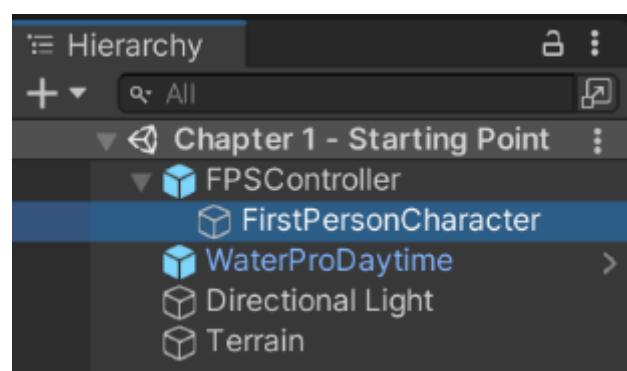
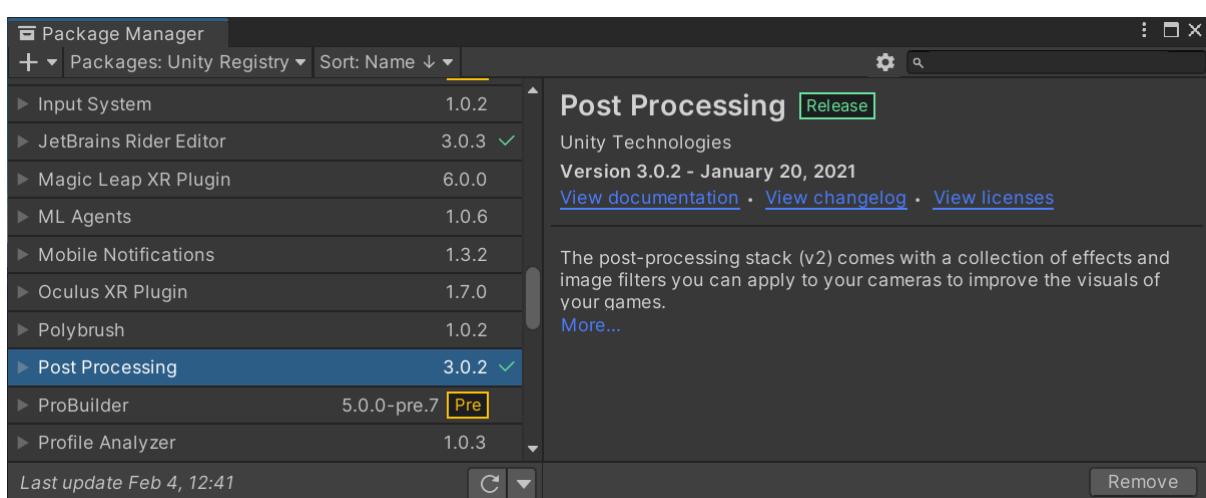
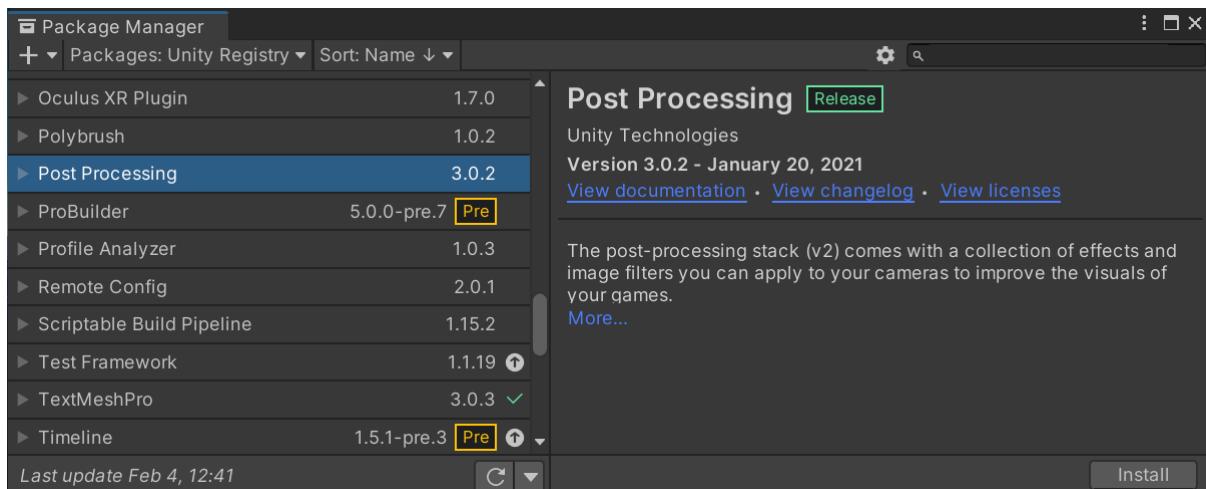
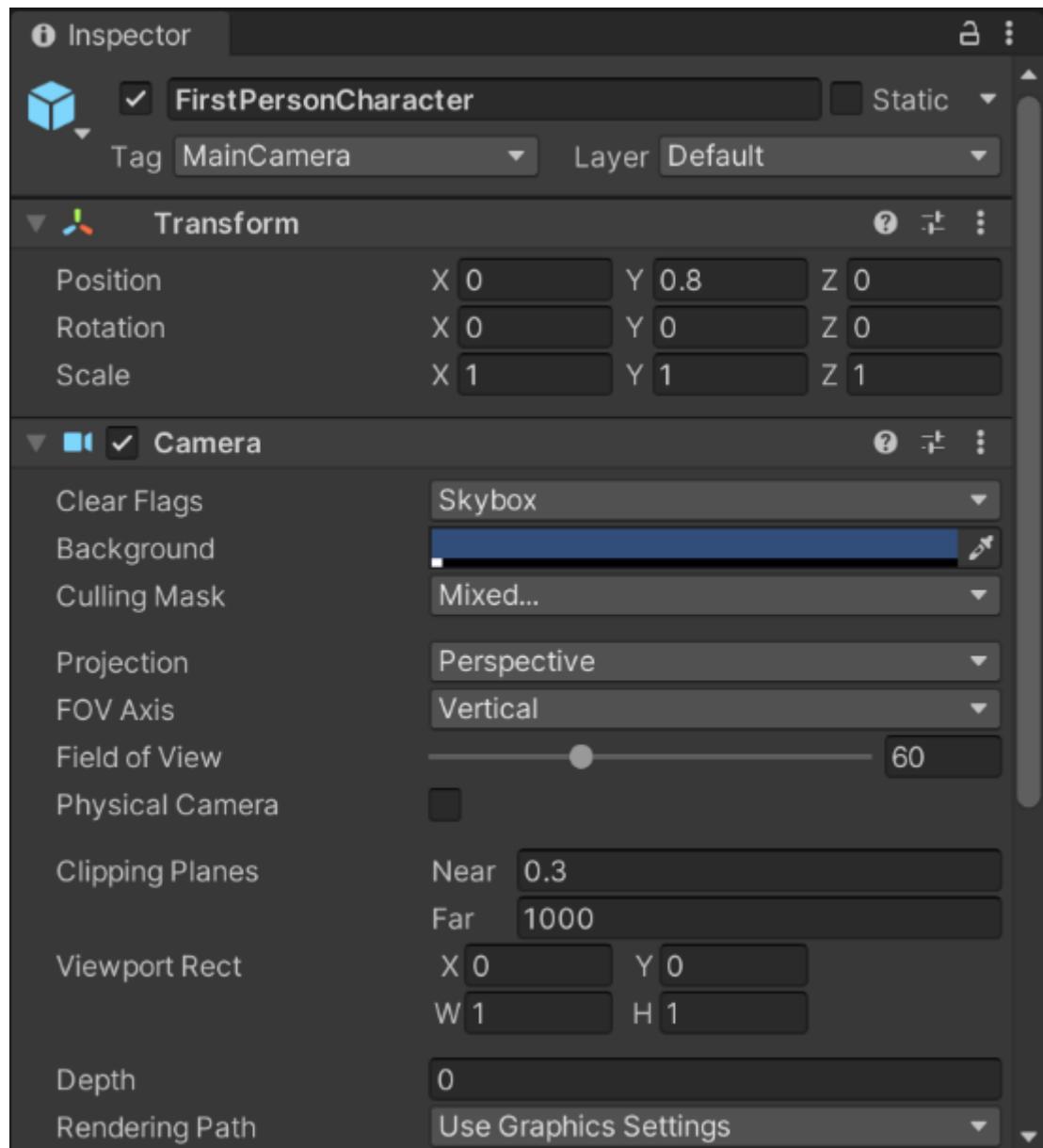


Chapter 1: Post Processing Stack



A screenshot of the Unity Package Manager window. The title bar says "Package Manager". The left sidebar shows a tree view with "Unity Technologies" expanded, listing packages like "JetBrains Rider Editor" (version 3.0.3, status "Release"), "Test Framework" (1.1.19), "TextMeshPro" (3.0.3), "Timeline" (1.5.1-pre.3, status "Pre"), "Unity Collaborate" (1.3.9), "Unity UI" (1.0.0), "Visual Scripting" (1.5.1-pre.3, status "Pre"), "Visual Studio Code Editor" (1.2.3), and "Visual Studio Editor" (2.0.5). The right panel shows the "JetBrains Rider Editor" package details: "Unity Technologies", "Version 3.0.3 - November 25, 2020", links to "View documentation", "View changelog", and "View licenses". A descriptive text block explains the package's purpose: "The JetBrains Rider Editor package provides an integration for using the JetBrains Rider IDE as a code editor for Unity. It adds support for generating .csproj files for code completion and auto-discovery of More...". Below this are "Registry" and "Unity" tabs. At the bottom, it says "Last update Feb 4, 12:44" and has "Remove" and "C" buttons.







Inspector

Target Display **Display 1**

▼ 4 command buffers

- BeforeLighting: Deferred Ambient Occlusion (0 B)
- BeforeImageEffectsOpaque: Opaque Only Post-processing (0 B)
- BeforeImageEffects: Post-processing (0 B)
- BeforeReflections: Deferred Ambient Occlusion (0 B)

Remove all

Audio Listener

Post-process Layer

Volume blending

Trigger  This

Volume Layer Nothing

! No layer has been set, the trigger will never be affected by volumes.

Anti-aliasing

Mode No Anti-aliasing

Stop NaN Propagation

Directly to Camera Target

Inspector

Tags & Layers

► Tags

► Sorting Layers

▼ Layers

Builtin Layer 0	Default
Builtin Layer 1	TransparentFX
Builtin Layer 2	Ignore Raycast
User Layer 3	
Builtin Layer 4	Water
Builtin Layer 5	UI
User Layer 6	PostProcessing
User Layer 7	

Inspector

Allow Dynamic Resolution

Target Display **Display 1**

▼ 4 command buffers

- BeforeLighting: Deferred Ambient Occlusion (0 B)
- BeforeImageEffectsOpaque: Opaque Only Post-processing (0 B)
- BeforeImageEffects: Post-processing (0 B)
- BeforeReflections: Deferred Ambient Occlusion (0 B)

Remove all

Audio Listener

▼ **Post-process Layer**

Volume blending

Trigger  FirstPersonCharacter (Tracer) This

Volume Layer

Anti-aliasing

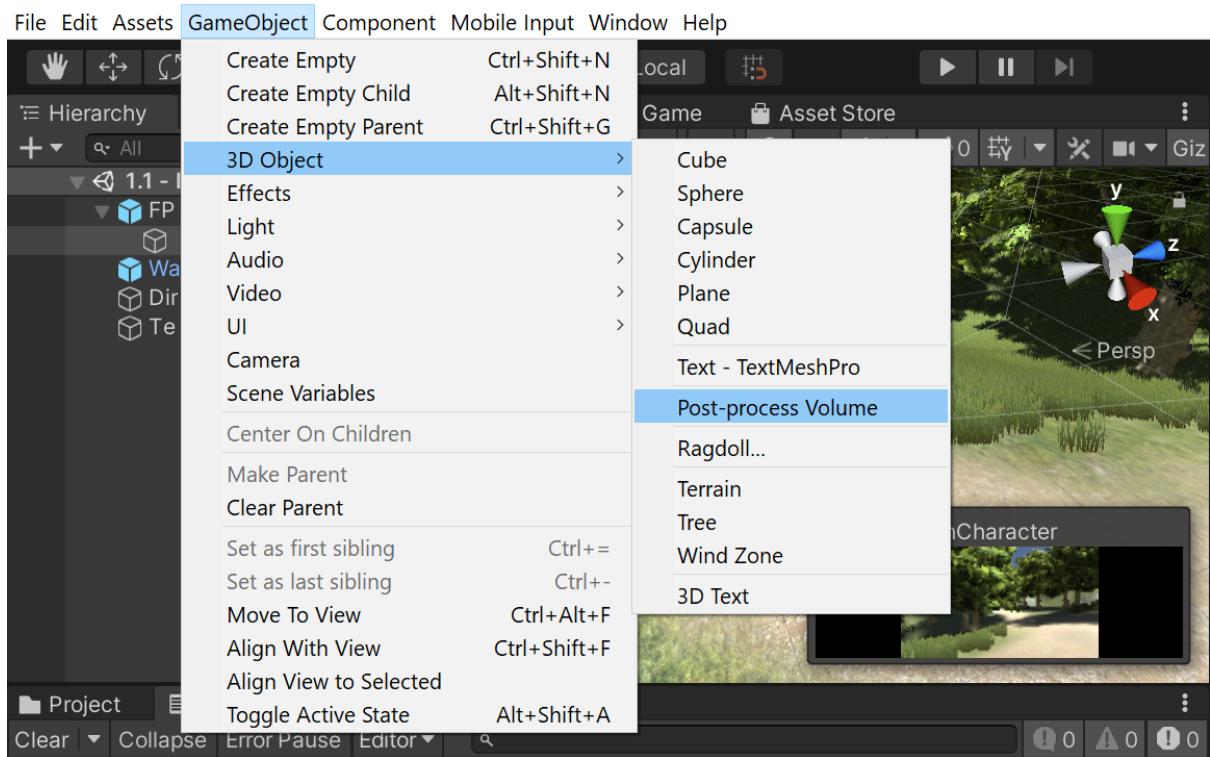
Mode

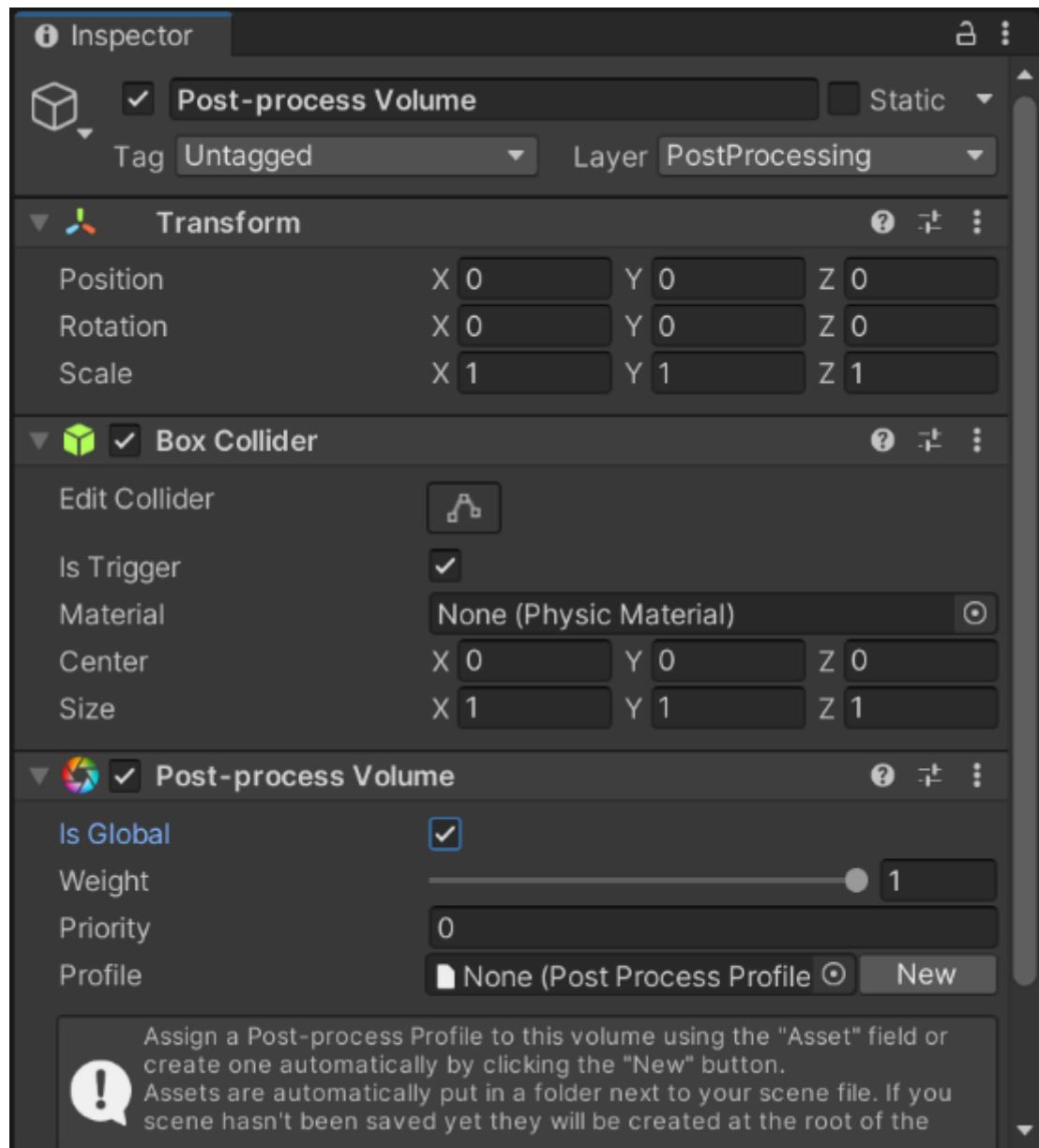
Stop NaN Propagation

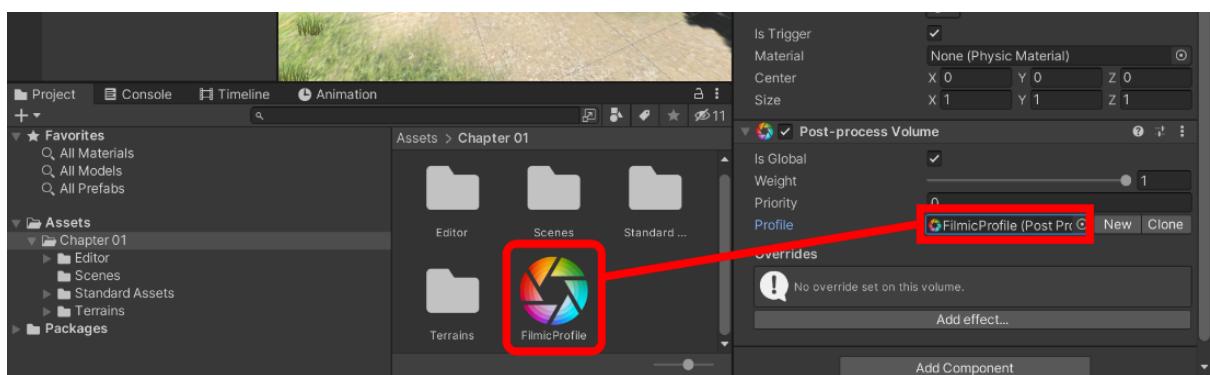
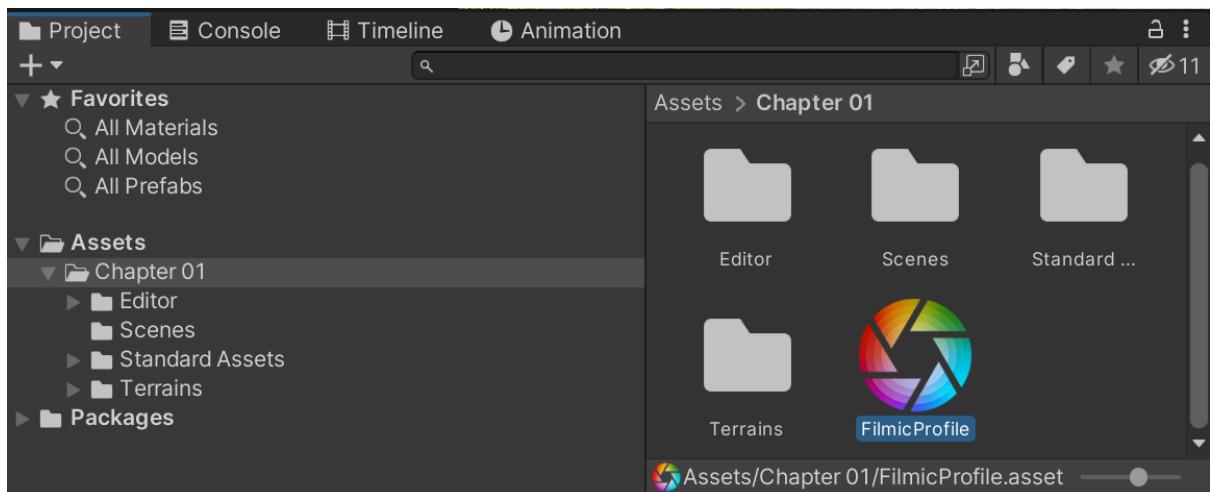
Directly to Camera Target

► **Toolkit**

► **Custom Effect Sorting**







Post-process Volume ? ↶ ⋮

Is Global

Weight 1

Priority 0

Profile FilmicProfile (Post Pr) ○ New Clone

Overrides

▼ **Grain** ⋮

All None On Off

Colored

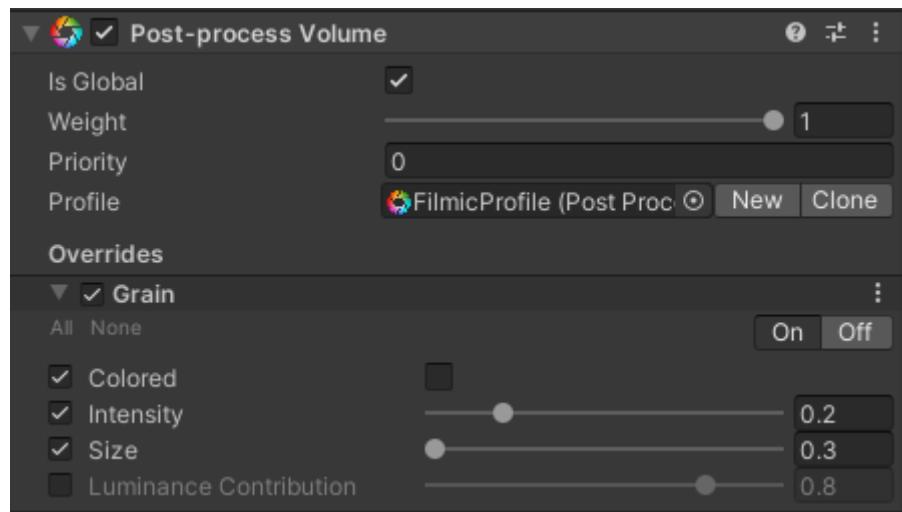
Intensity 0

Size 1

Luminance Contribution 0.8

Add effect...





Inspector

Weight: 1

Priority: 0

Profile: FilmicProfile (F)

Overrides

Grain

All: None

Colored

Intensity: 0.2

Size: 0.3

Luminance Contribution: 0.8

Vignette

All: None

Mode: Classic

Color

Center

Intensity: 0.5

Smoothness: 0.35

Roundness

Rounded



Inspector

Colored Intensity Size Luminance Contribution

Vignette

All None

Mode

Color

Center

Intensity X 0.5 Y 0.5

Smoothness 0.5 0.35

Roundness 1

Rounded

Depth Of Field

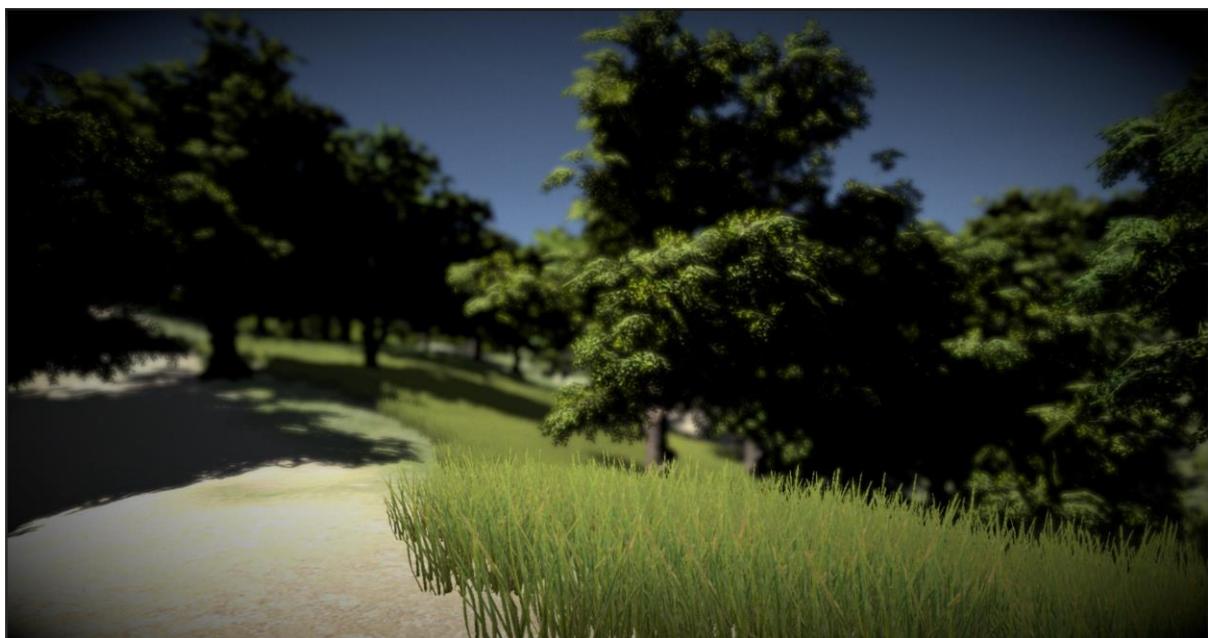
All None

Focus Distance 6

Aperture 5.6

Focal Length 80

Max Blur Size Medium





Inspector

Size X 1 Y 1 Z 1

Post-process Volume

Is Global

Weight 1

Priority 0

Profile BloomProfile ()

Overrides

Bloom

All None

Bloom

Intensity 3

Threshold 0.75

Soft Knee 0.1

Clamp 65472

Diffusion 7

Anamorphic Ratio 0

Color HDR

Fast Mode

Dirtiness

Texture None (Texture)

Intensity 0

The image shows the Unity Editor's Inspector window for a Post-process Volume component. At the top, there are fields for 'Size' (X 1, Y 1, Z 1). Below that is a section for 'Post-process Volume' with a camera icon, a checked 'Is Global' checkbox, a 'Weight' slider set to 1, a 'Priority' field at 0, and a 'Profile' dropdown set to 'BloomProfile' with options for 'New' and 'Clone'. A large 'Overrides' section follows, starting with a 'Bloom' section. Under 'Bloom', the 'All' dropdown is set to 'None', with 'On' and 'Off' buttons available. The 'Bloom' settings include checkboxes for 'Intensity' (value 3), 'Threshold' (value 0.75), and 'Soft Knee' (value 0.1), along with sliders for 'Clamp' (value 65472), 'Diffusion' (value 7), and 'Anamorphic Ratio' (value 0). There is also a 'Color' section with a 'HDR' button and an 'Edit' icon. Below the 'Bloom' section is a 'Dirtiness' section with checkboxes for 'Texture' (set to 'None (Texture)') and 'Intensity' (value 0).



▼ Post-process Layer ? ⊕ ⋮

Volume blending

Trigger FirstPersonCharacter (Tra) This

Volume Layer PostProcessing ▾

Anti-aliasing

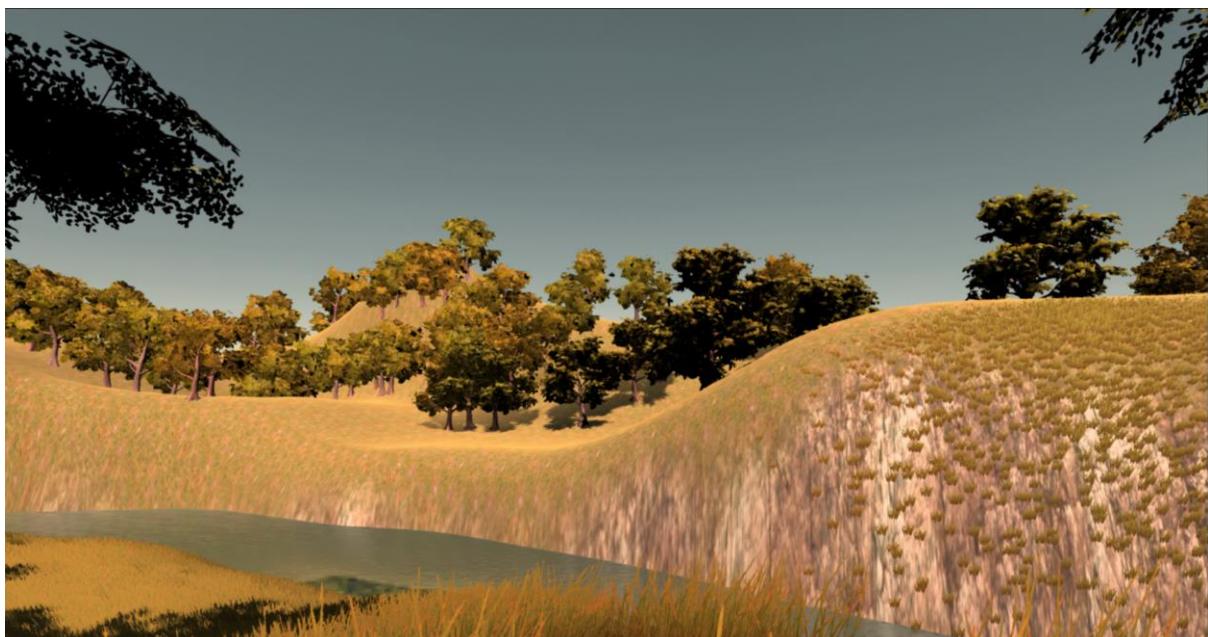
Mode Fast Approximate Anti-aliasing (FXAA) ▾

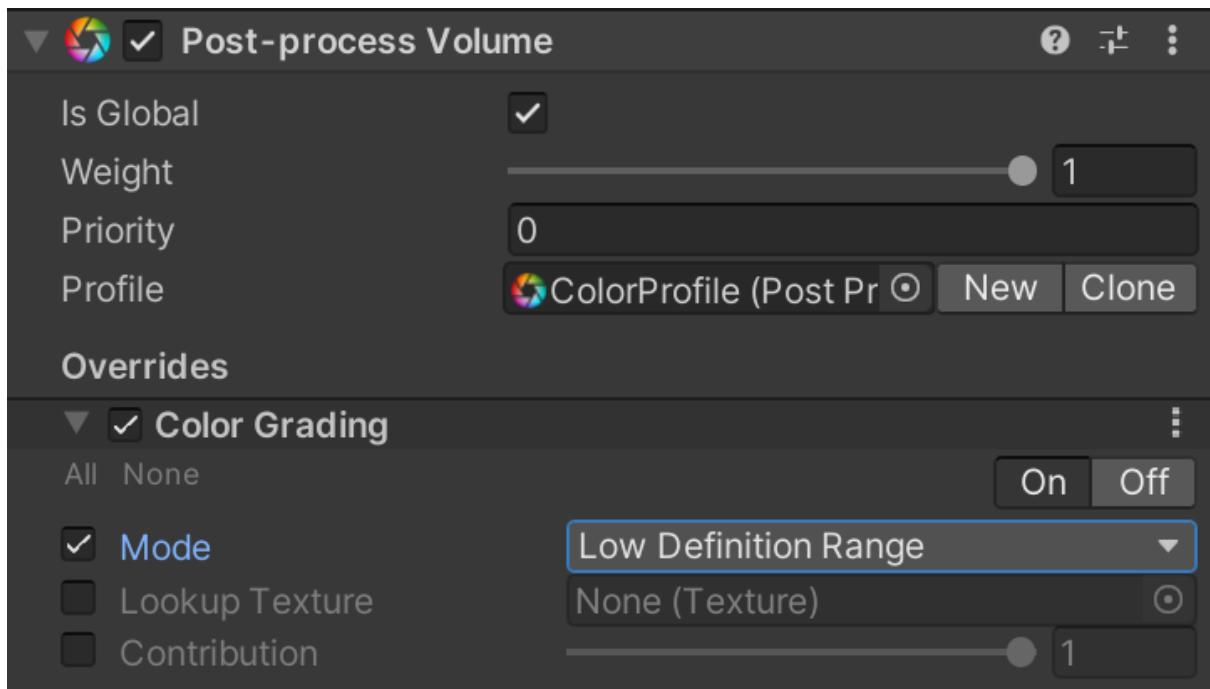
Fast Mode

Keep Alpha

Stop NaN Propagation

Directly to Camera Target





▼  Post-process Volume ? ↶ ⋮

Is Global

Weight 1

Priority 0

Profile  ColorProfile (Post Pr) ○ New Clone

Overrides

▼ **Color Grading** ⋮

All None On Off

Mode Low Definition Range ▼

Lookup Texture None (Texture) ○

Contribution 1

White Balance

Temperature 30

Tint 0

Tone

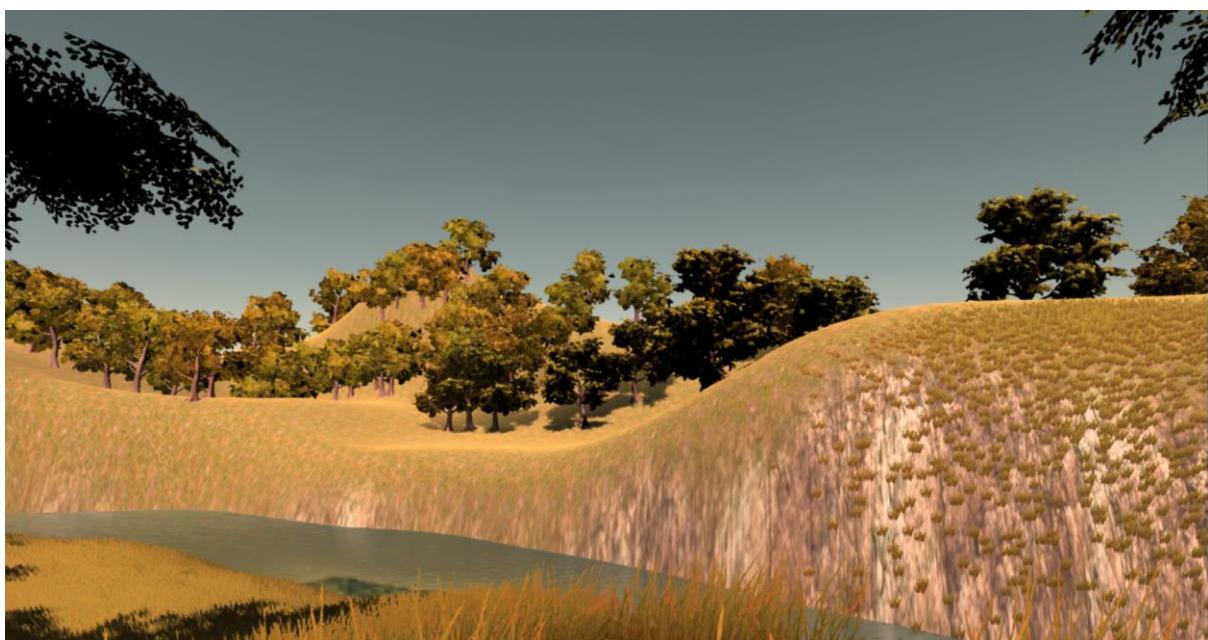
Color Filter HDR ✎

Hue Shift -20

Saturation 15

Brightness 0

Contrast 0



Color

x



Inspector **Lighting** **⋮**

Scene **Environment** **Realtime Lightmaps** **Baked Lightmaps** **?** **⚙**

Environment Reflections

Source	Skybox
Resolution	128
Compression	Auto
Intensity Multiplier	1
Bounces	1

Other Settings

Fog	<input checked="" type="checkbox"/>
Color	[Color Swatch]
Mode	Exponential
Density	0.03
Halo Texture	None (Texture 2D)
Halo Strength	0.5
Flare Fade Speed	3
Flare Strength	1
Spot Cookie	Soft

Auto Generate **Generate Lighting** **⋮**

This screenshot shows the Unity Editor's Lighting settings. The top navigation bar has tabs for Inspector, Lighting, and various lightmap types. Below the tabs are dropdowns for Source (Skybox), Resolution (128), Compression (Auto), and sliders for Intensity Multiplier (1) and Bounces (1). A section titled 'Other Settings' contains controls for Fog (checked), Color, Mode (Exponential), Density (0.03), Halo Texture (None), Halo Strength (0.5), Flare Fade Speed (3), Flare Strength (1), and Spot Cookie (Soft). At the bottom are 'Auto Generate' and 'Generate Lighting' buttons.



Inspector Lighting

Horror Profile (Post Process Profile)

Open

Overrides

▼ Ambient Occlusion

All None

On Off

Mode Scalable Ambient Obscurance ▾

Intensity 2

Radius 20

Quality Medium ▾

Color

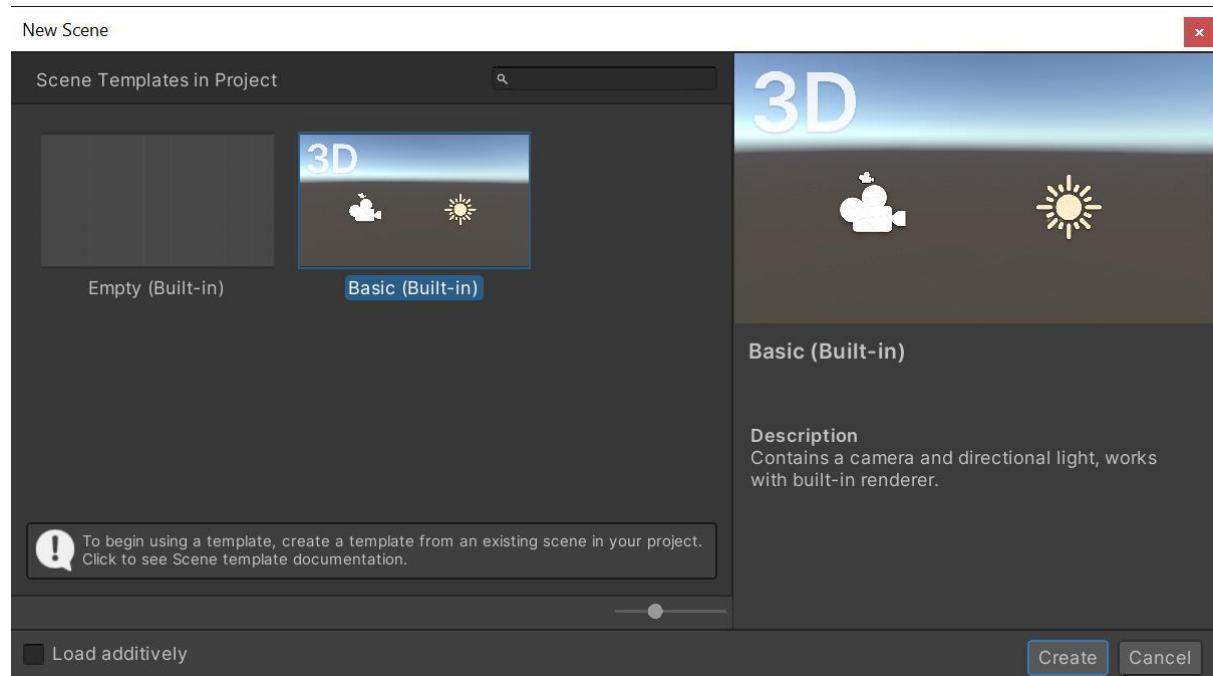
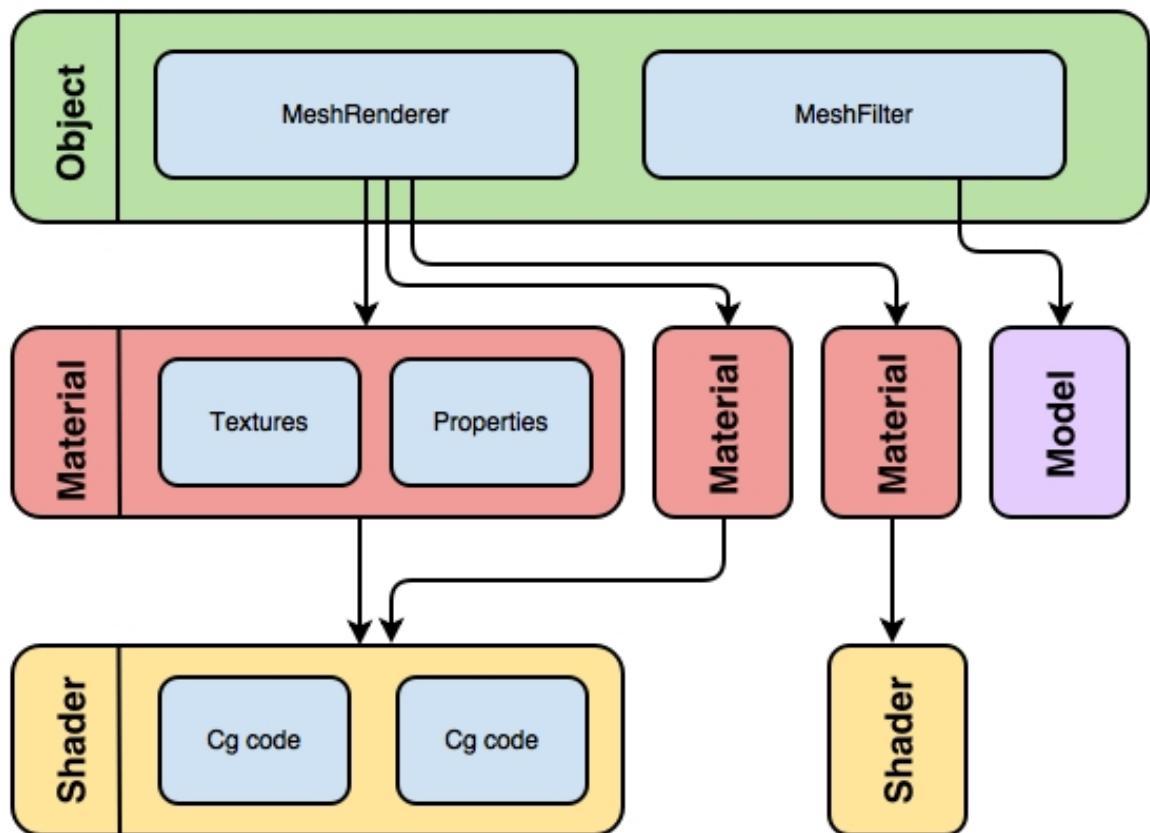
Ambient Only

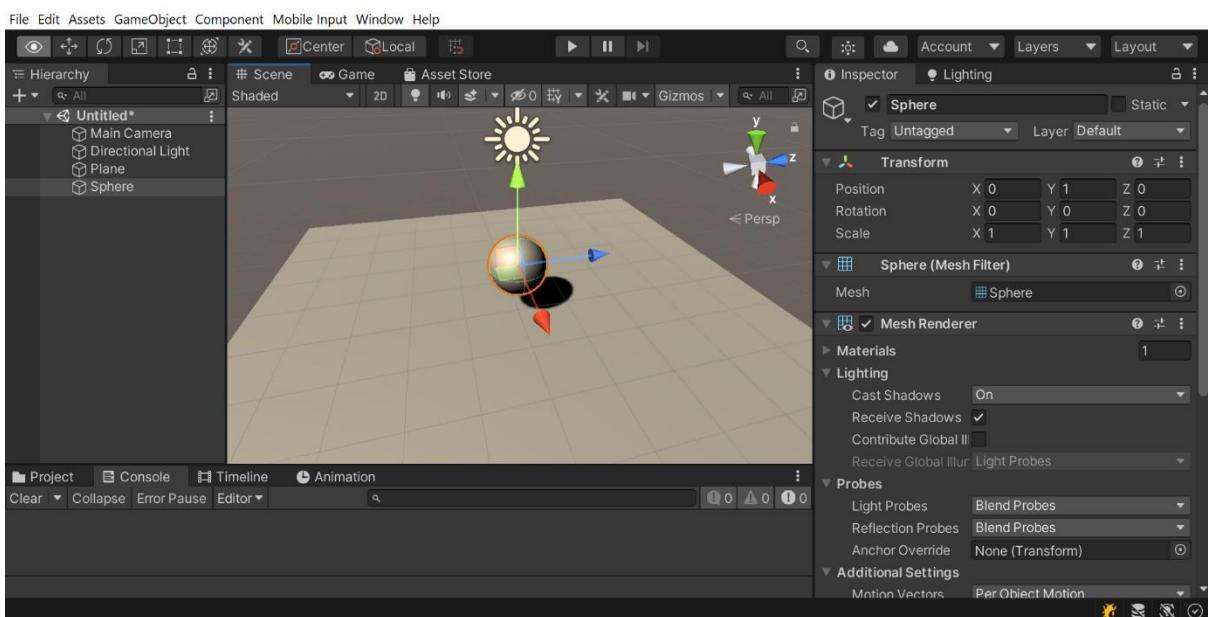
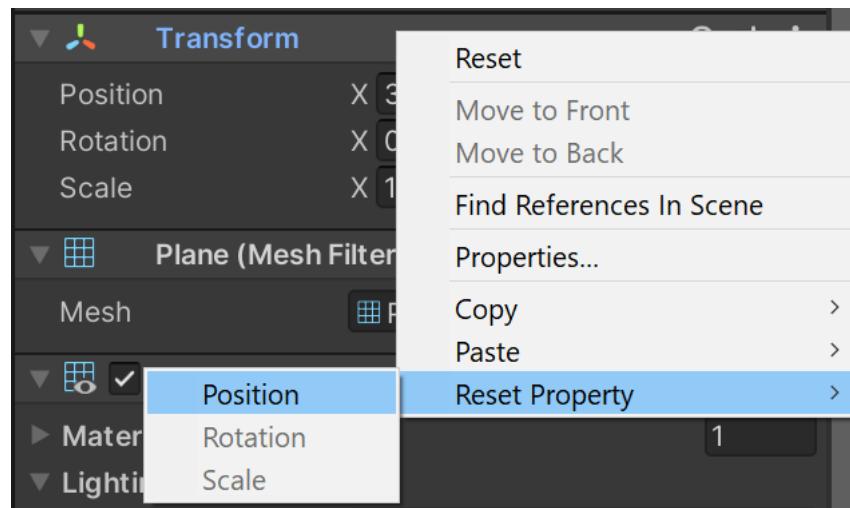
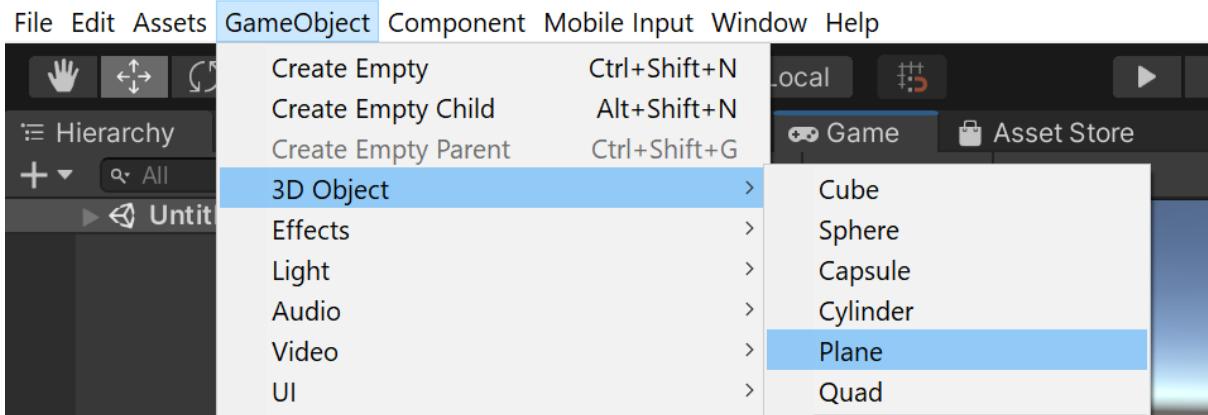
Add effect...

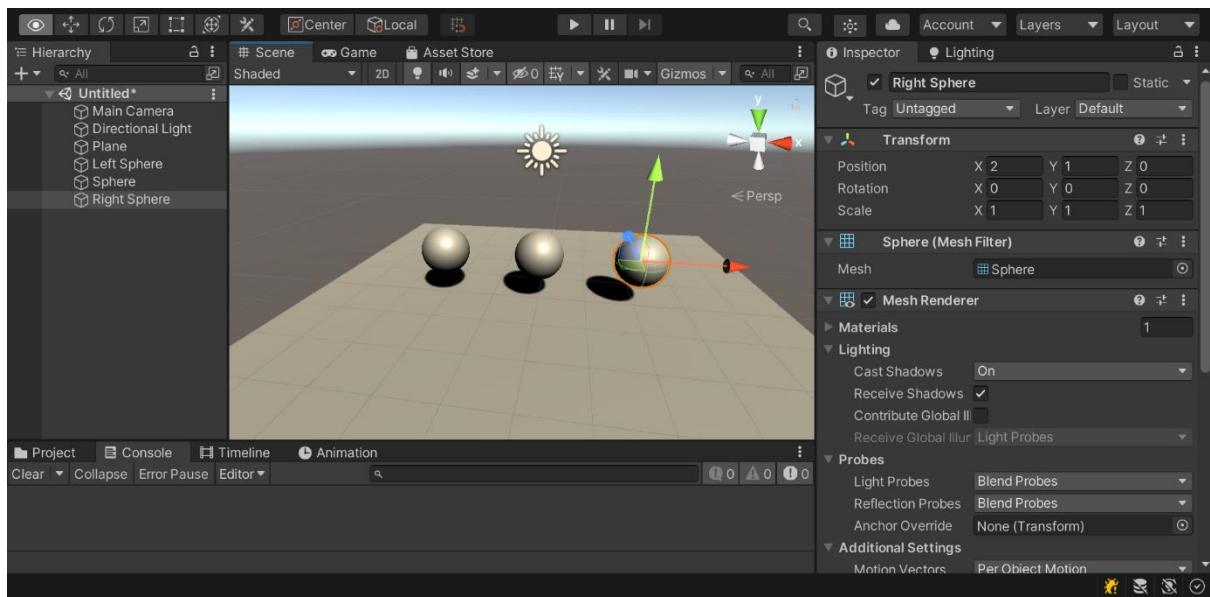




Chapter 2: Creating Your First Shader







Inspector

Standard Diffuse (Material)

Shader CookbookShaders/Chapter 02/StandardDiffuse Edit...

