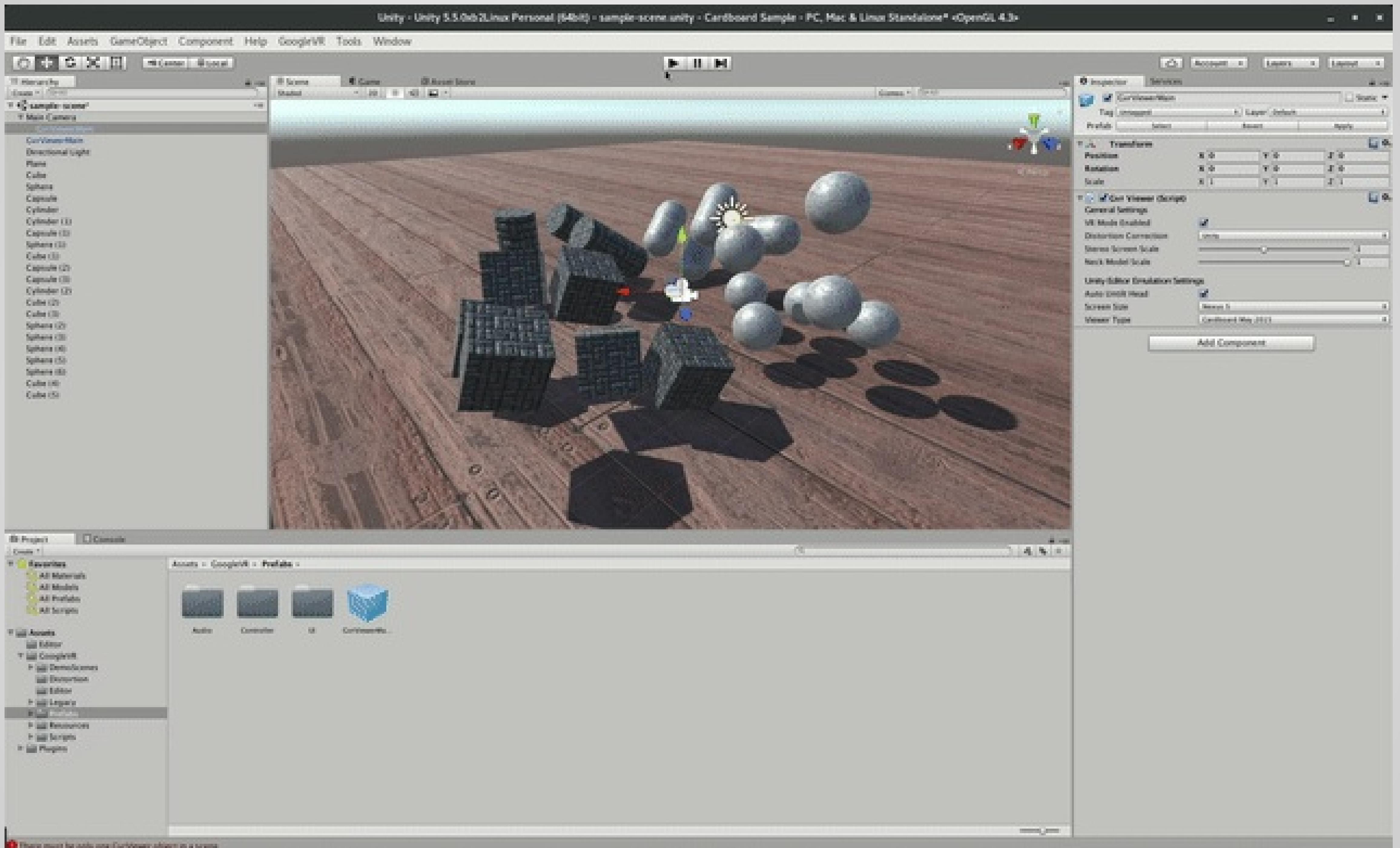
Assets > GoogleVR > Prefabs >

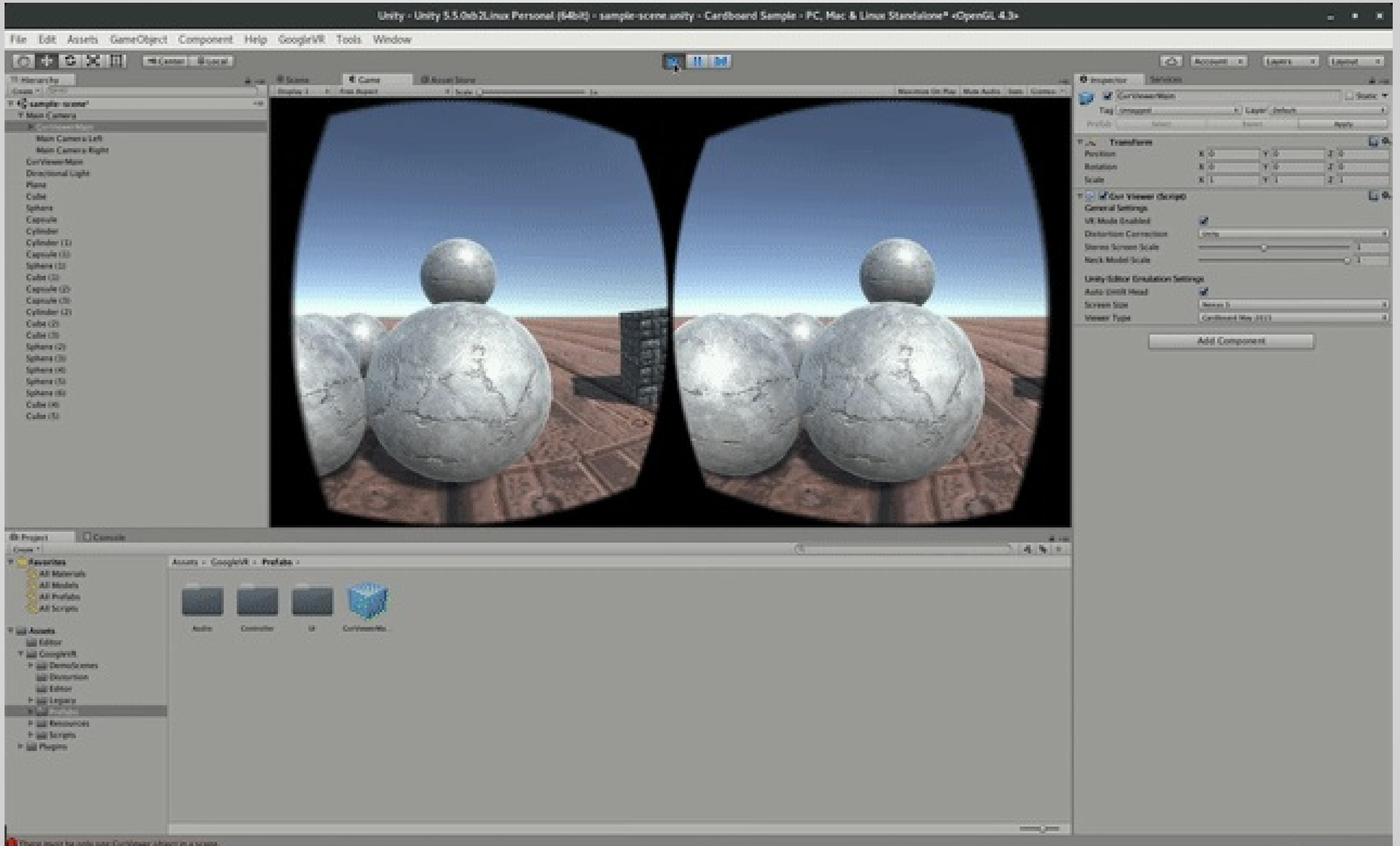
Audio Controller UI GvrViewerMa...

Asset Labels

AssetBundle None

OnLevelWasLoaded was found on GvrViewer





Summary of Unity Demo

- Using Unity is fast
- Using Cardboard SDK is easy
- Using internal renderer for simulating

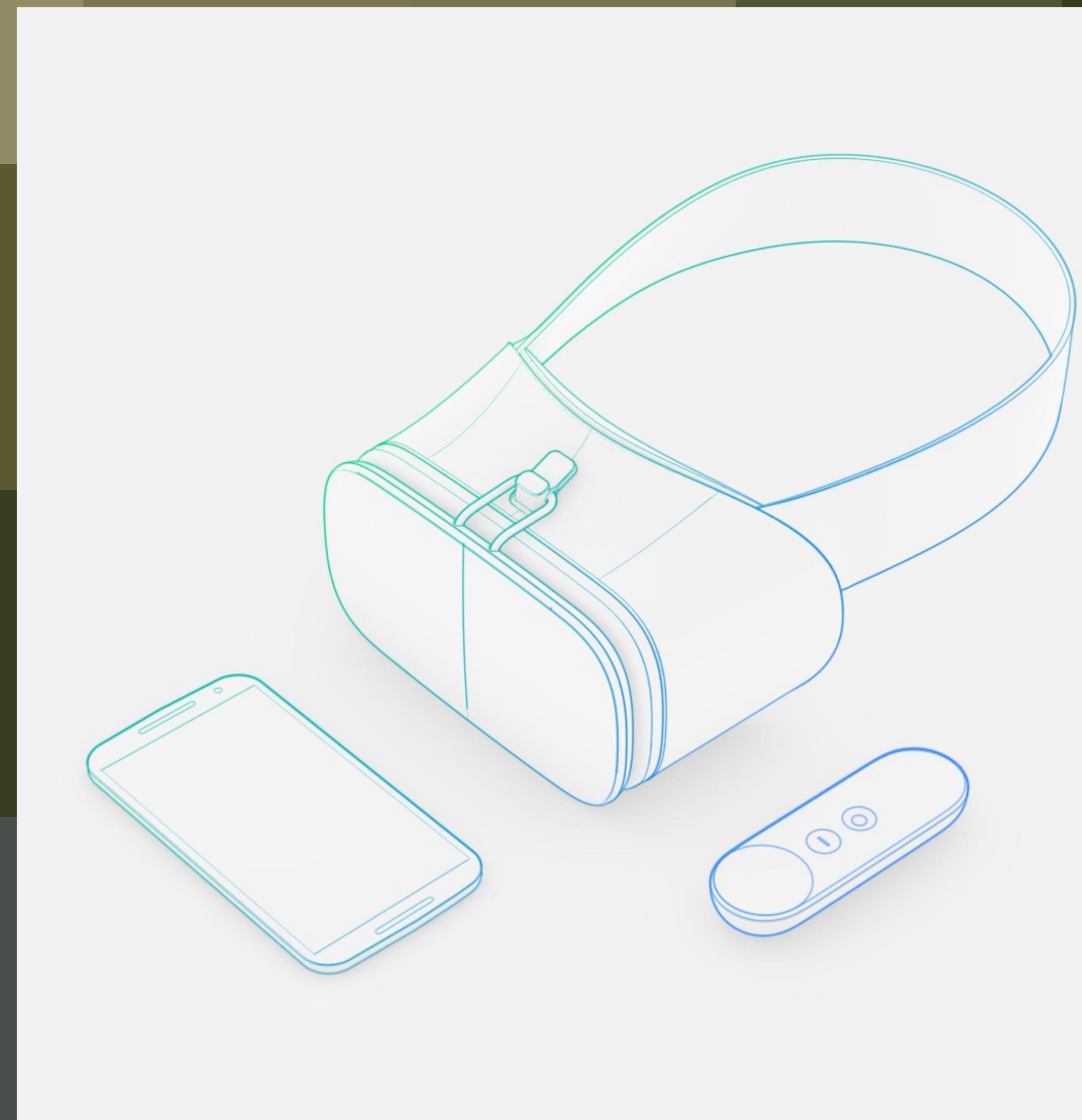


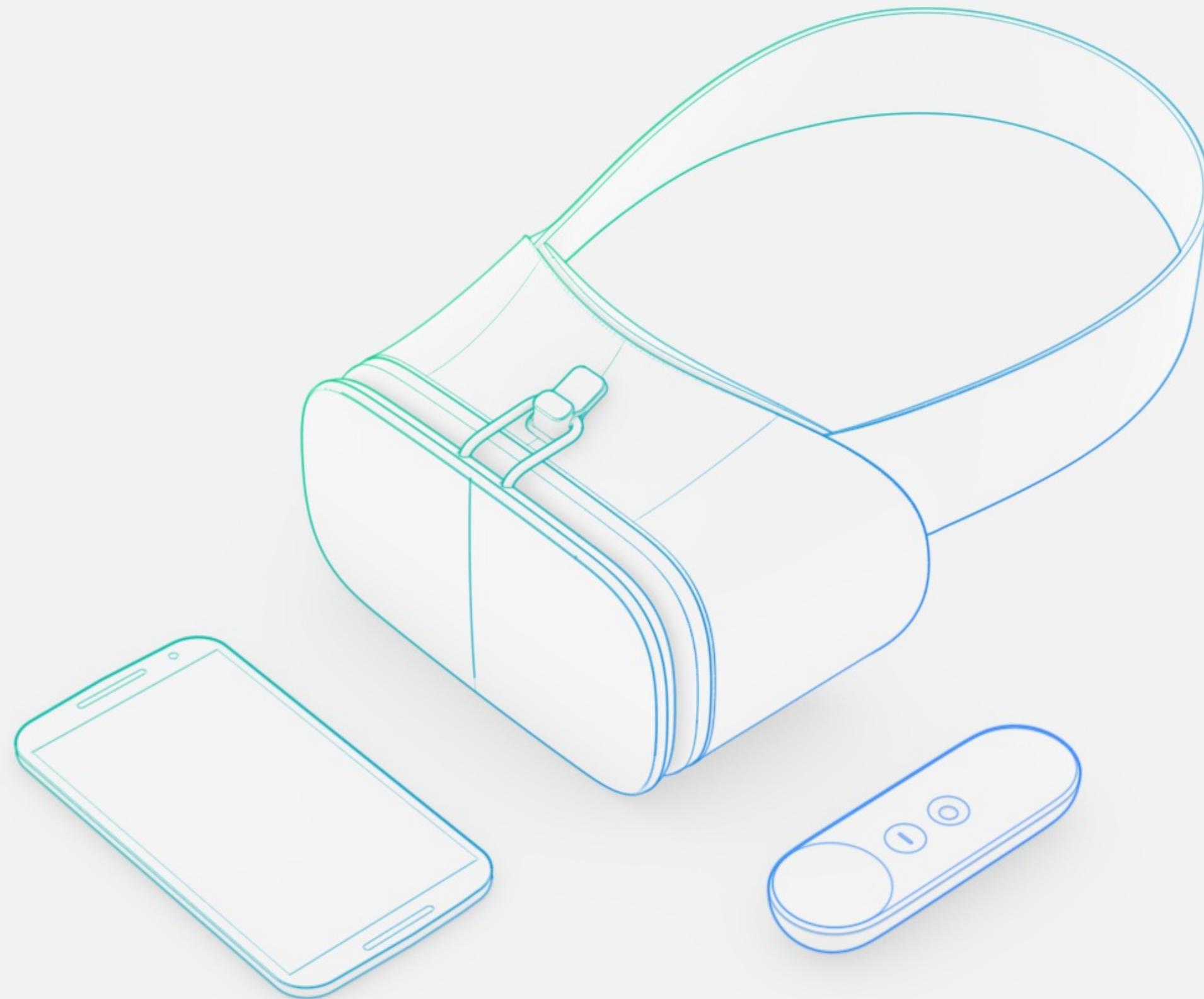
Difficulties in using Unity