Color

Albedo (RGB)

Tiling X 1 Y 1
Offset X 0 Y 0 Select

Smoothness 0.5

Metallic 0

Render Queue From Shader 2000

Enable GPU Instancing

Double Sided Global Illumination

StandardDiffuse

AssetBundle None

Hierarchy

- 2.1 Creating a basic Standard Material
- Main Camera
- Directional Light
- Plane
- Left Sphere
- Sphere
- Right Sphere

Scene

Project

Assets > Chapter 02 > Materials

StandardDiffuse

Inspector

Standard Diffuse (Material)

Shader CookbookShaders/Chapter 02/StandardDiffuse

Color

Albedo (RGB)

Tiling X 1 Y 1
Offset X 0 Y 0 Select

Smoothness 0.5

Metallic 0

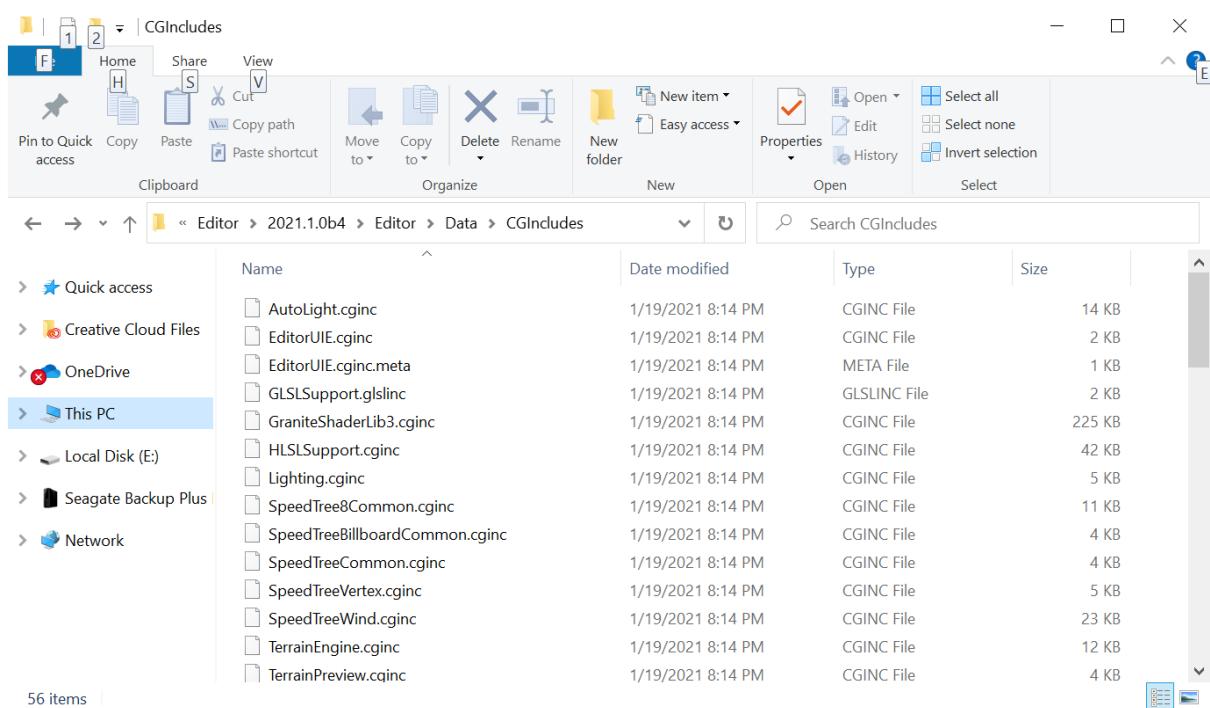
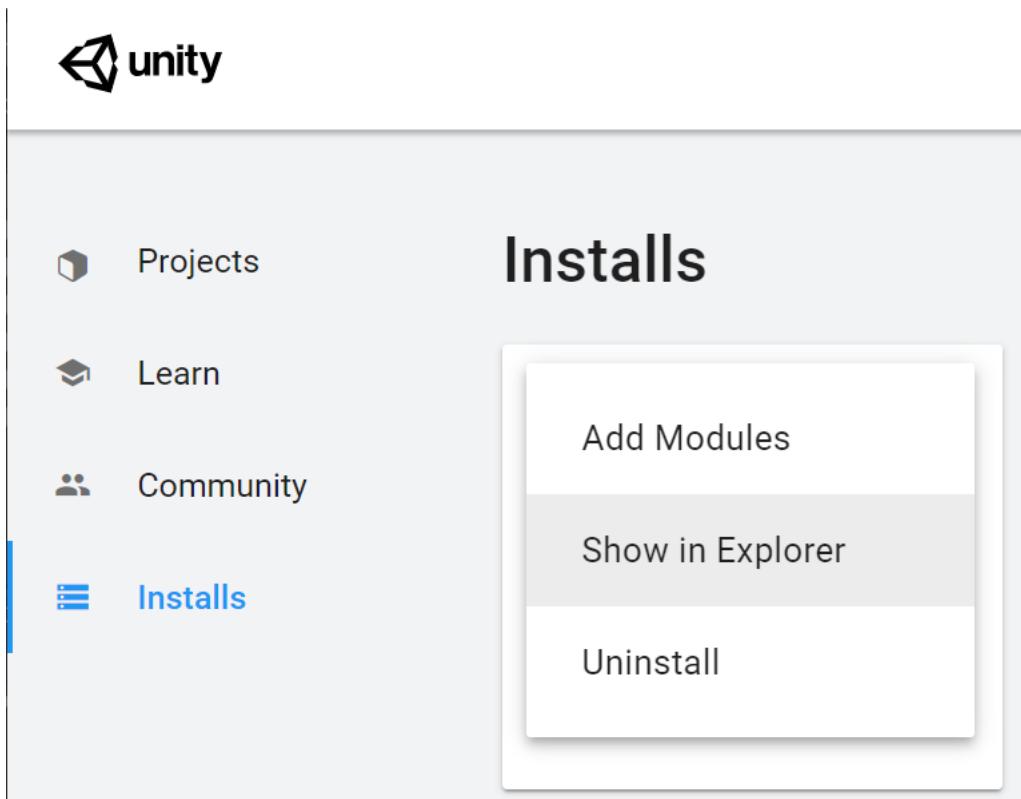
Render Queue From Shader 2000

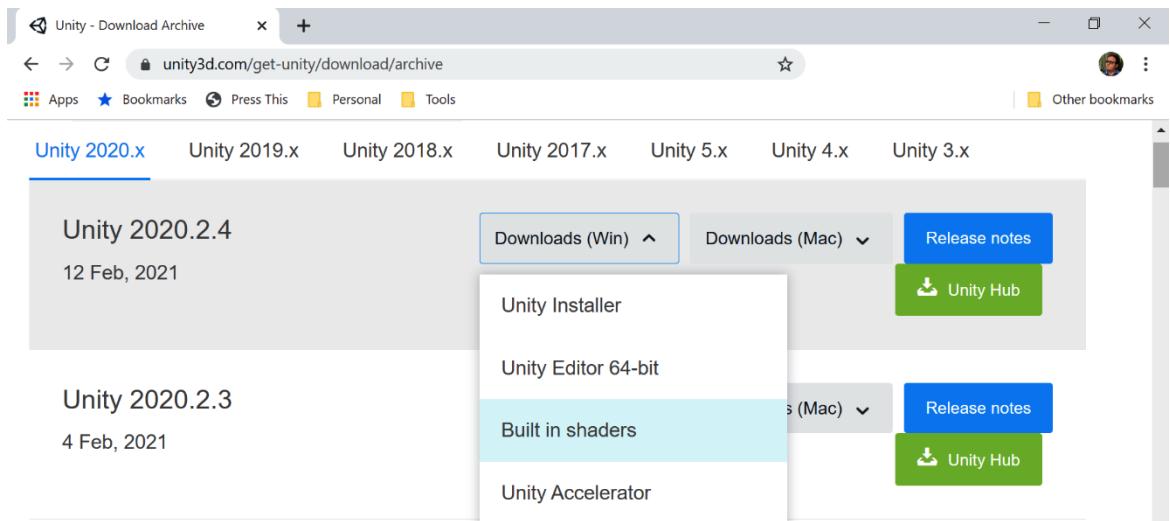
Enable GPU Instancing

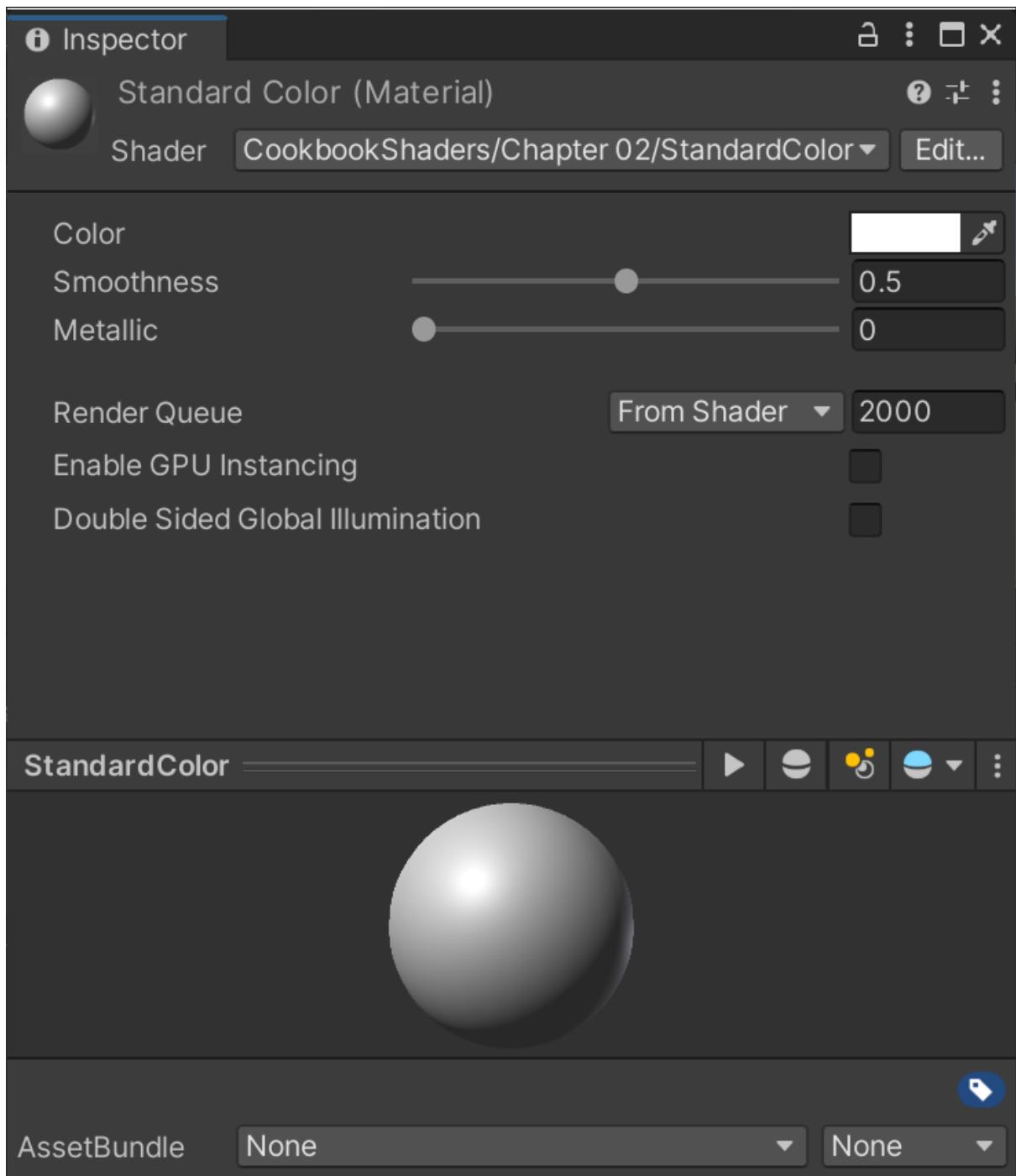
Double Sided Global Illumination

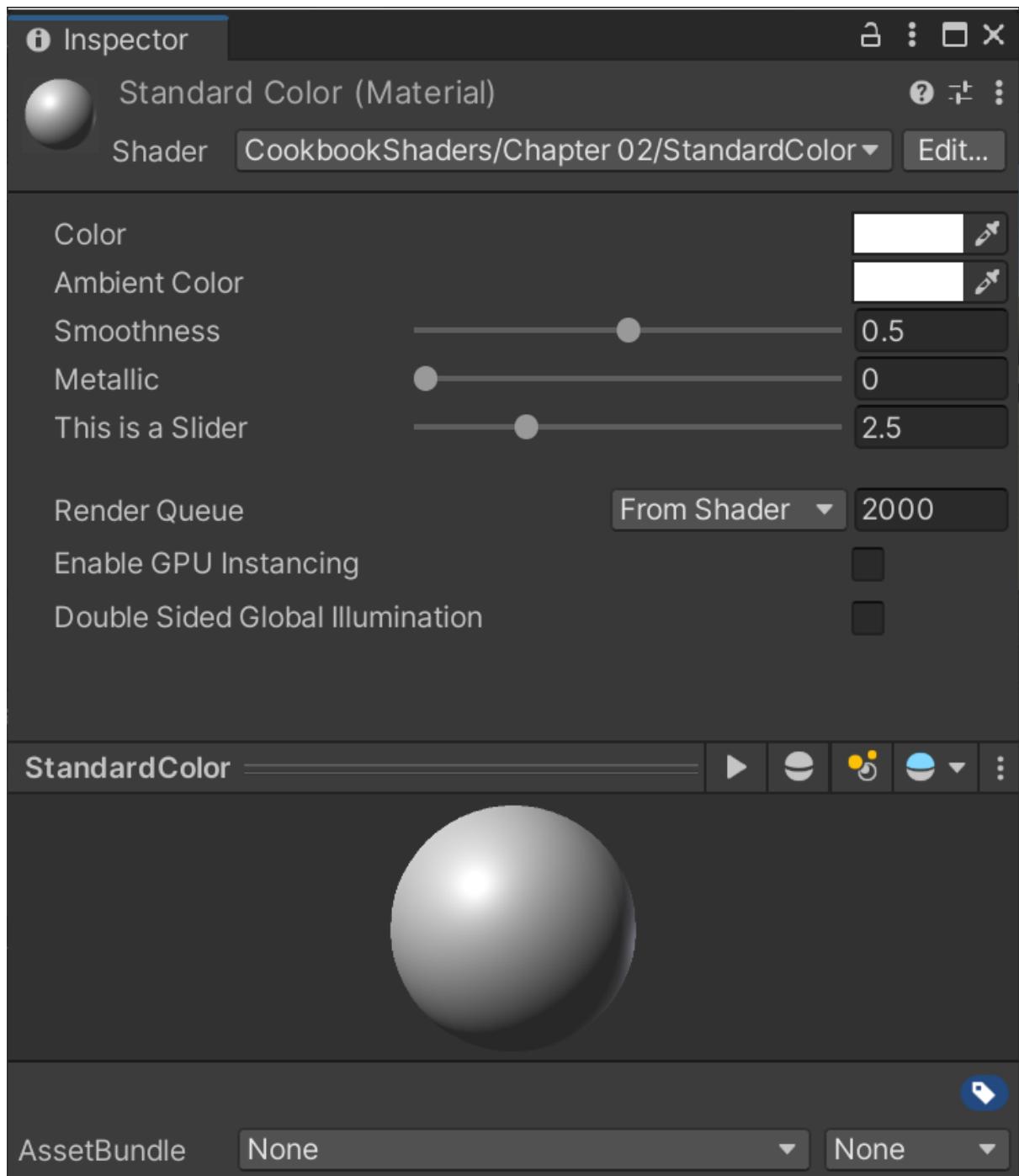
StandardDiffuse

AssetBundle None



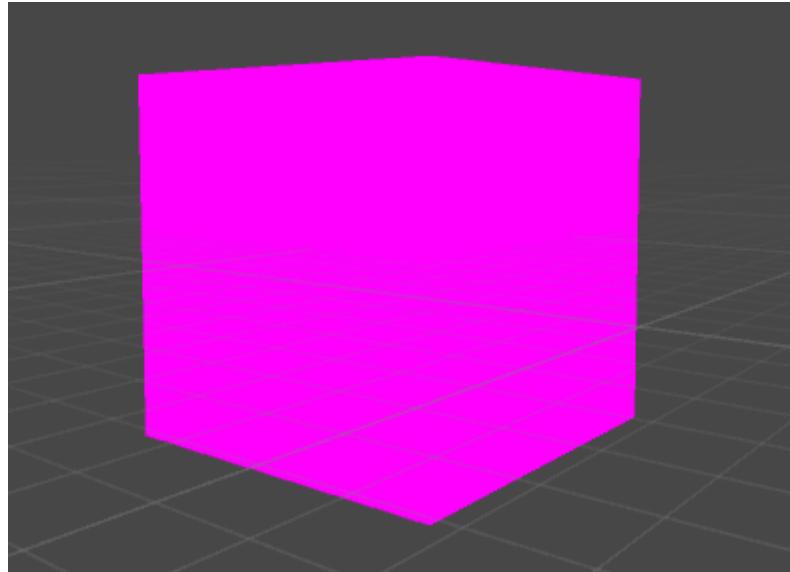
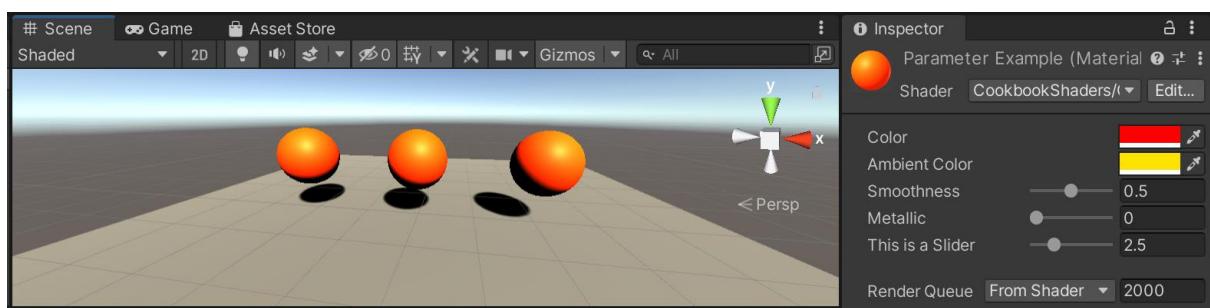
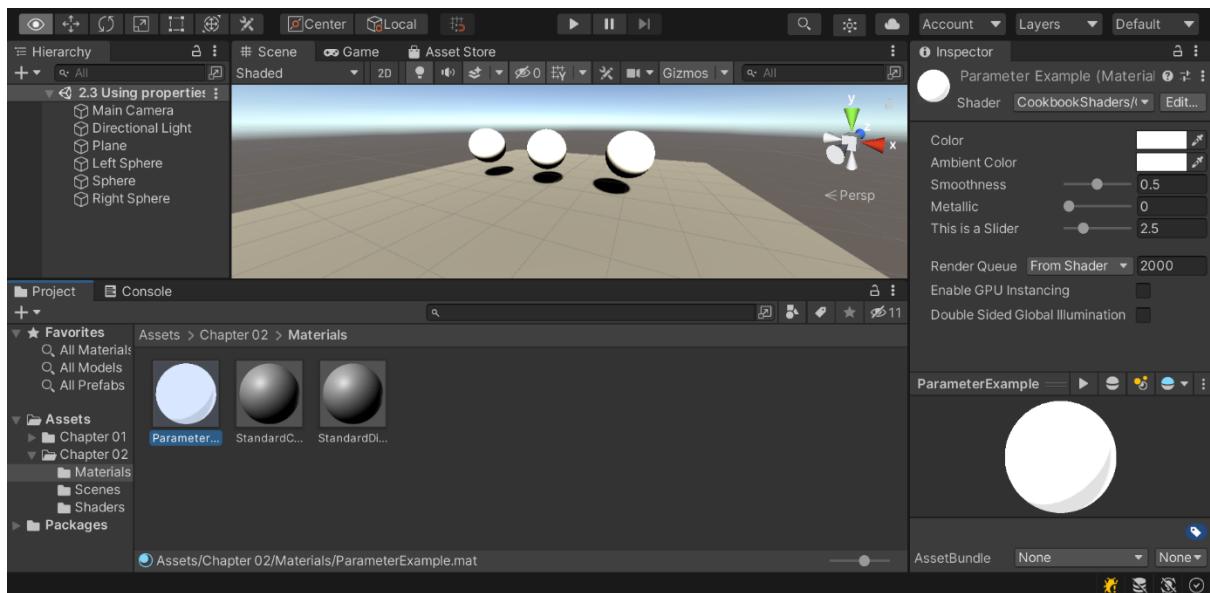


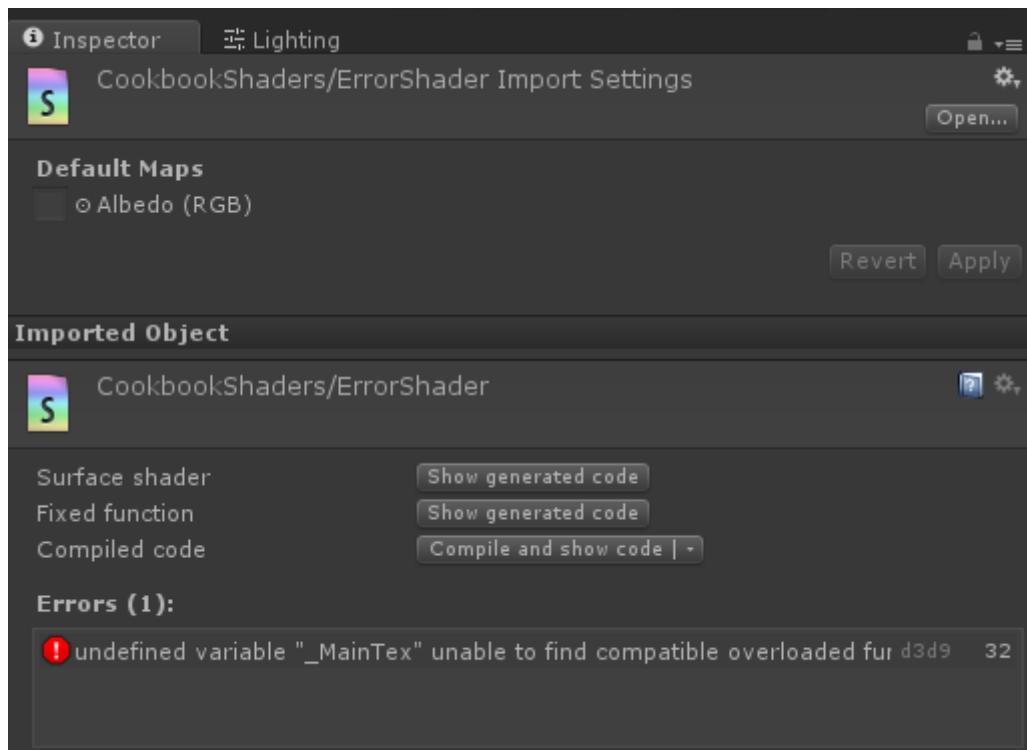




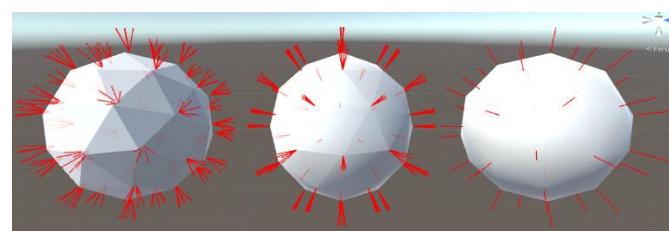
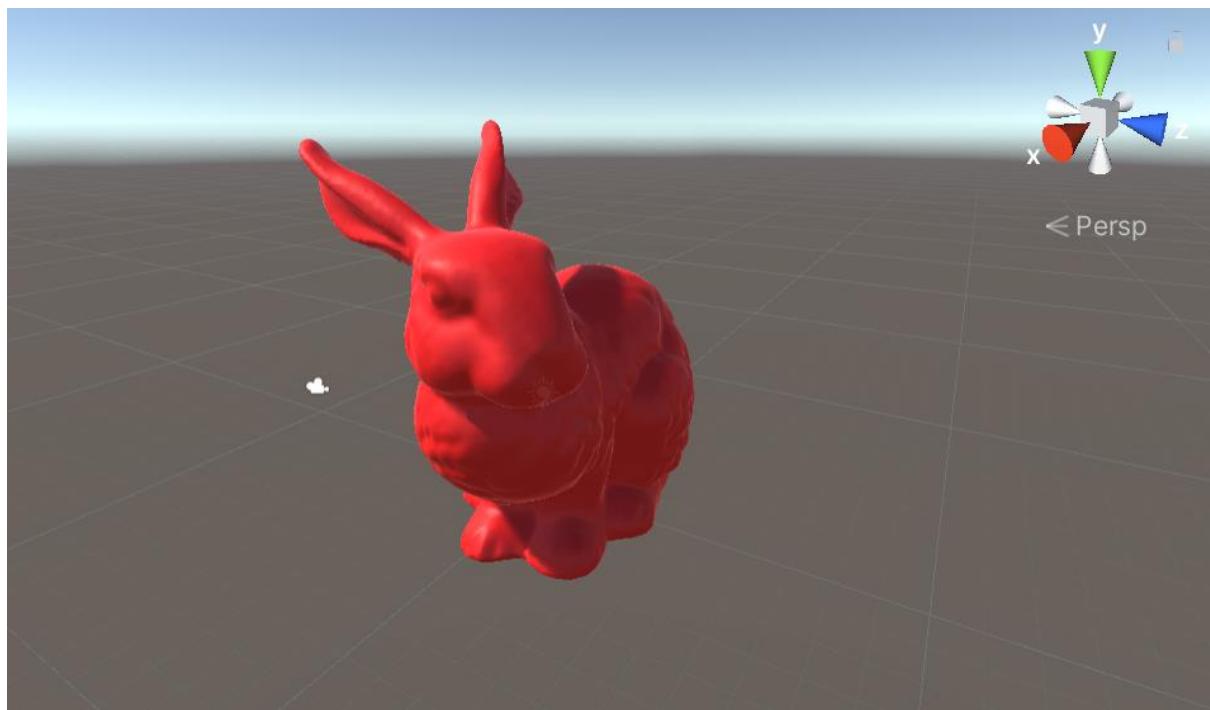
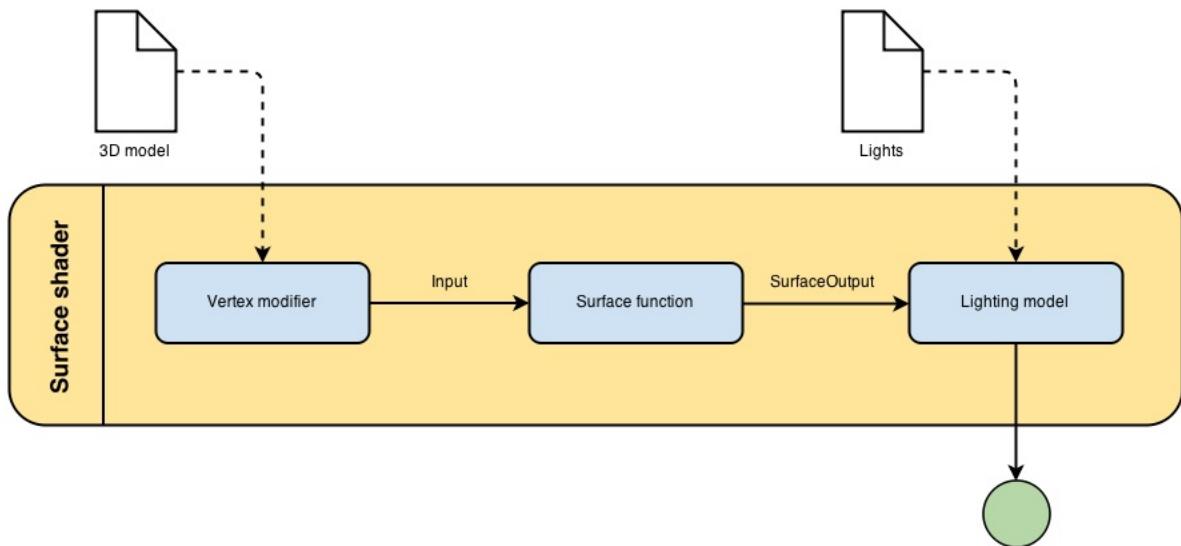
```
Properties
{
    _AmbientColor ("Ambient Color", Color) = [1,1,1,1]
}
```

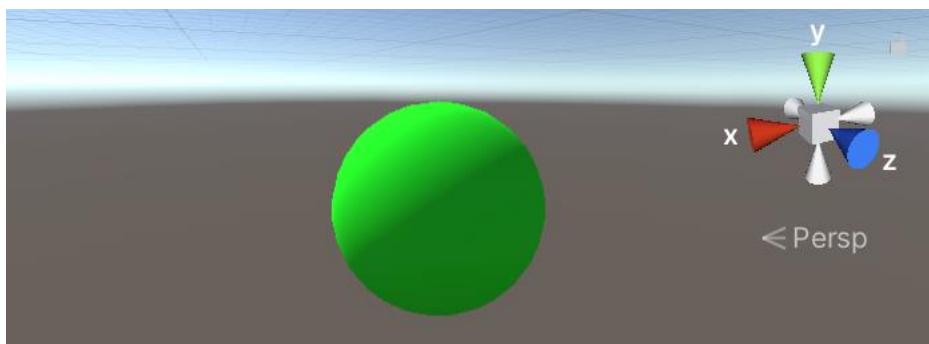
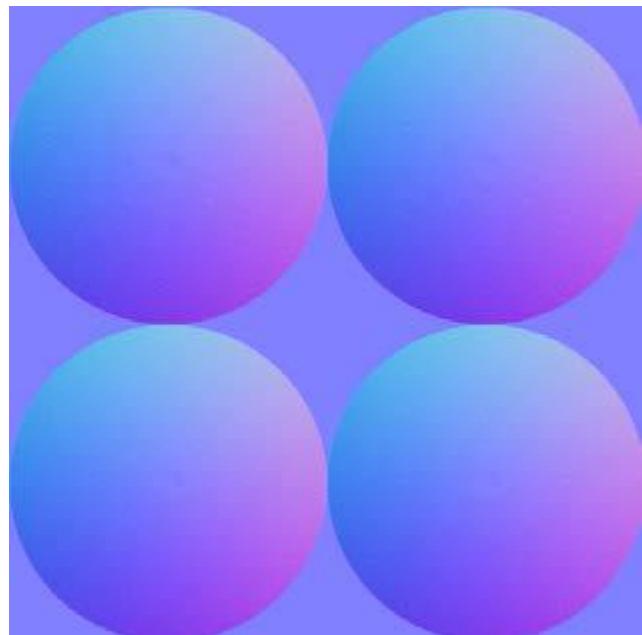
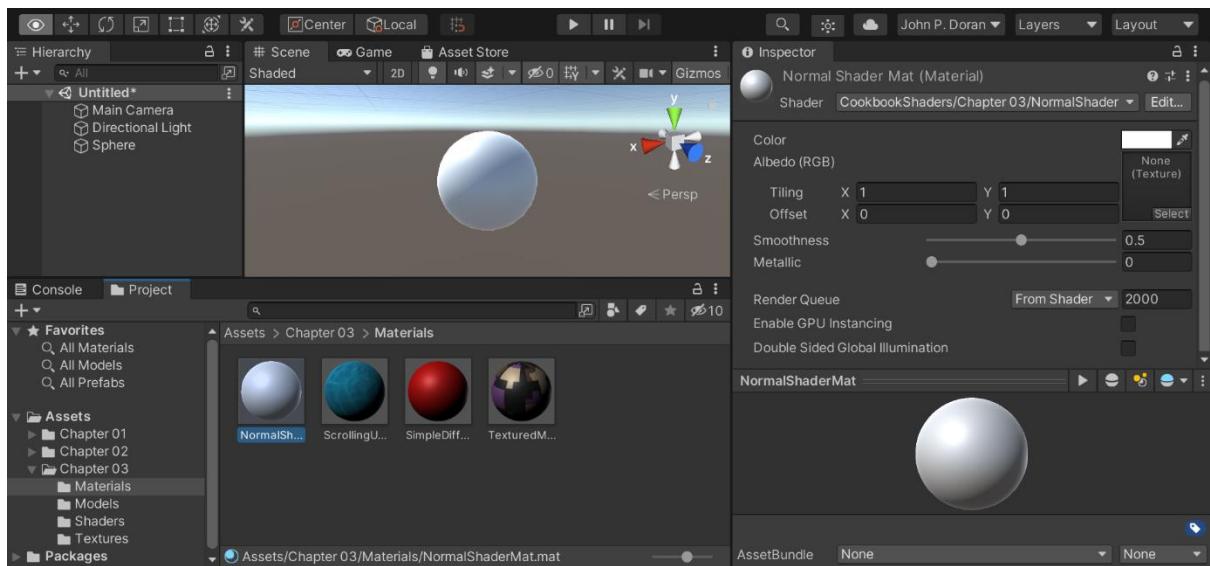
Variable Name	Inspector GUI Name	Type	Default Value
_AmbientColor	"Ambient Color"	Color	[1,1,1,1]

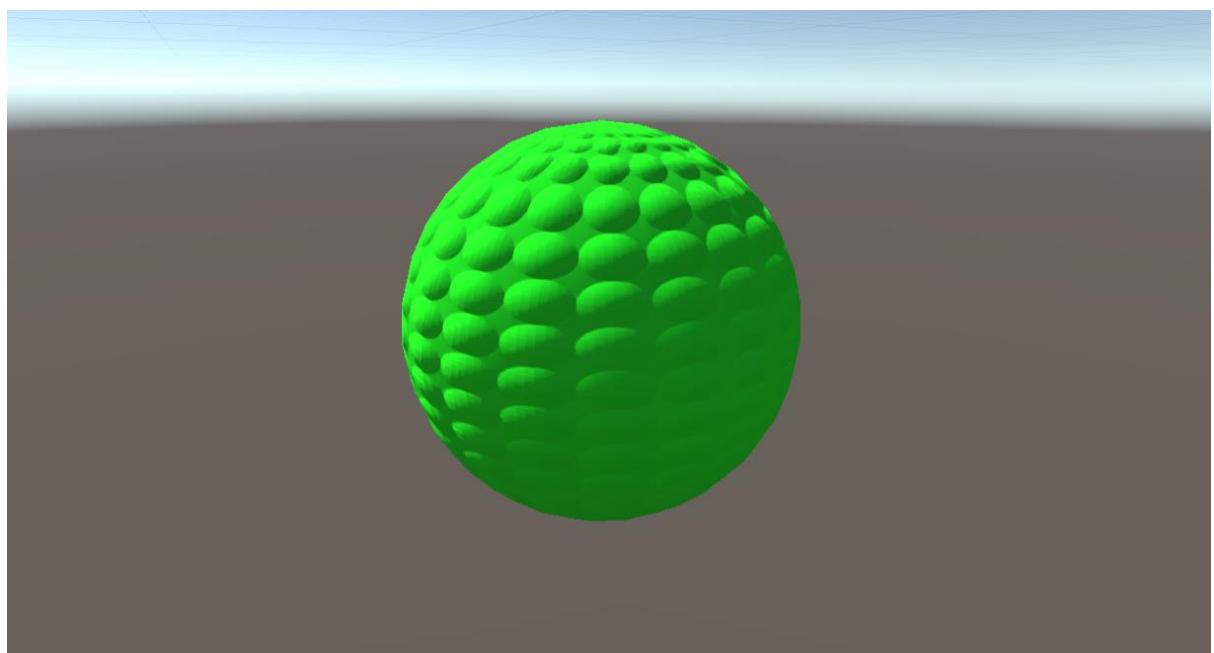
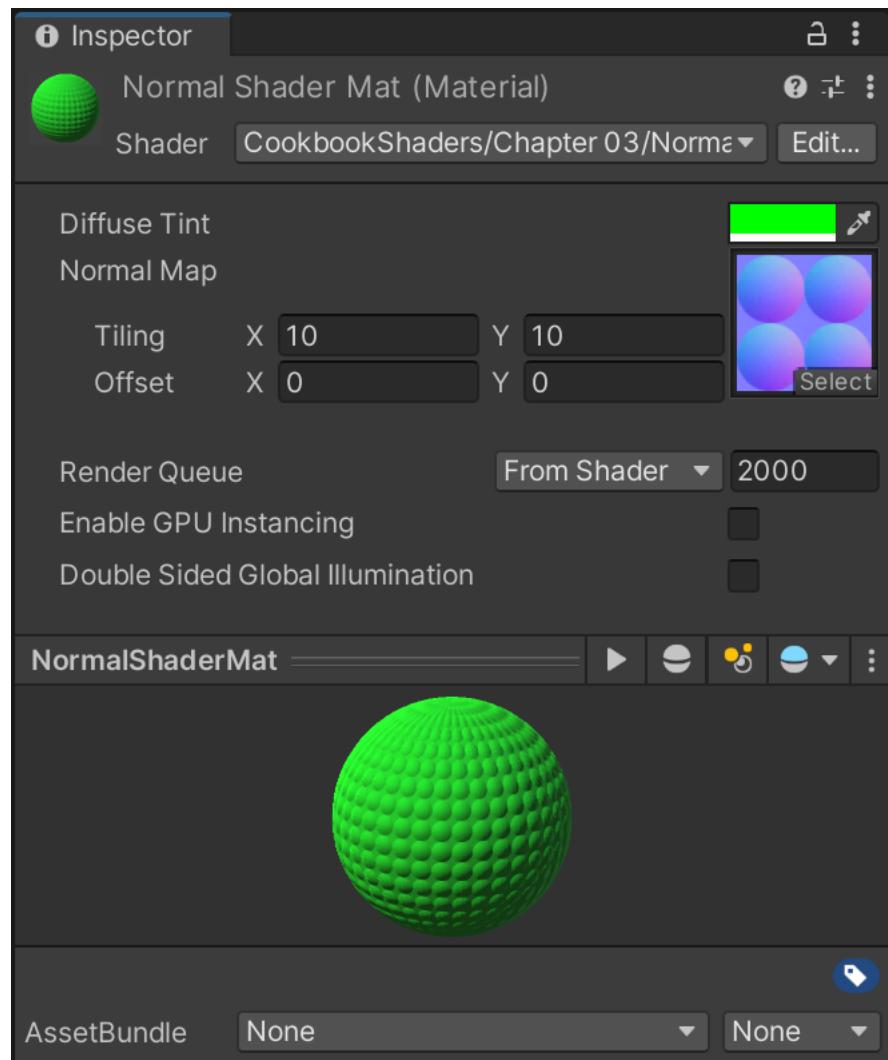


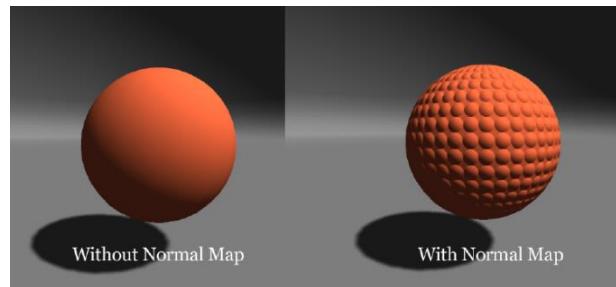


Chapter 3: Working with Surface Shaders









Inspector

Normal Shader Mat (Material)

Shader CookbookShaders/Chapter 03/Normal

Diffuse Tint (Color swatch)

Normal Map

Tiling X 10 Y 10

Offset X 0 Y 0

Normal intensity 0.5

Render Queue From Shader 2000

Enable GPU Instancing

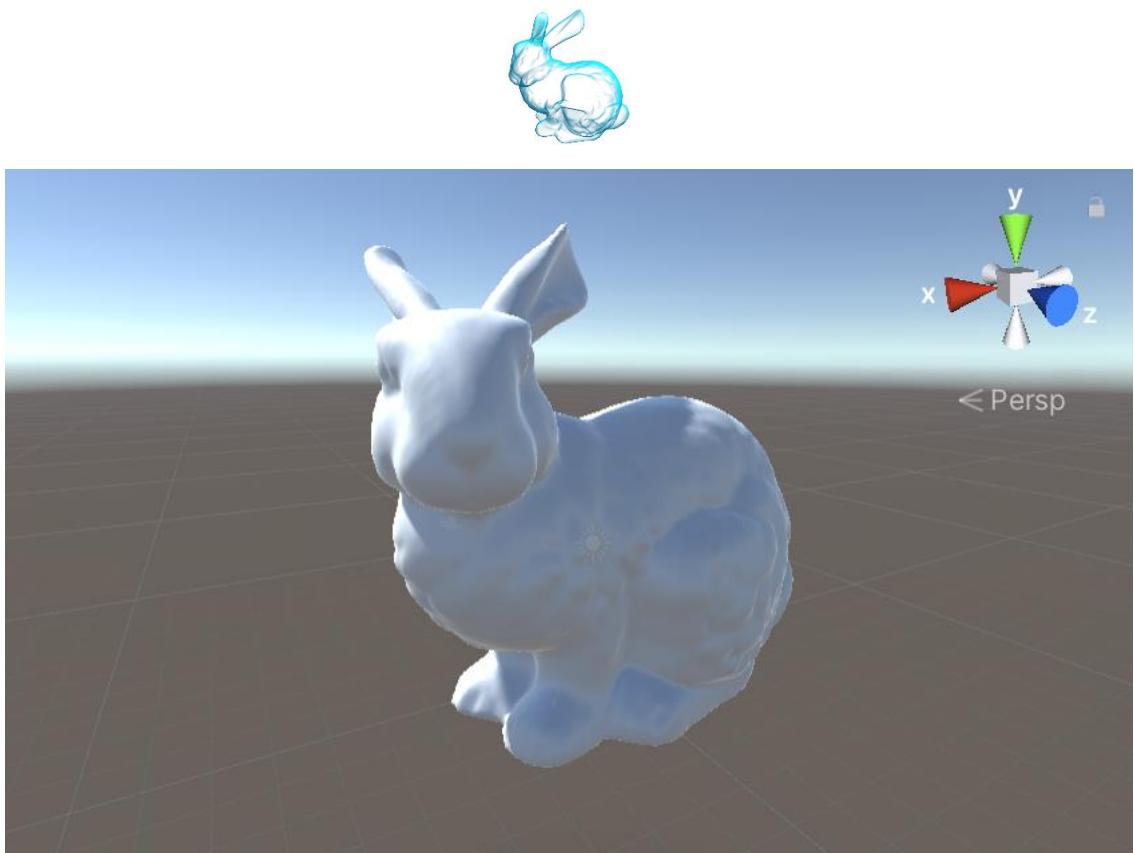
Double Sided Global Illumination

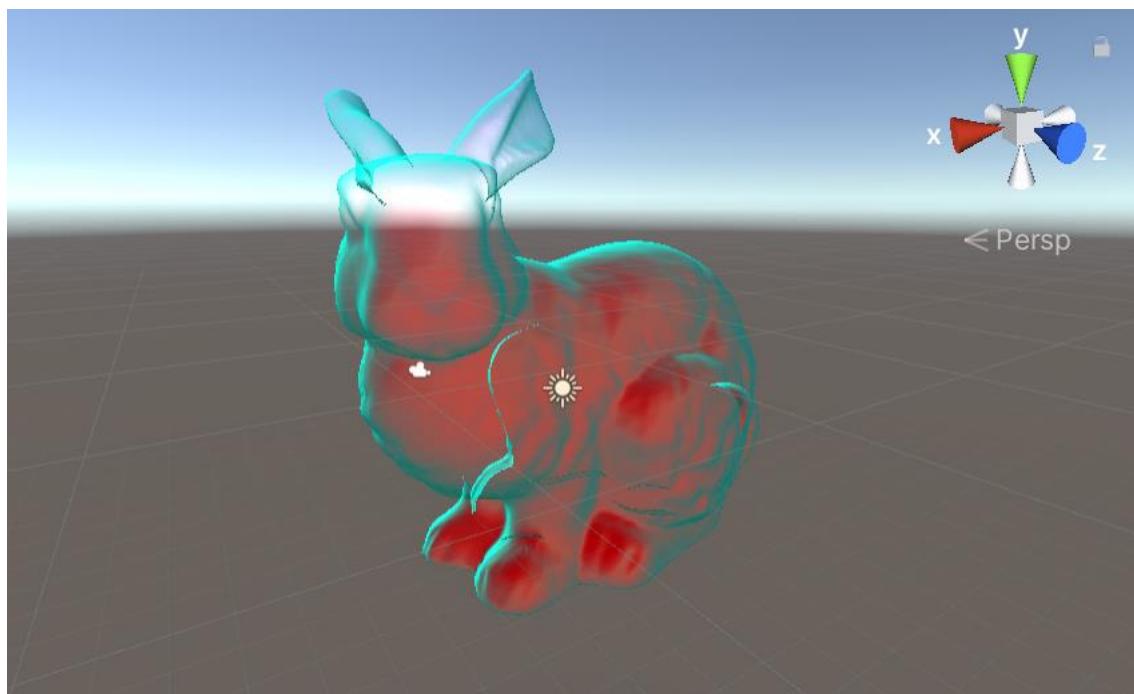
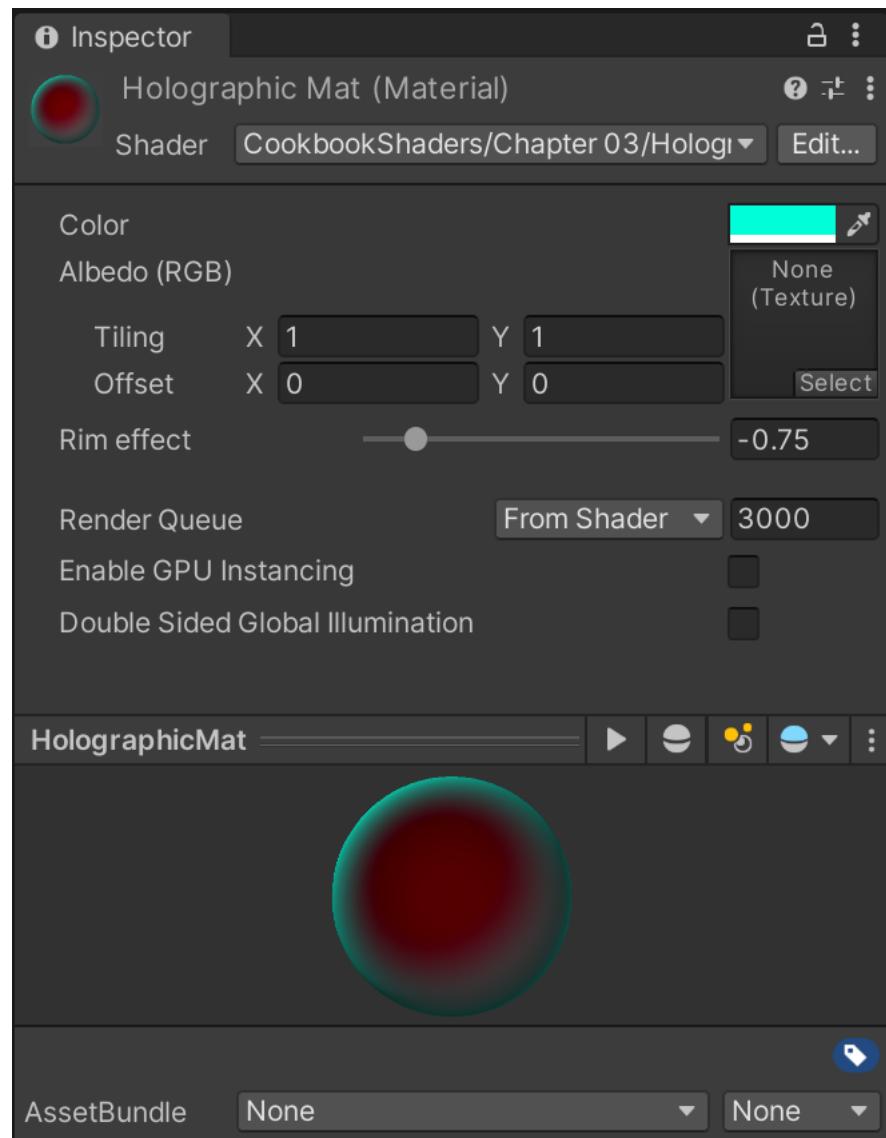
NormalShaderMat

AssetBundle None

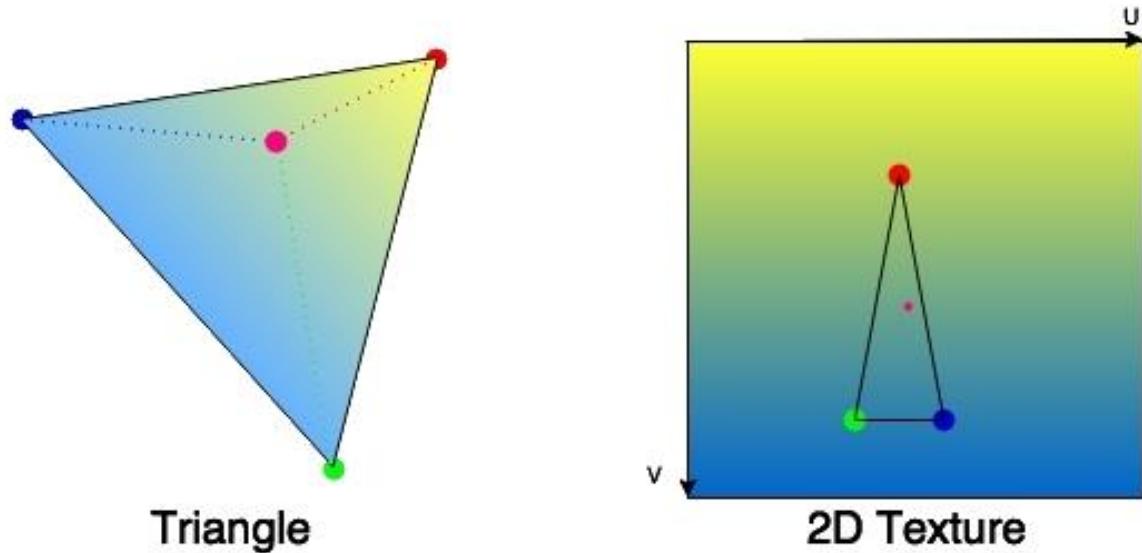
None

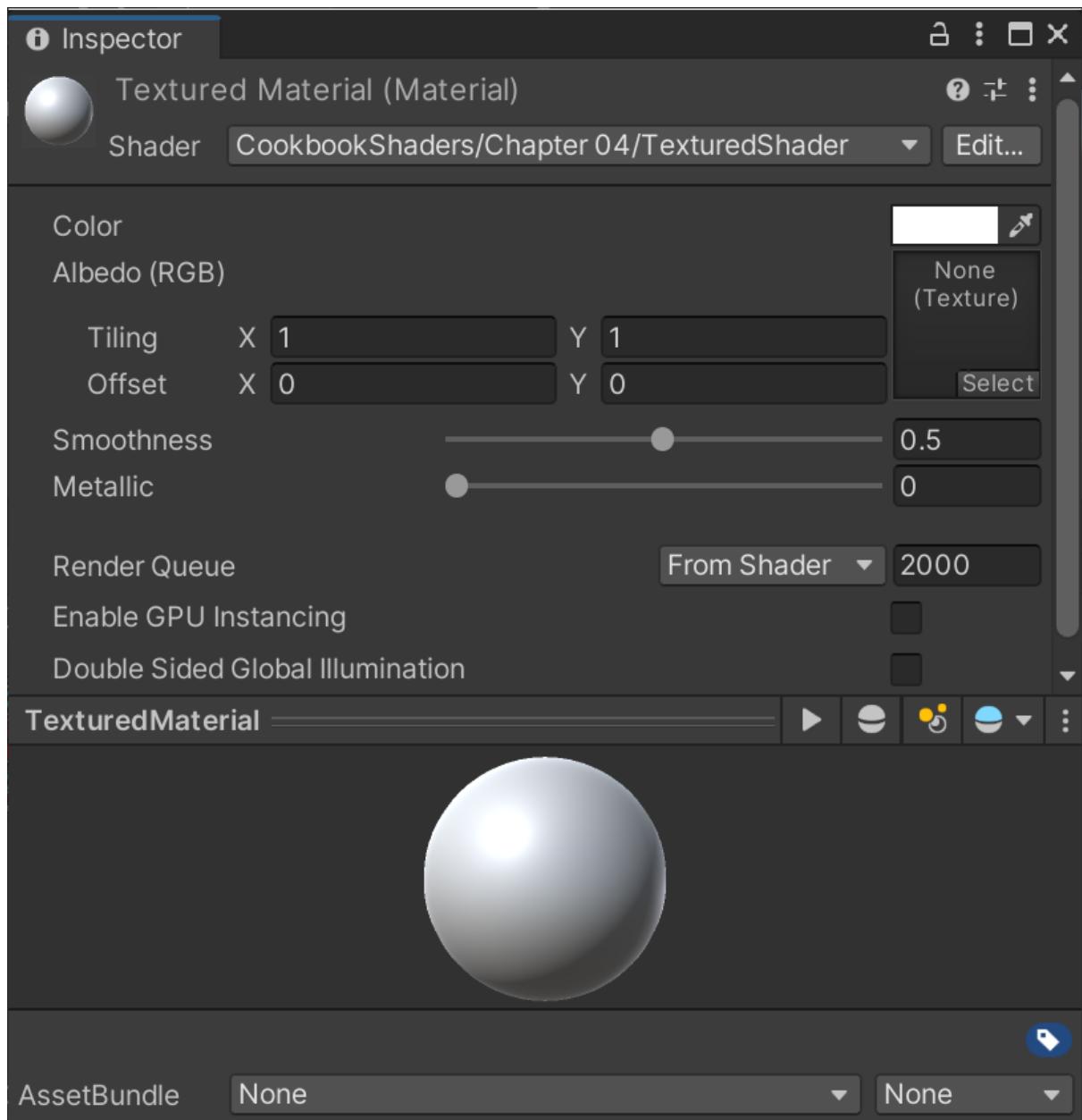


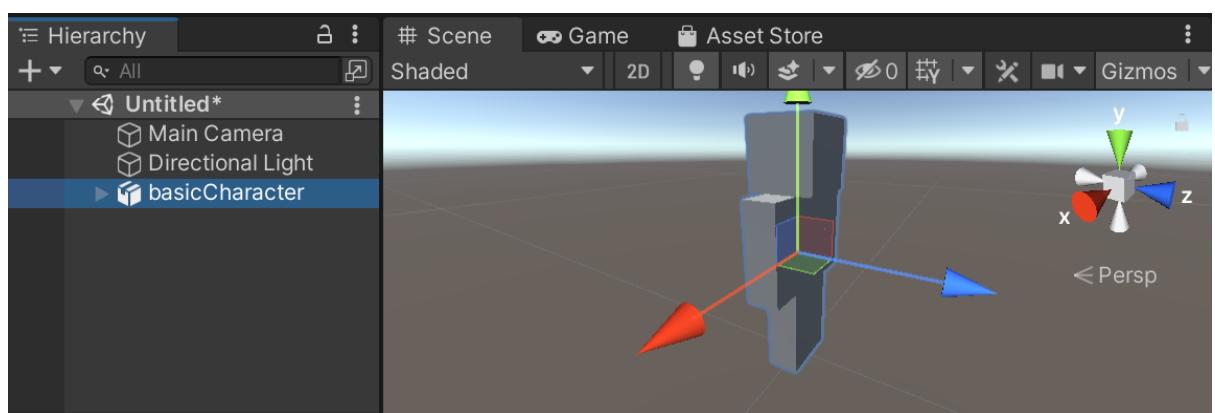
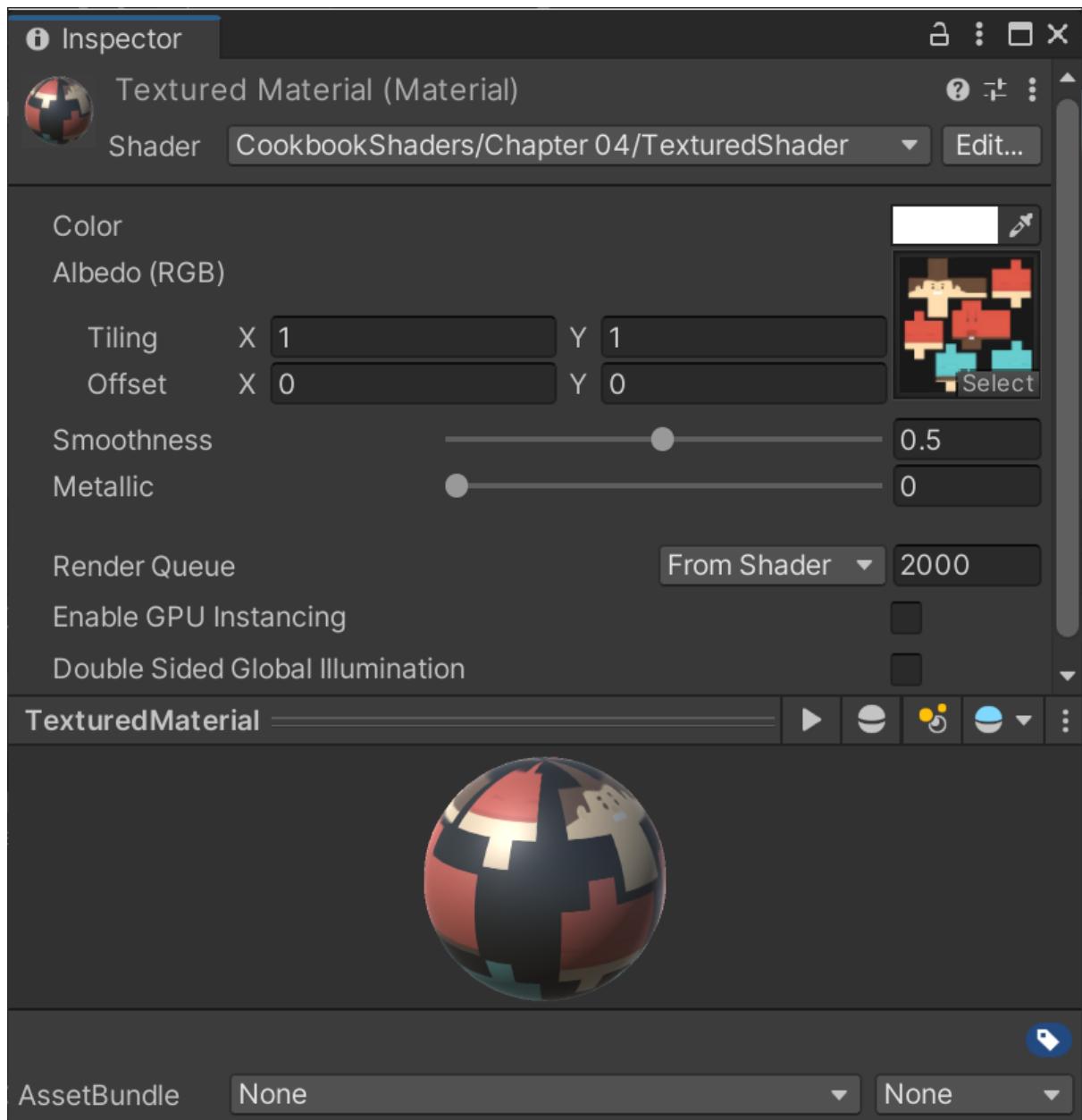