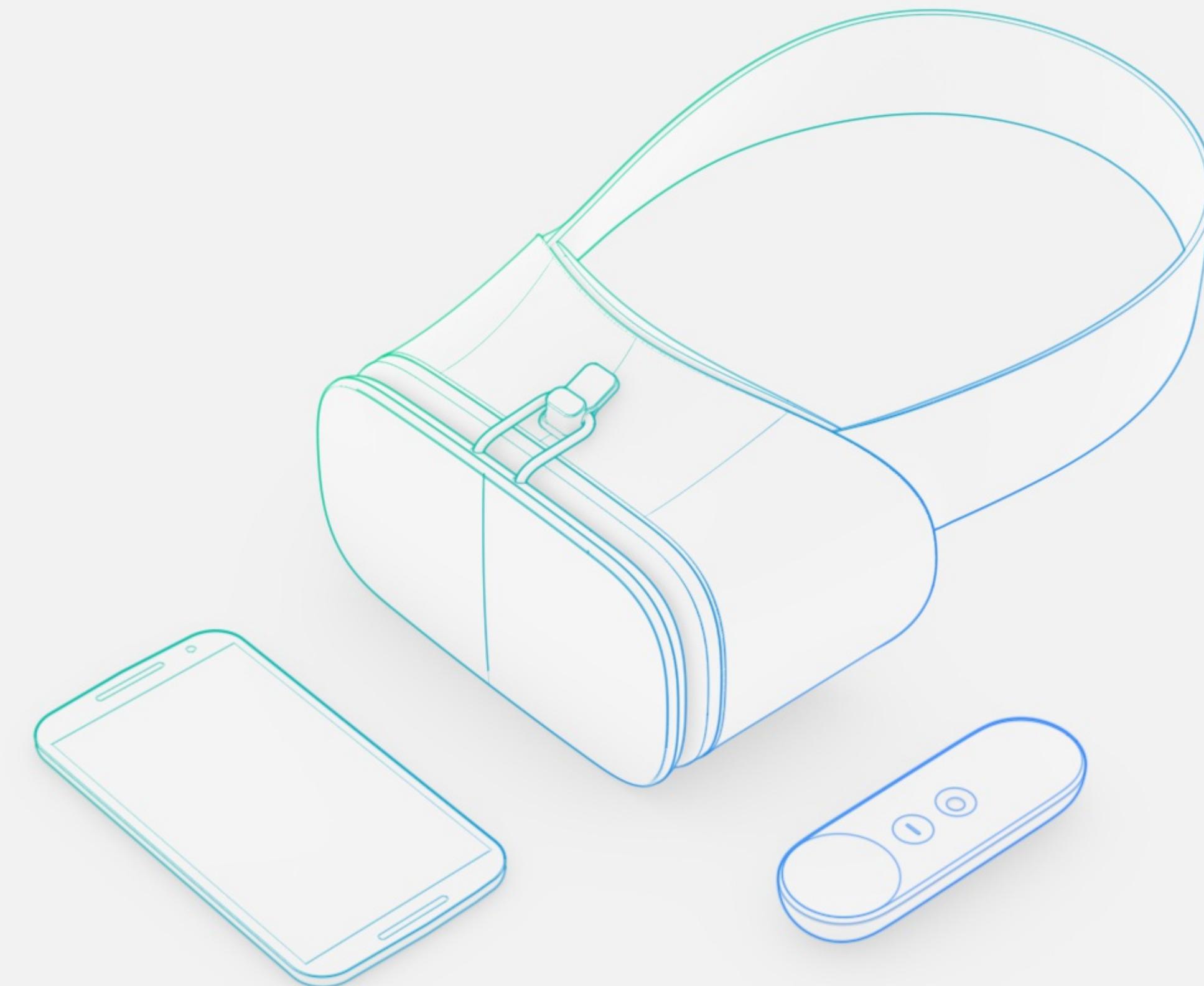
- Cost for non free version exists.
- Integration with other (Java) libraries difficult at best.
- Sending of Intents (aka interacting with Android OS / apps) is rather hard.

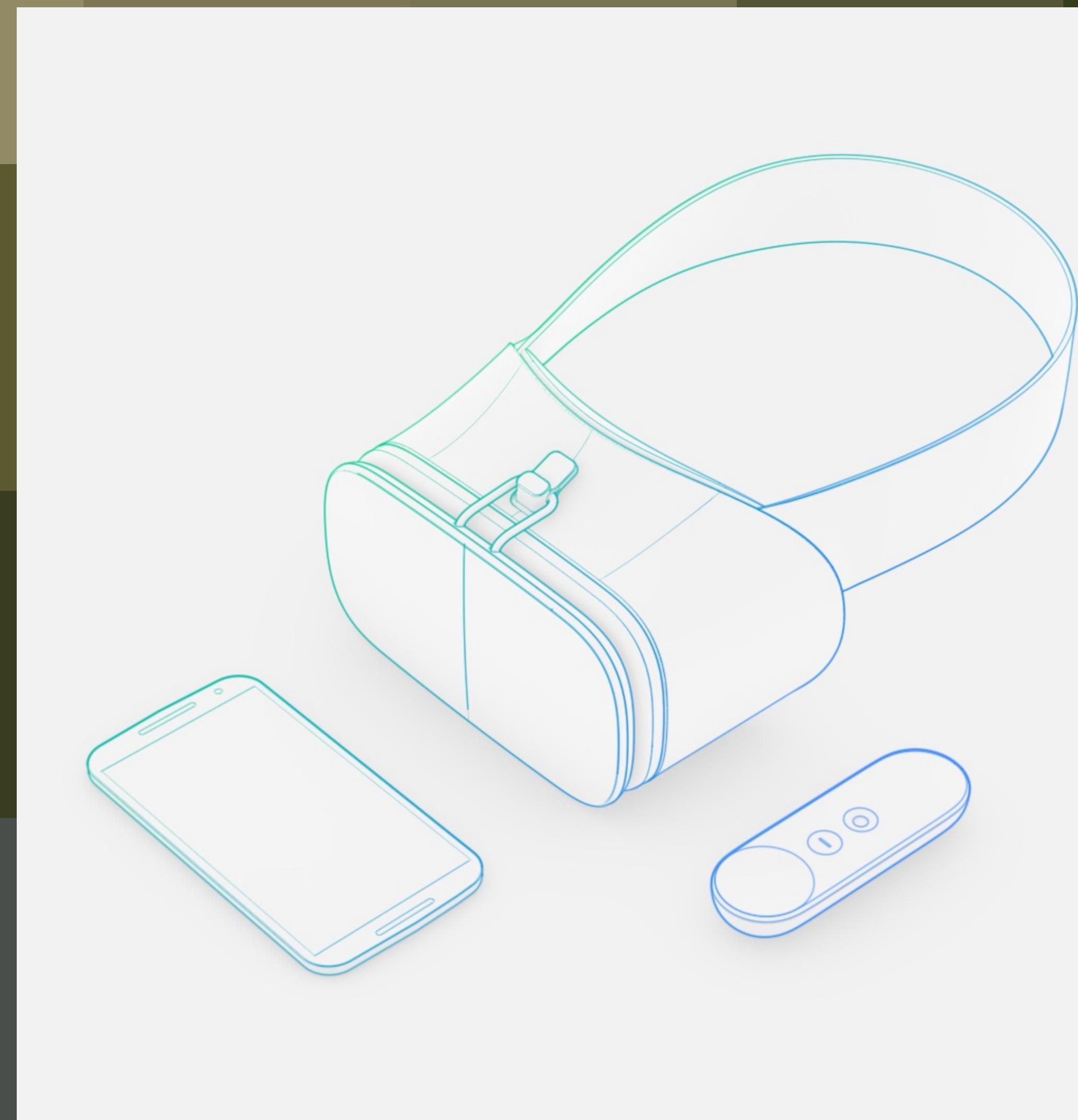


Daydream









New SDK features

- Controlling the controller
 - orientation/acceleration
 - input (Clickpad: x,y, clicked, App Button, Vol+/-)
- spatial audio engine
- VR View

i

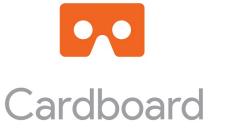
Deprecation & Deletion

- depreciation of v1.0 Cardboards 
- magnets are uncool!
- depreciation of cardboard button infavor of controller
- renaming Cardboard* packages to Gvr*

Adding Photospheres to a simple project

Limitations of Android SDK

- using 3D models has to be done by
 - either low level OpenGL or
 - 3rd party 3d engine



Cardboard



Google Cardboard

- easy to produce
- available from different companies
- in different styles/interactions
- You just need a phone™



How does Cardboard work?

- use 3D data and movement to draw two images
- one for the left and right eye
- contains lenses to move things away
- brain combines image to 3D scene

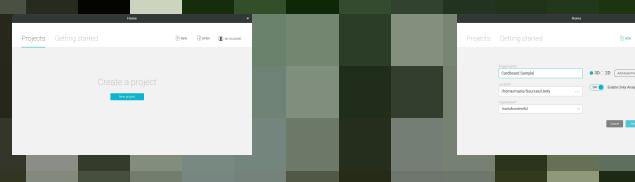


How do I write a Unity App?



Prerequisites

- clone Google's GitHub for Unity
- https://github.com/googlevr/google-unity-sdk repository
- install and open Unity
- https://store.unity.com/
- http://forum.unity3d.com/threads/unity-on-linux-release-notes-and-known-issues.350256/



New SDK features

- Controlling the controller
- orientation/acceleration
- Input (Click/Up, x/y, Clicked, App.Button, Vol+/-)
- spatial audio engine
- VR View