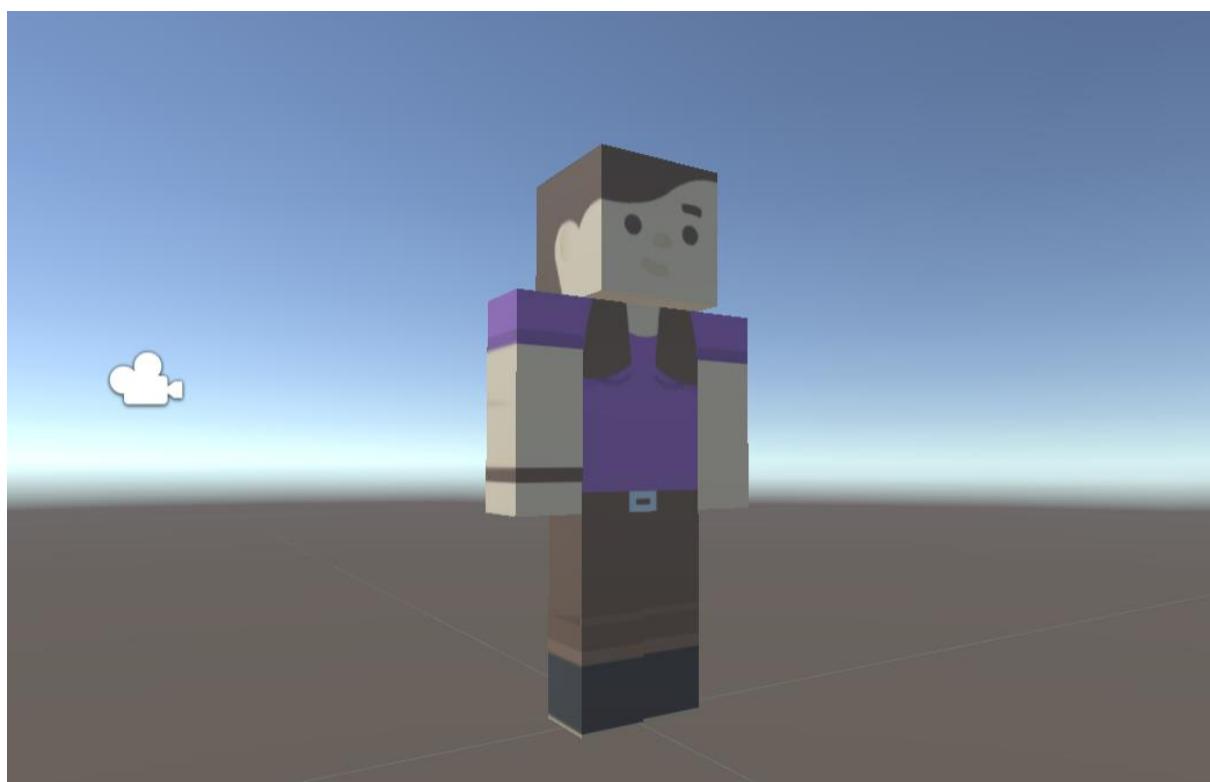
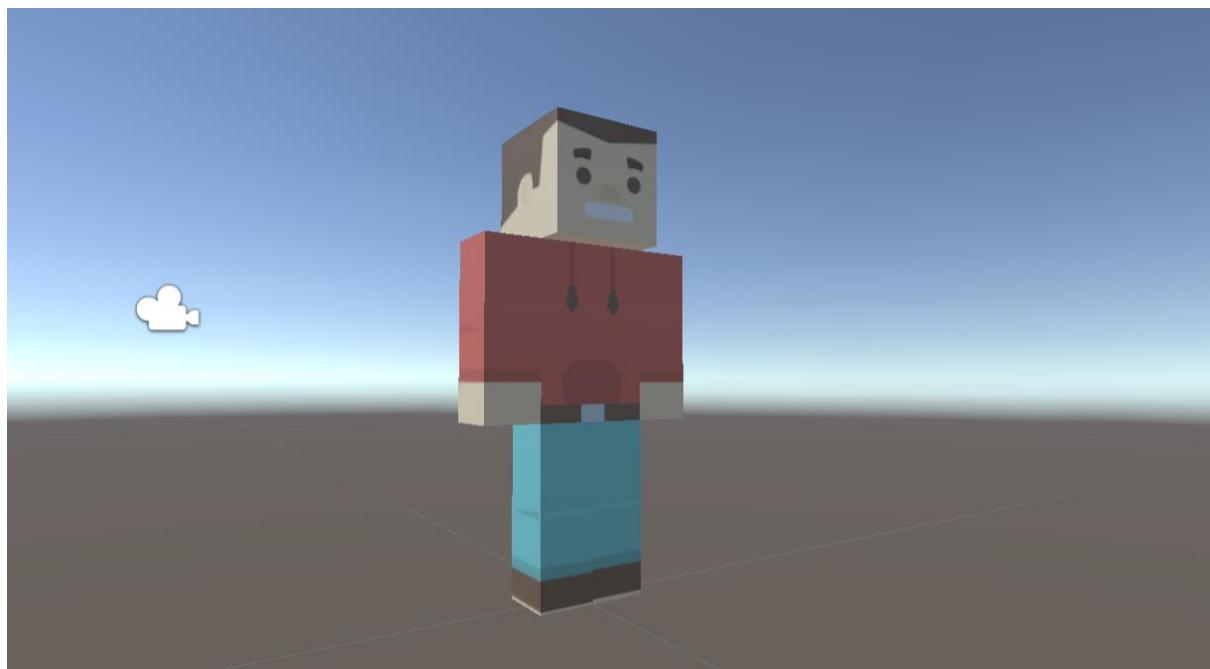


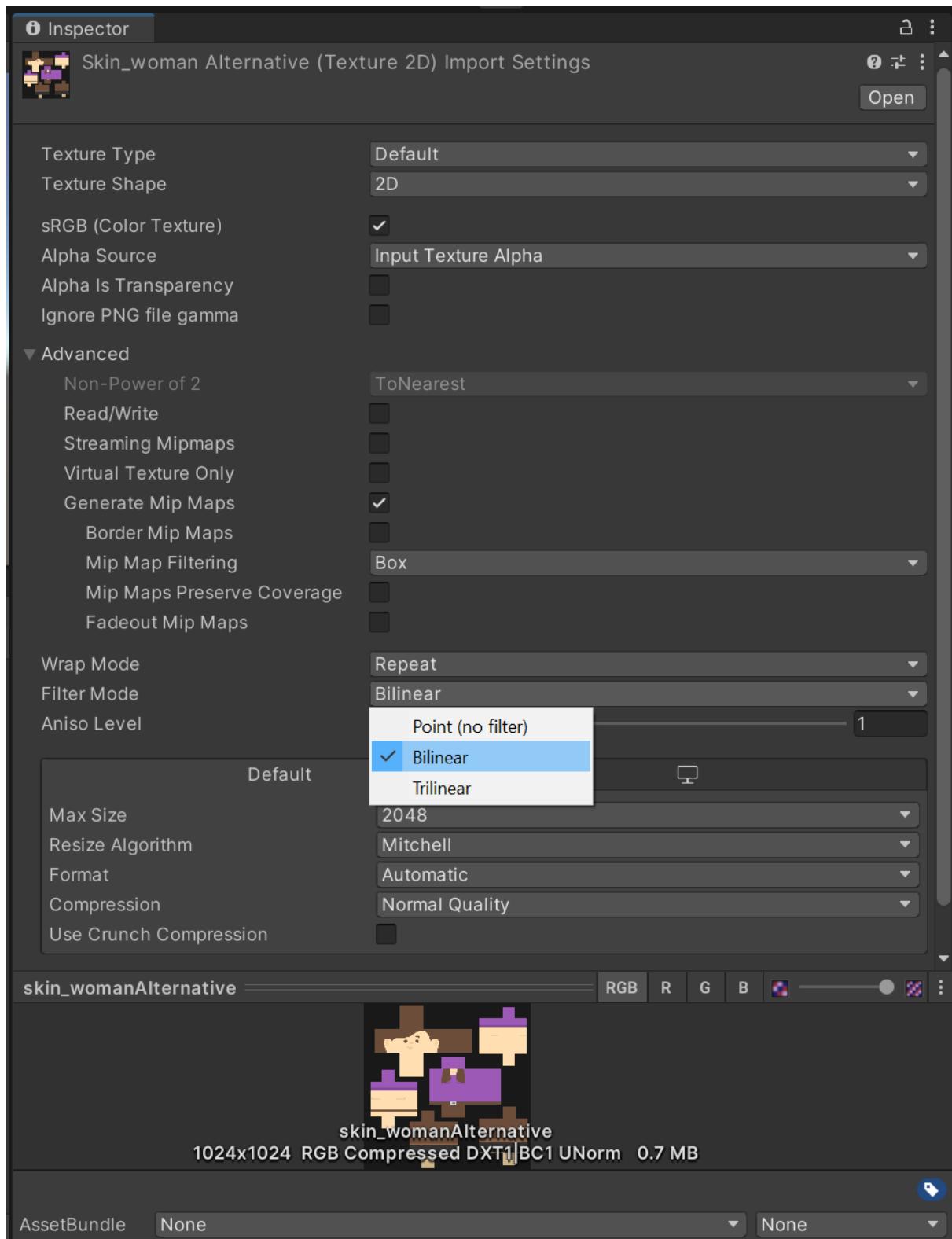
Chapter 4: Working with Texture Mapping

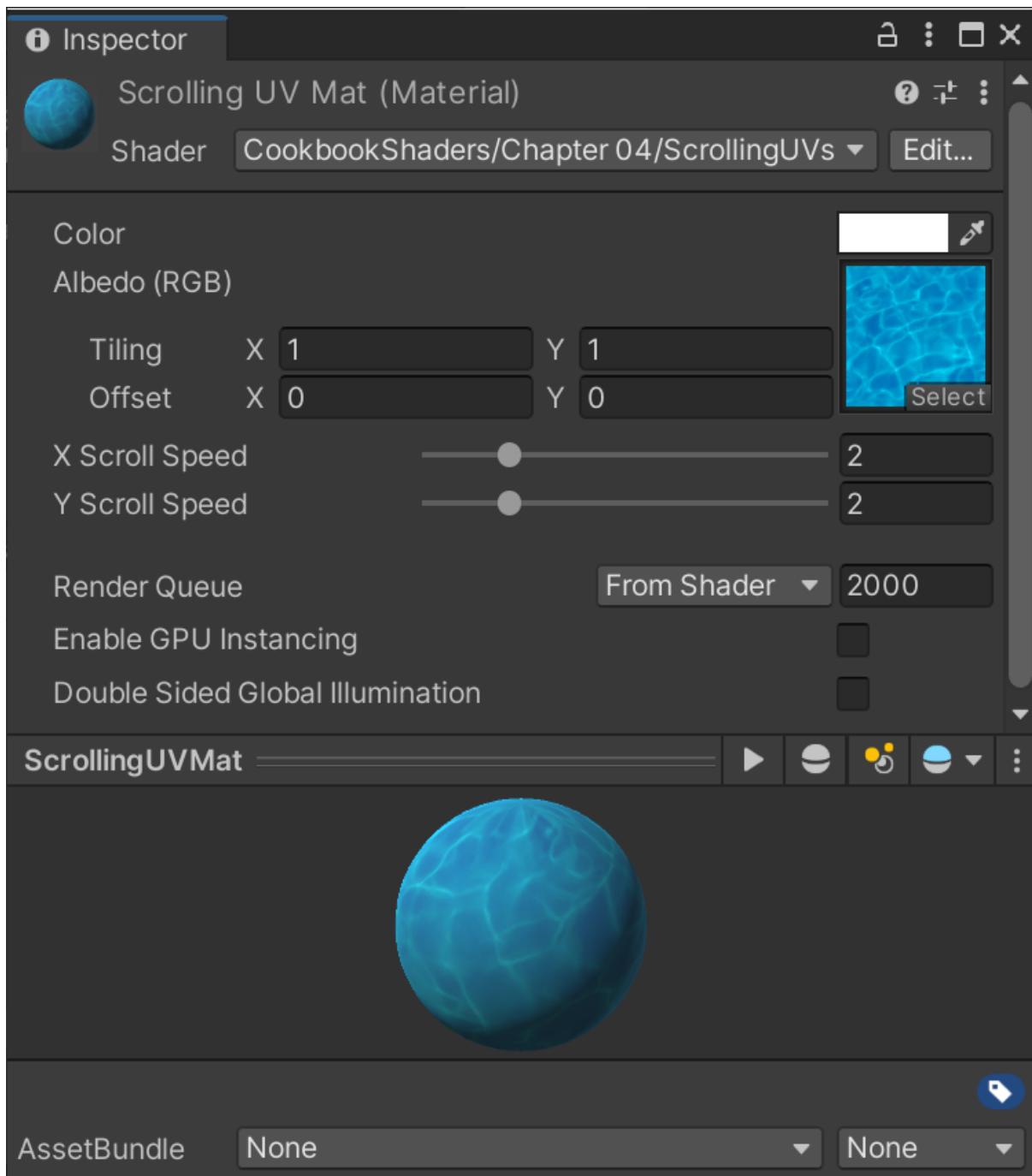


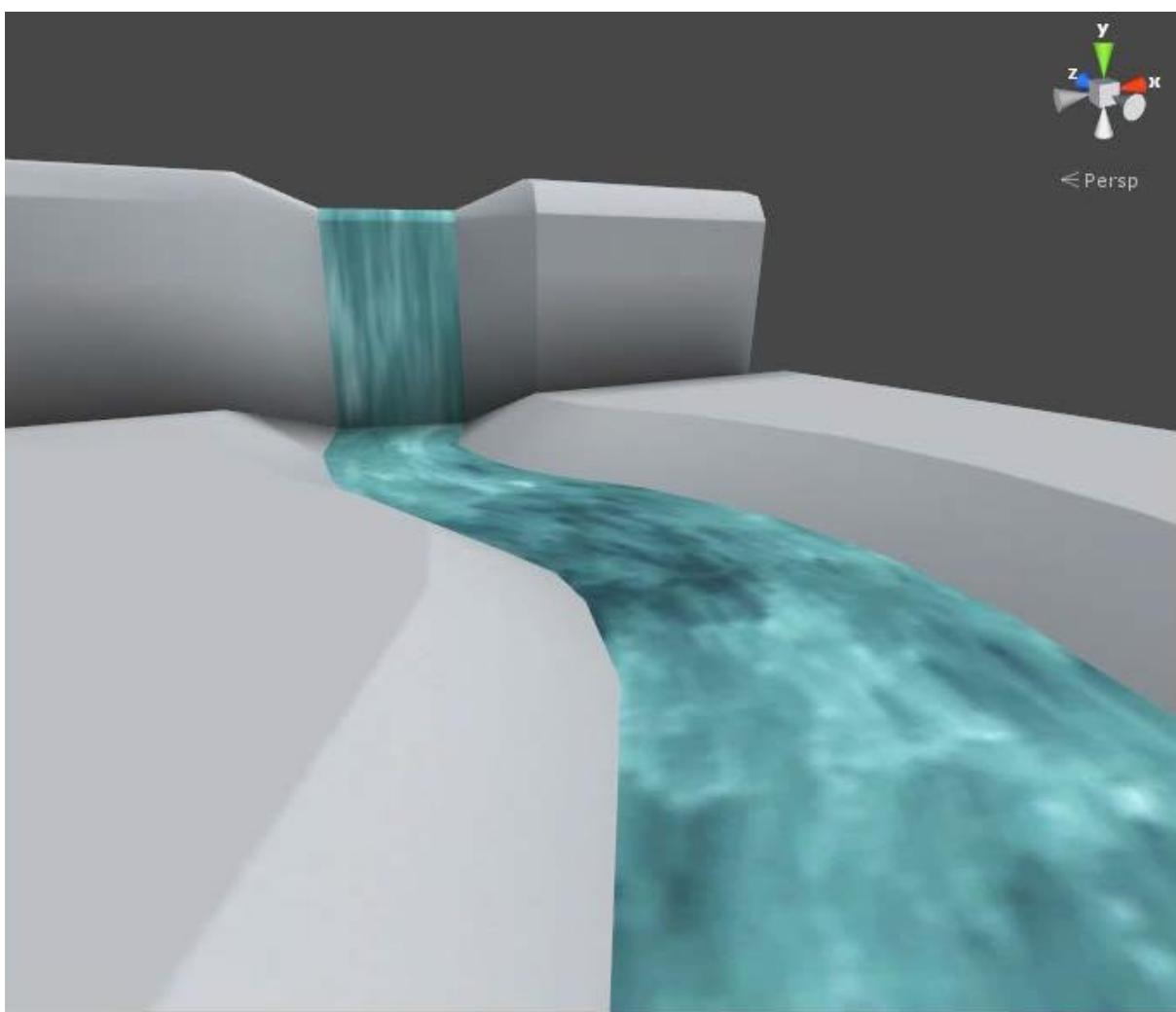
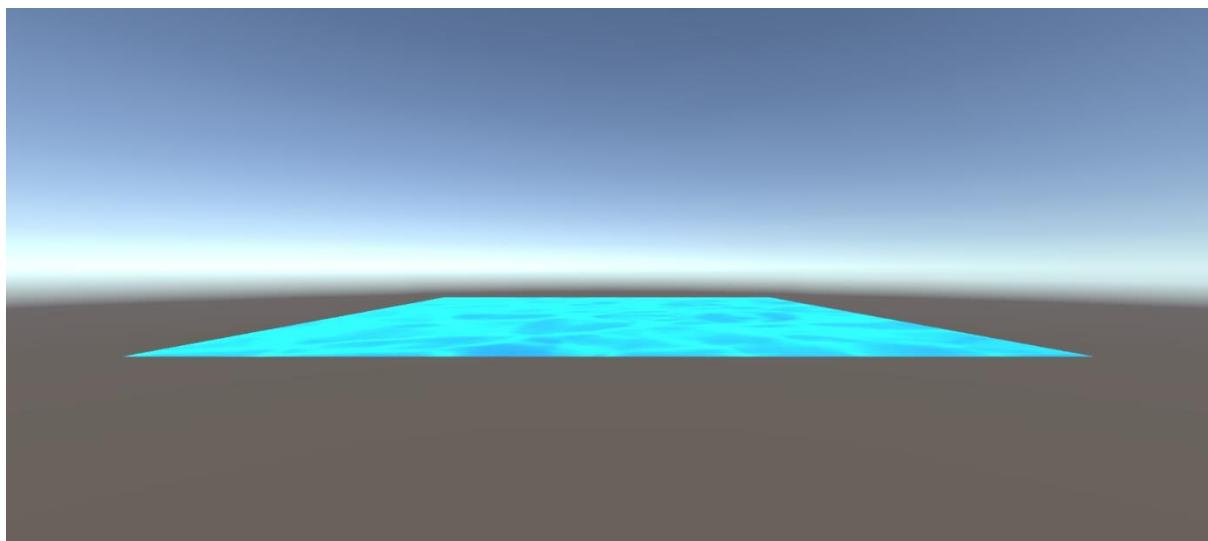


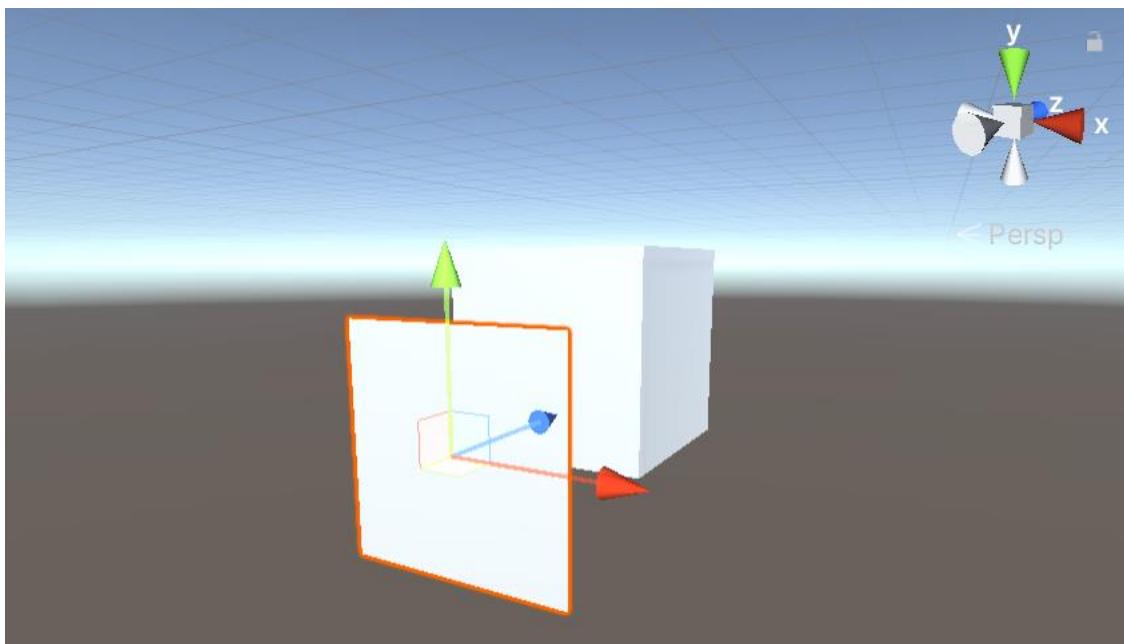


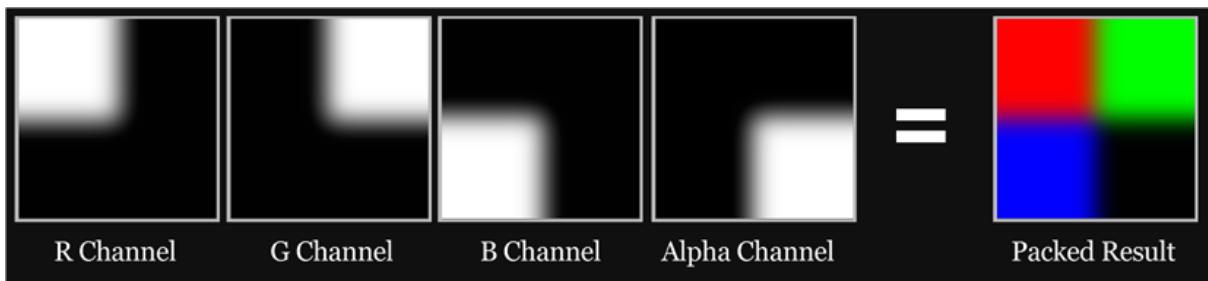
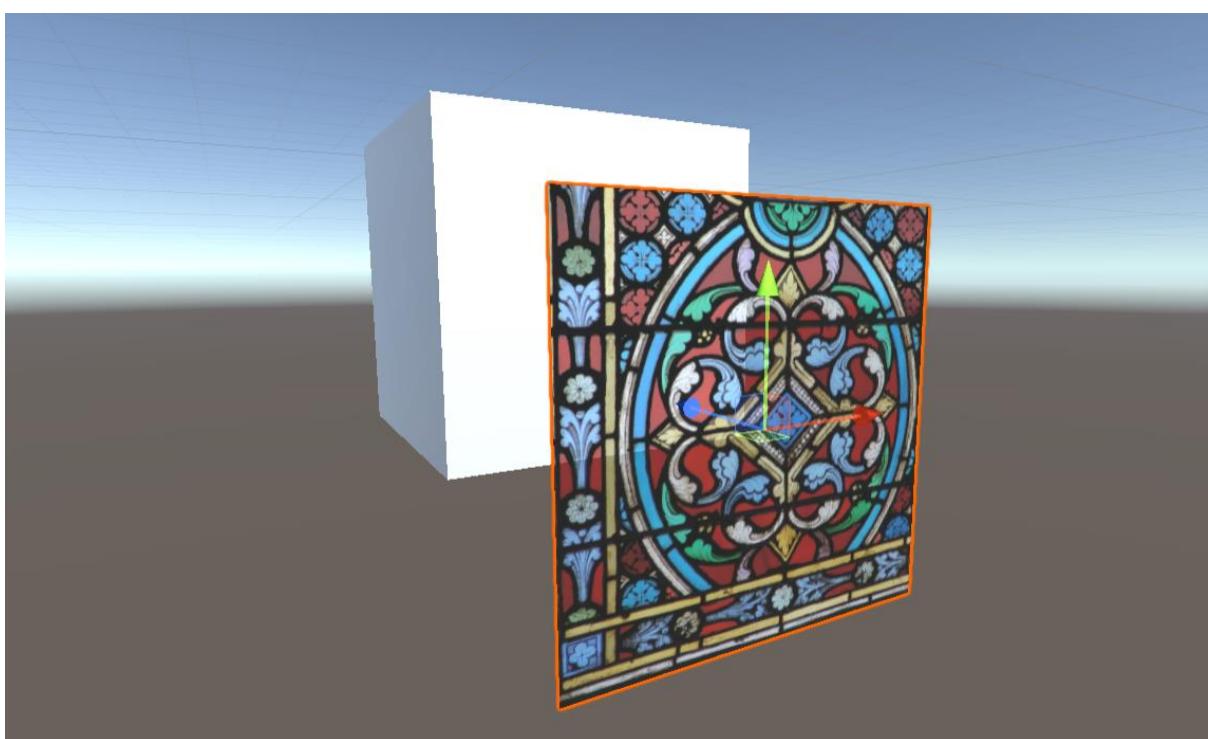
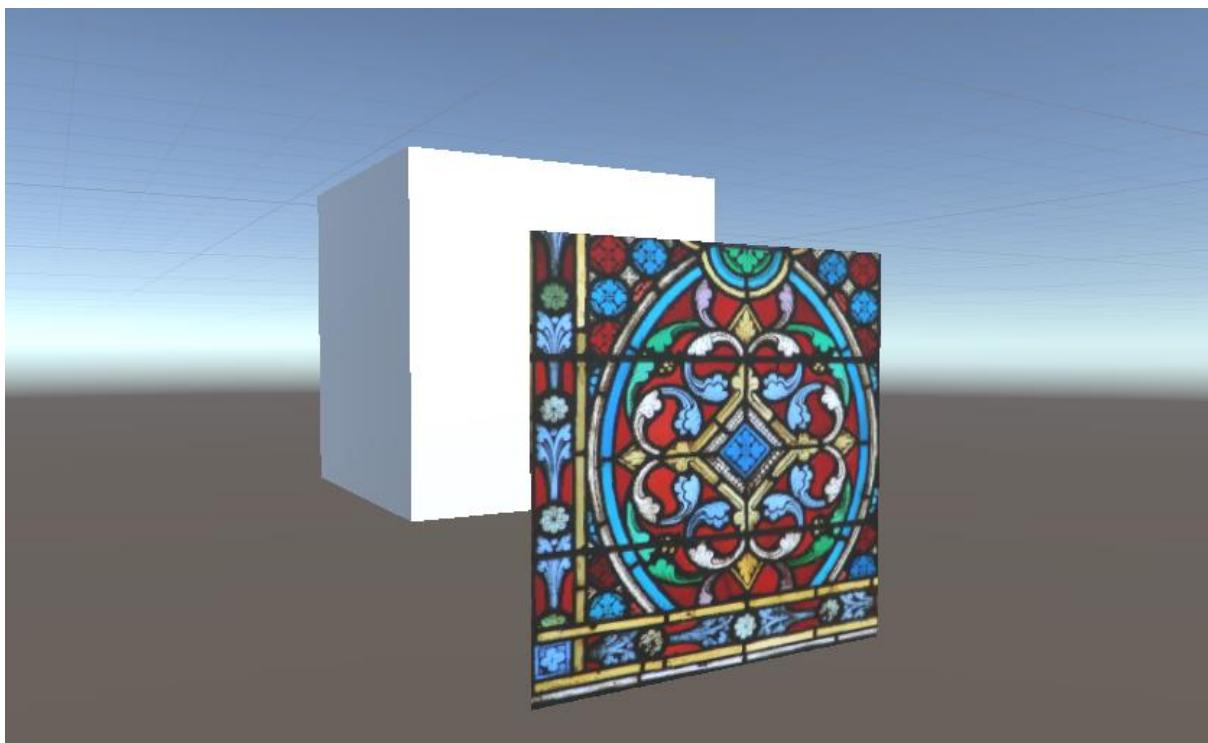


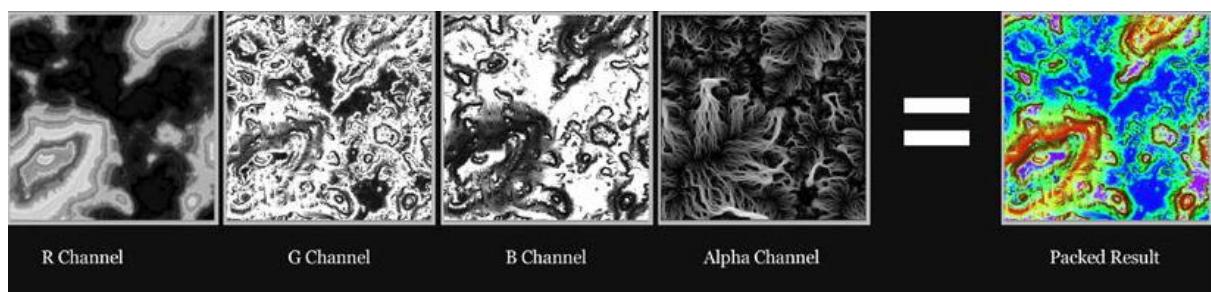
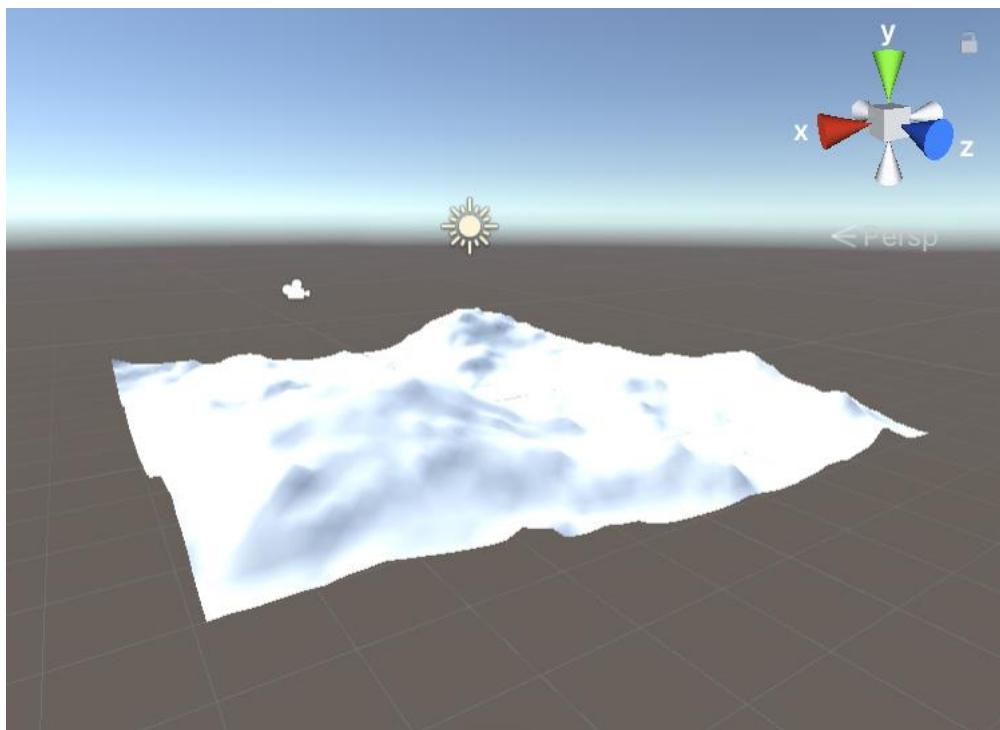




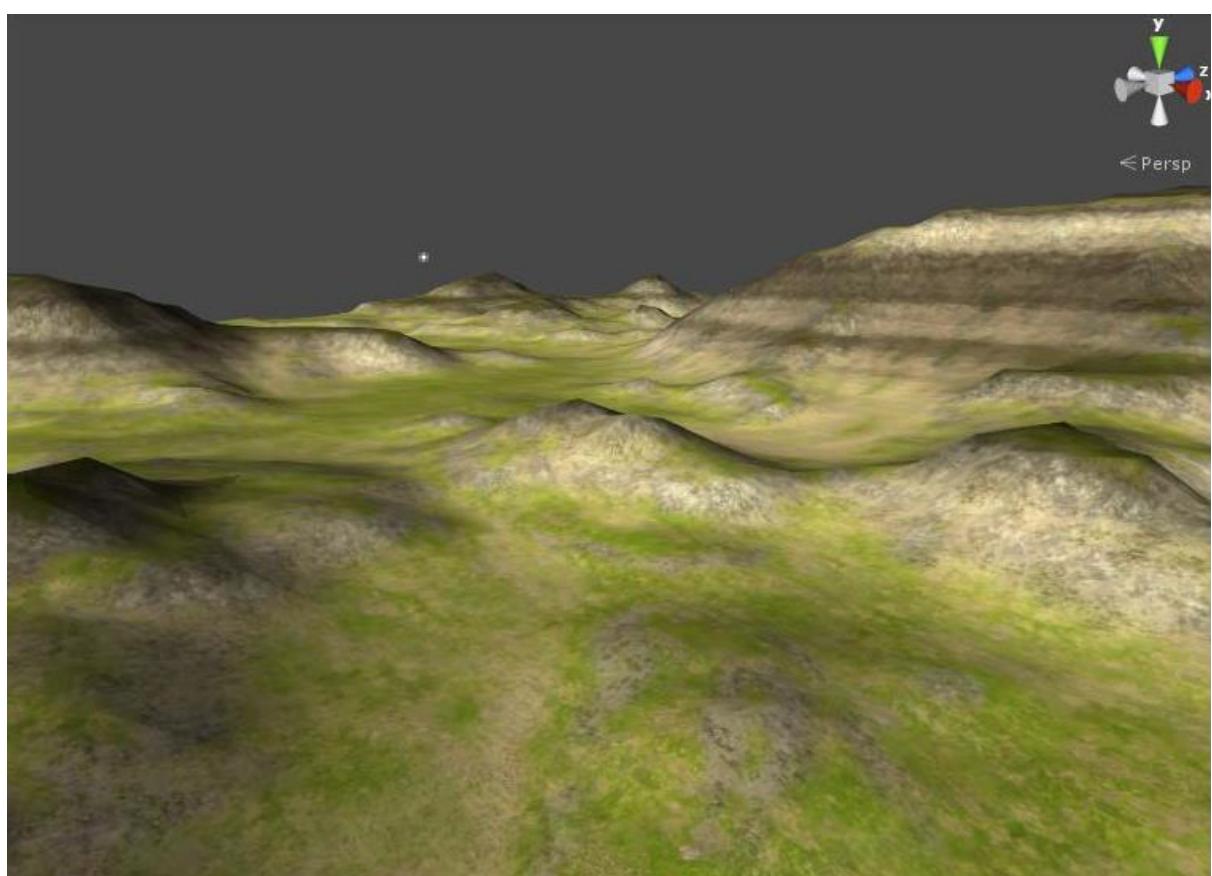
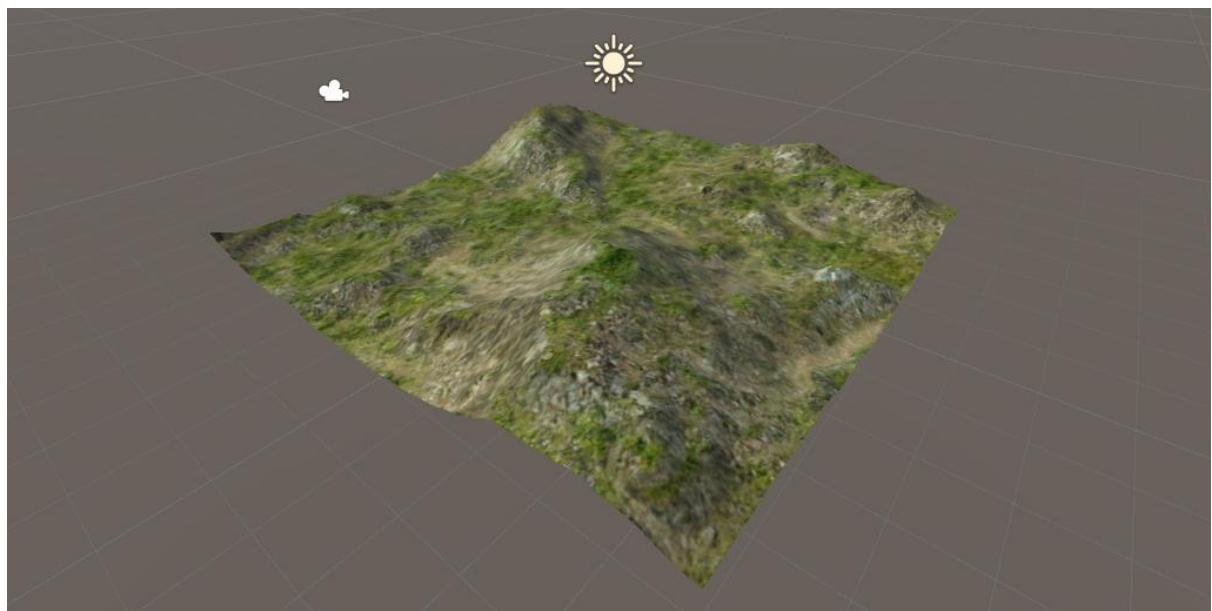




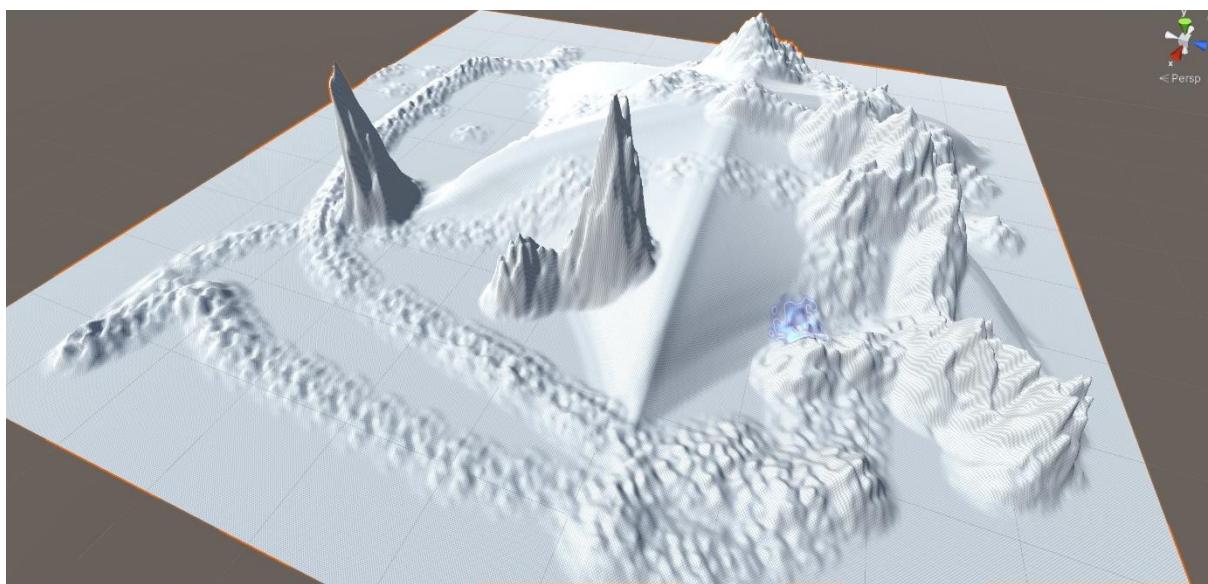
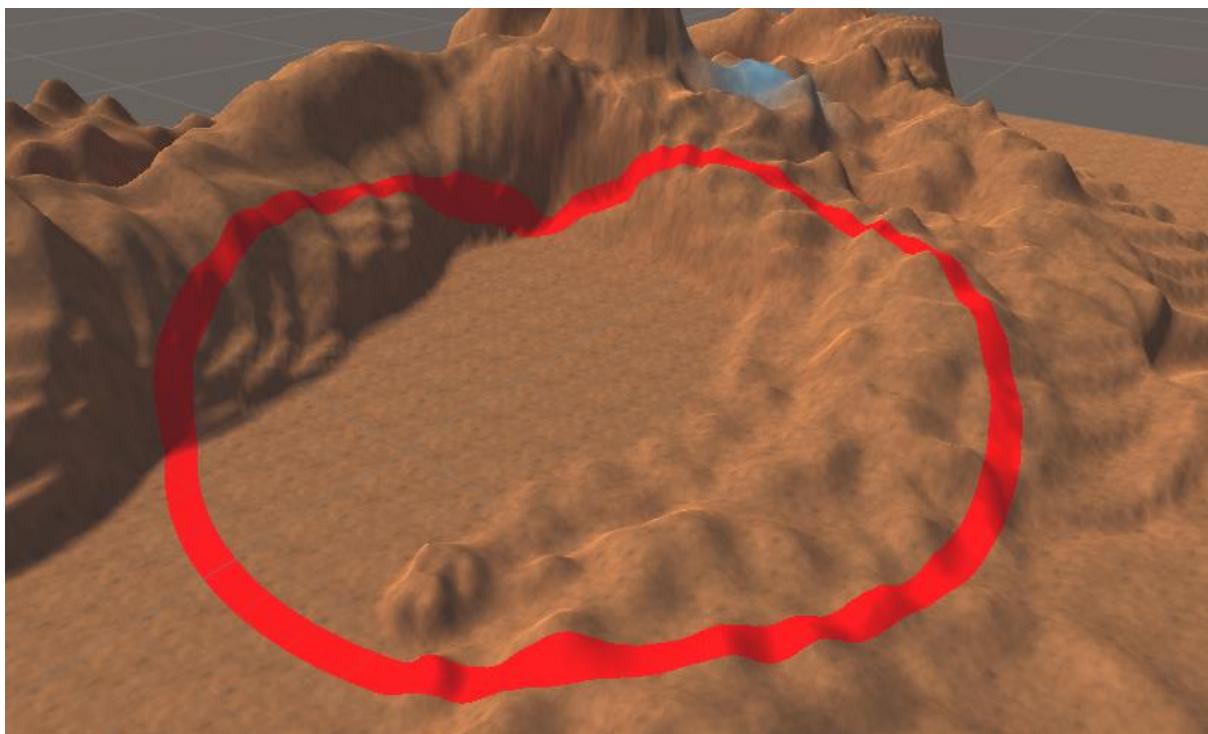


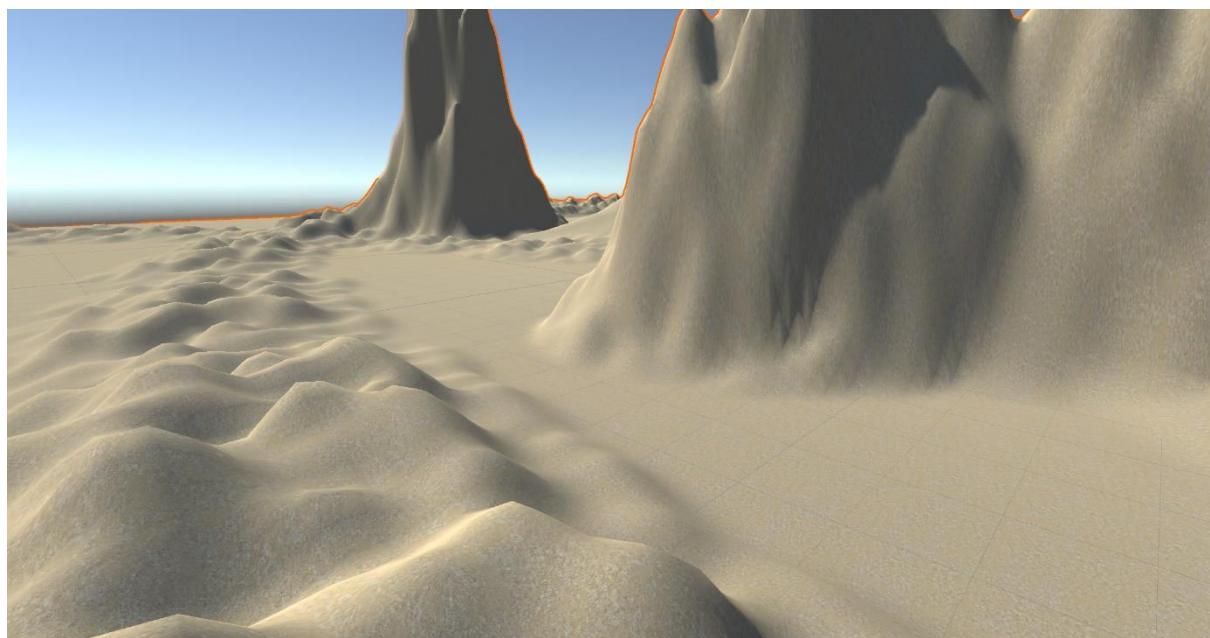
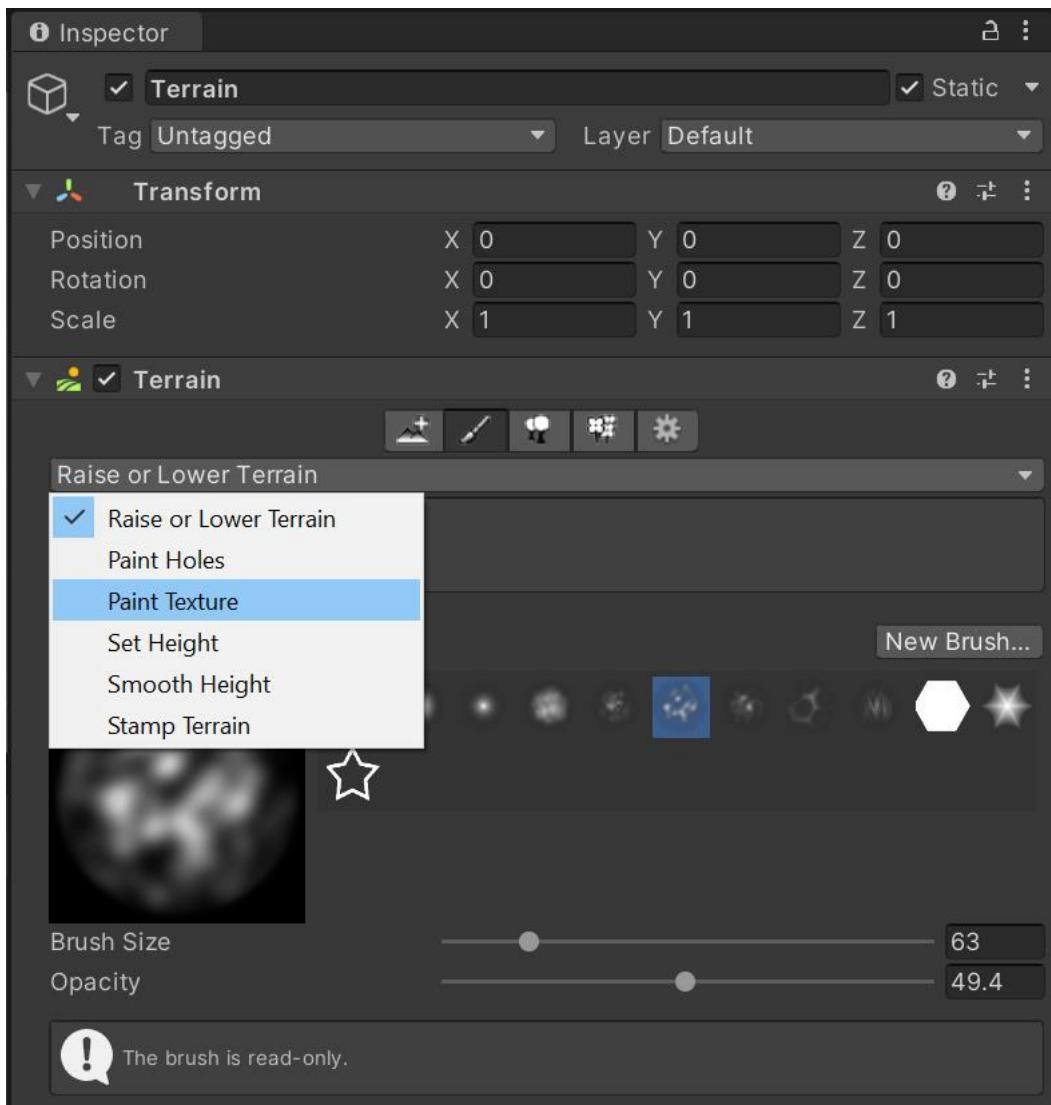


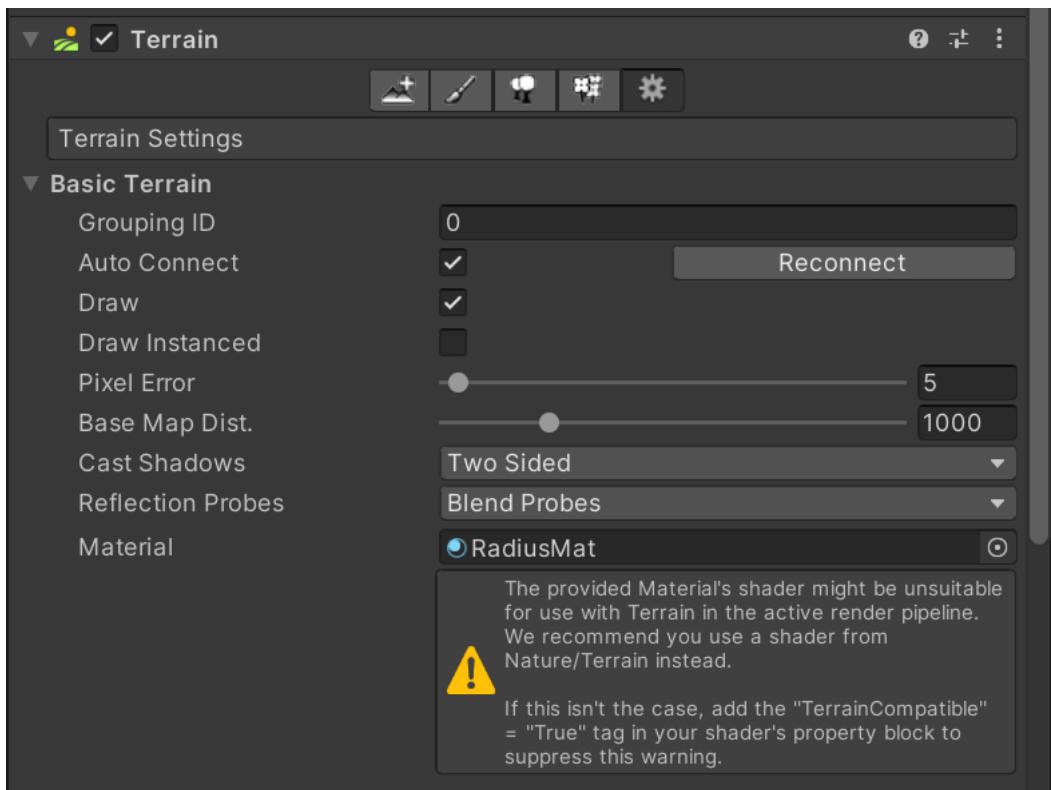


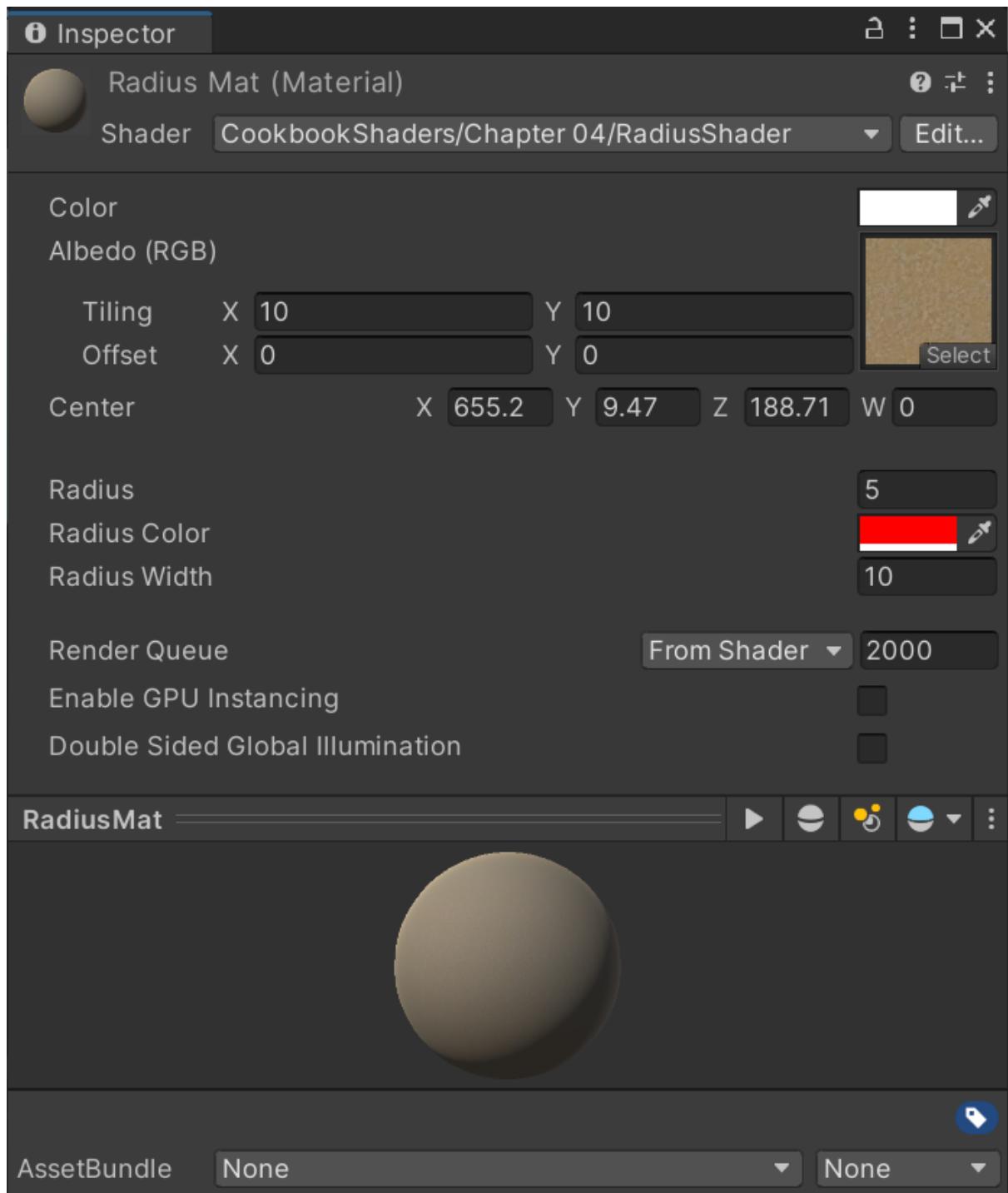


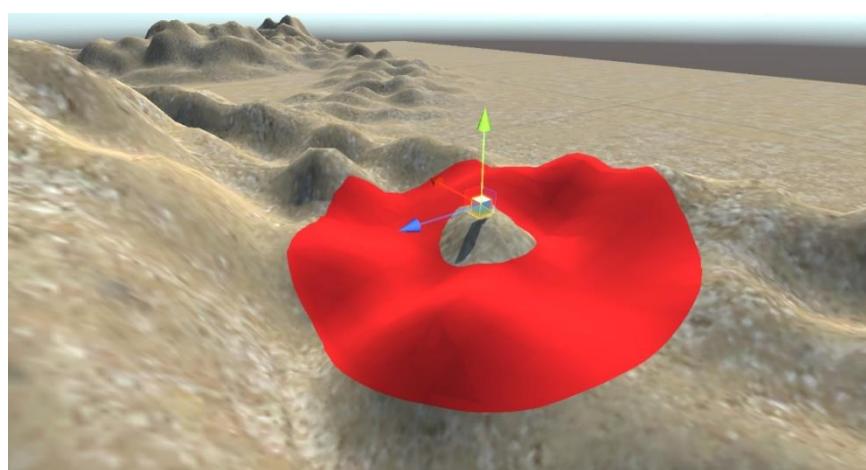
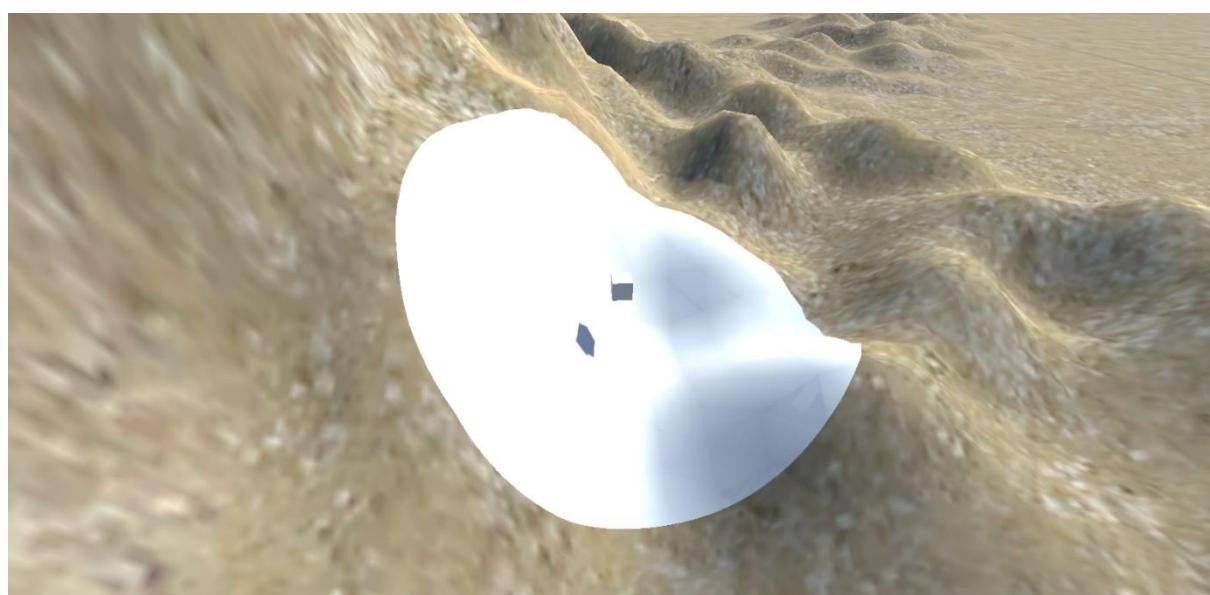
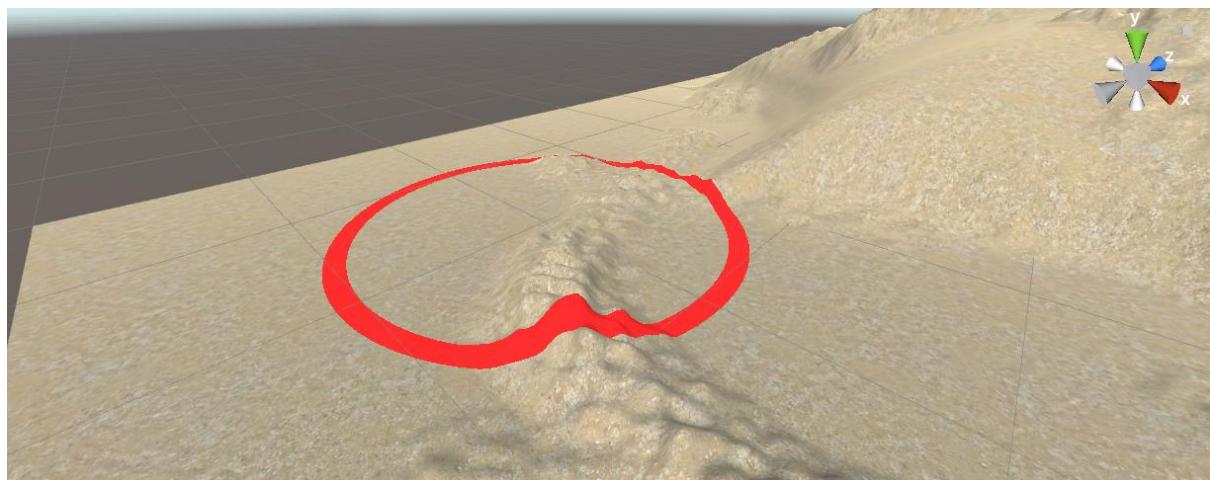
$$\text{lerp}(\underset{a}{\text{[image of a textured surface]}}, \underset{b}{\text{[image of a green grassy surface]}}, \underset{f}{\text{[image of a black and white noise pattern]}}) = \underset{\text{result}}{\text{[image of a final textured surface]}}$$



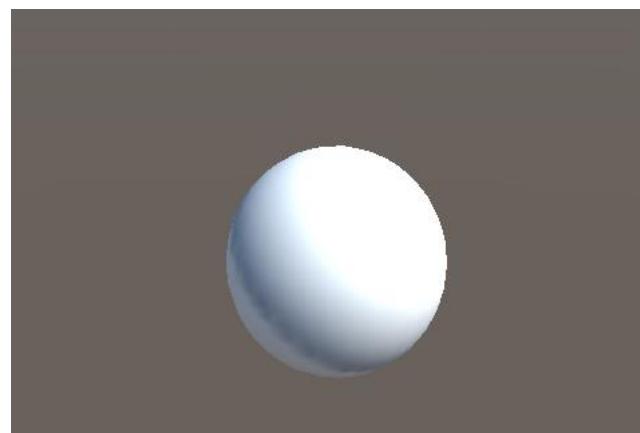
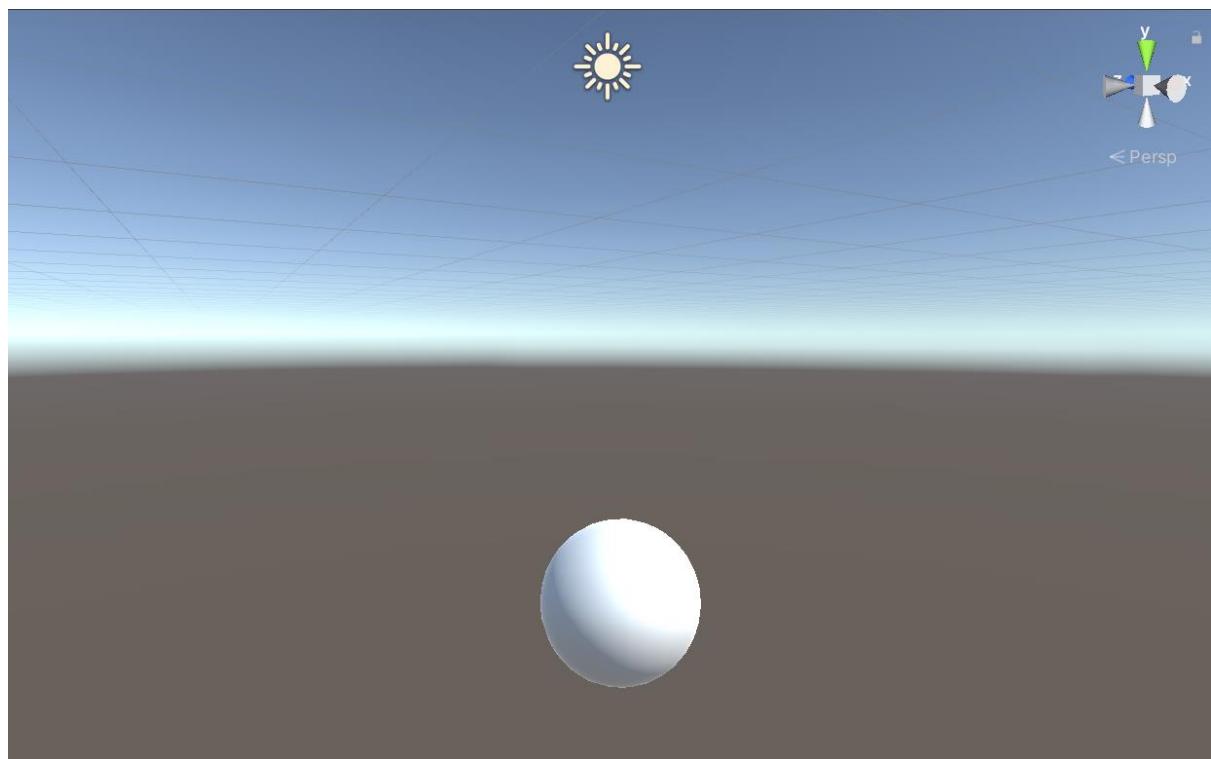
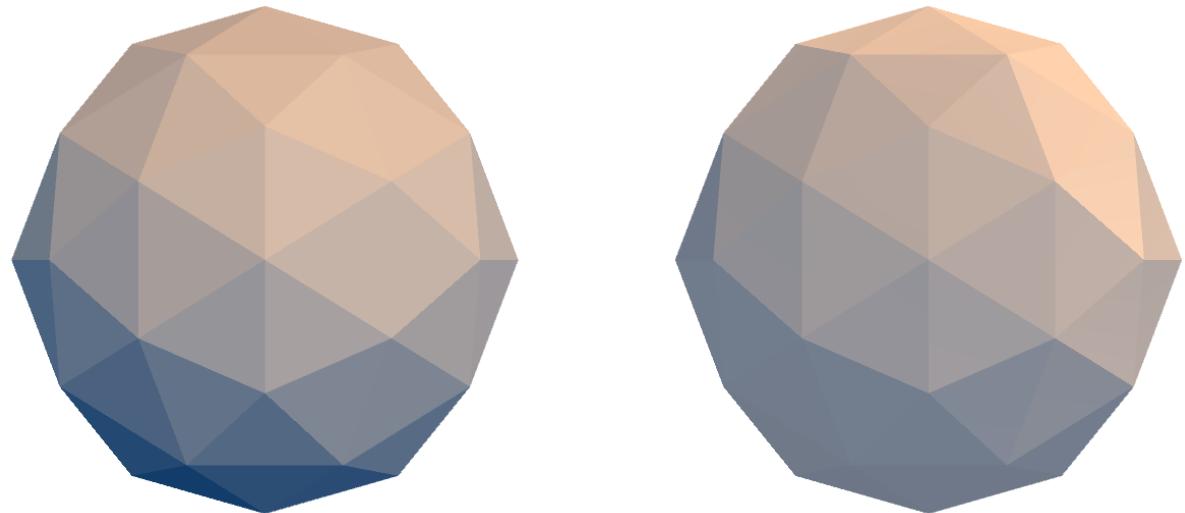


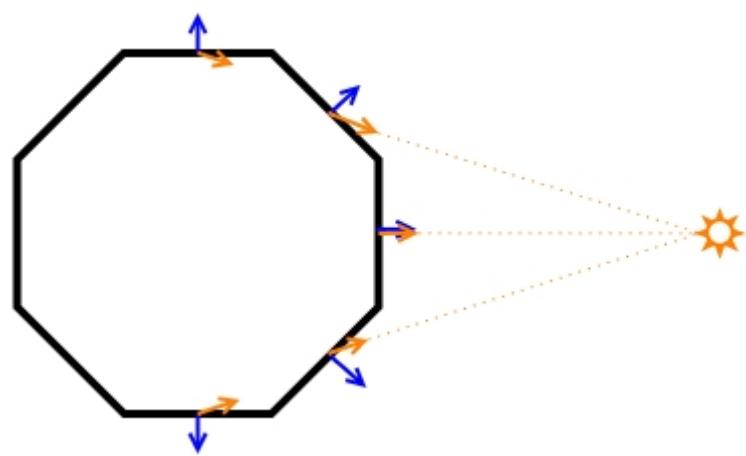
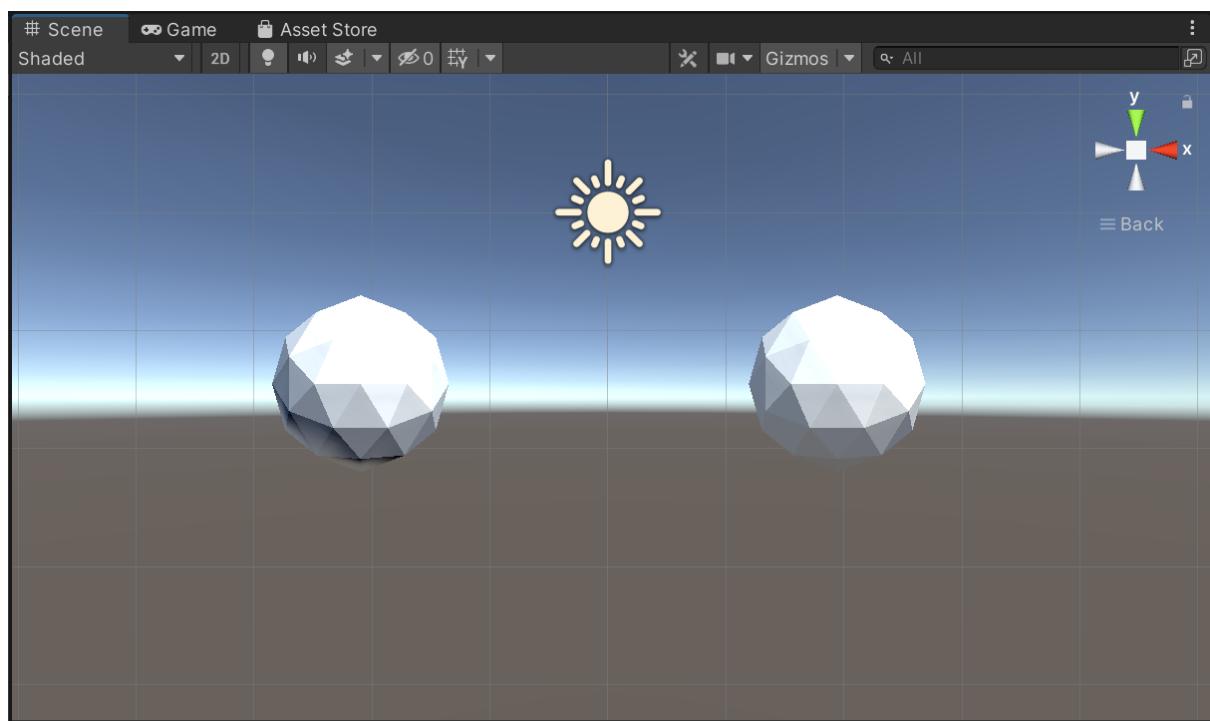
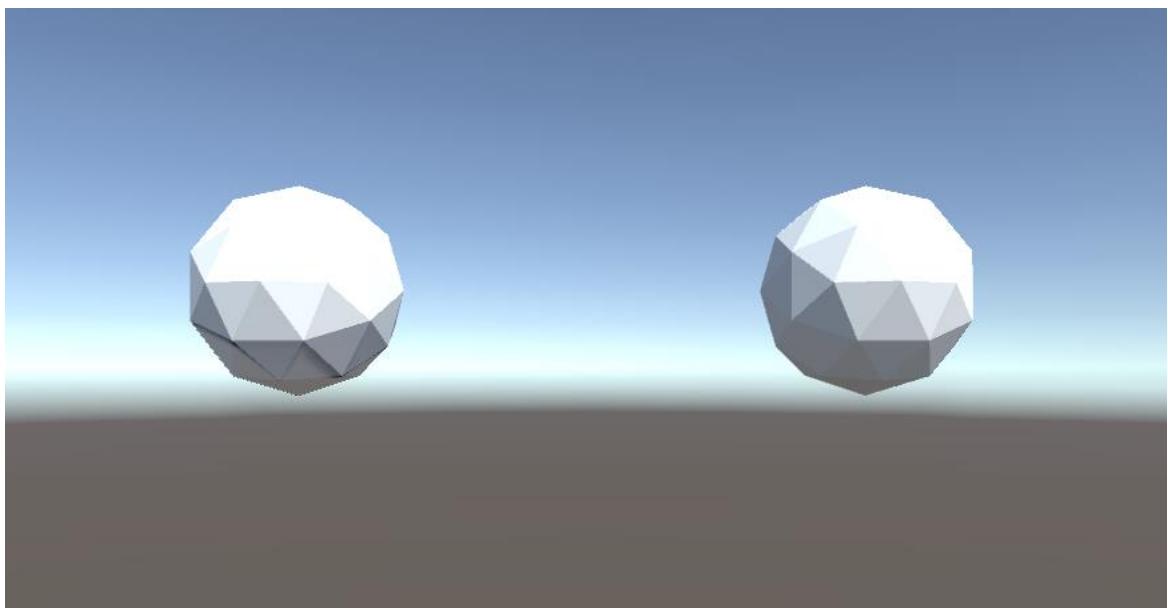


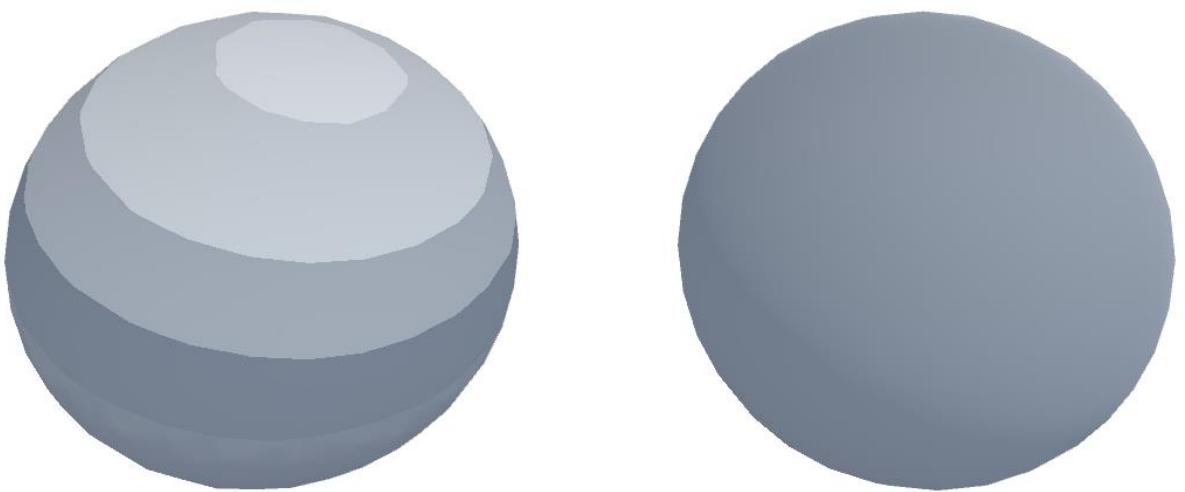
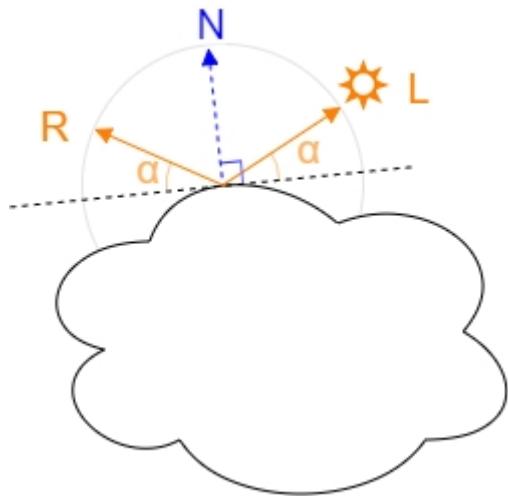


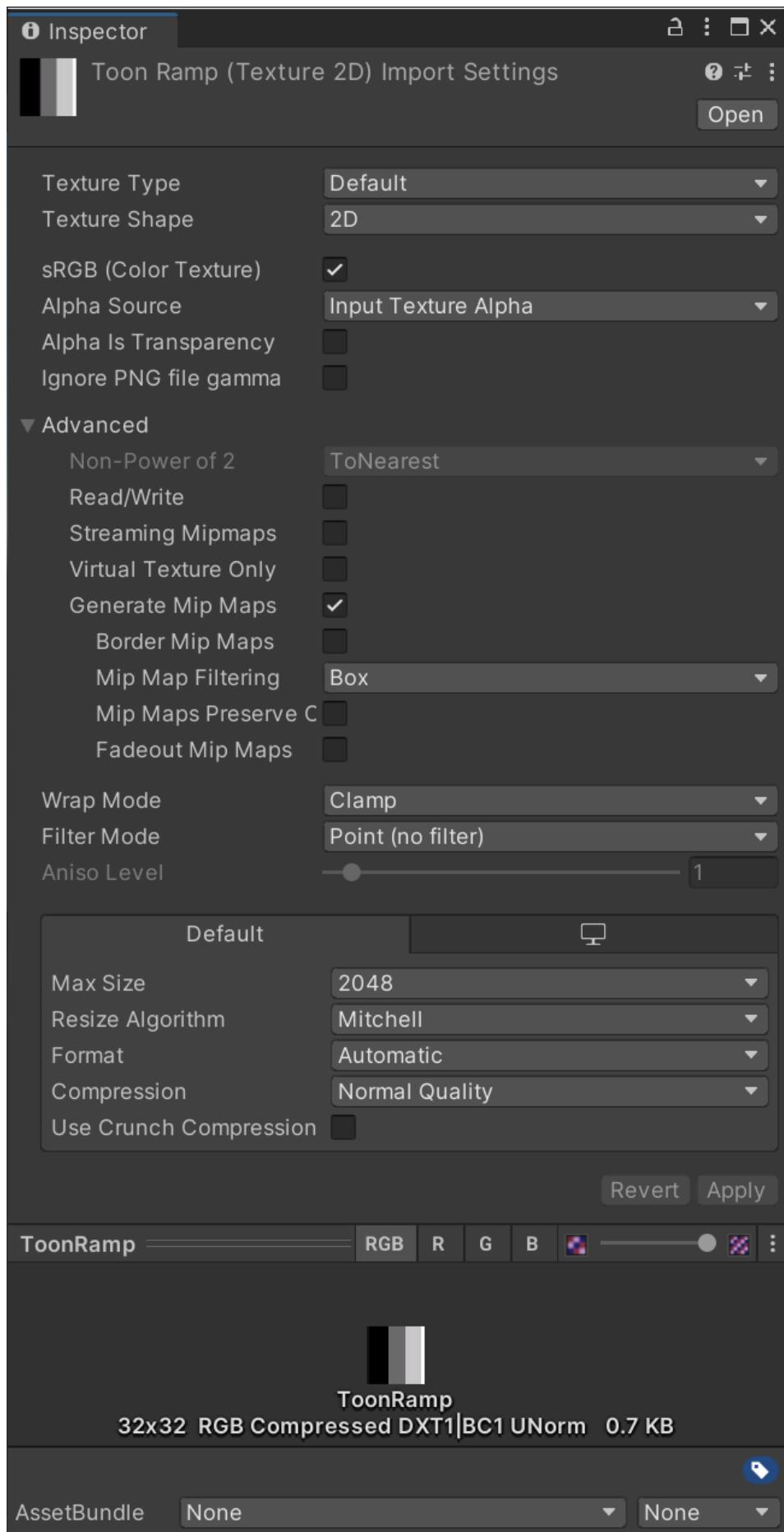


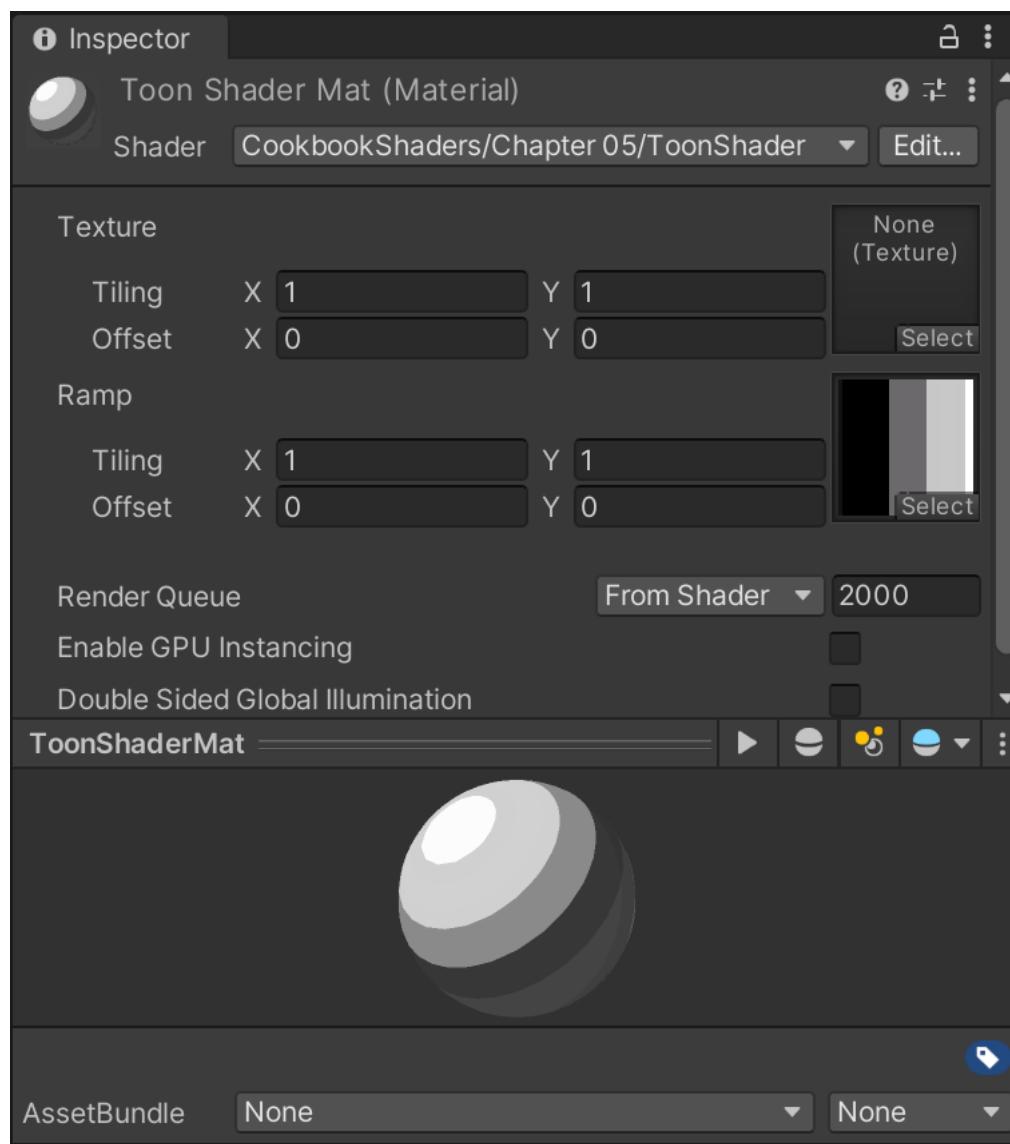
Chapter 5: Understanding Lighting Models











Lighting

Scene Environment Realtime Lightmaps Baked Lightmaps ?

Environment

Skybox Material Default-Skybox

Sun Source None (Light)

Realtime Shadow Color

Environment Lighting

Source Skybox

Intensity Multiplier 0

Environment Reflections

Source Skybox

Resolution 128

Compression Auto

Intensity Multiplier 1

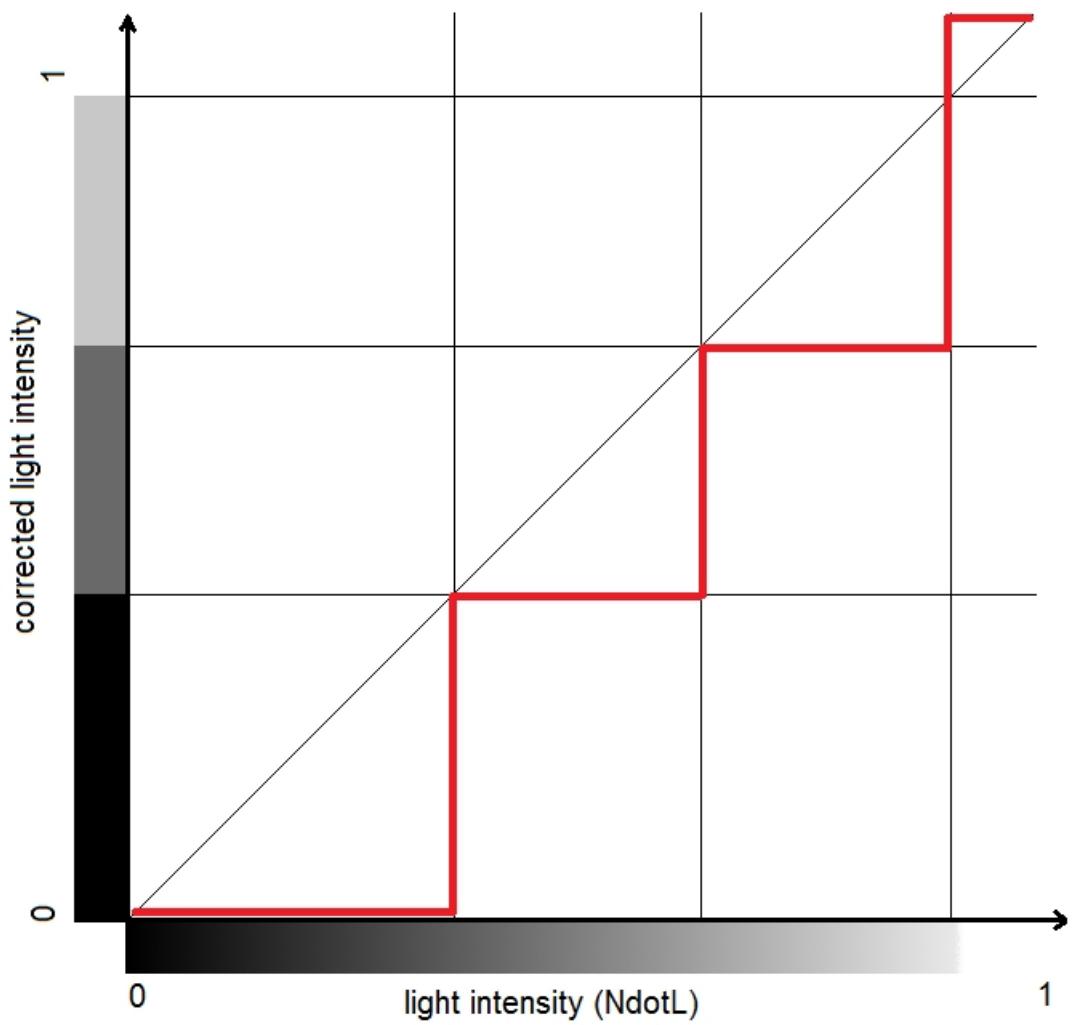
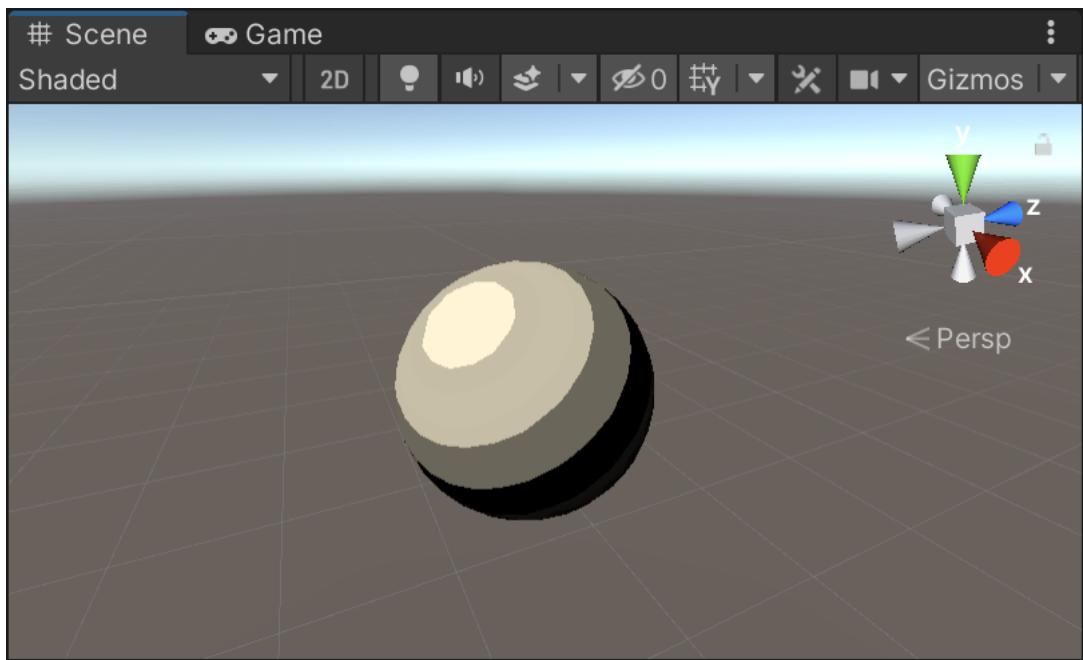
Bounces 1

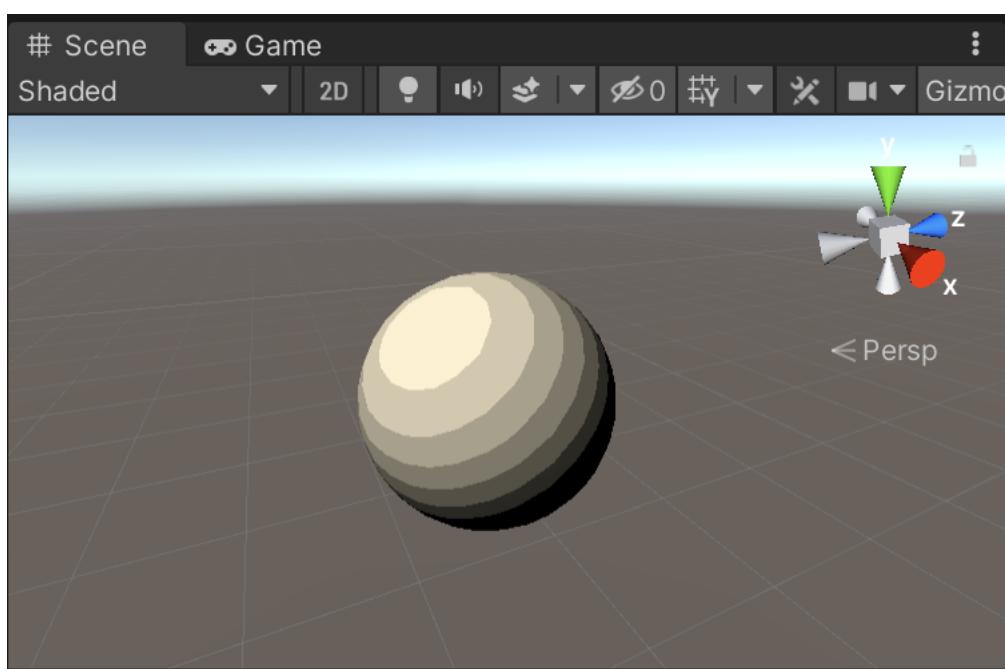
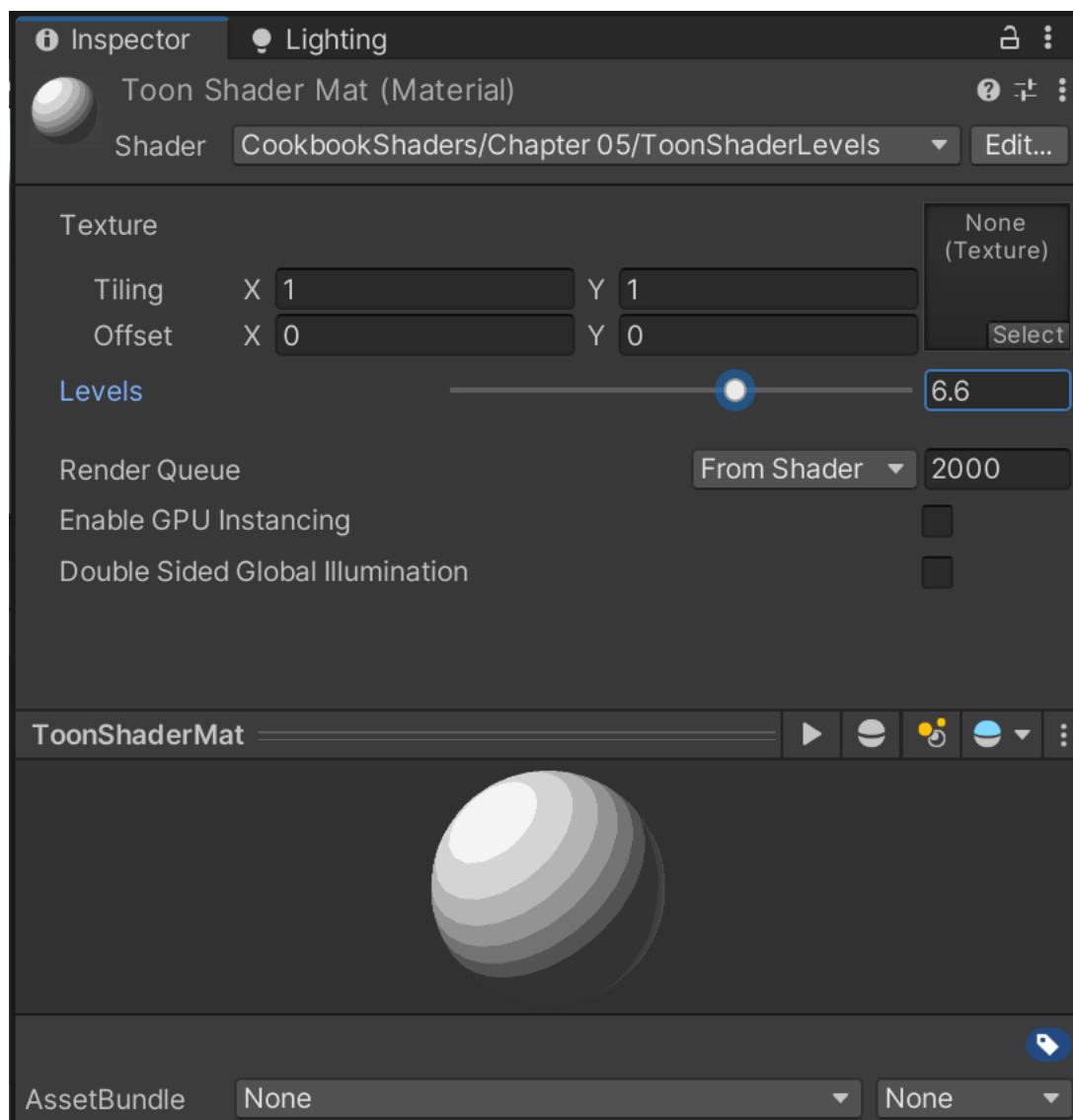
Auto Generate

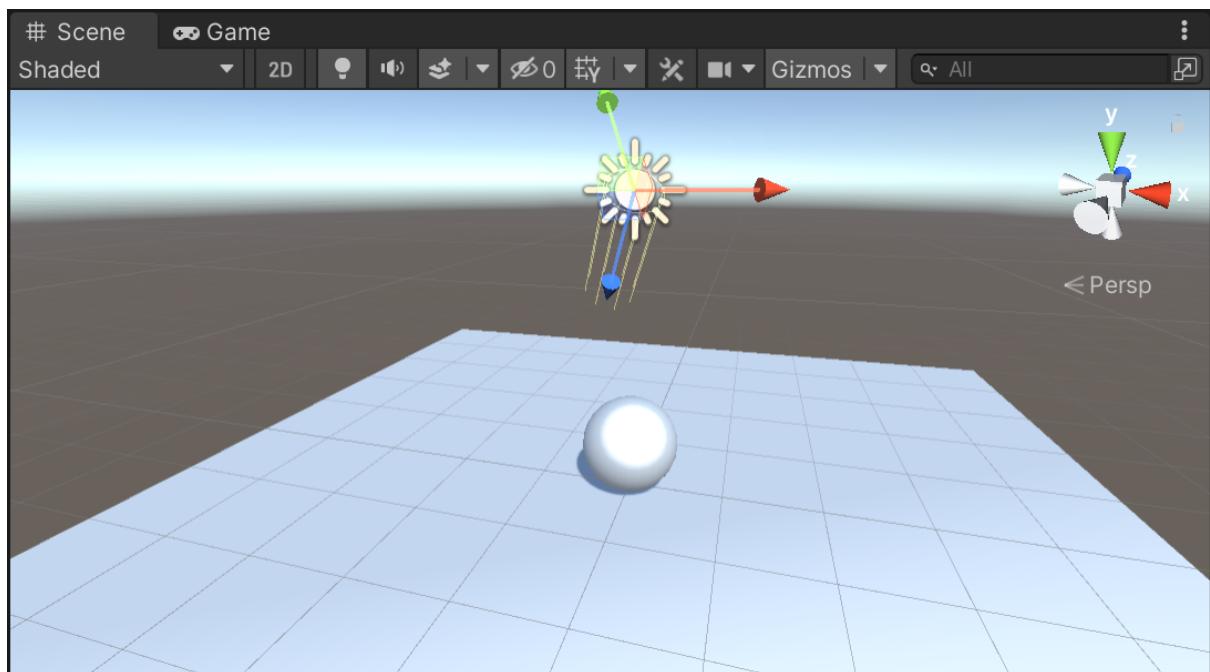
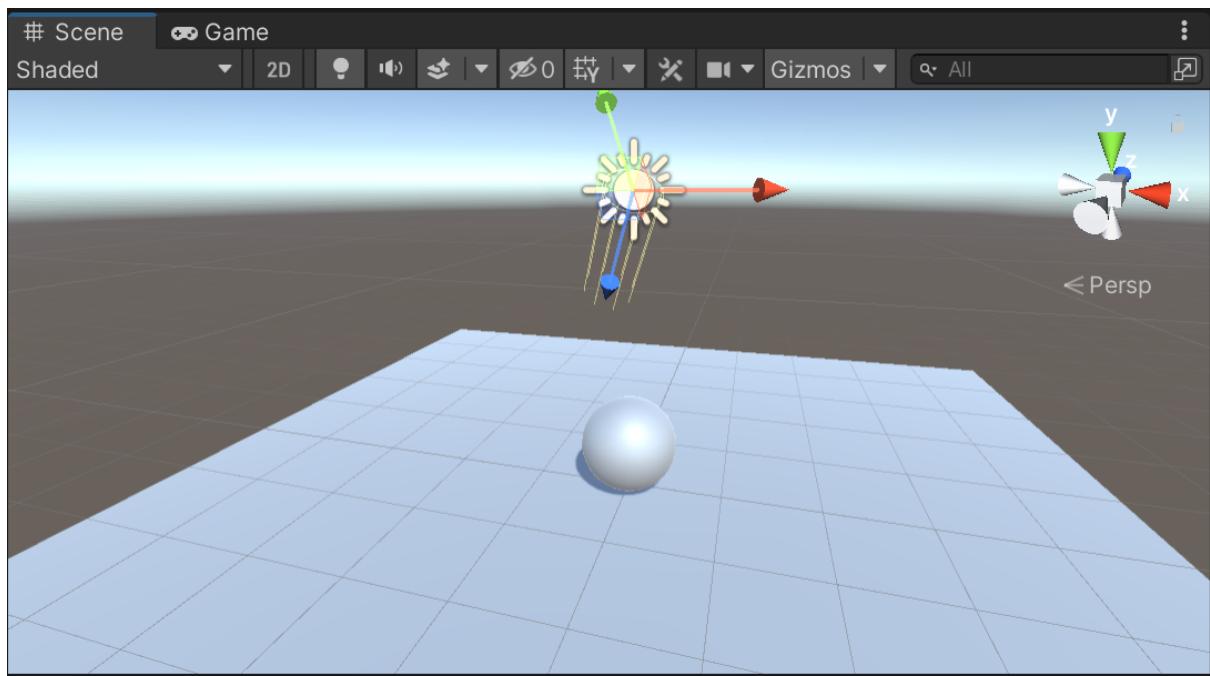
0 Non-Directional Lightmaps 0 B
No Lightmaps

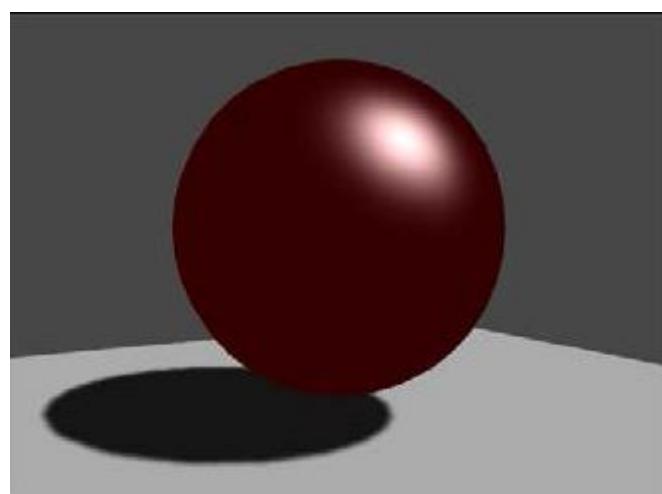
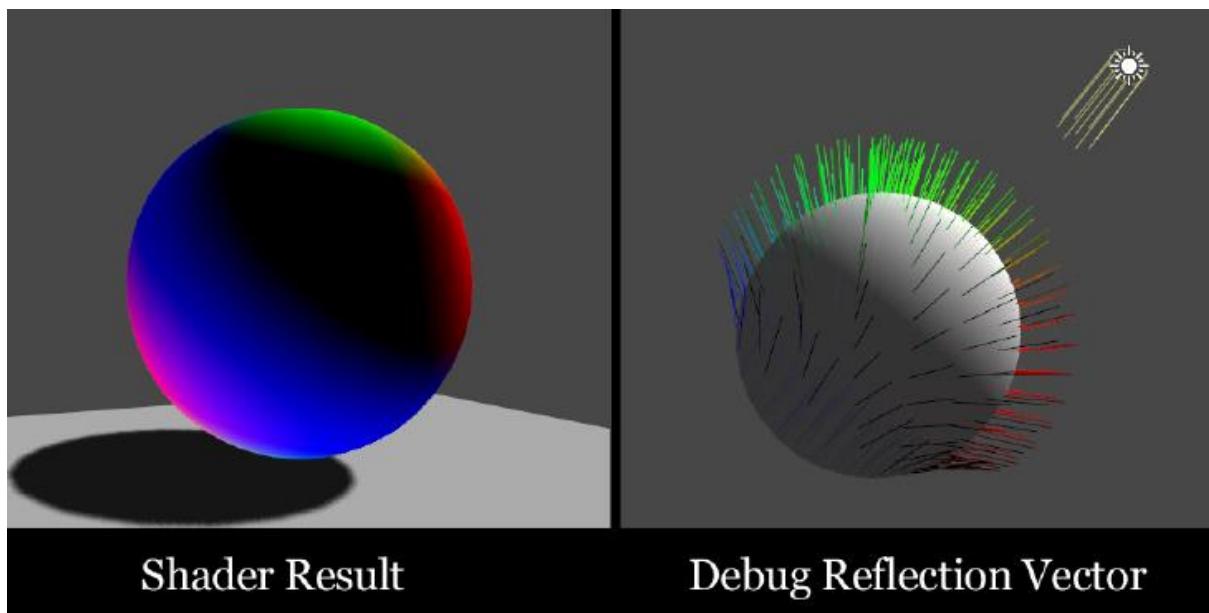
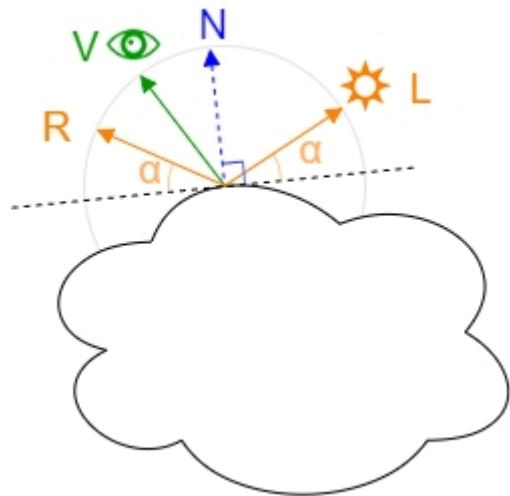
Occupied Texels: 0.0

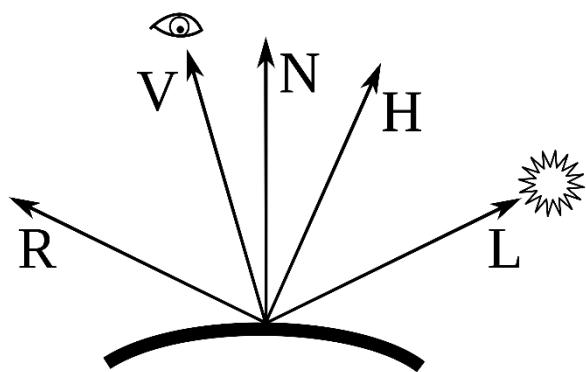
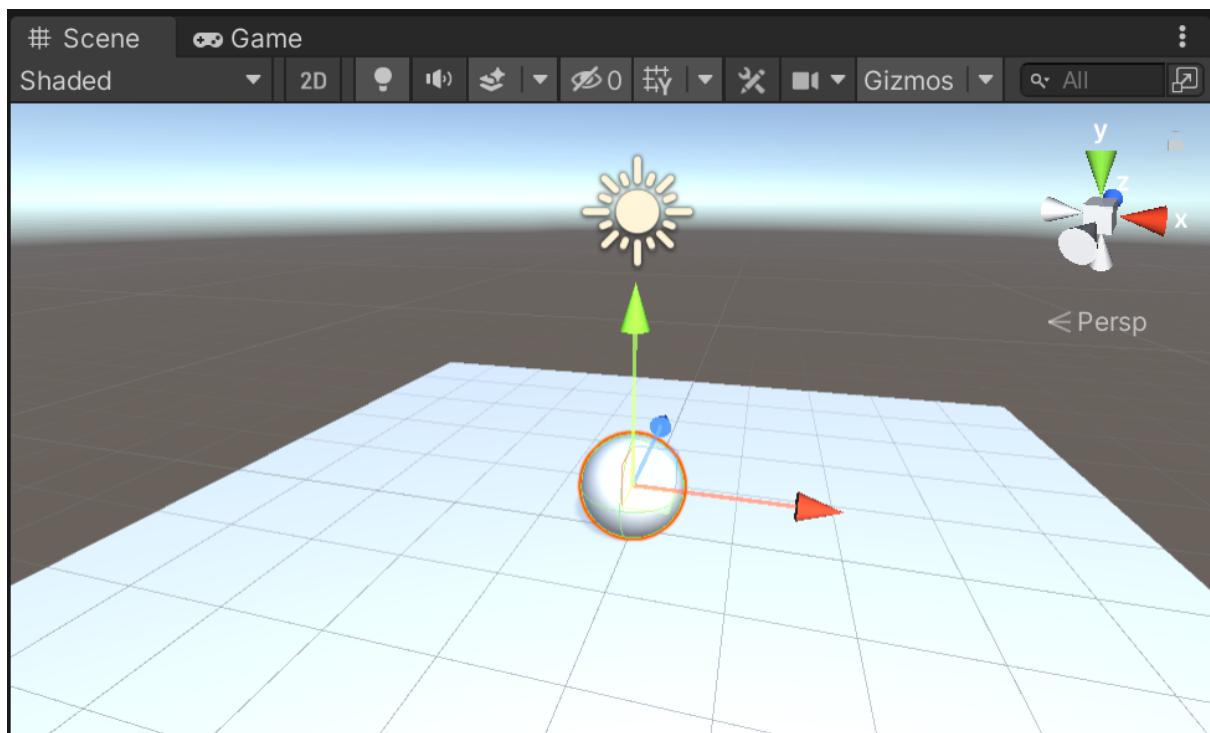
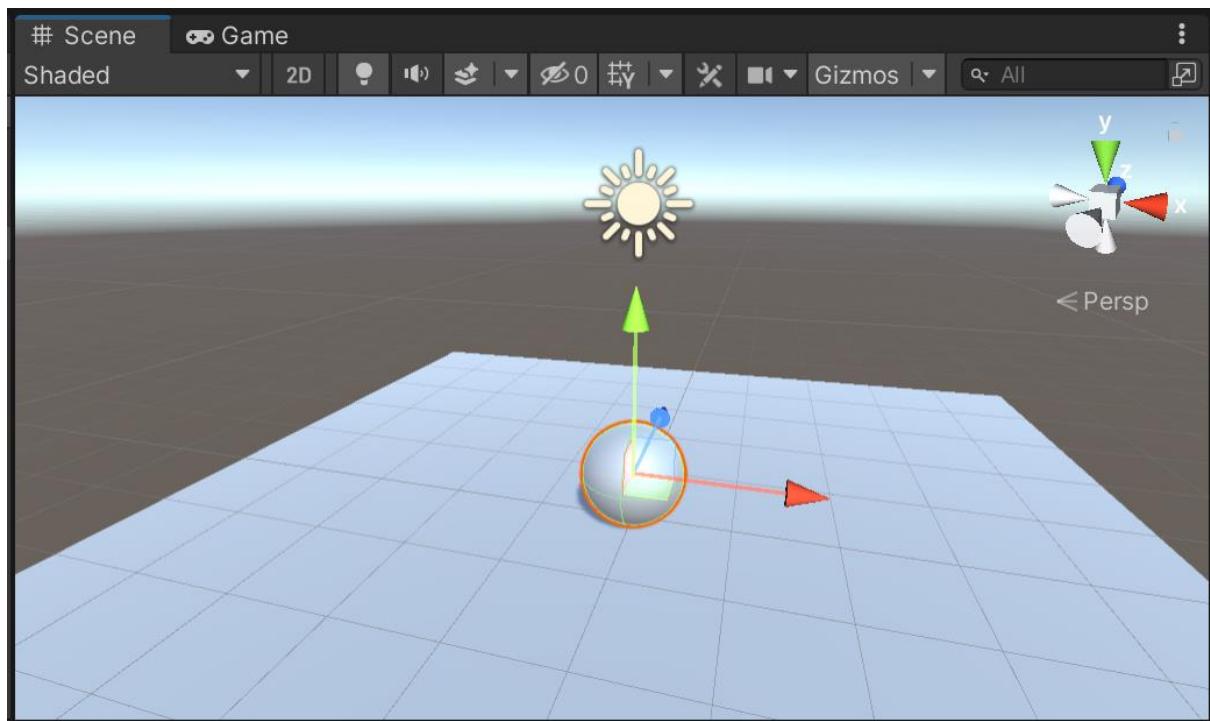
Total Bake Time: 0:00:00

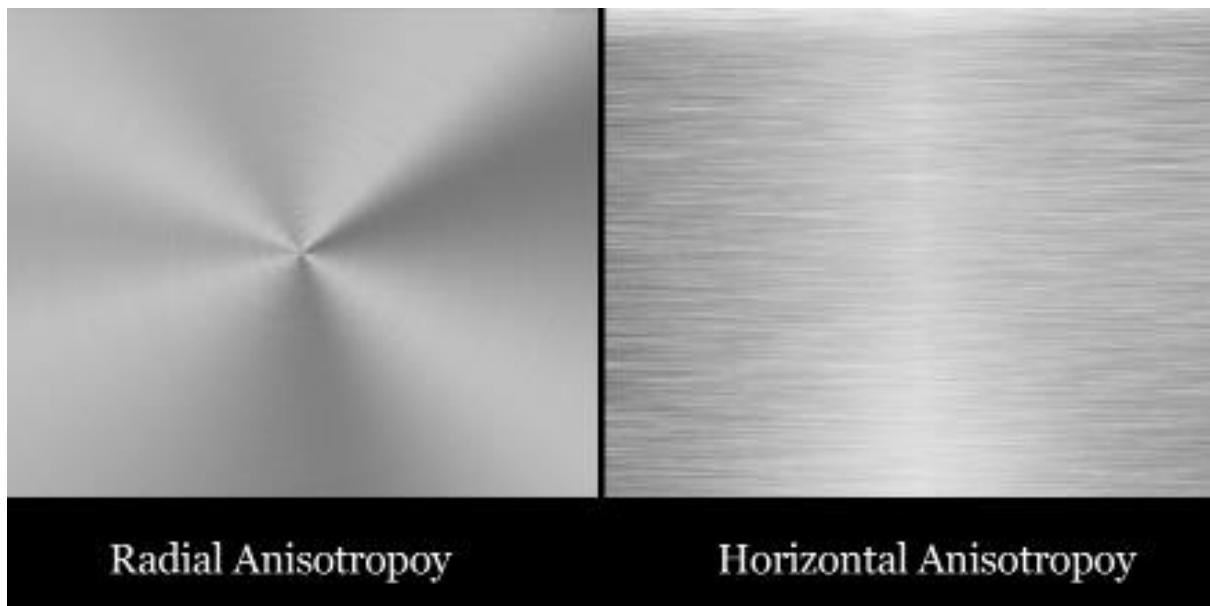






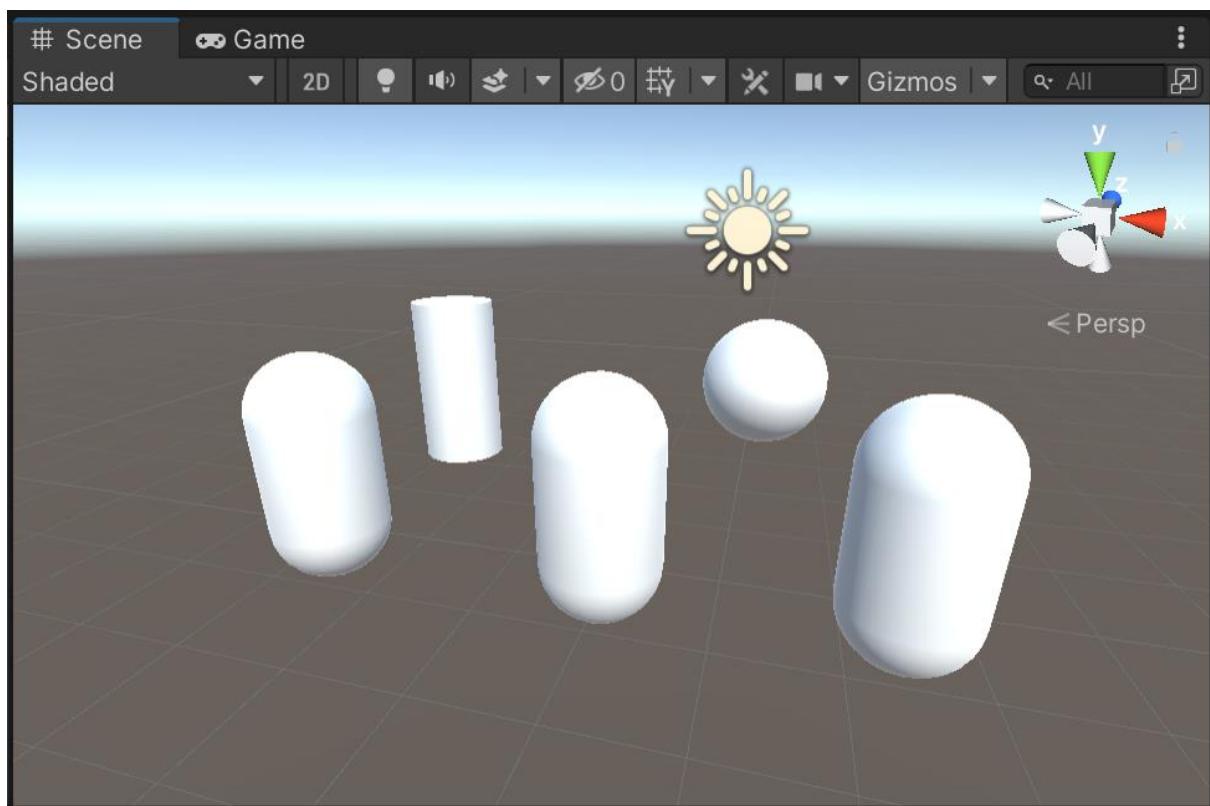


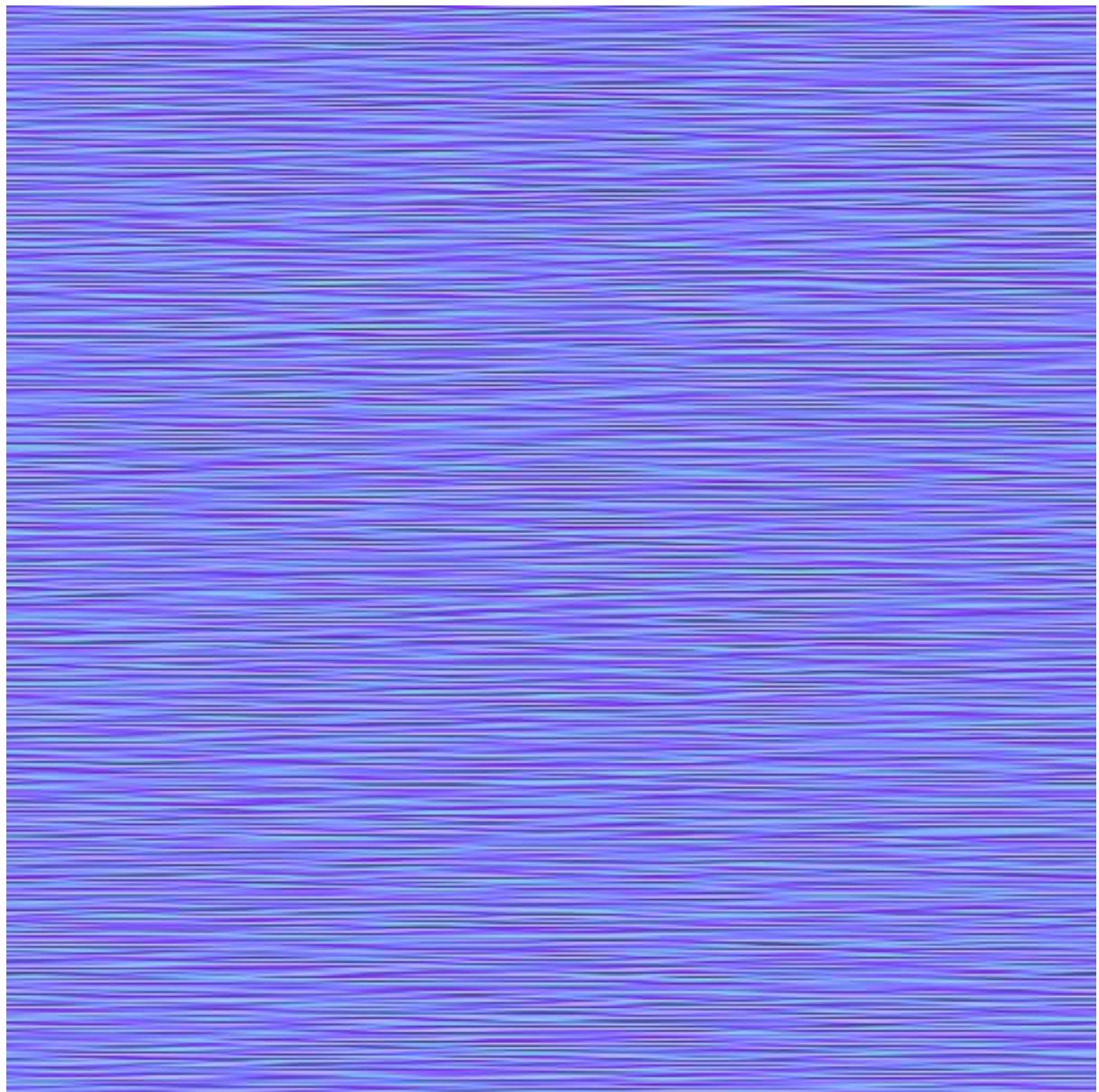




Radial Anisotropy

Horizontal Anisotropy





Inspector

Anisotropic Mat (Material)

Shader [CookbookShaders/Chapter 05/Anisotropic](#) ▾ Edit...

Diffuse Tint 

Base (RGB) 

Tiling X Y

Offset X Y

Specular Color 

Specular Amount

Specular Power

Specular Color 

Anisotropic Direction 

Tiling X Y

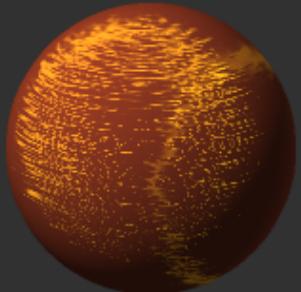
Offset X Y

Anisotropic Offset

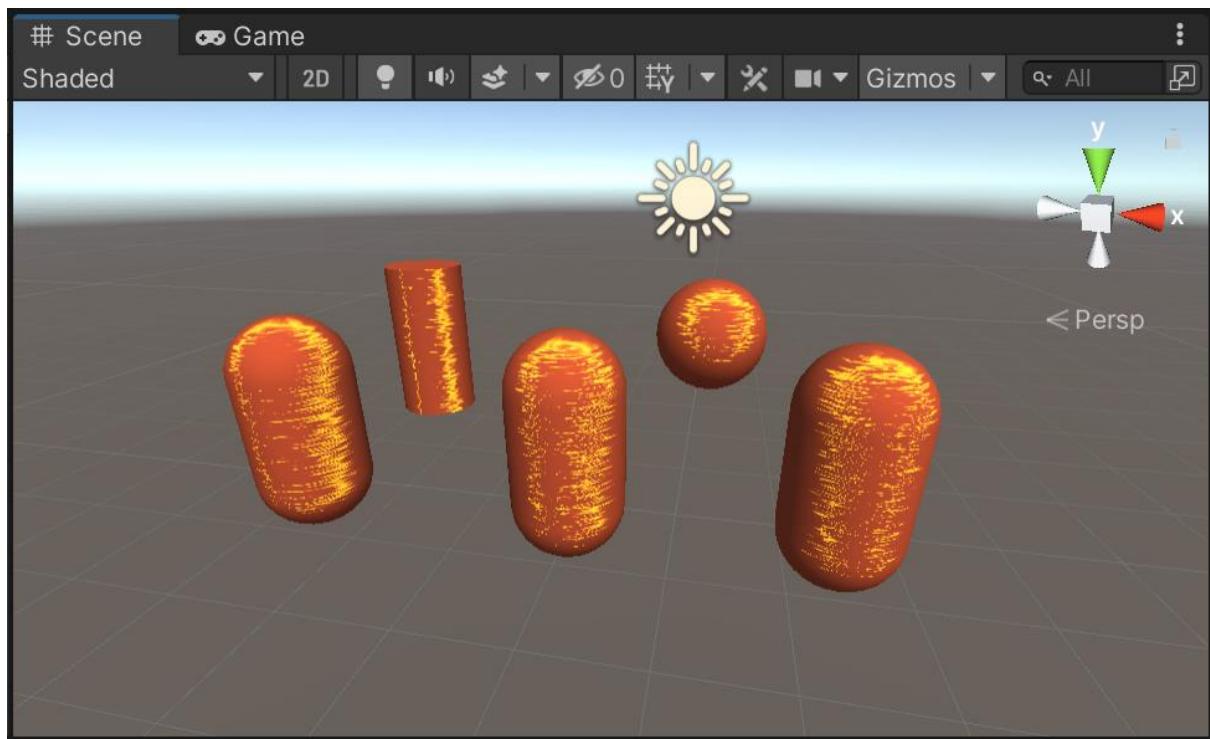
Render Queue

Enable GPU Instancing

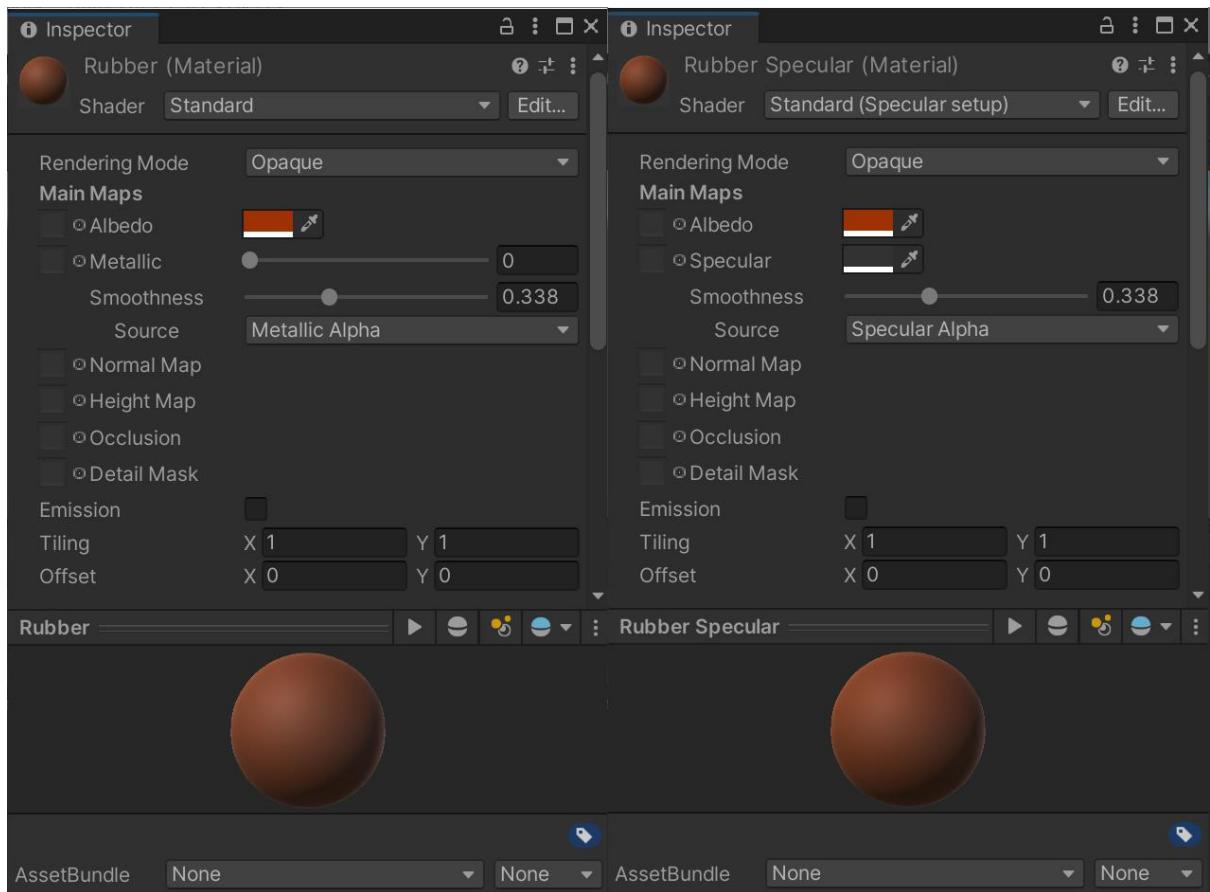
Double Sided Global Illumination

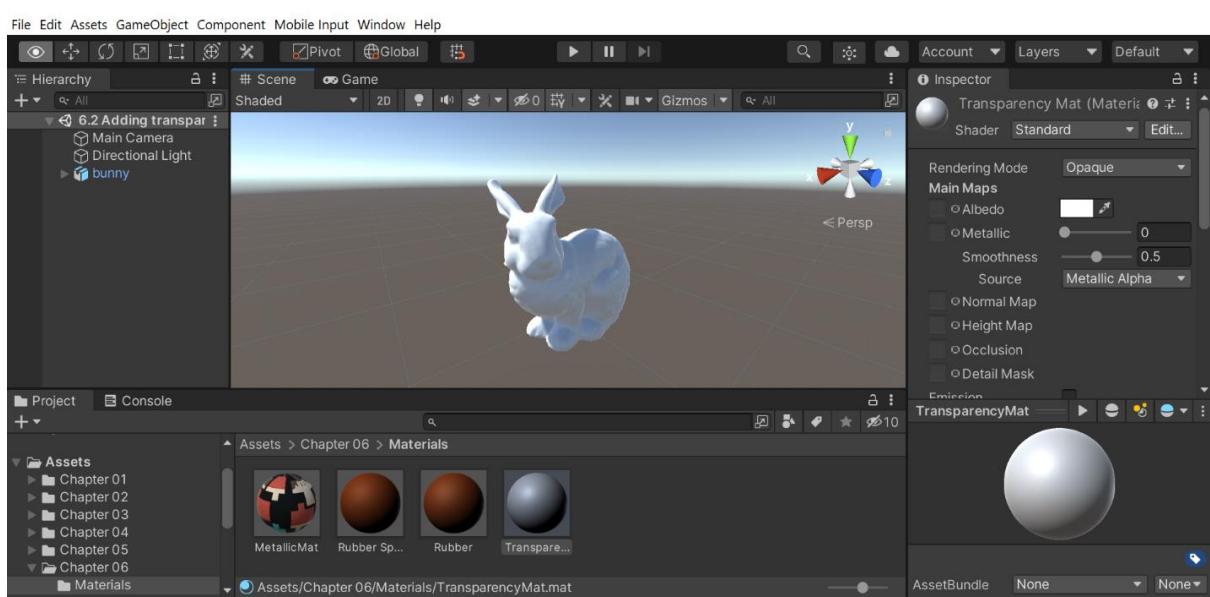
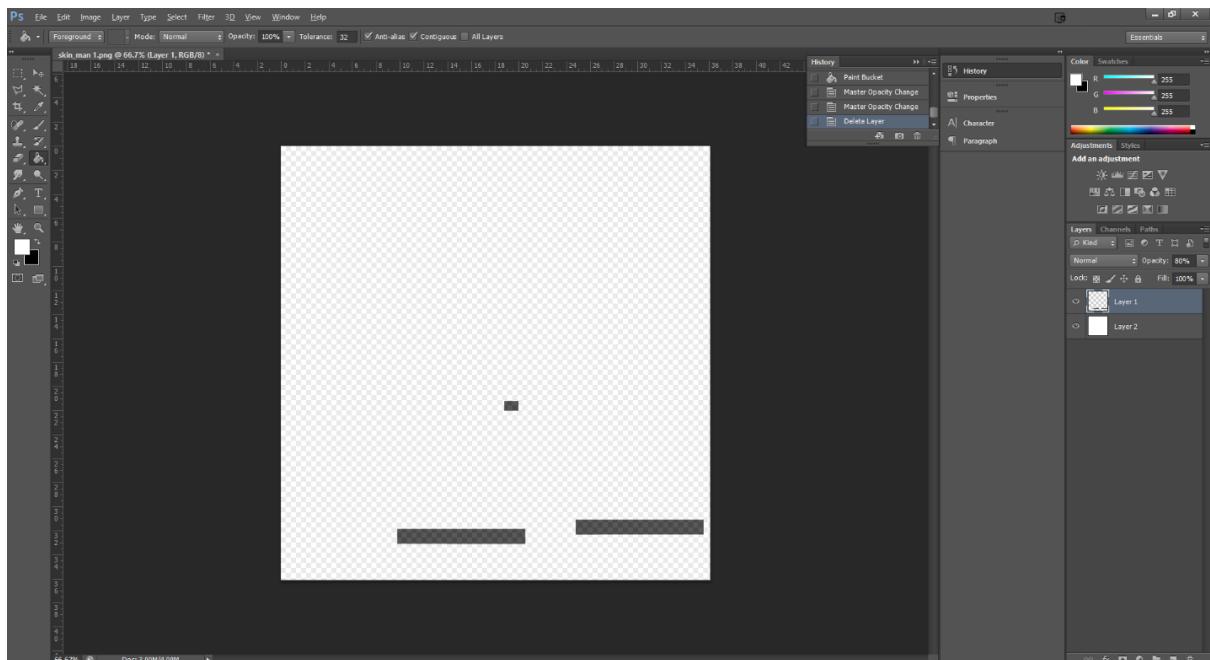
AnisotropicMat 

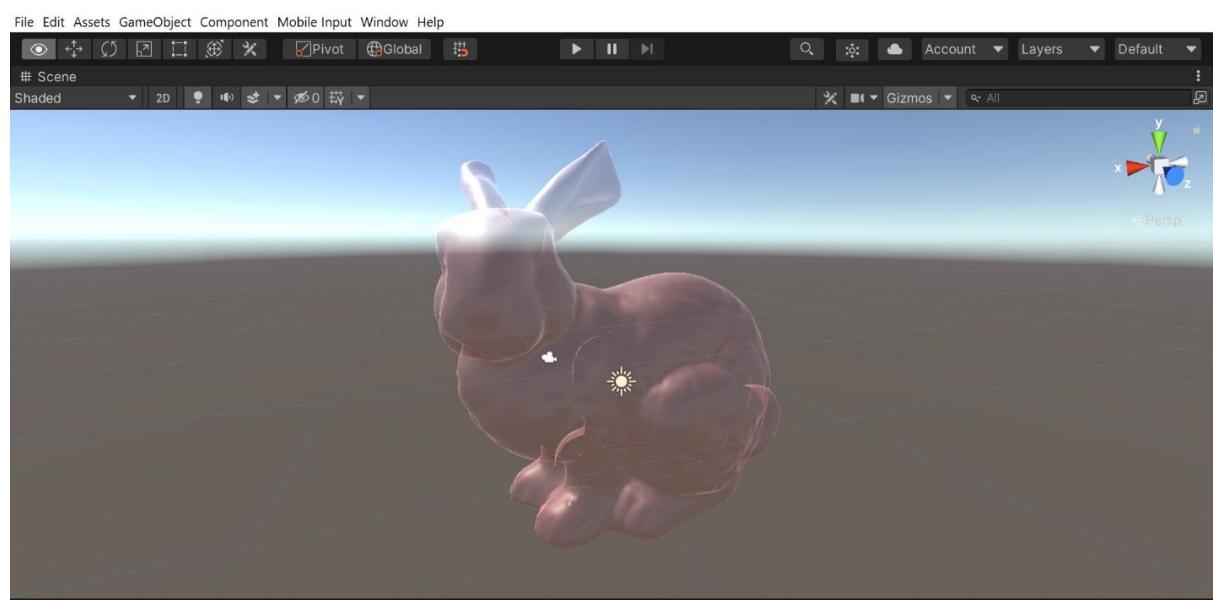
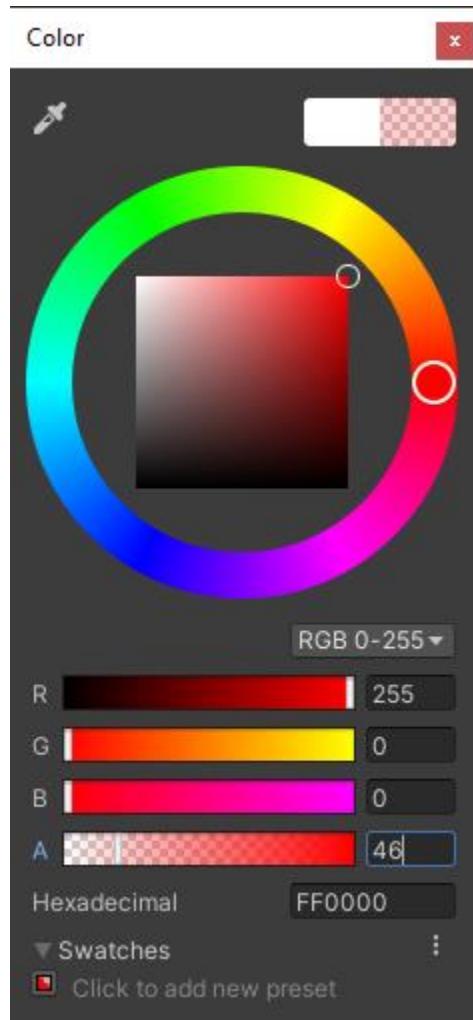
AssetBundle

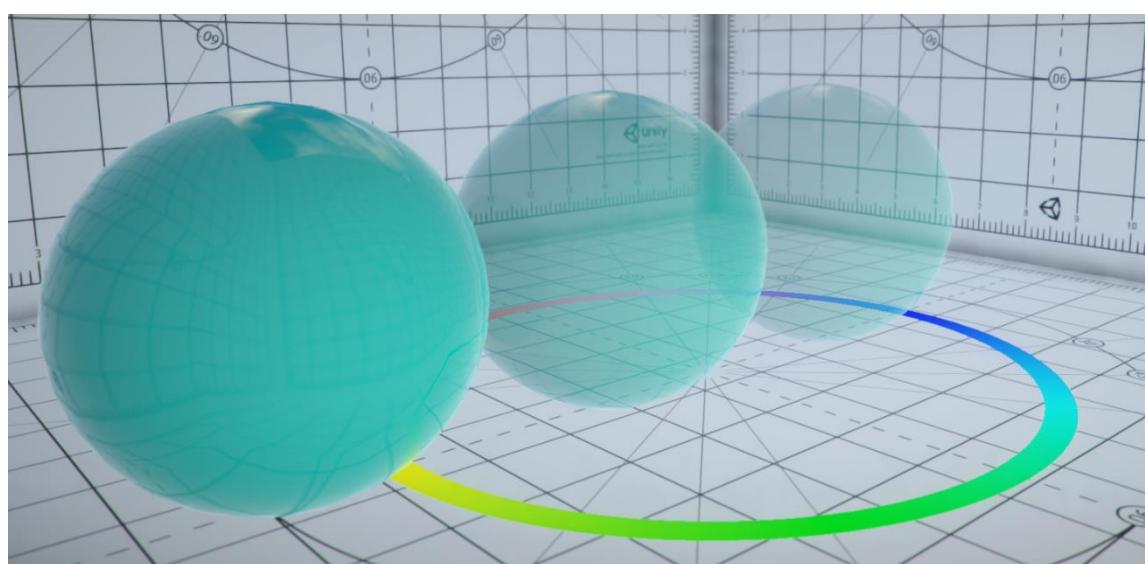
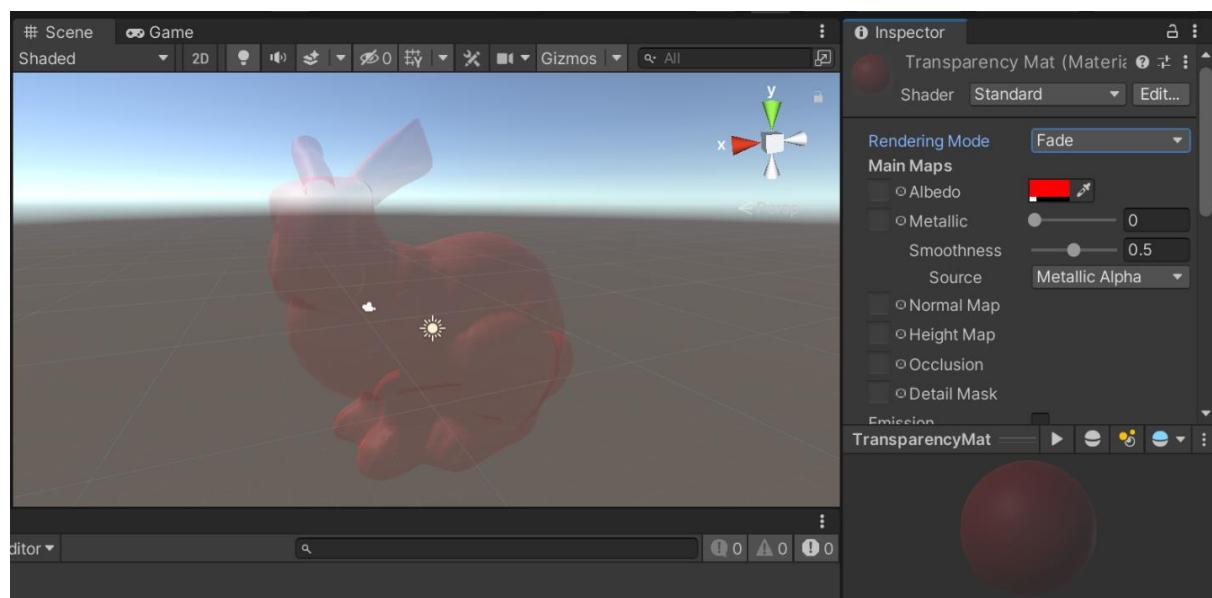
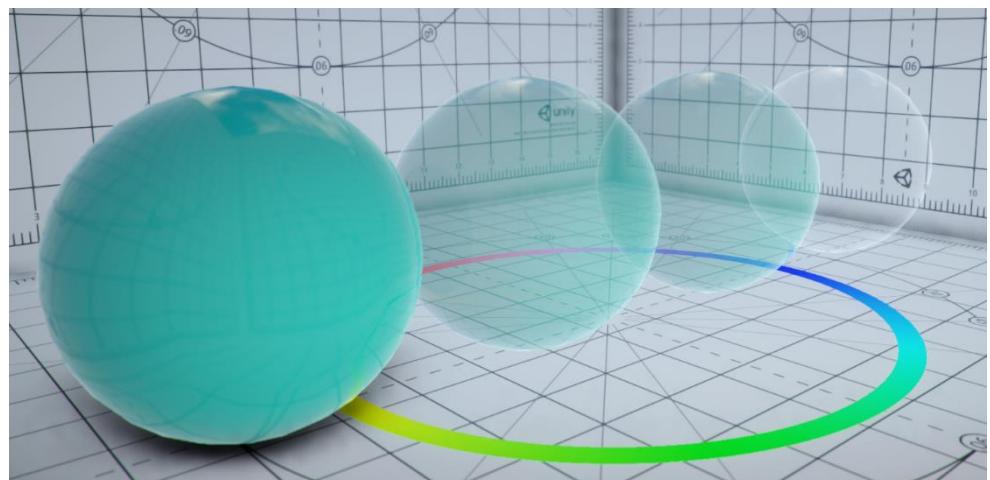


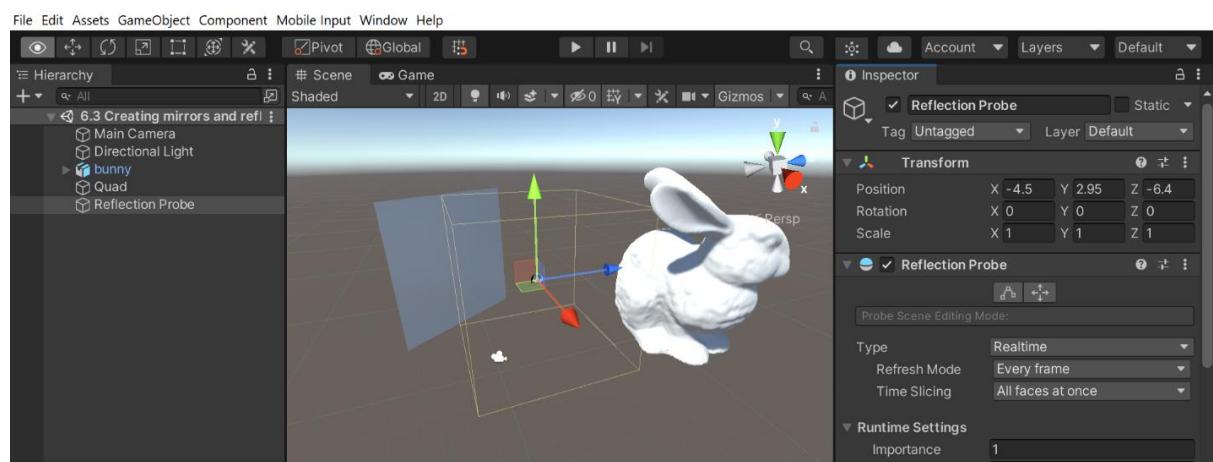
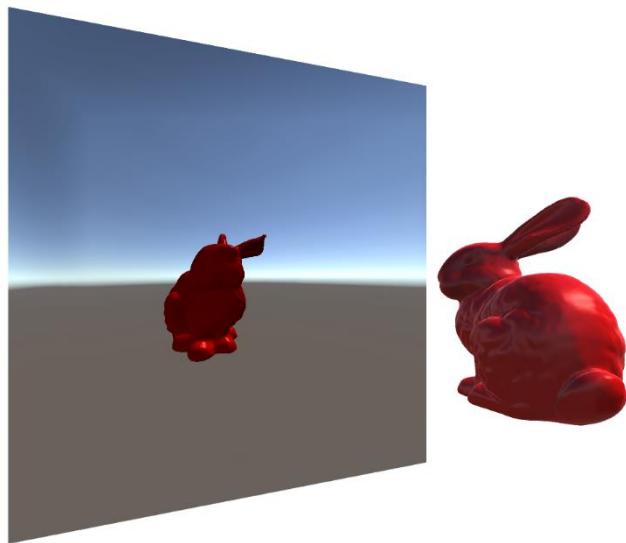
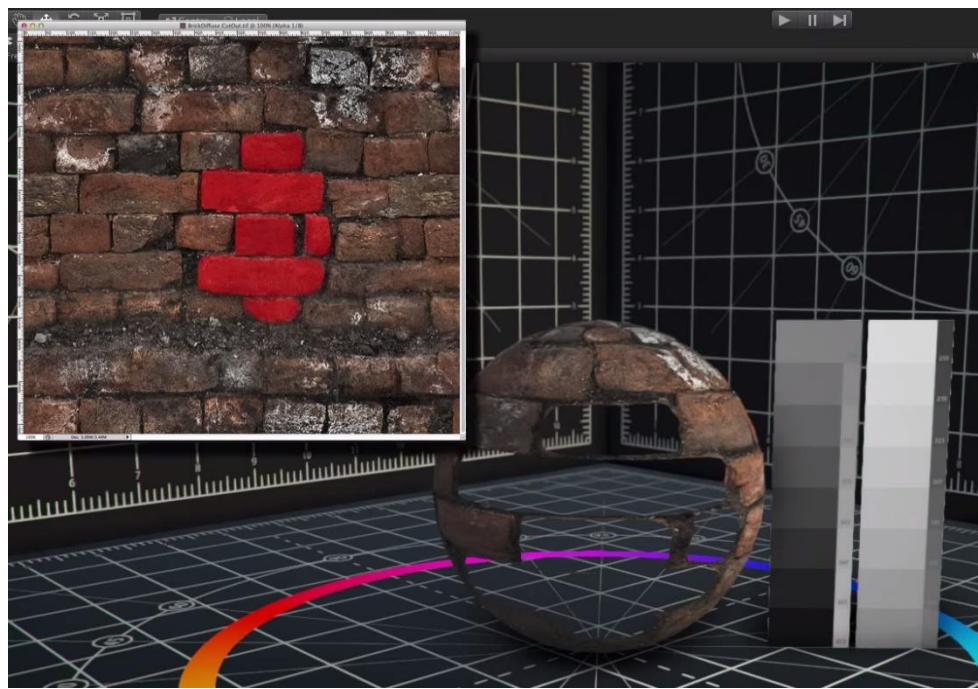
Chapter 6: Physically Based Rendering

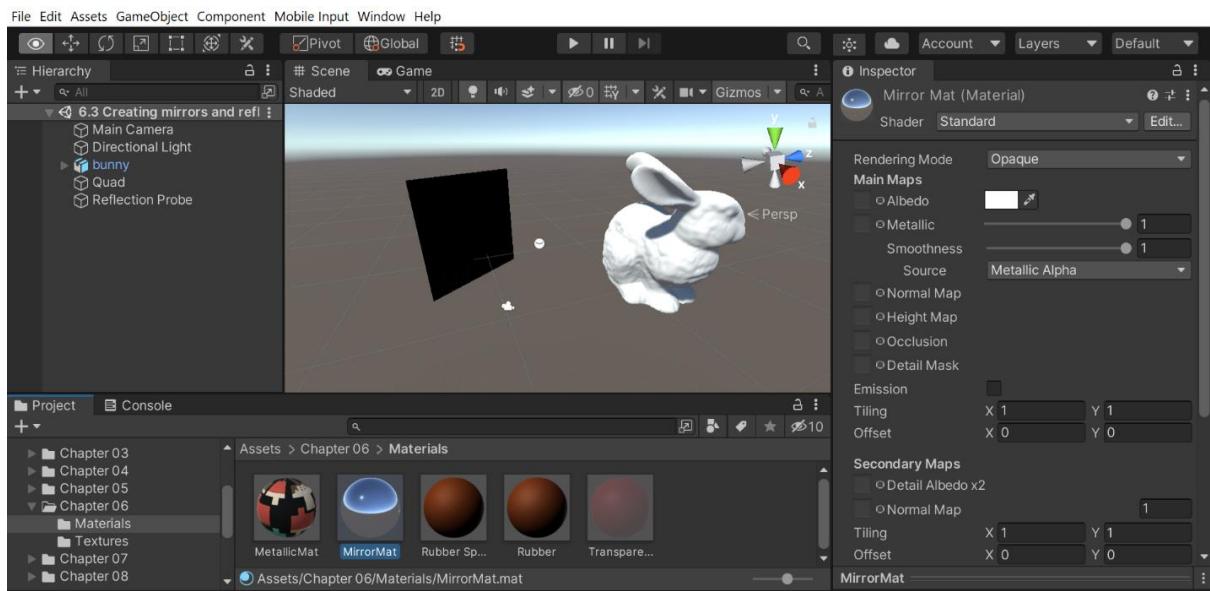












Inspector

Reflection Probe

Probe Scene Editing Mode:

Type: Realtime

Refresh Mode: Every frame

Time Slicing: All faces at once

Runtime Settings

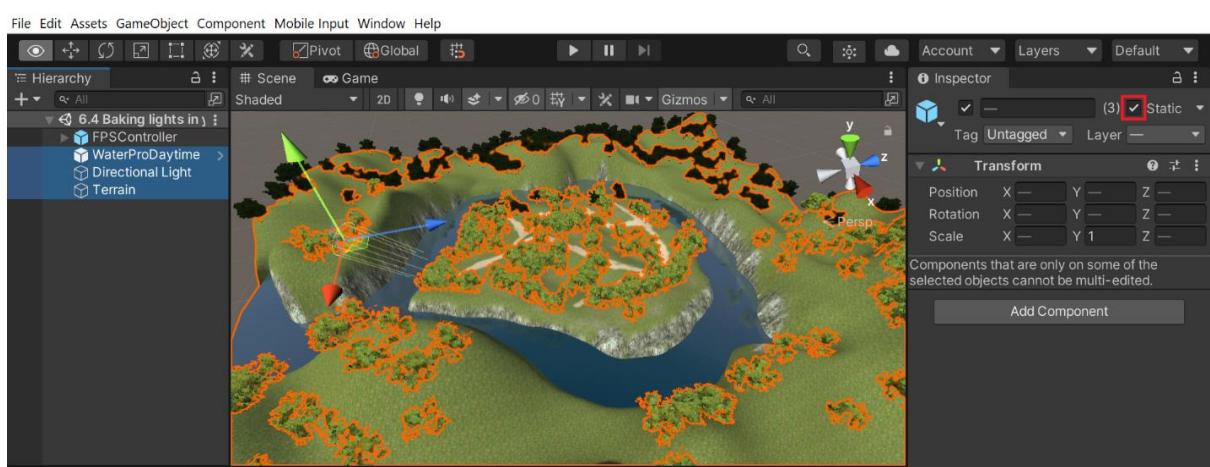
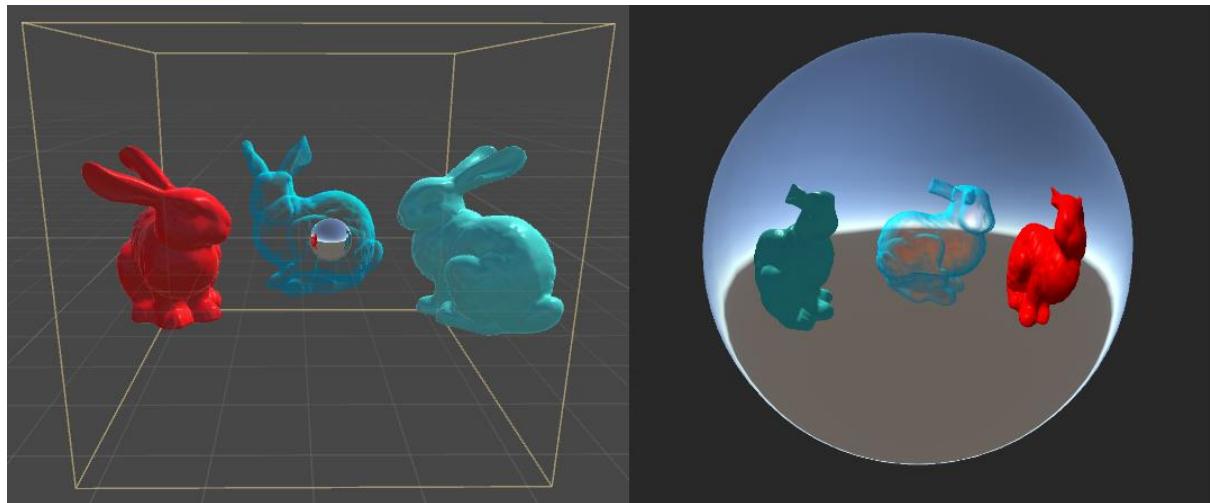
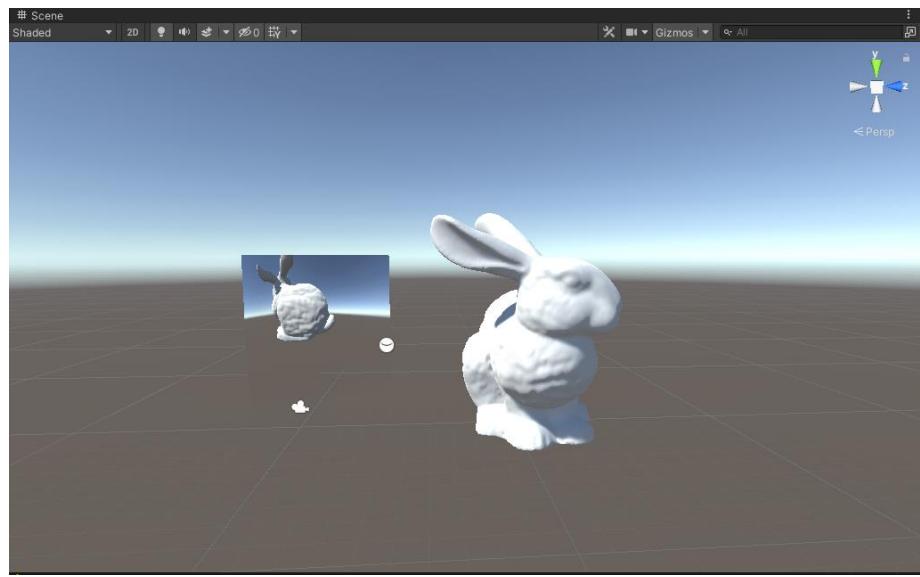
Importance	1
Intensity	1
Box Projection	<input checked="" type="checkbox"/>
Blend Distance	1
Box Size	X 10 Y 10 Z 10
Box Offset	X 0 Y 0 Z 0

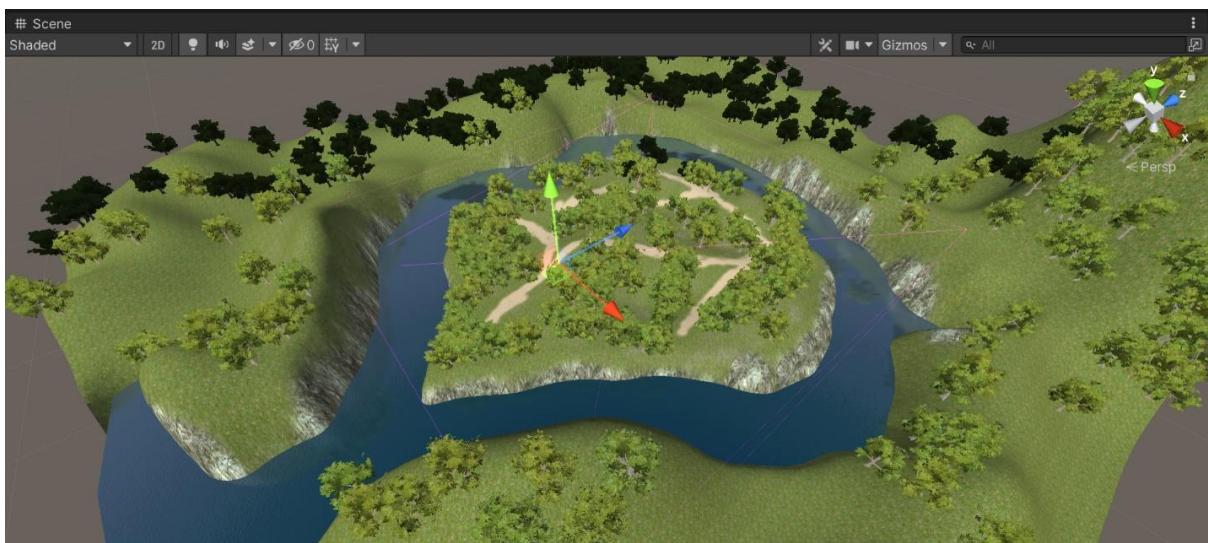
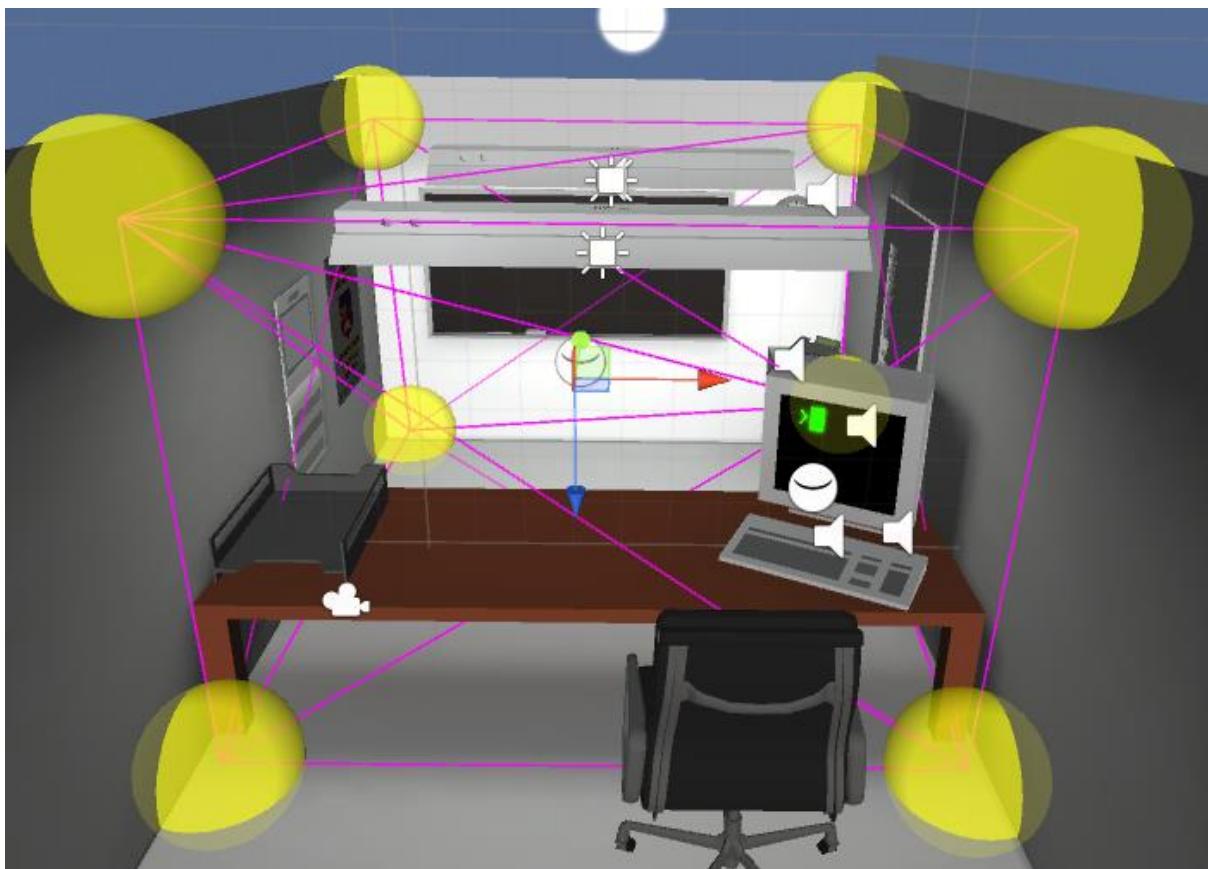
Cubemap Capture Settings

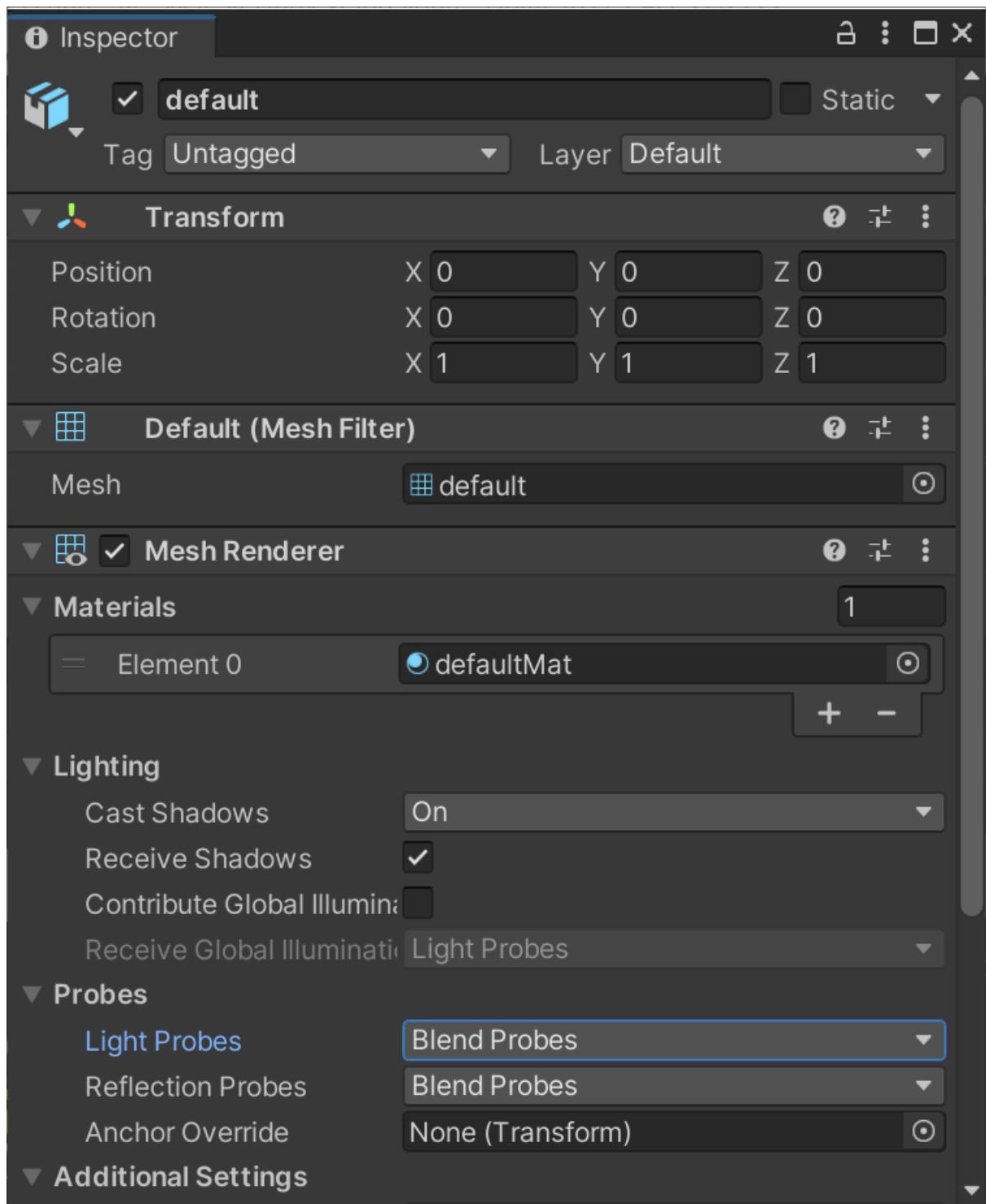
Resolution	2048
HDR	<input checked="" type="checkbox"/>
Shadow Distance	100
Clear Flags	Skybox
Background	 
Culling Mask	Everything
Use Occlusion Culling	<input checked="" type="checkbox"/>
Clipping Planes	Near 0.3
	Far 1000

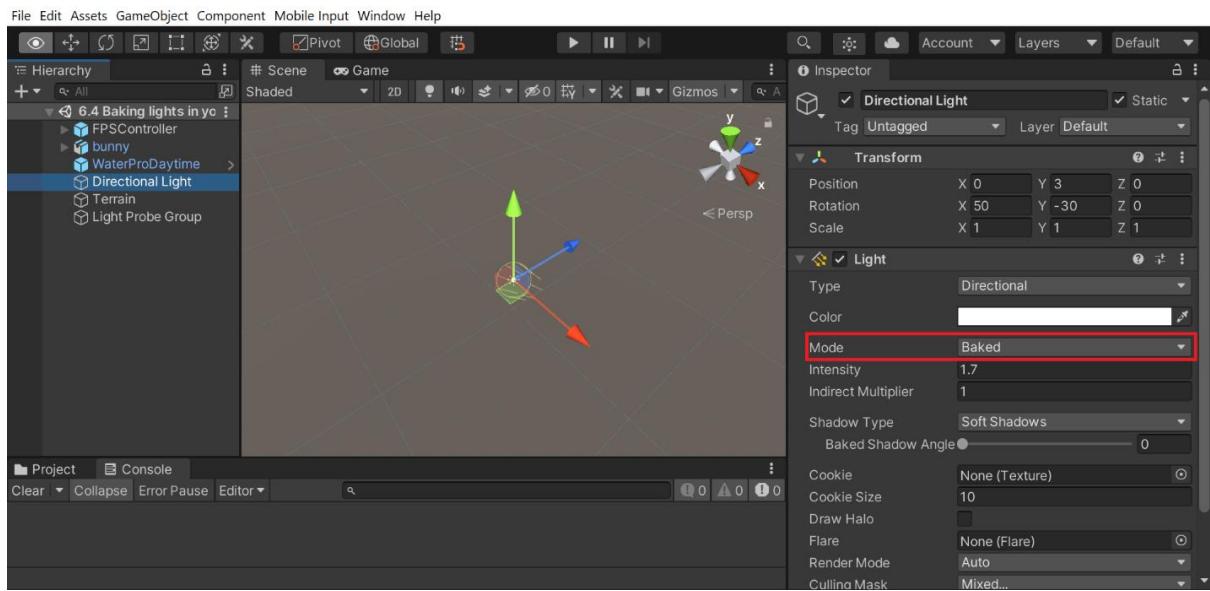
! Baking of this reflection probe should be initiated from the scripting API because the type is 'Realtime'

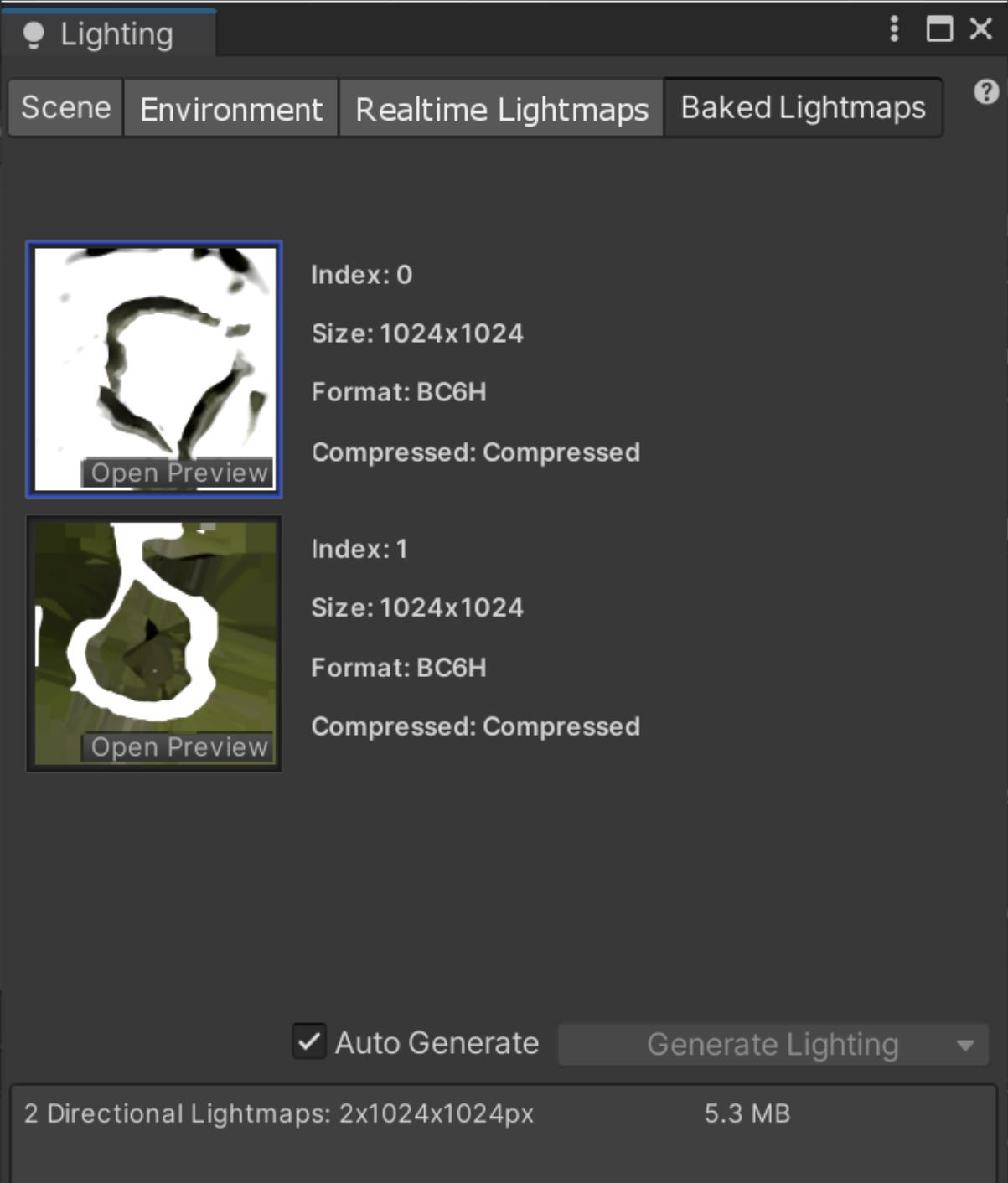
Reflection Probe









Lighting

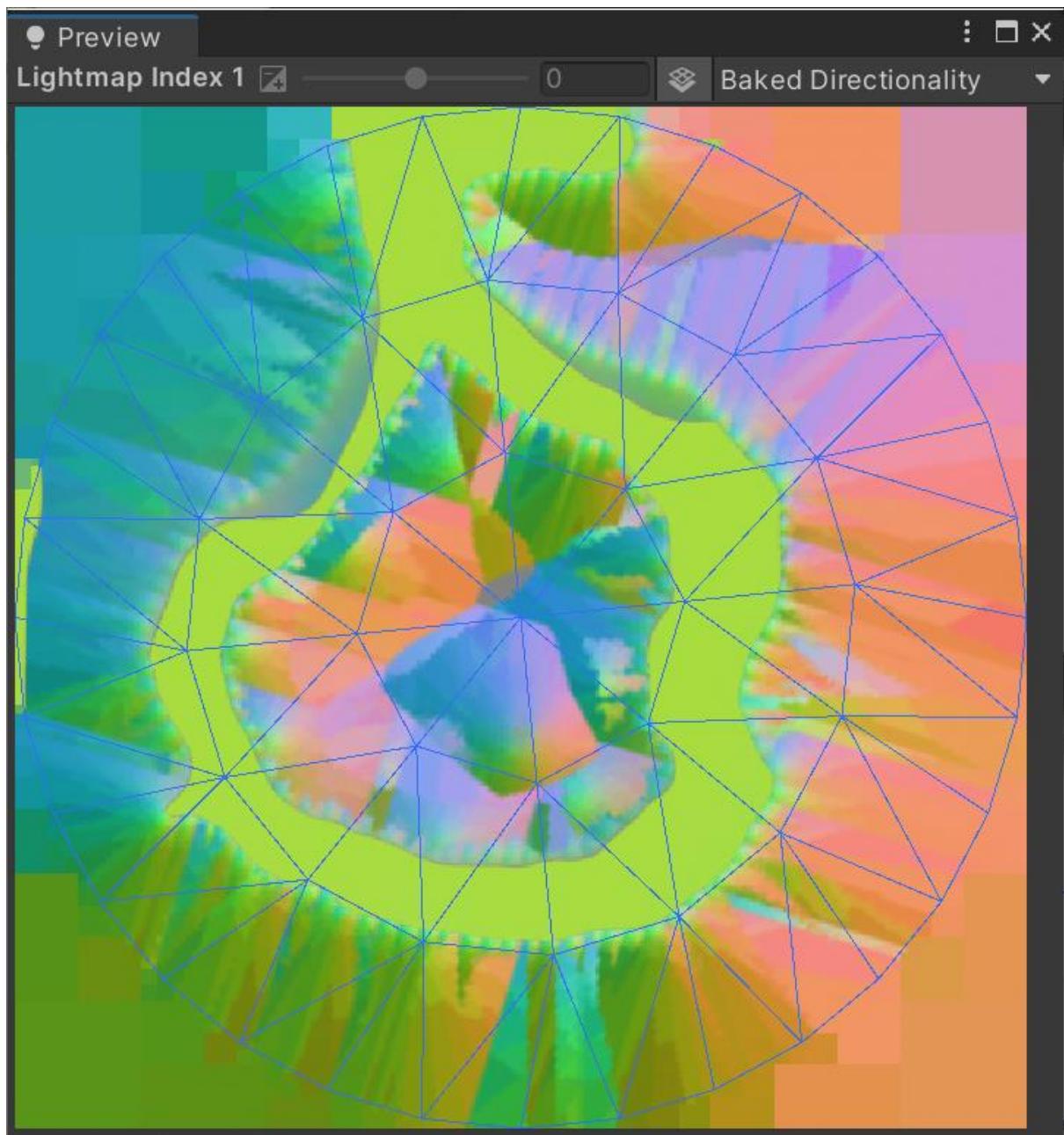
Scene Environment Realtime Lightmaps **Baked Lightmaps** ?

Index: 0
Size: 1024x1024
Format: BC6H
Compressed: Compressed

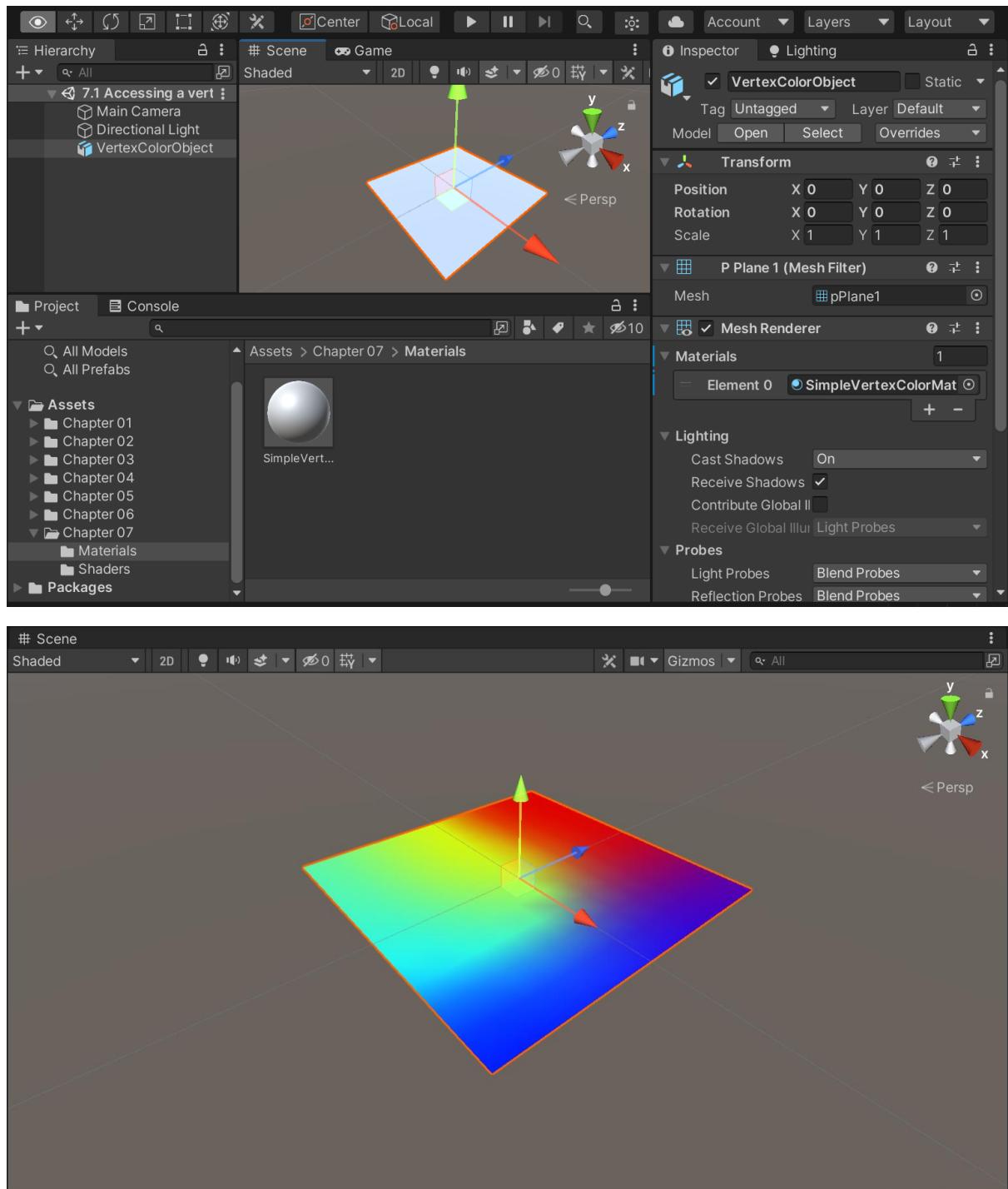
Index: 1
Size: 1024x1024
Format: BC6H
Compressed: Compressed

Auto Generate Generate Lighting ▾

2 Directional Lightmaps: 2x1024x1024px 5.3 MB



Chapter 7: Vertex Functions



Select Mesh

x

Assets Scene ⌂ 10

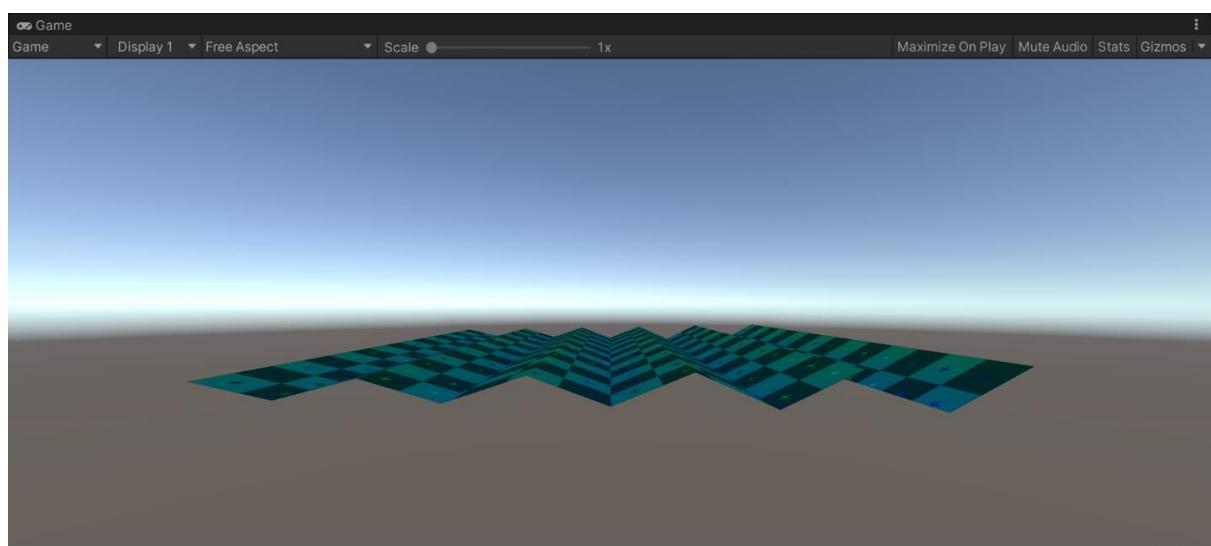
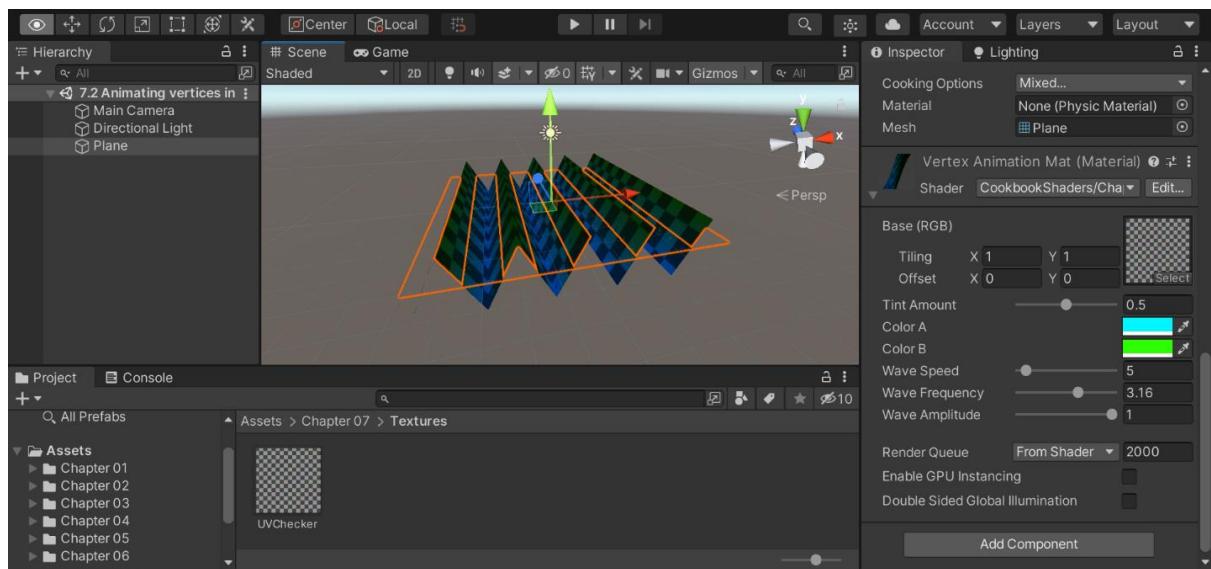
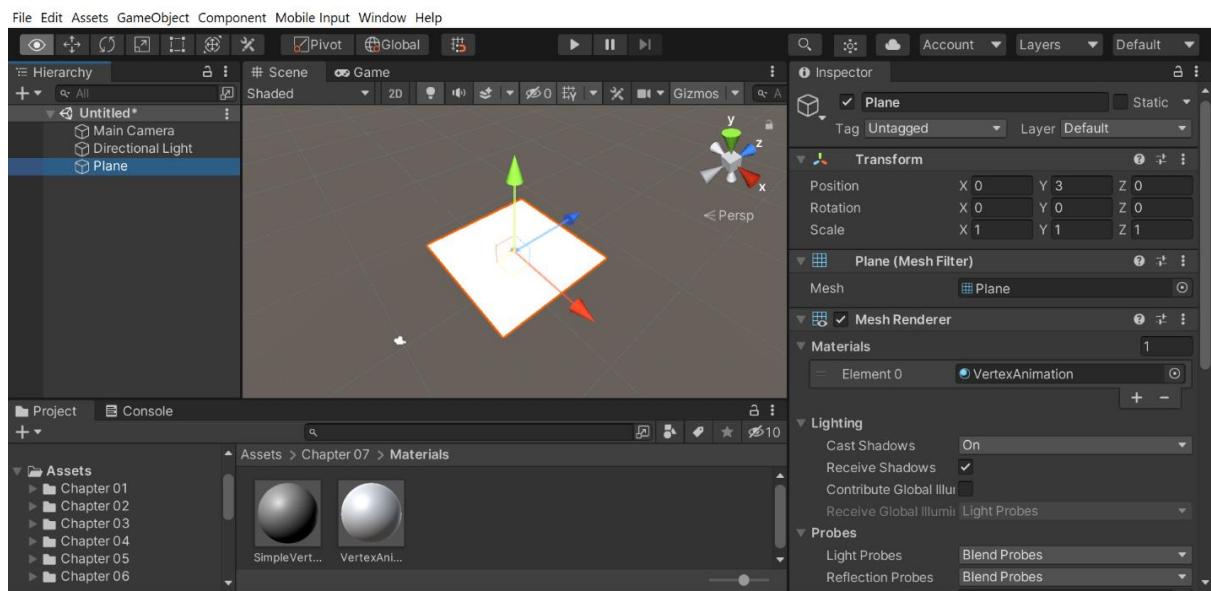
SketchUp SketchUp Soldier

Terrain_00... waterPlan... Cube

Capsule Cylinder Plane

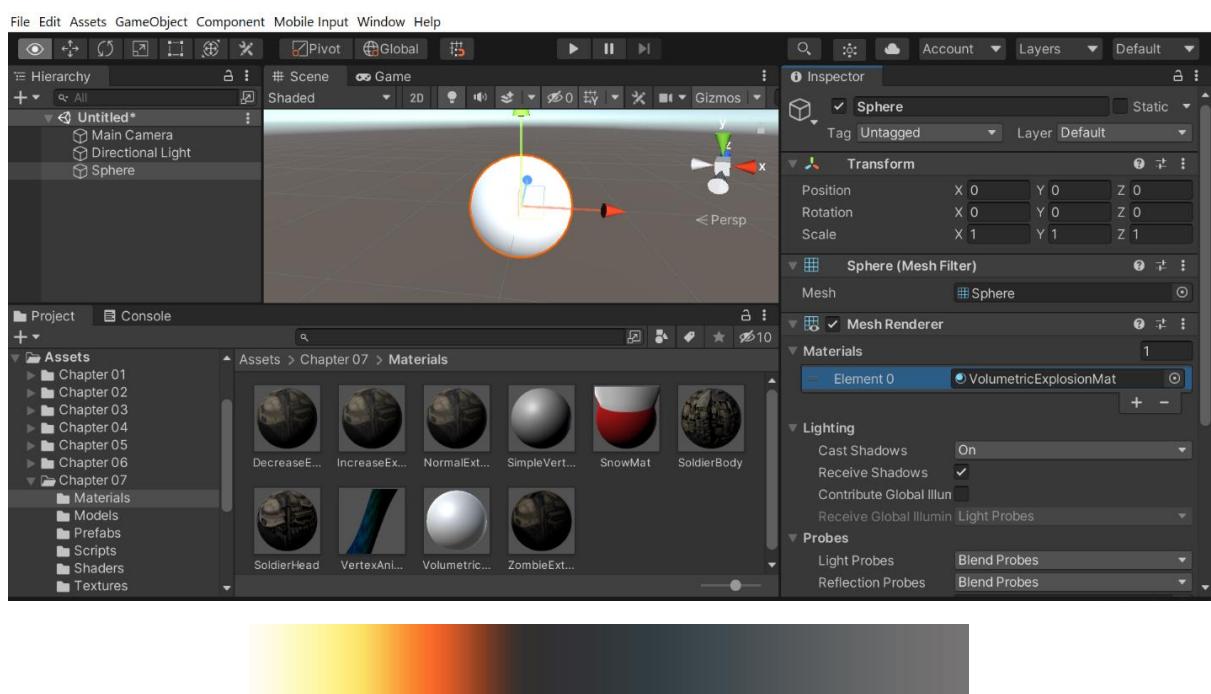
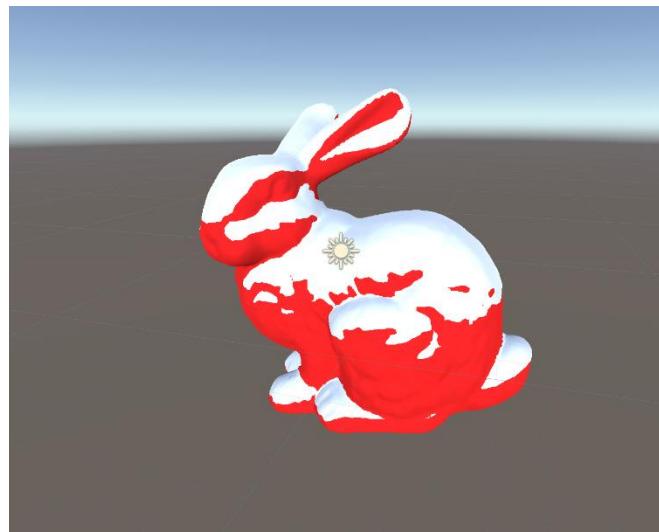
Sphere Quad

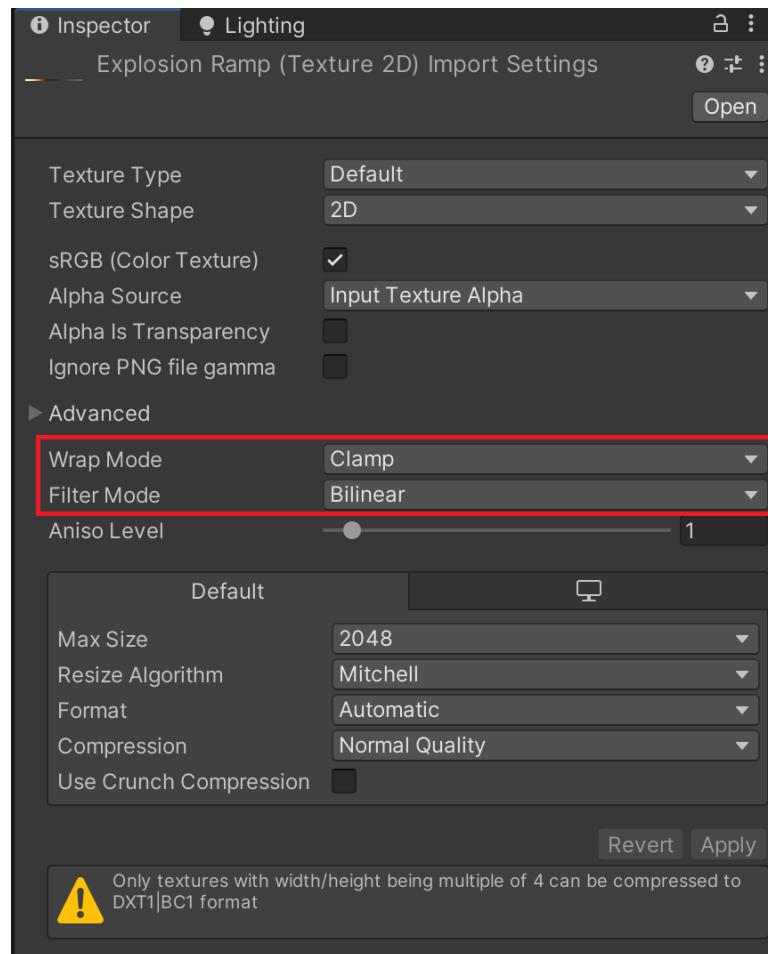
Plane
Mesh
121 Vertices, 200 Triangles | UV1
Library/unity default resources

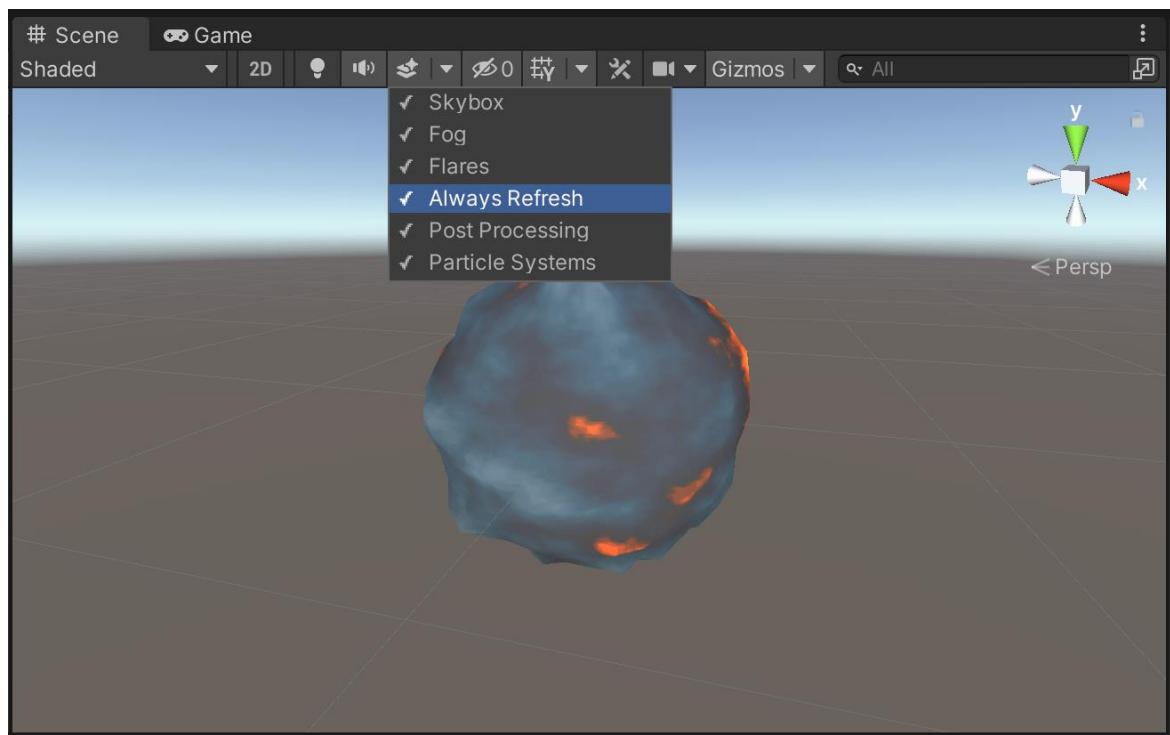
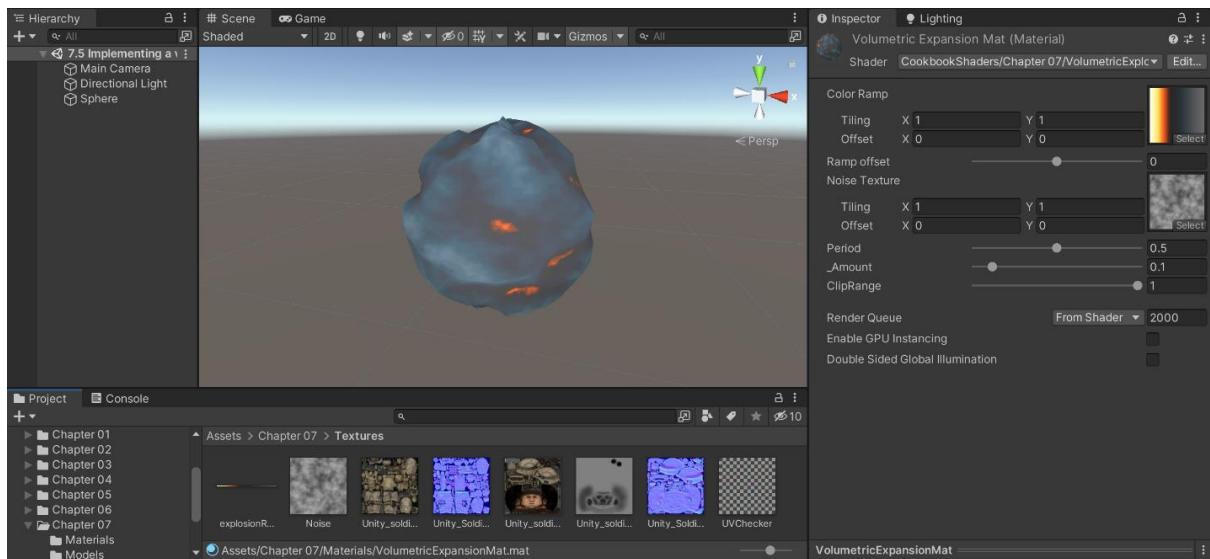


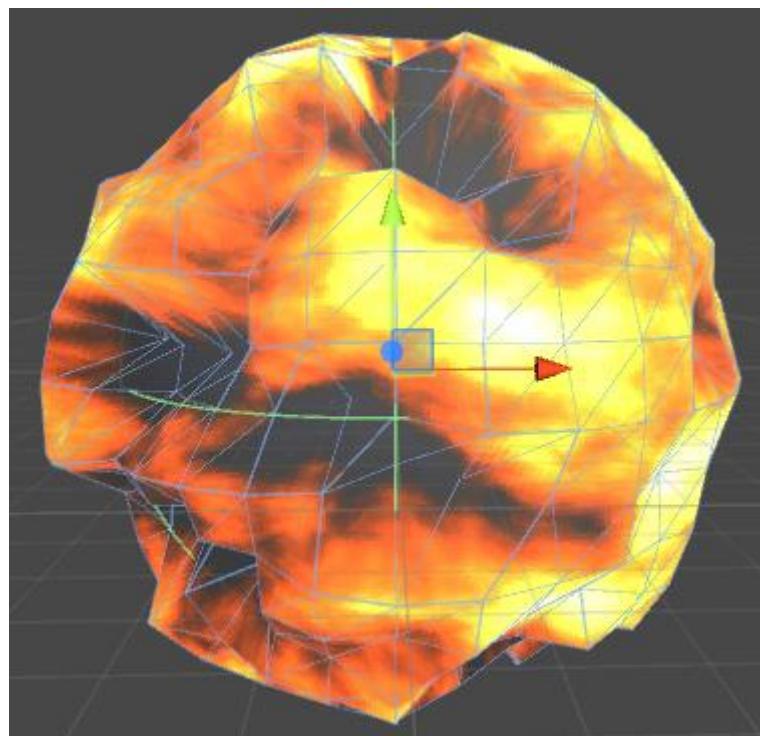




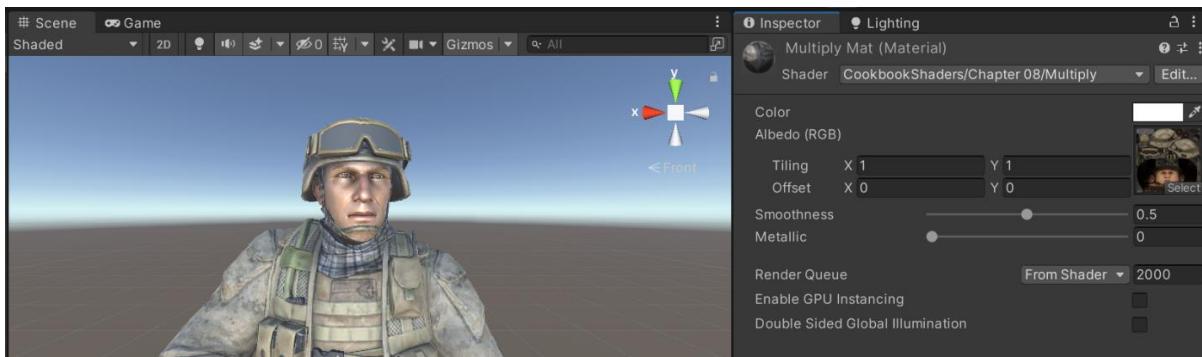
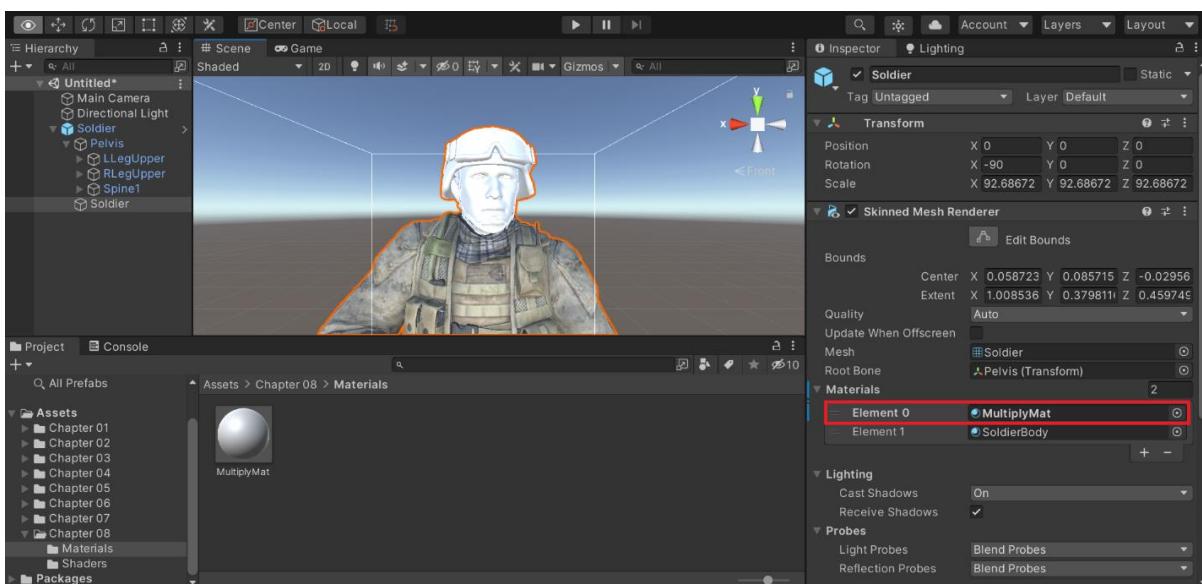


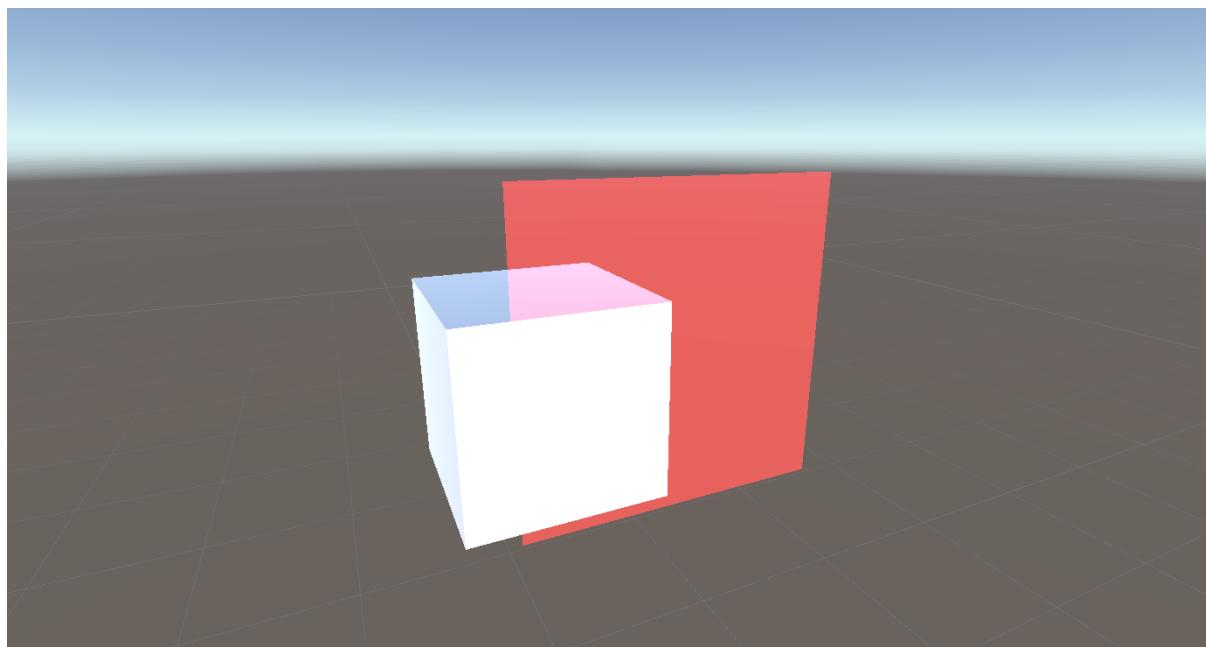
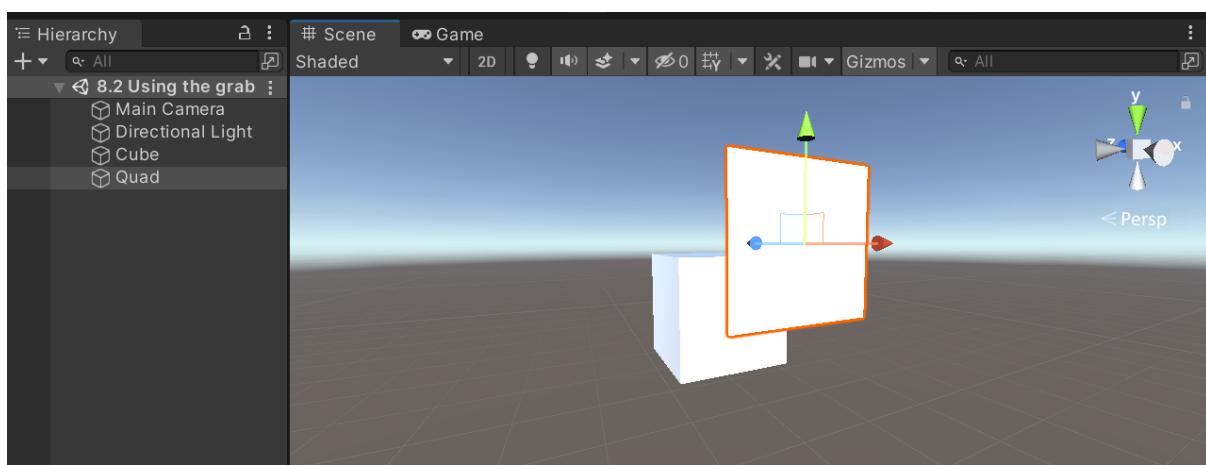
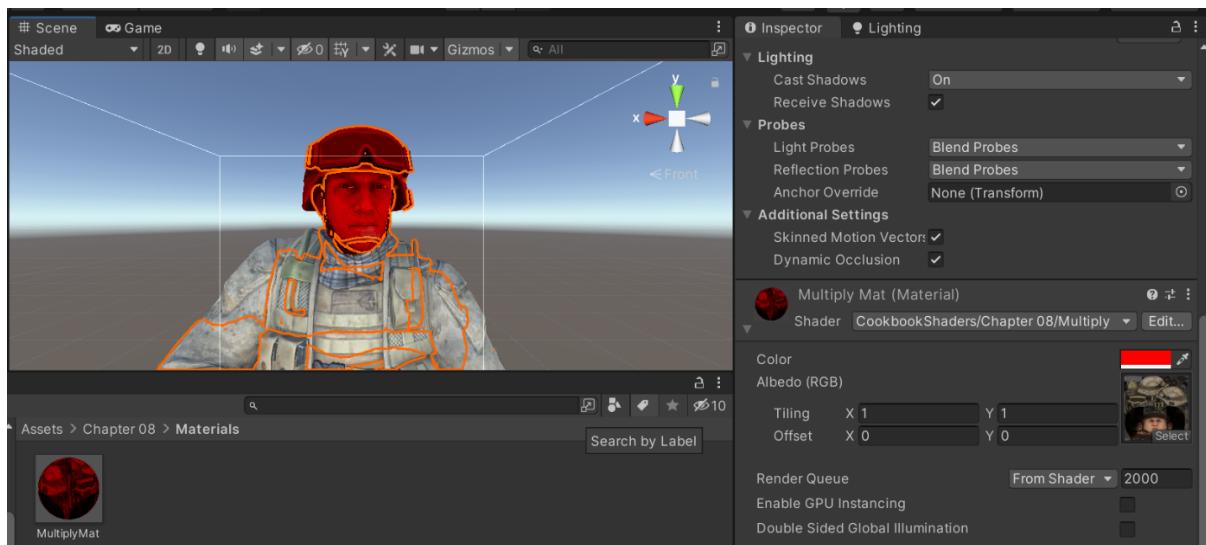


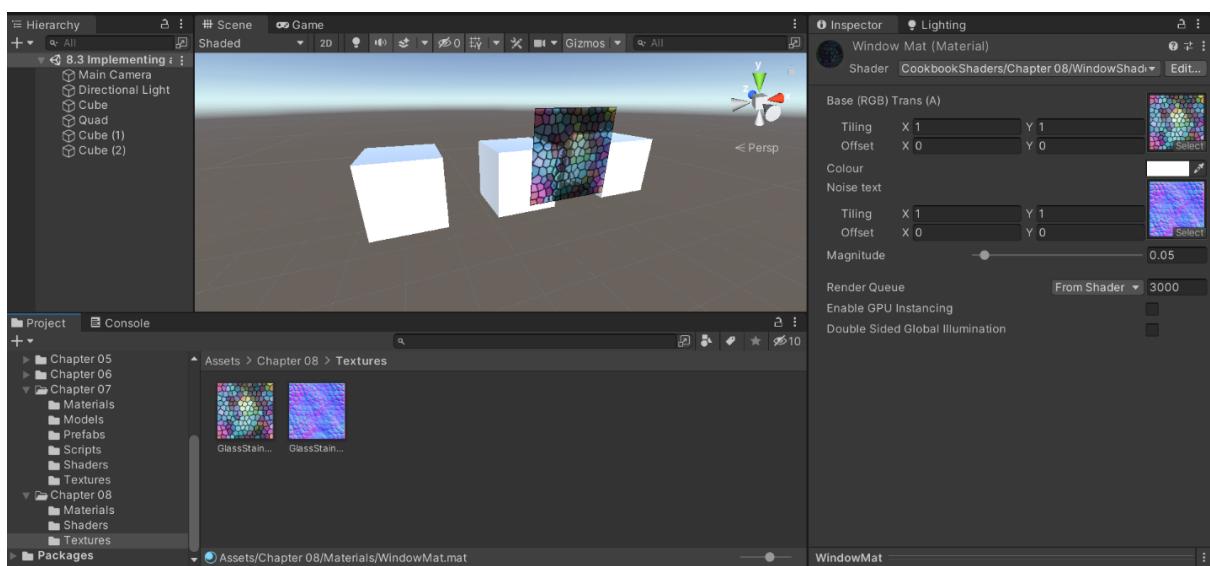
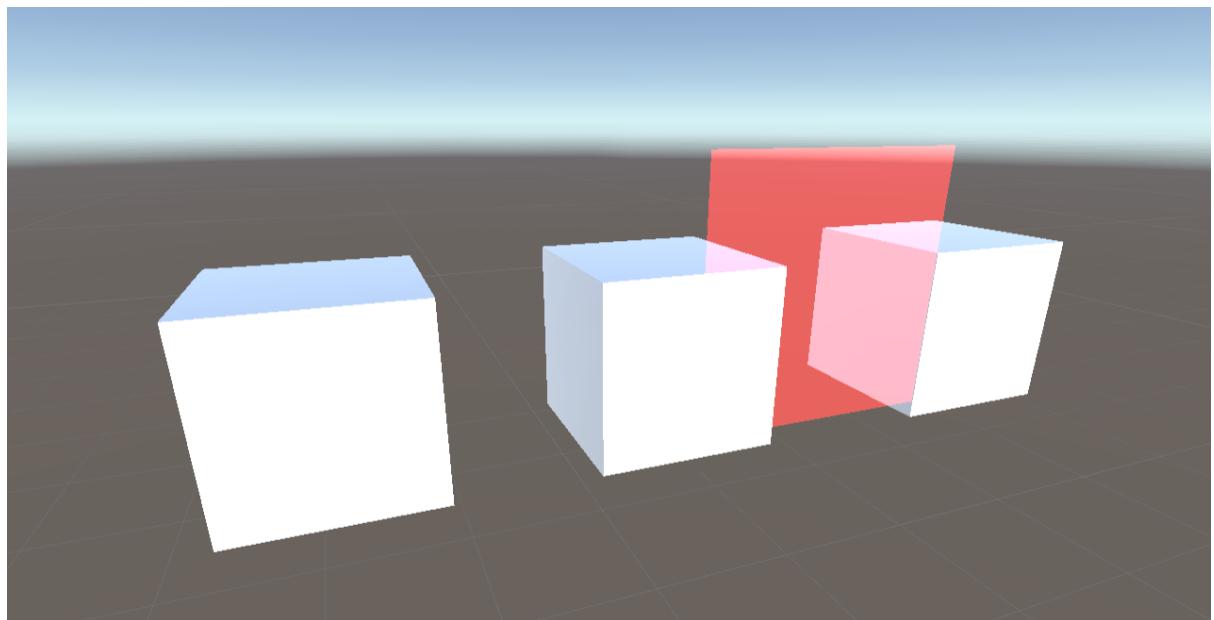
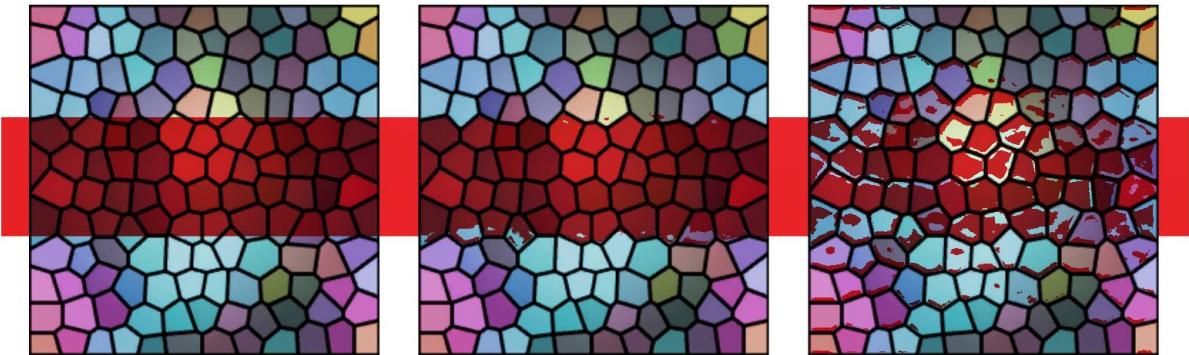


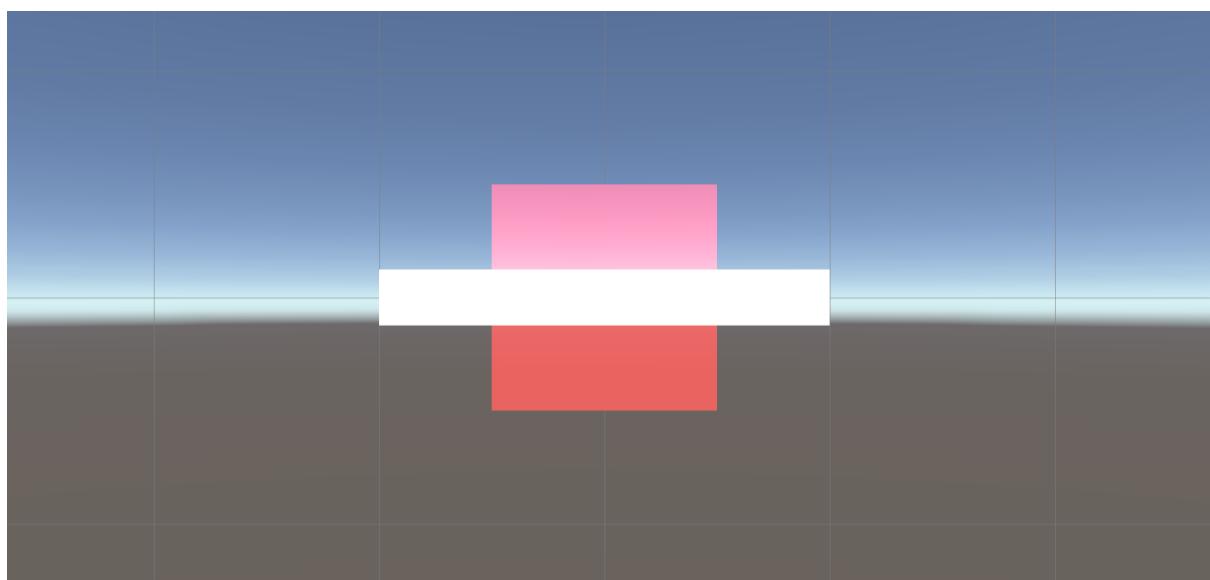
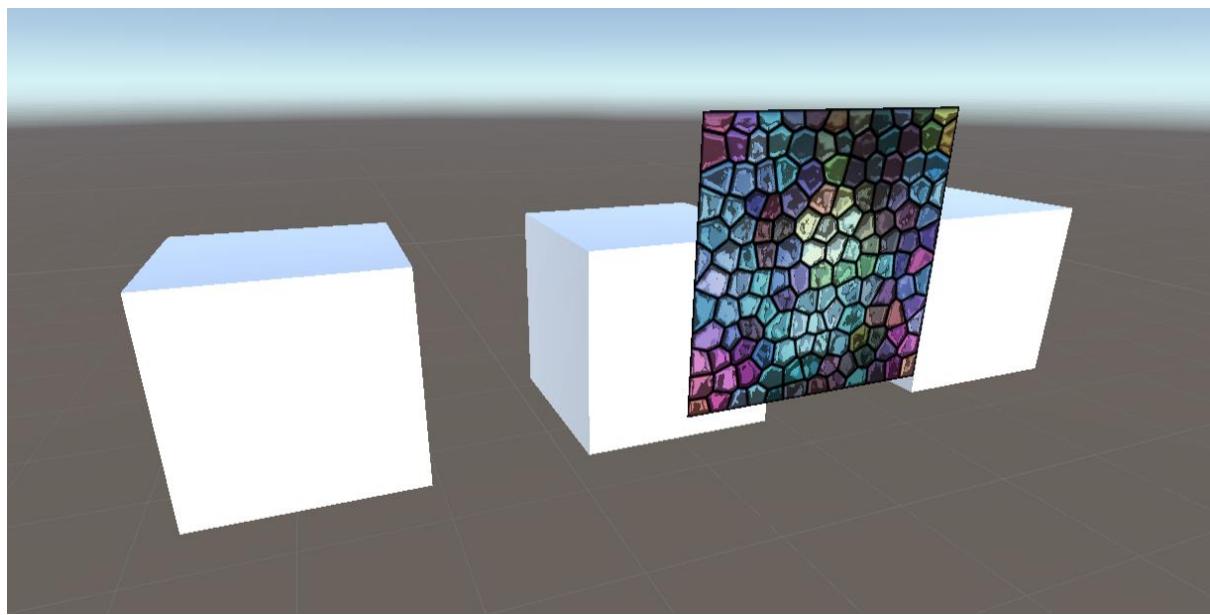


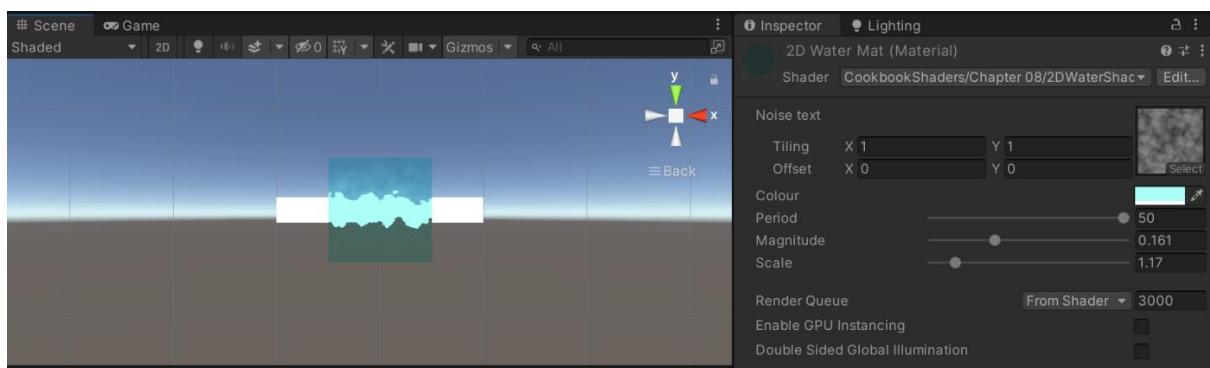
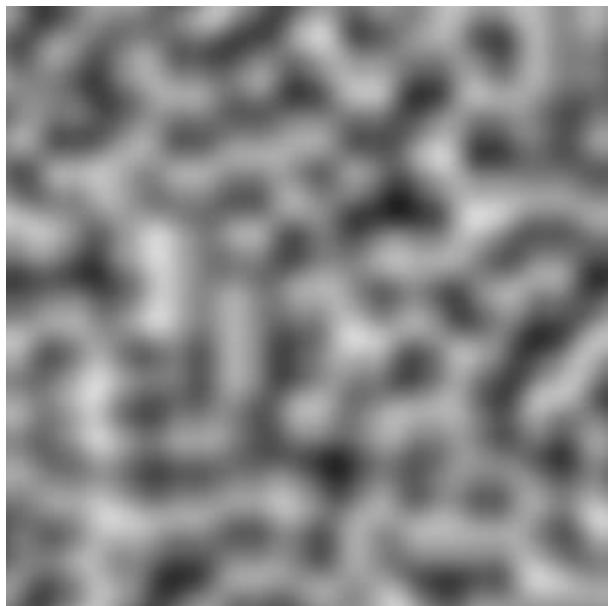
Chapter 8: Fragment Shaders and Grab Passes



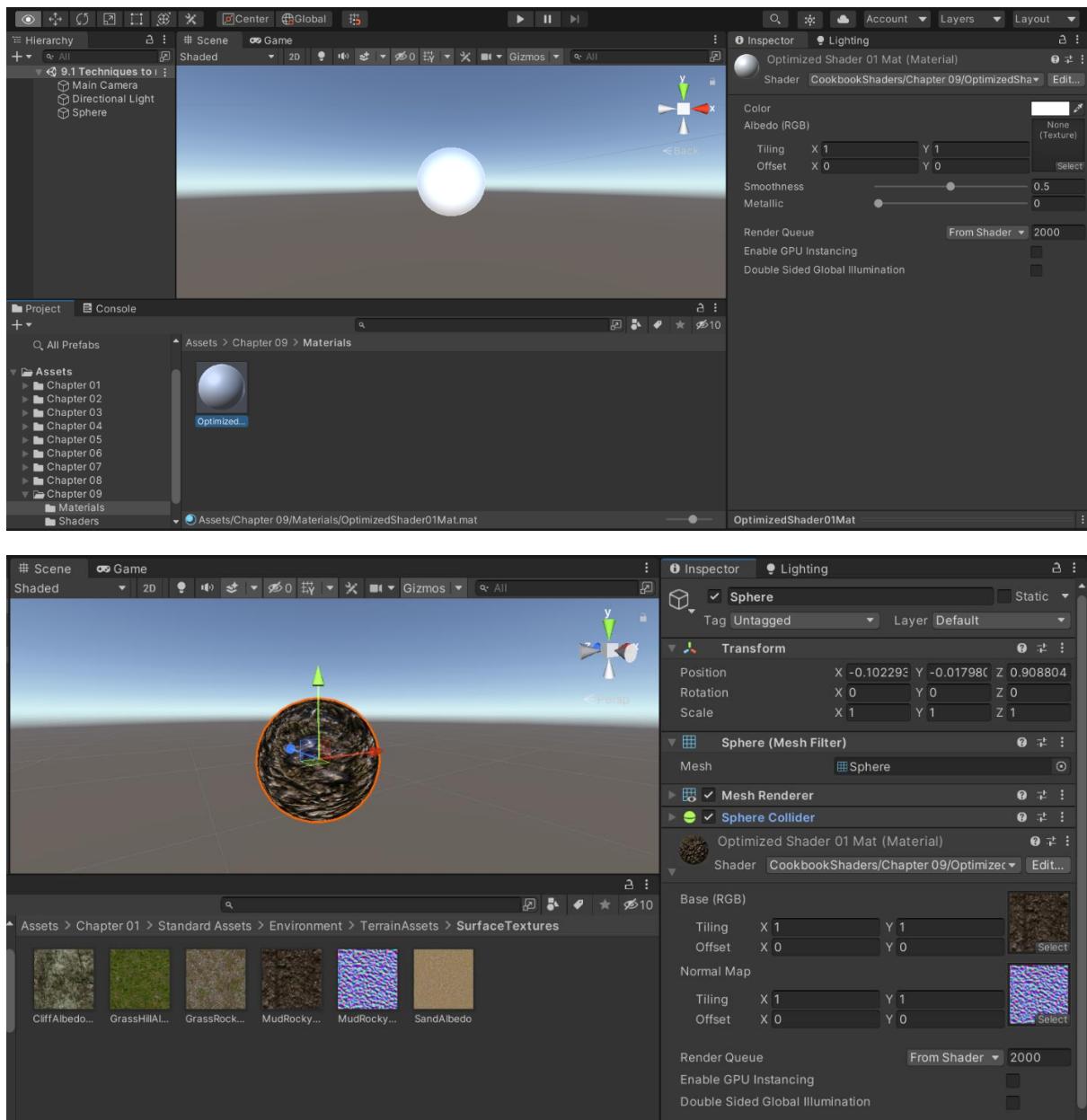


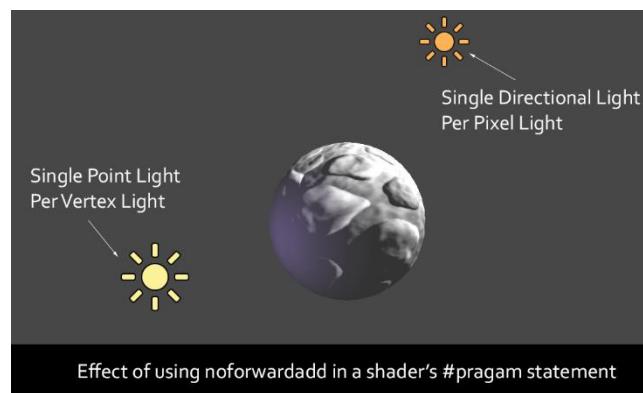
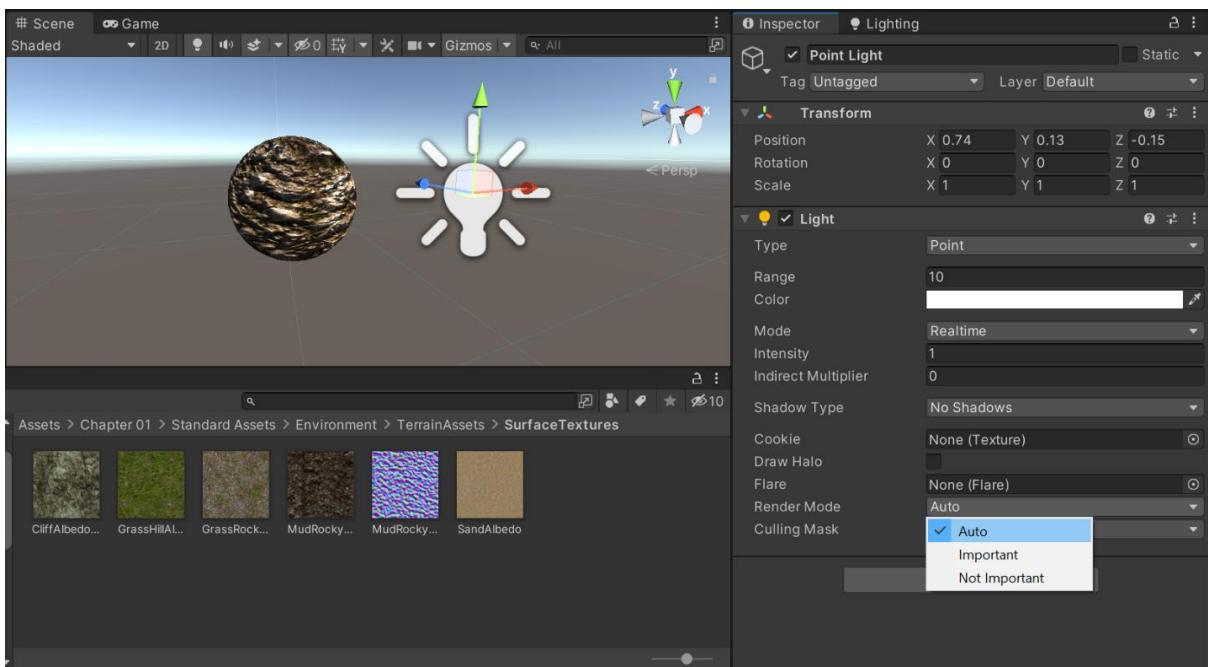
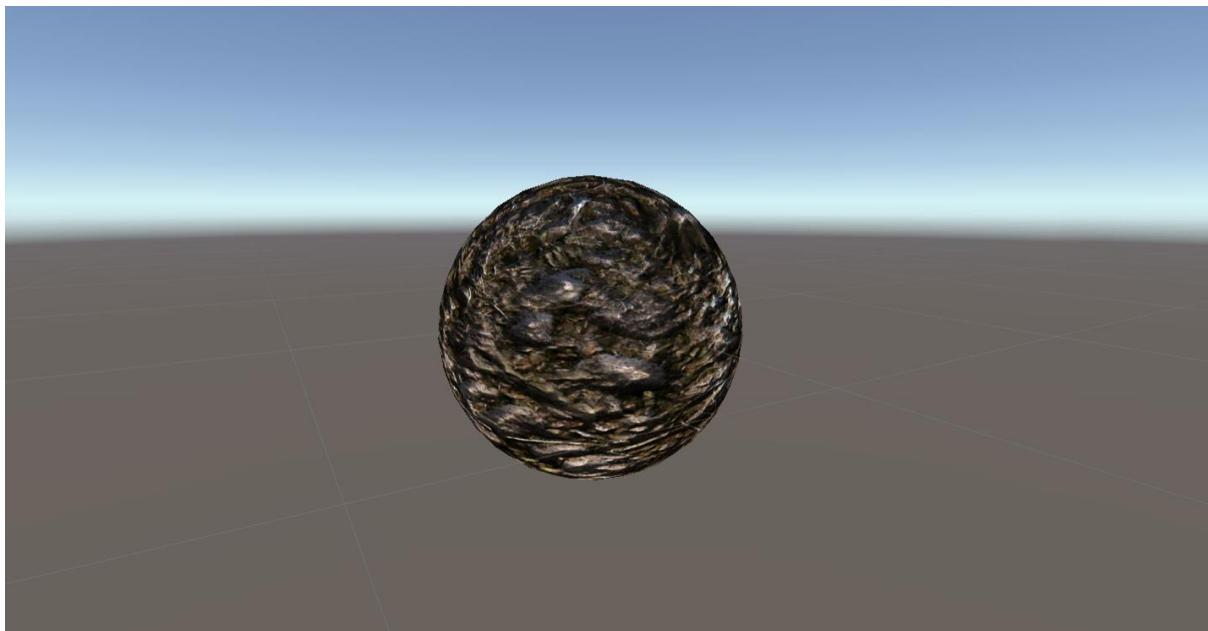


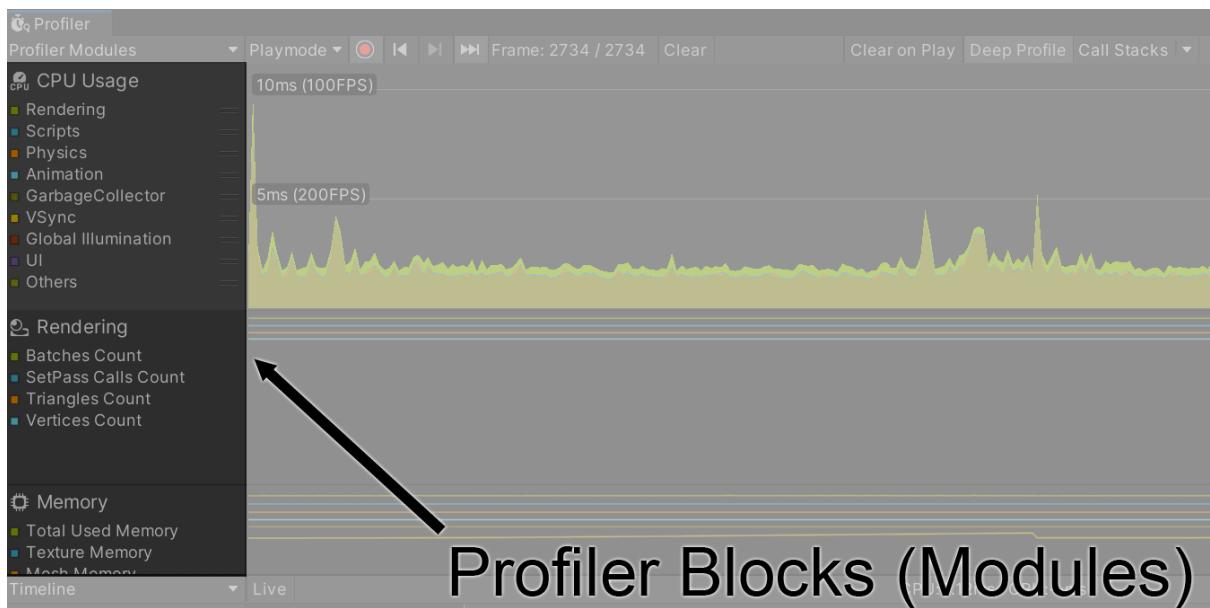
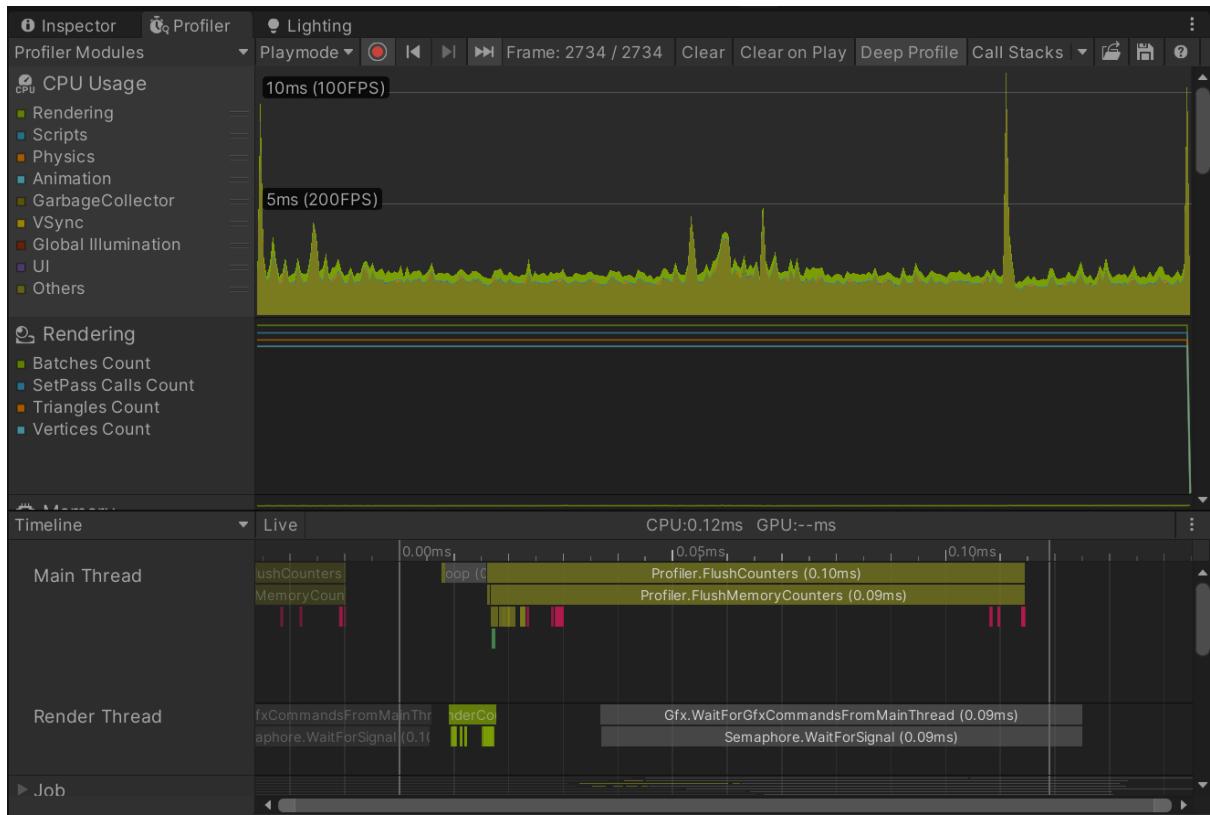




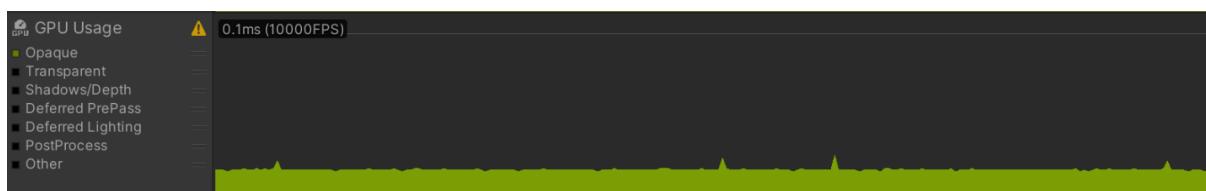
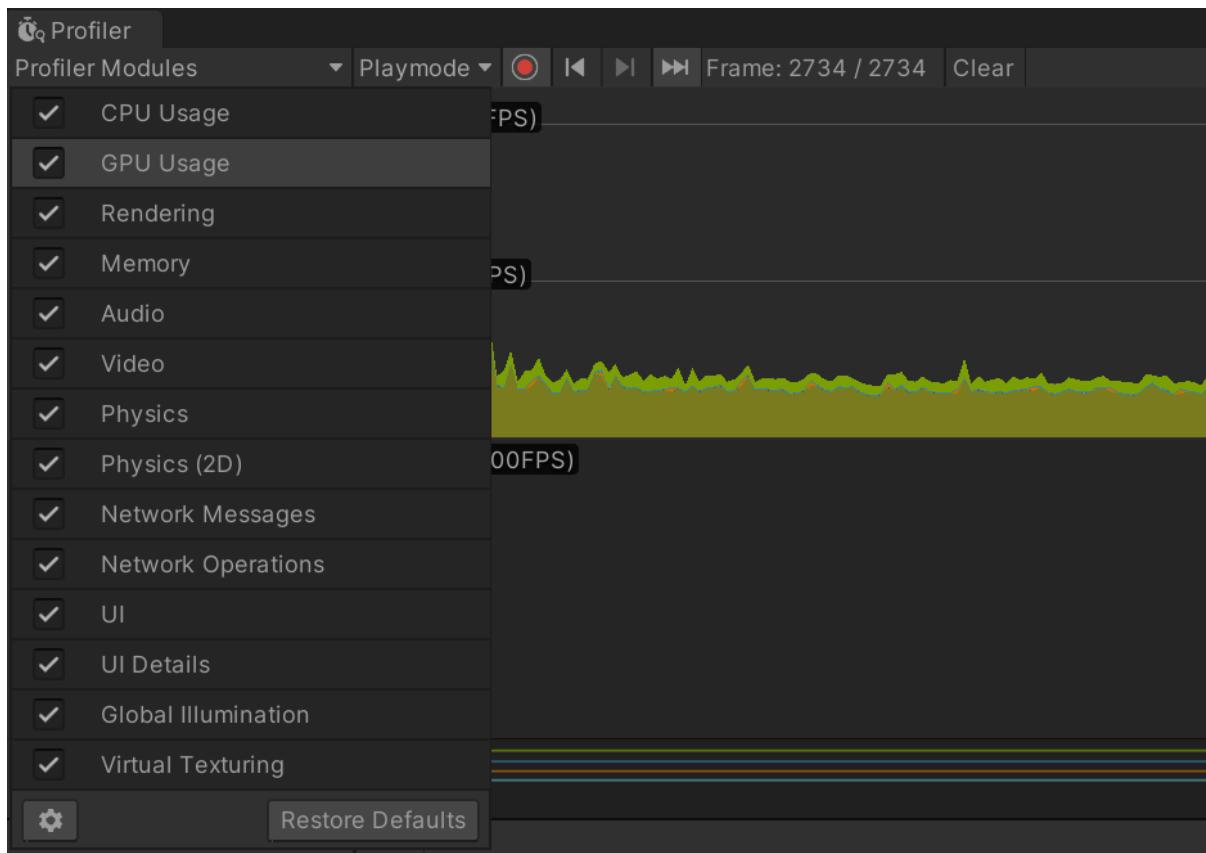
Chapter 9: Mobile Shader Adjustment

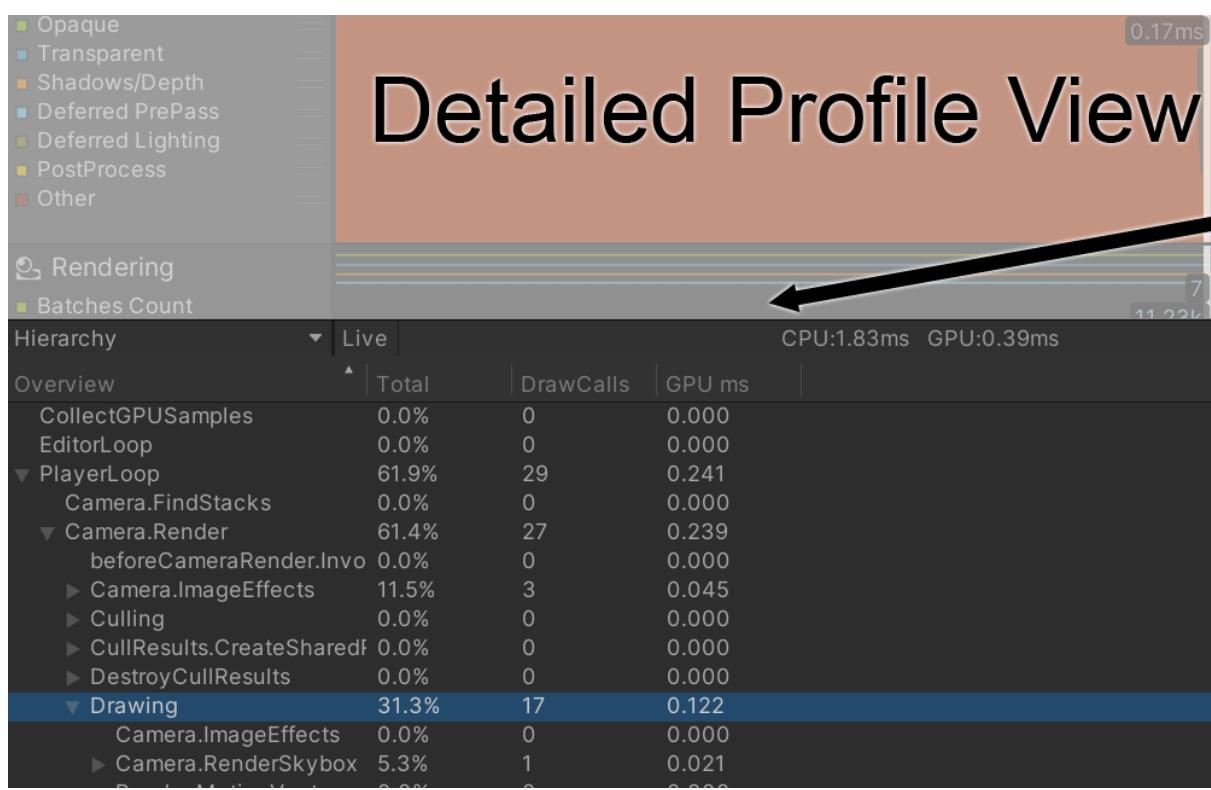
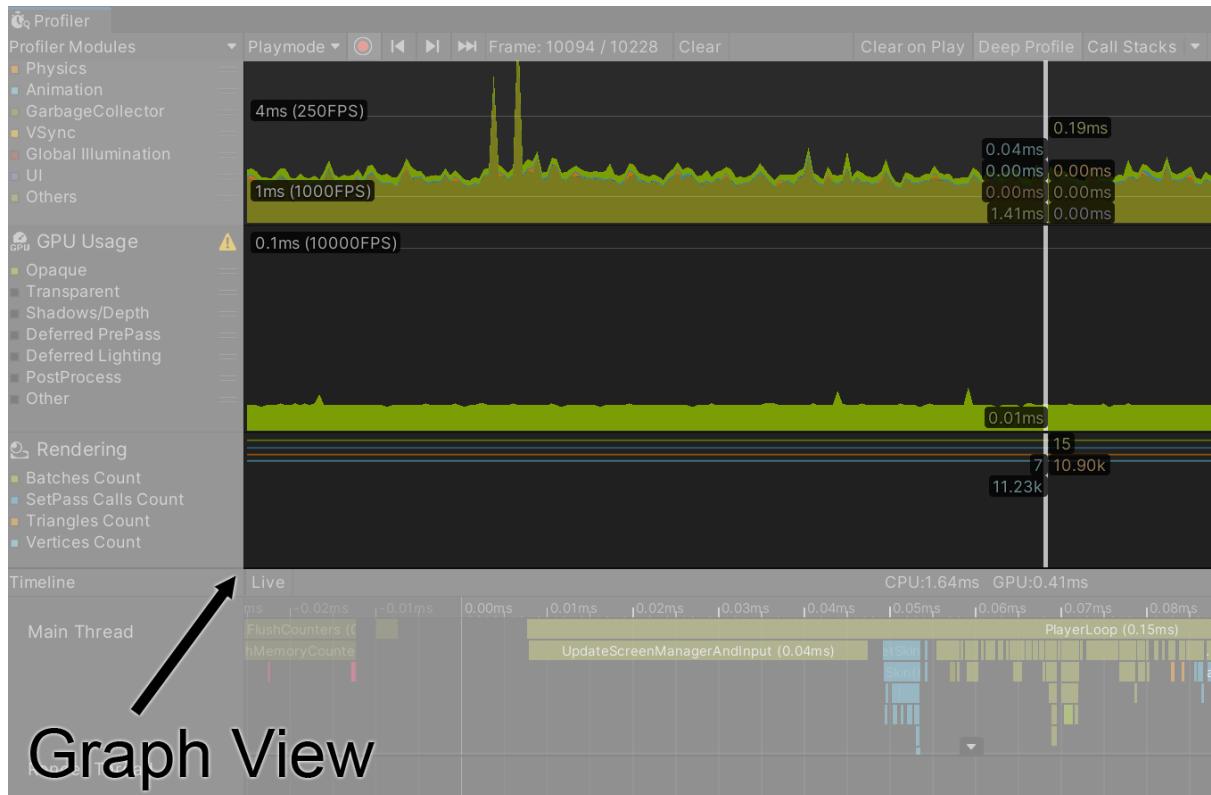




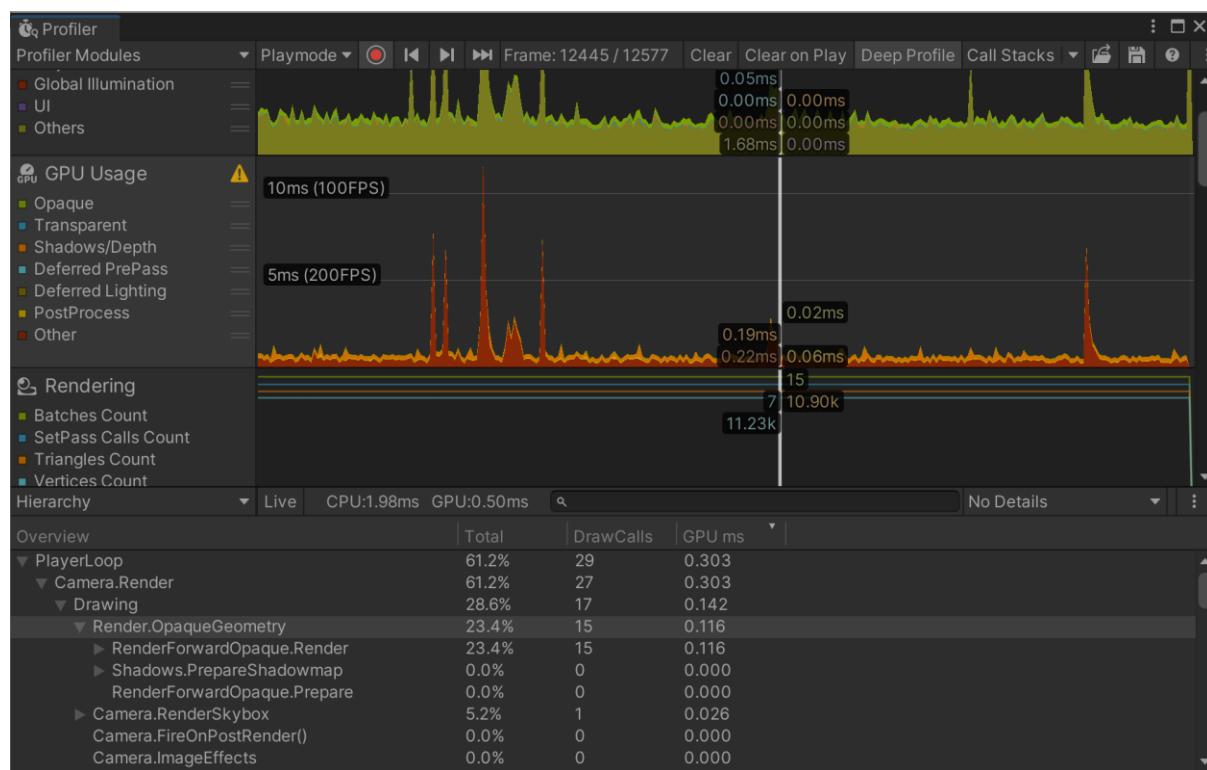
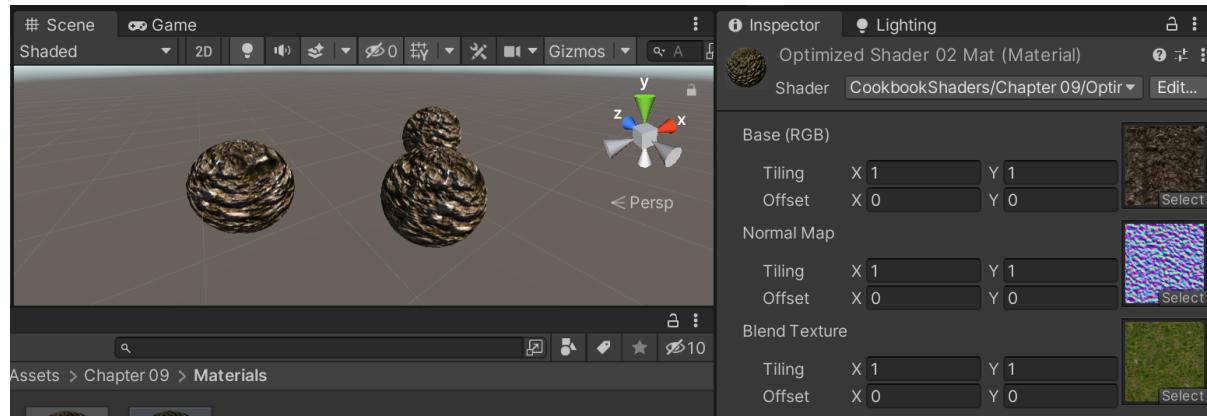


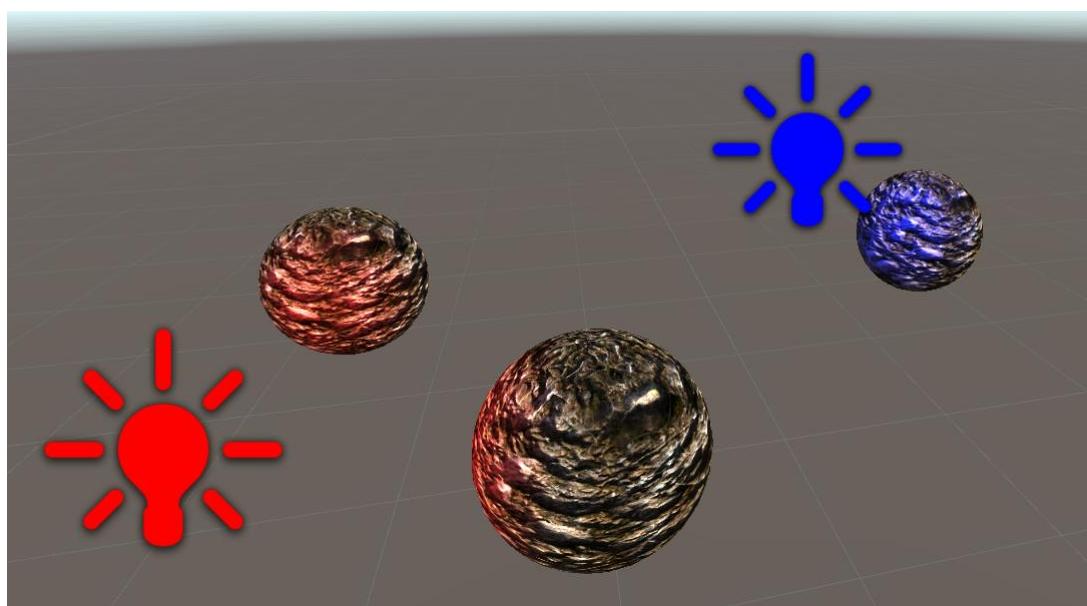
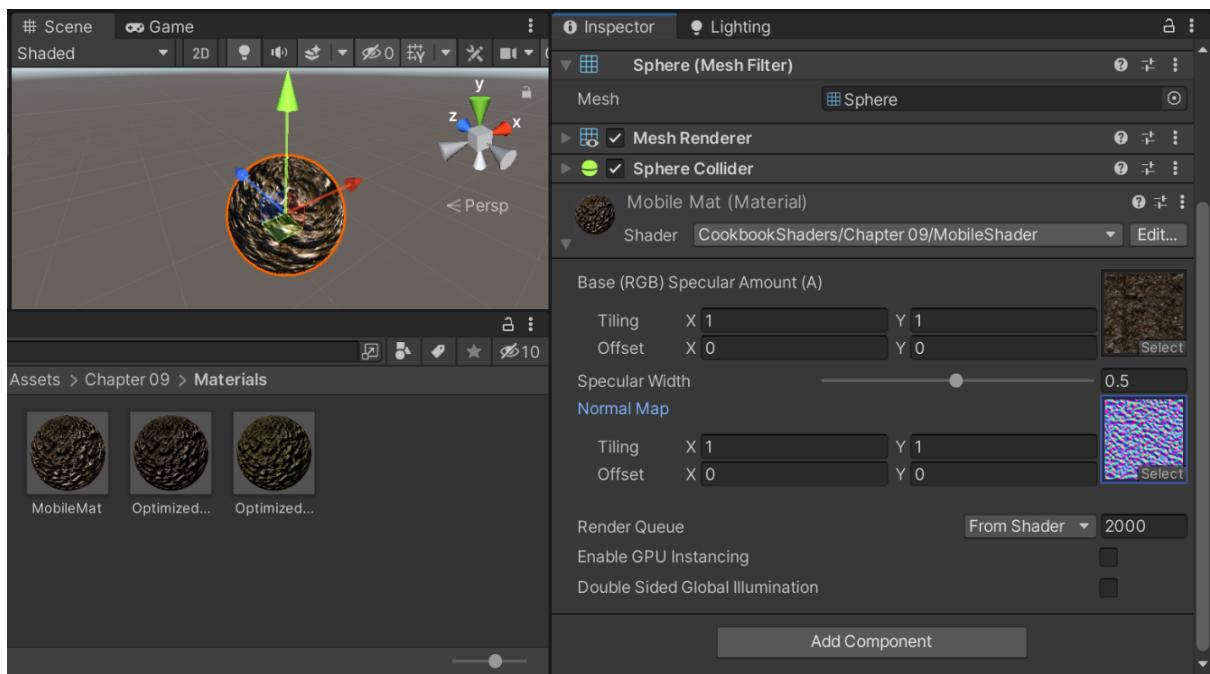
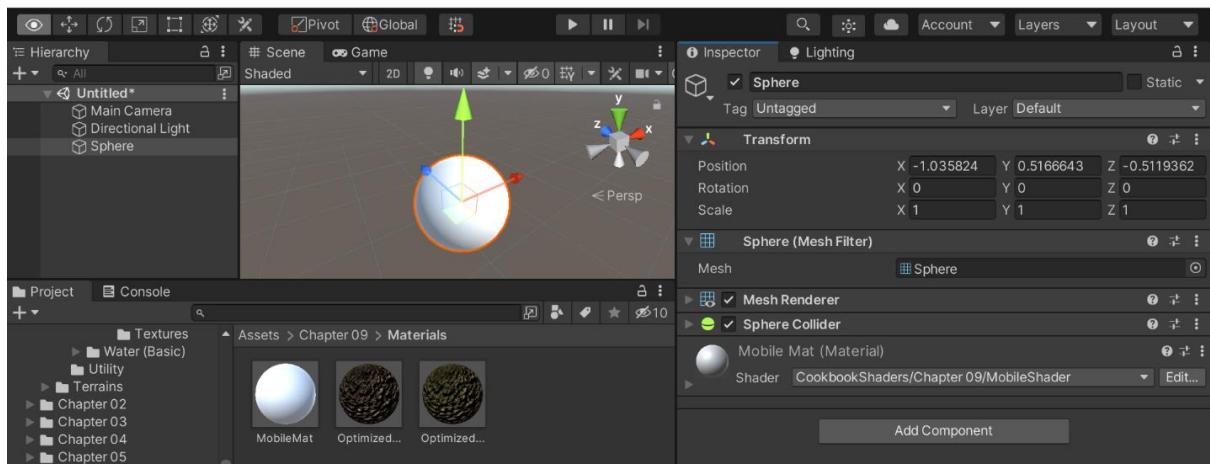
Profiler Blocks (Modules)



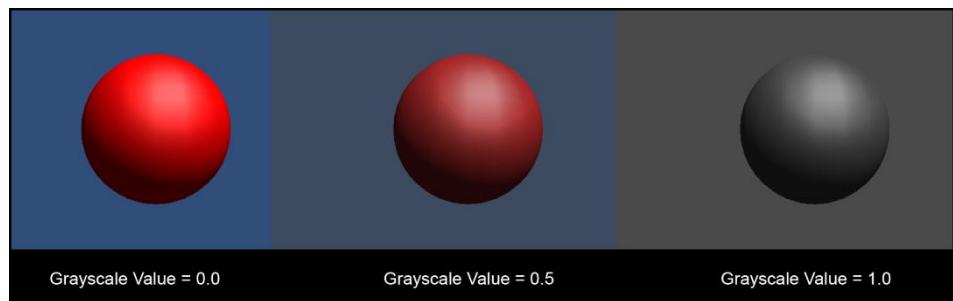
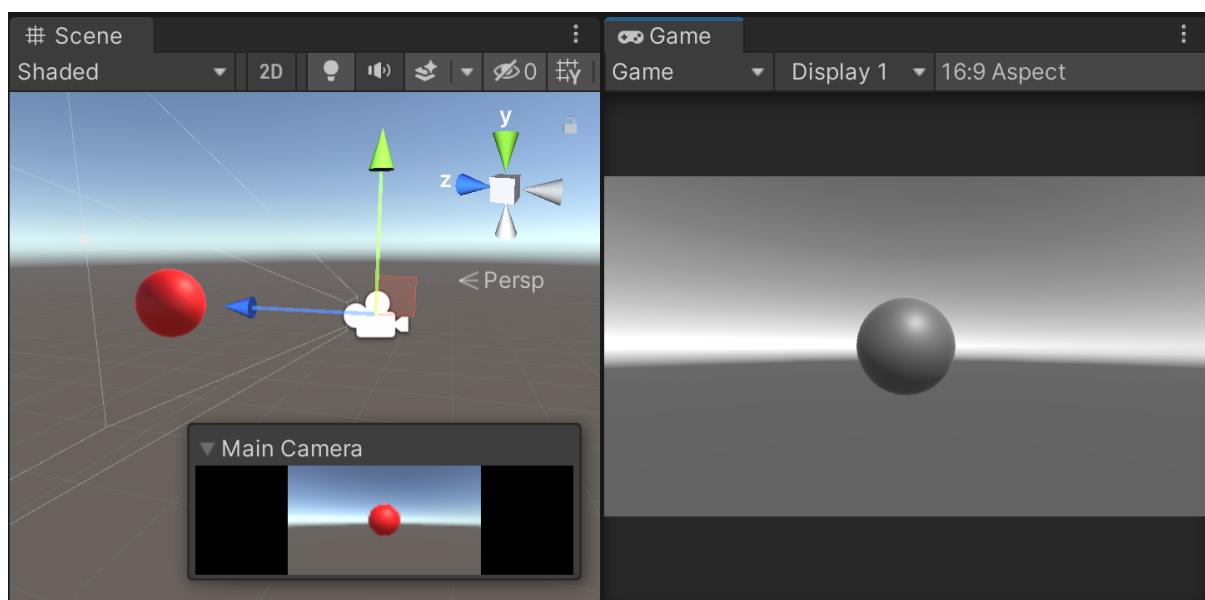
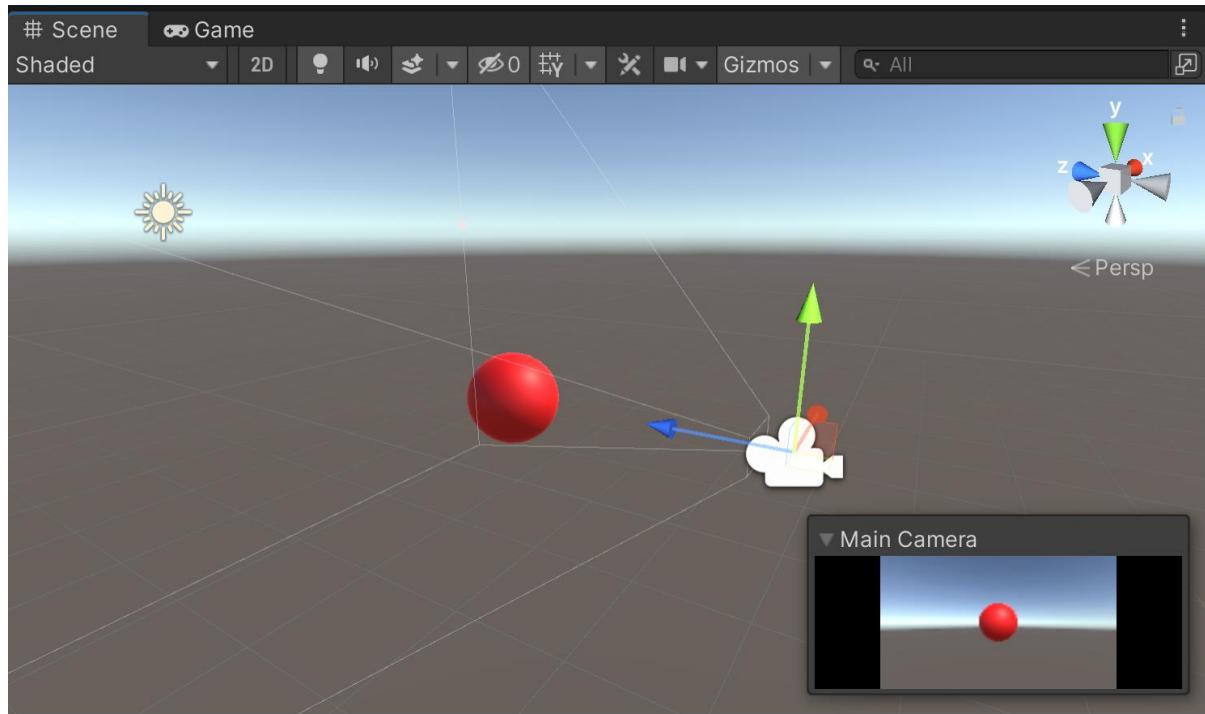


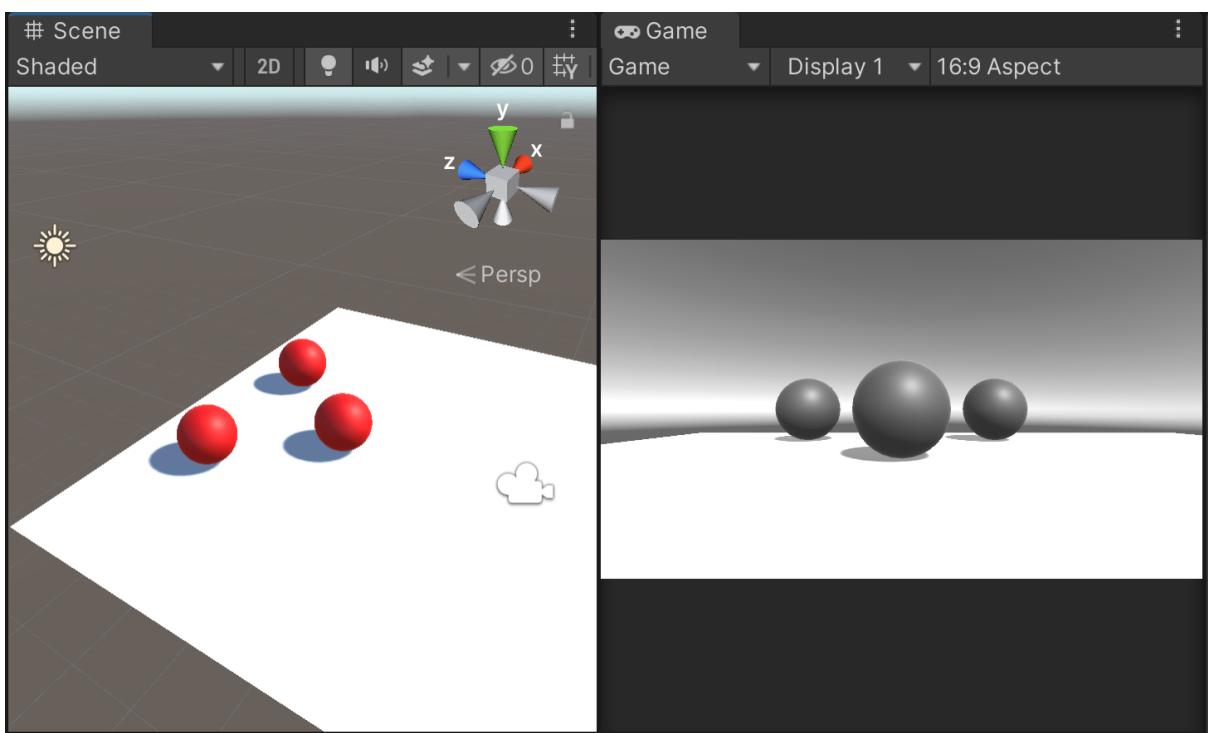
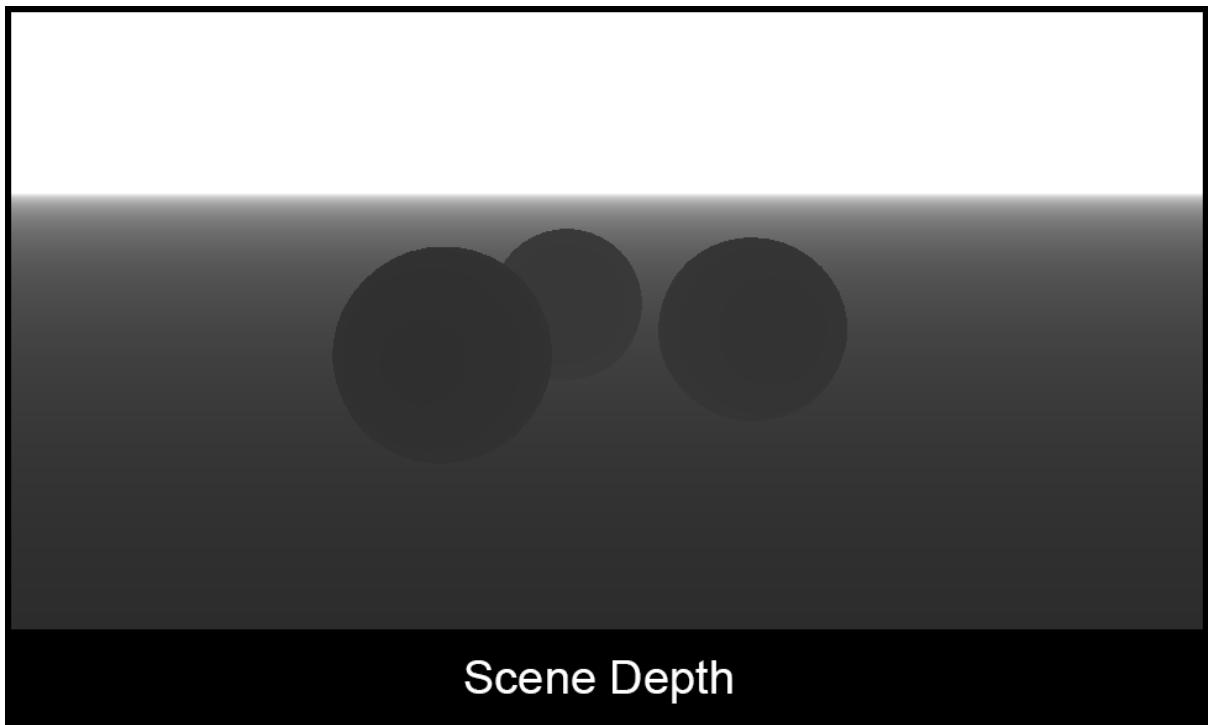
Overview	Total	DrawCalls	GPU ms
PlayerLoop	61.9%	29	0.241
Camera.Render	61.4%	27	0.239
Drawing	31.3%	17	0.122
RenderOpaqueGeometry	25.9%	15	0.101
Camera.RenderSkybox	5.3%	1	0.021
Camera.FireOnPostRender()	0.0%	0	0.000
RenderTexture.SetActive	0.0%	0	0.000
RenderLoop.CleanupNode	0.0%	0	0.000
RenderTransparentGeometry	0.0%	0	0.000
RenderPrepare	0.0%	0	0.000

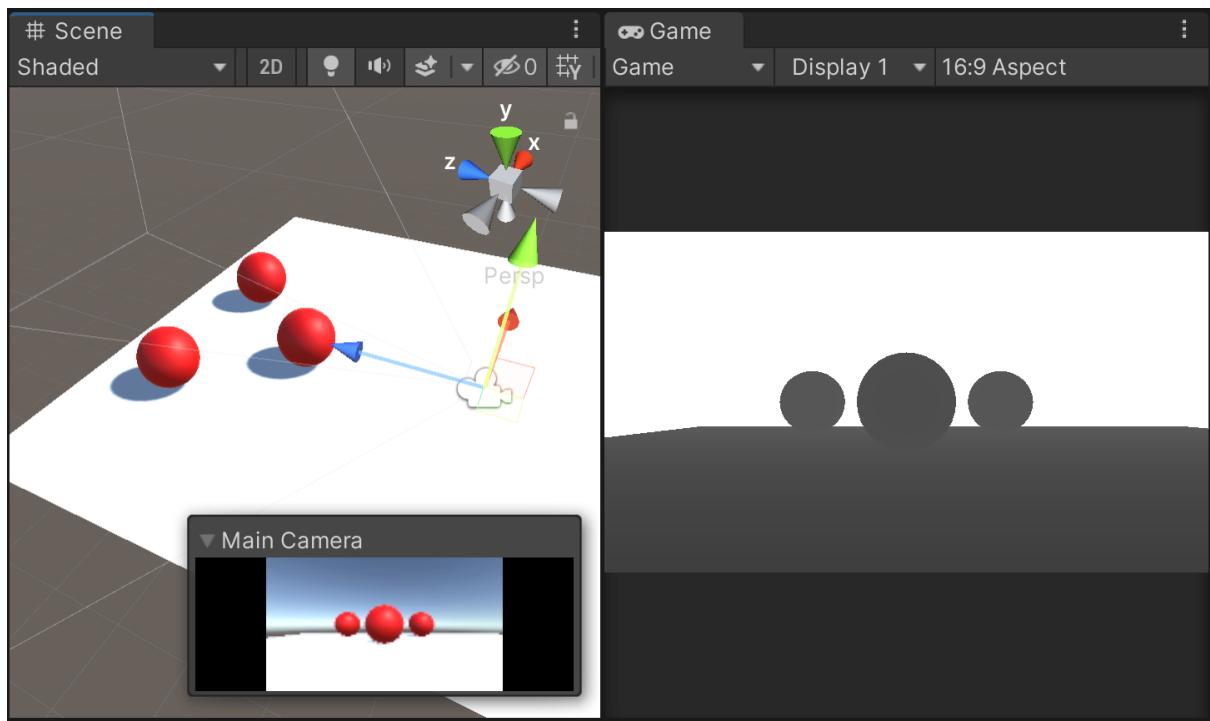




Chapter 10: Screen Effects with Unity Render Textures







Depth Power = 0.1

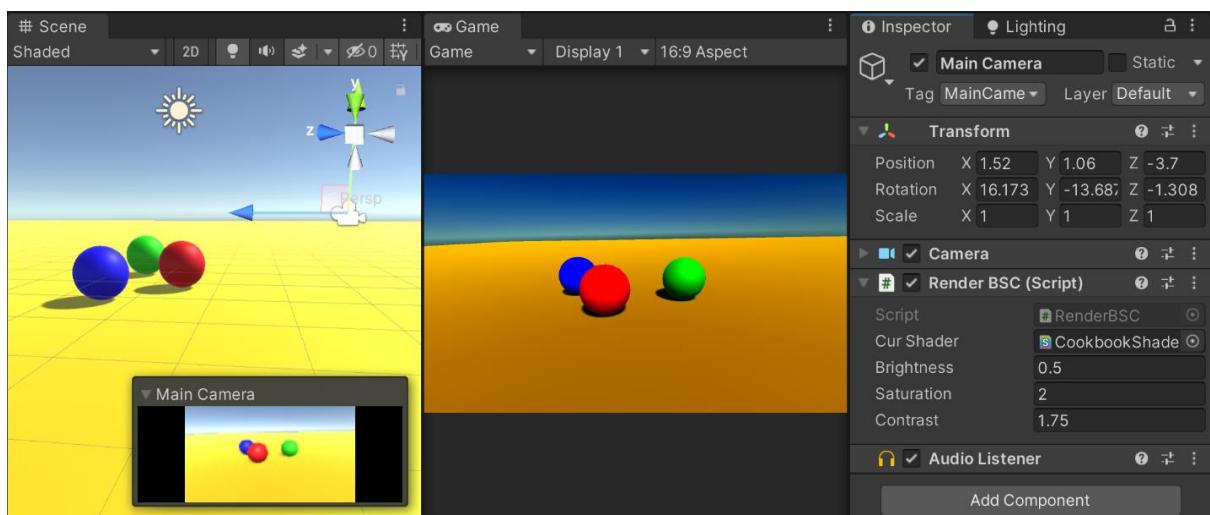
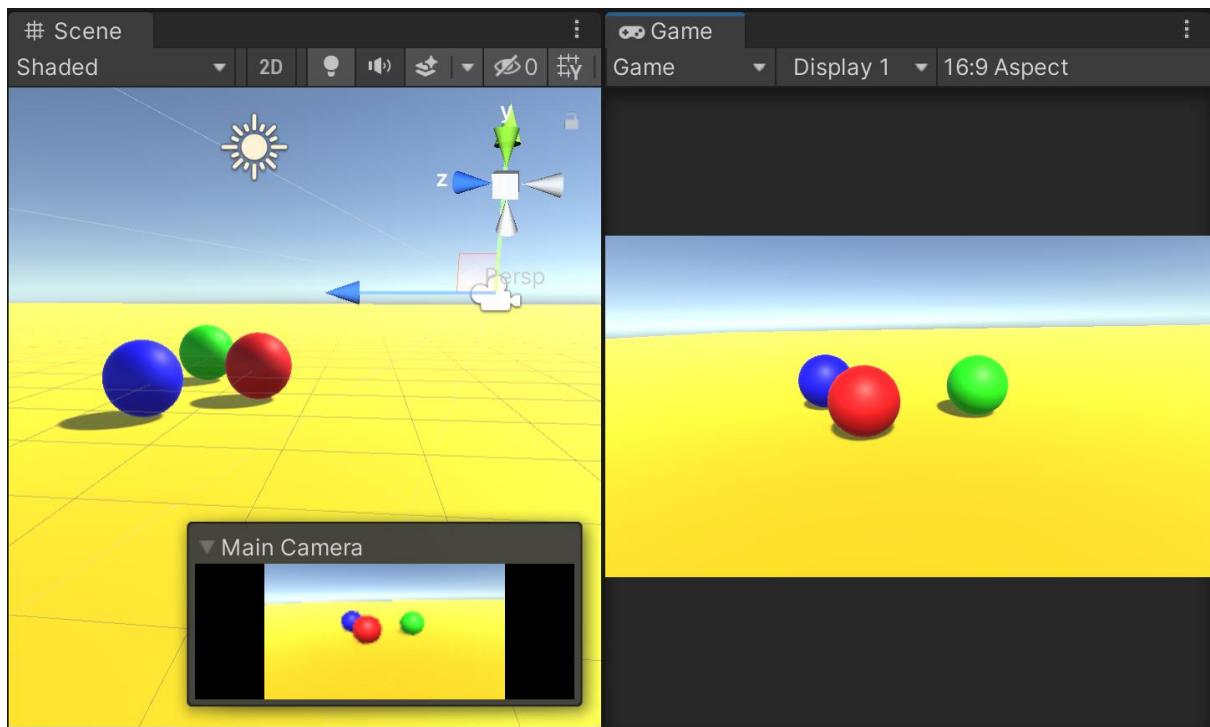


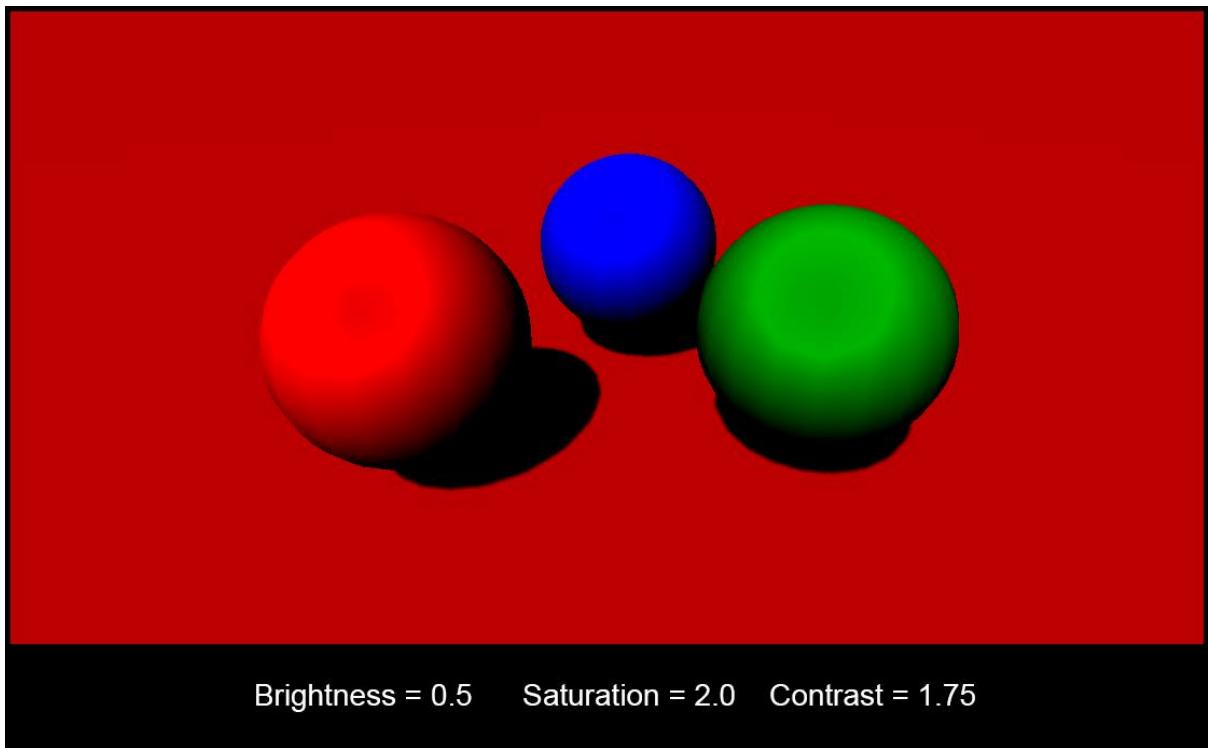
Depth Power = 0.4



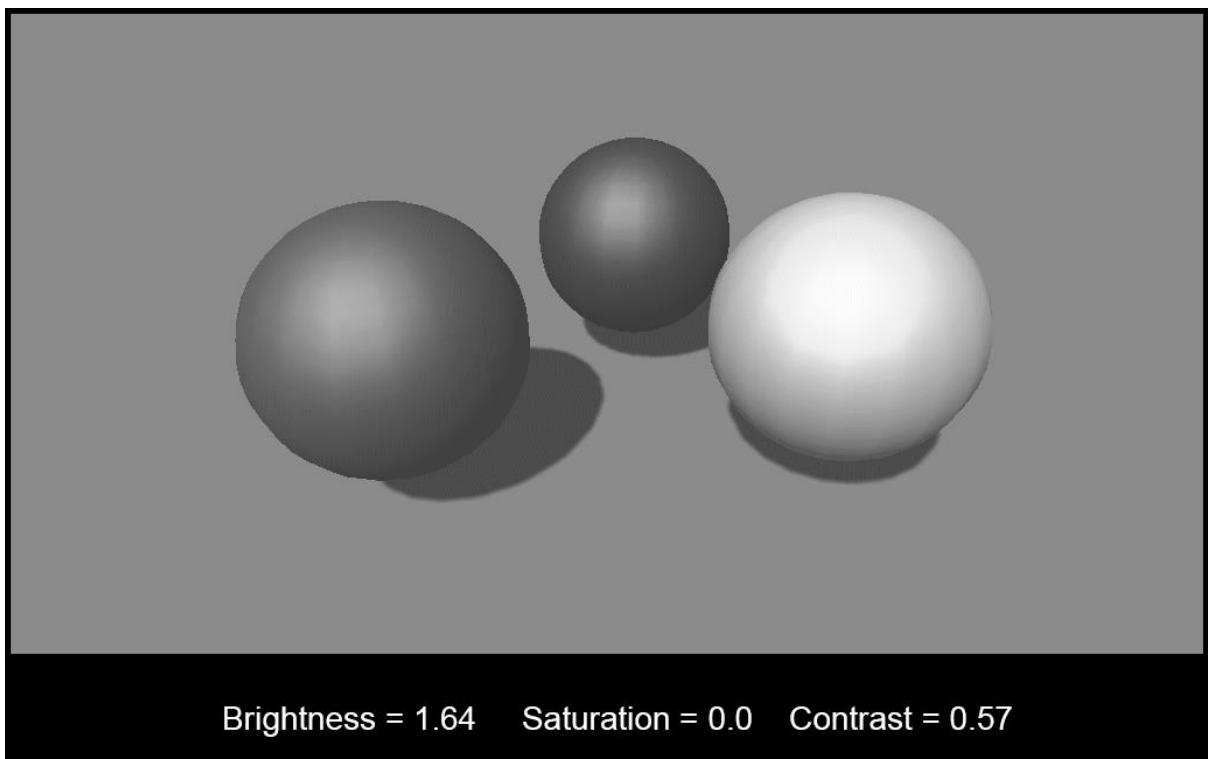
Depth Power = 0.8



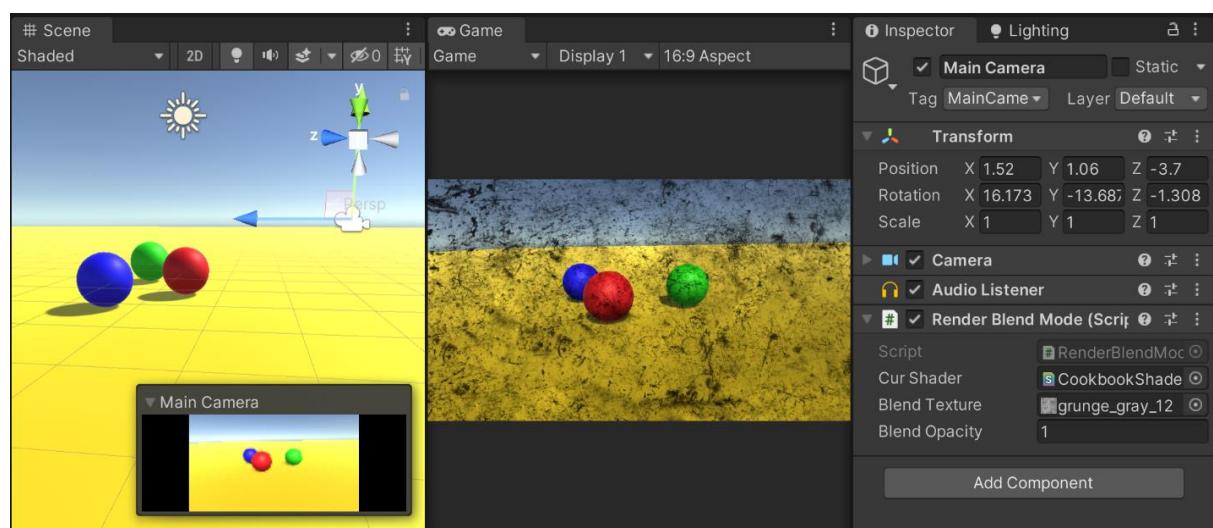
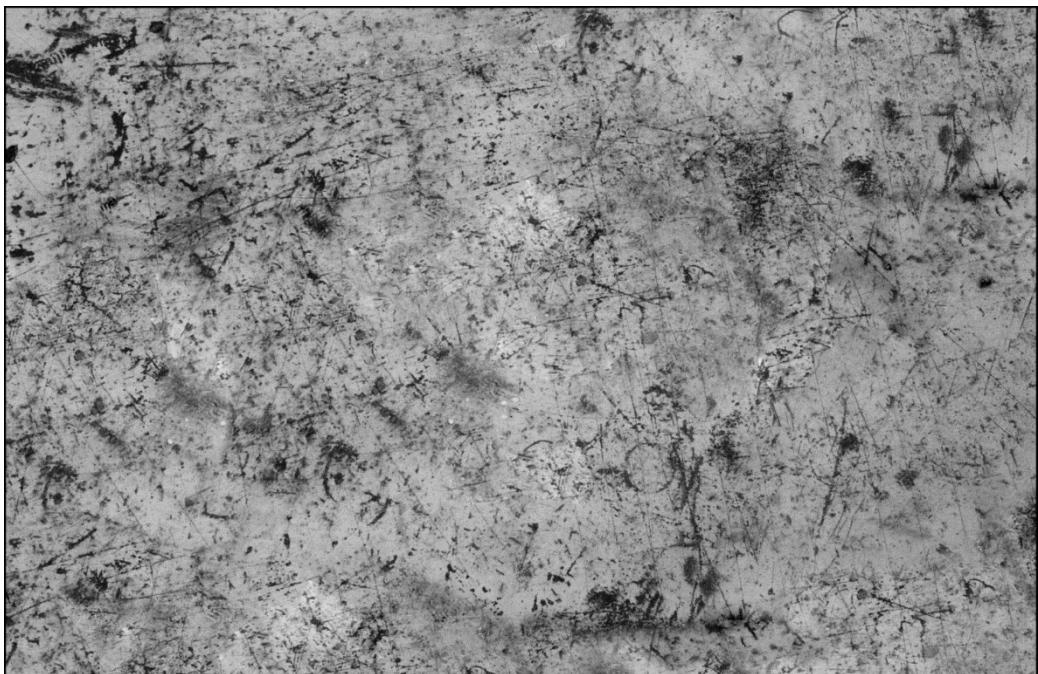


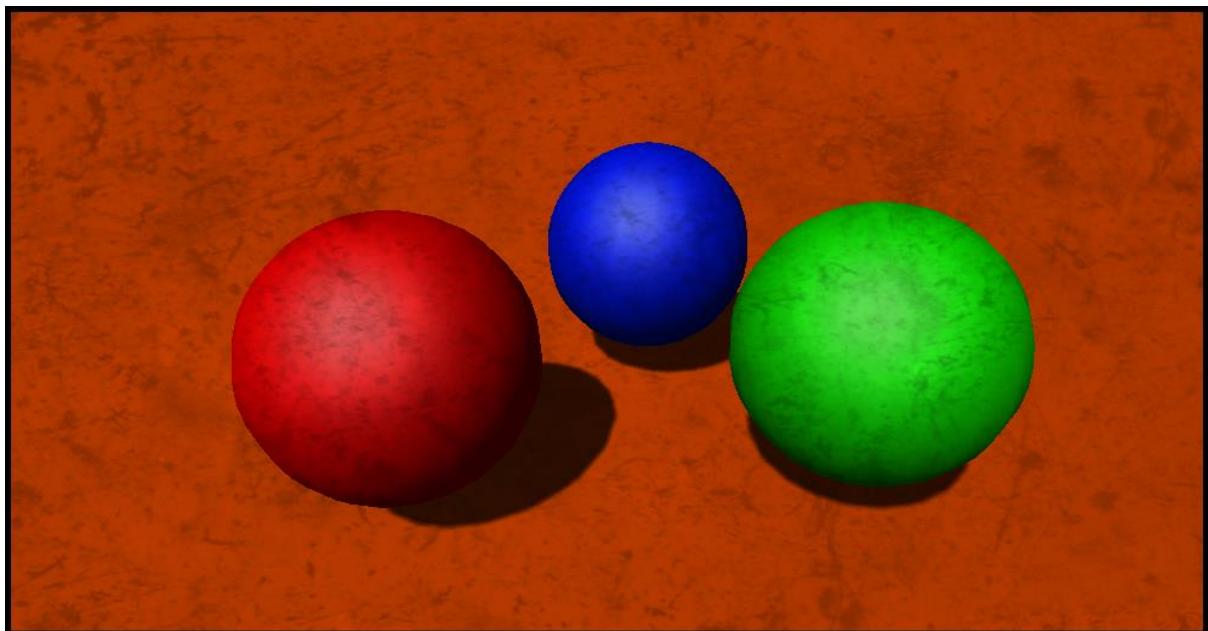


Brightness = 0.5 Saturation = 2.0 Contrast = 1.75

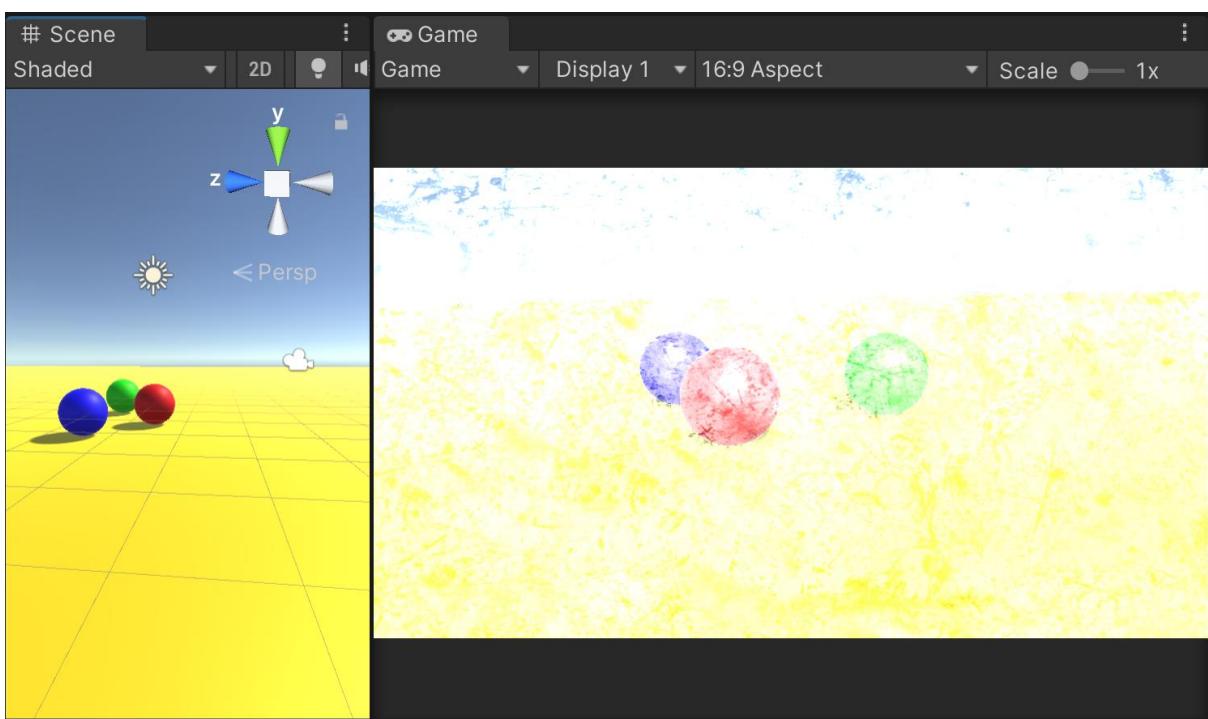


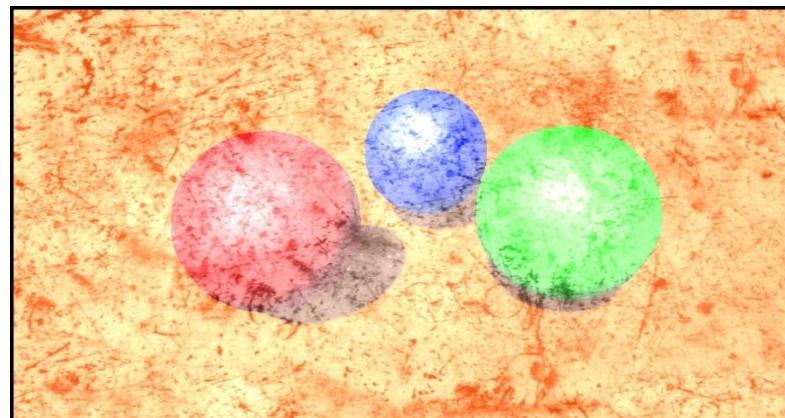
Brightness = 1.64 Saturation = 0.0 Contrast = 0.57



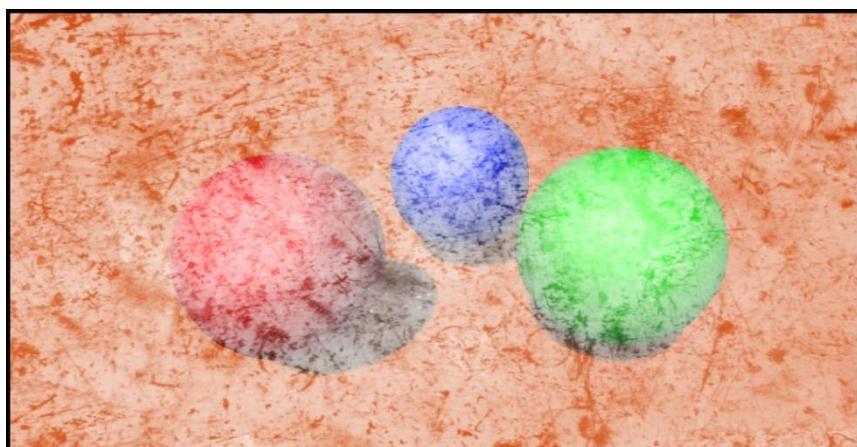
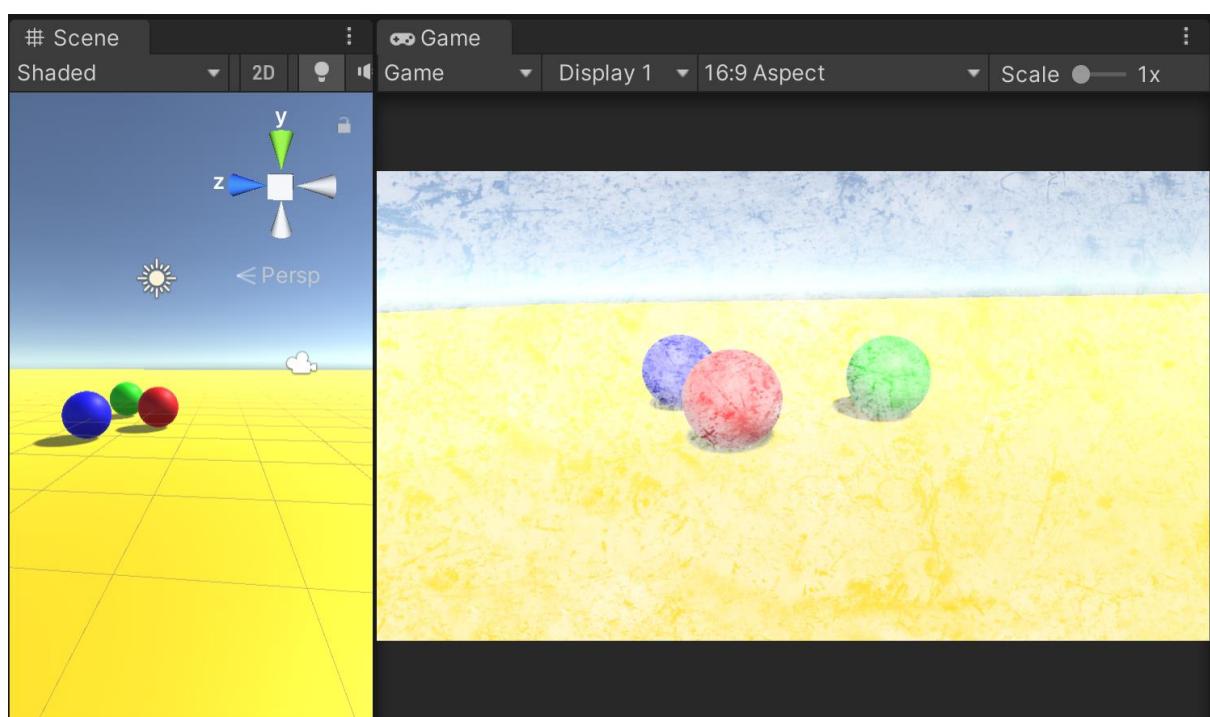


Blend Mode = Multiply Opacity = 0.5

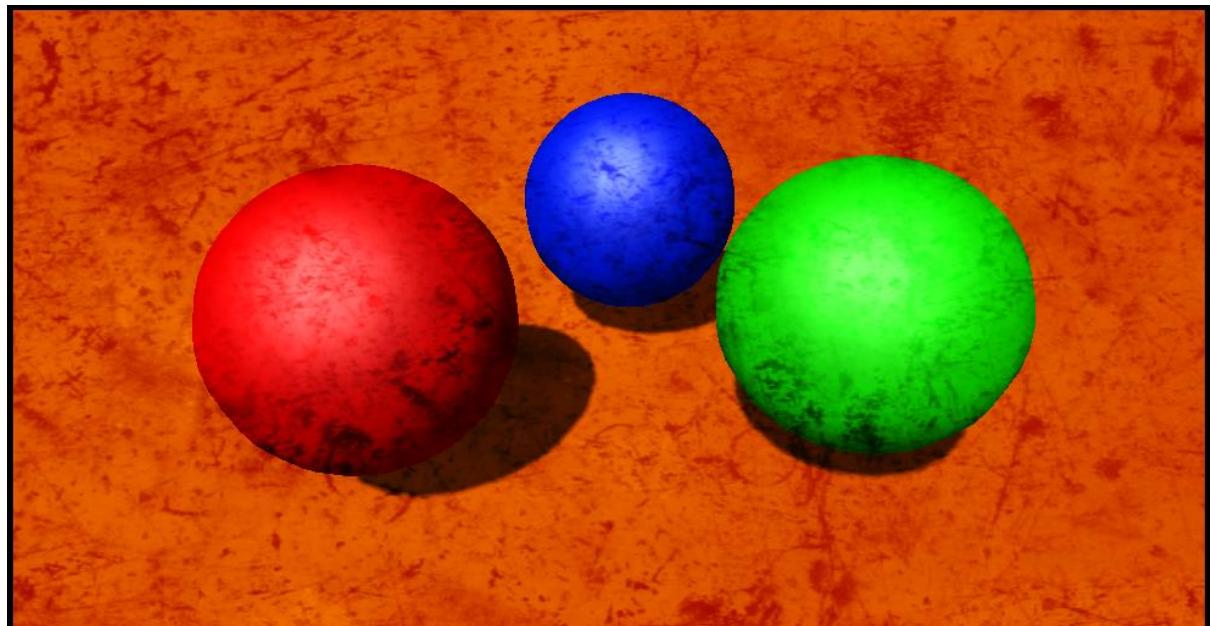
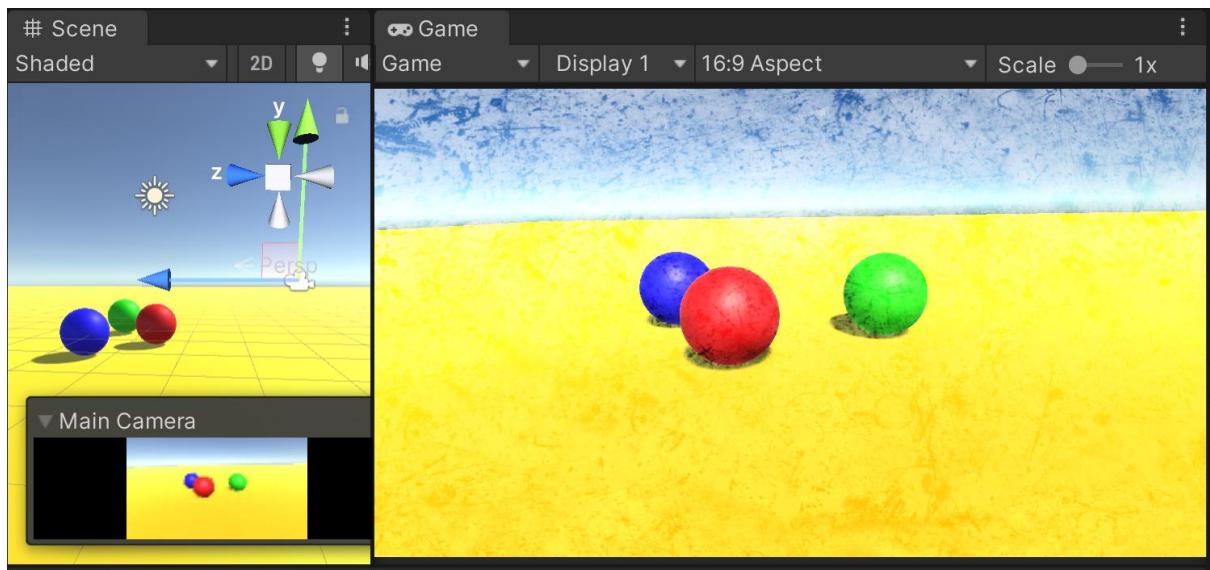




Add Blending Mode

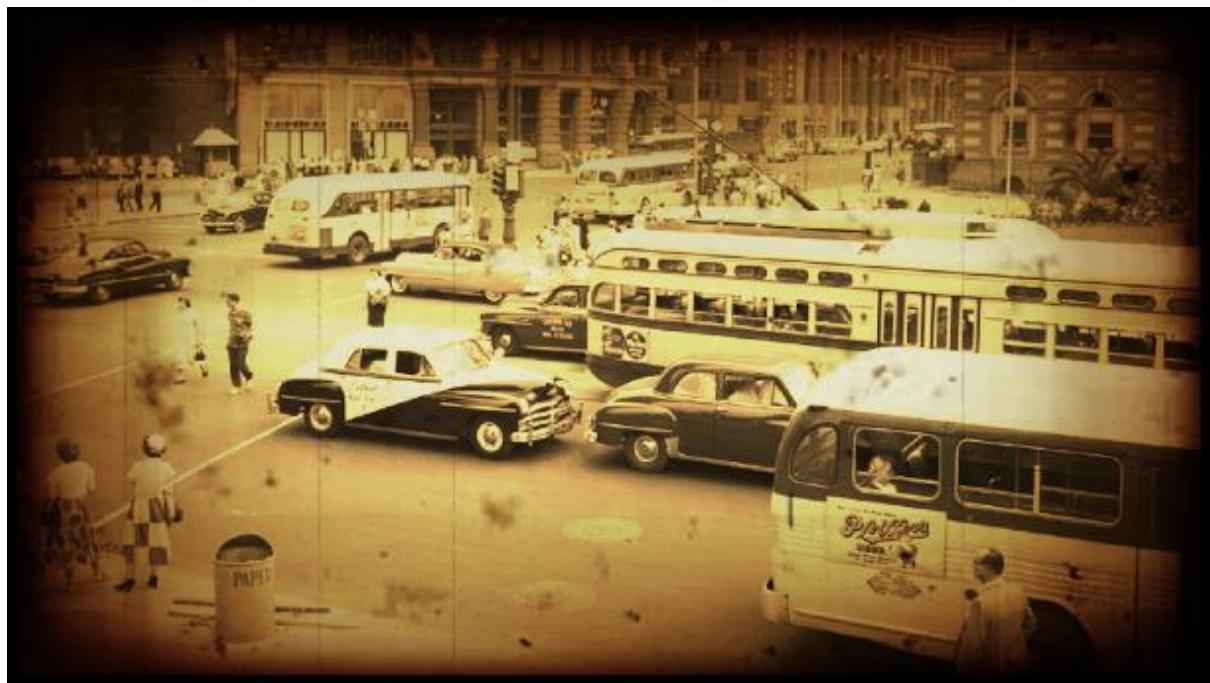


Screen Blend Mode

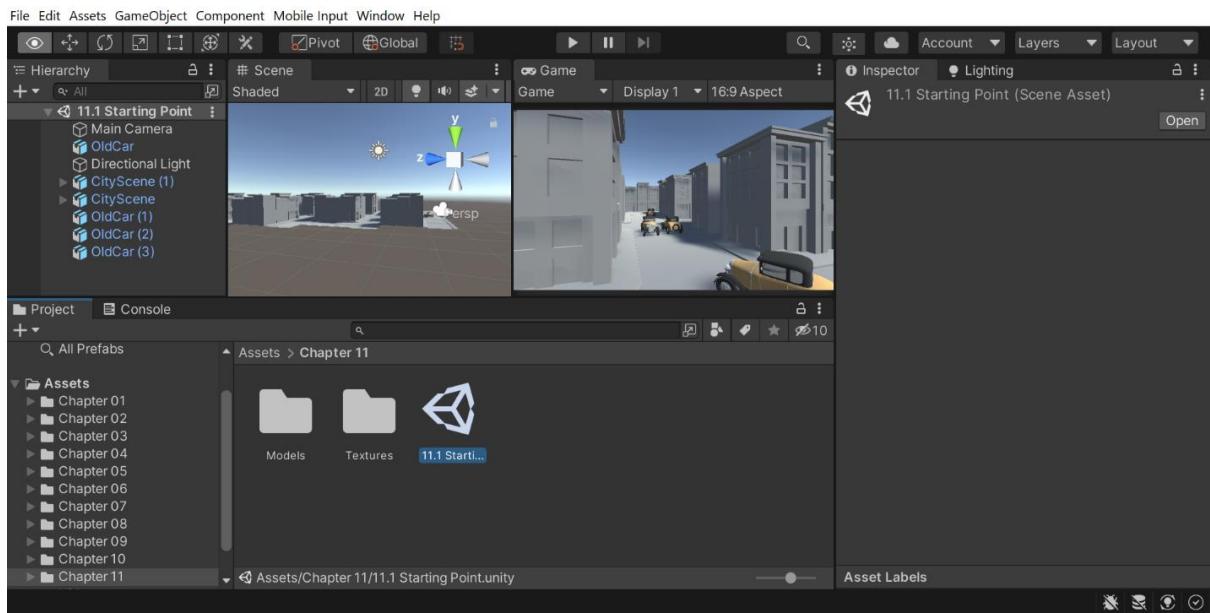


Overlay Blend Mode

Chapter 11: Gameplay and Screen Effects

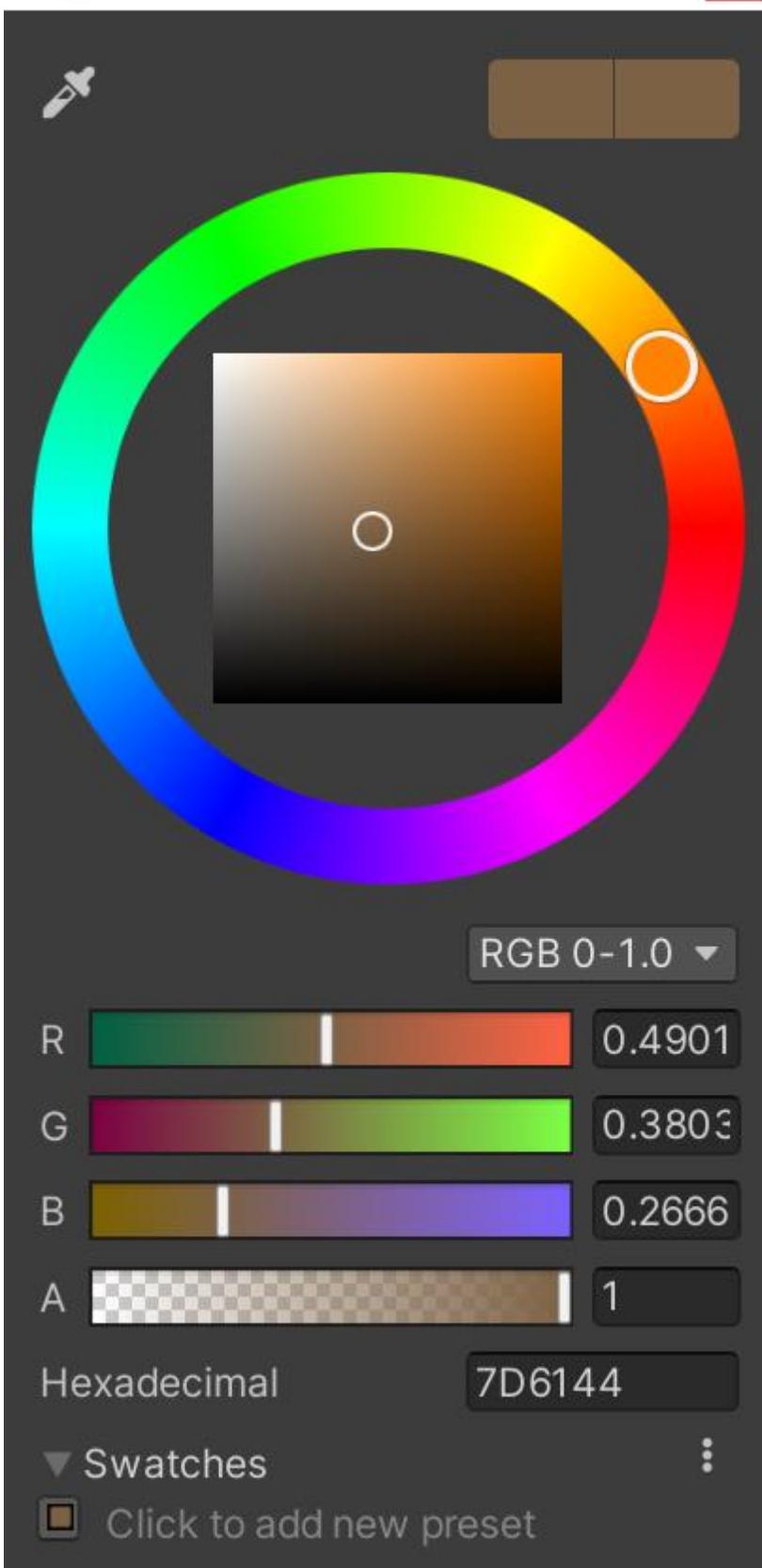


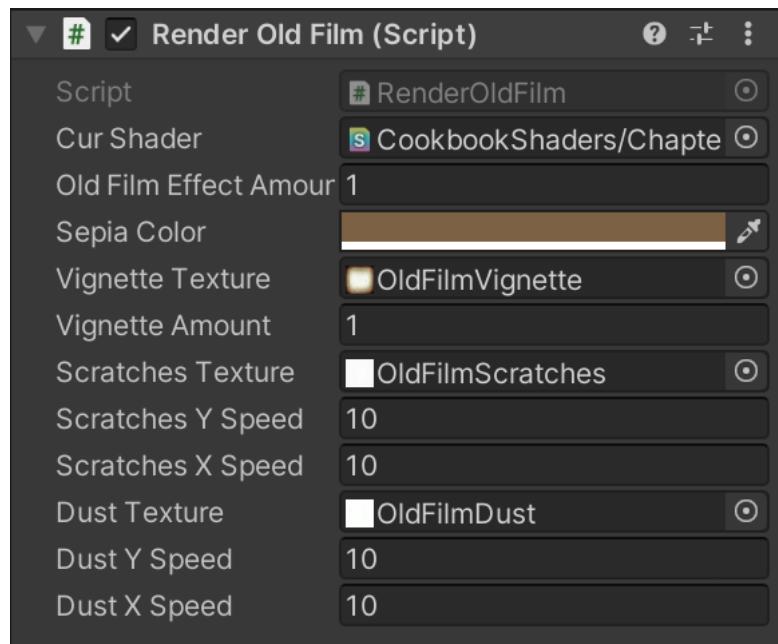


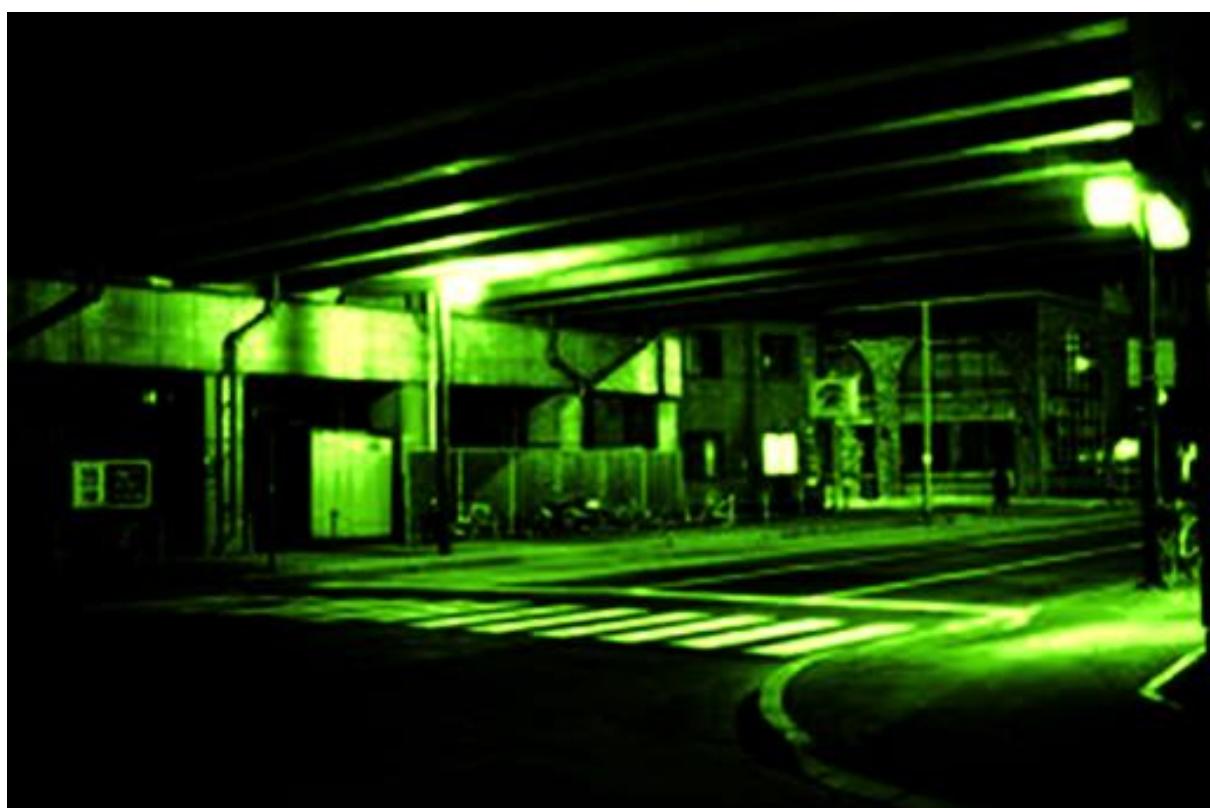


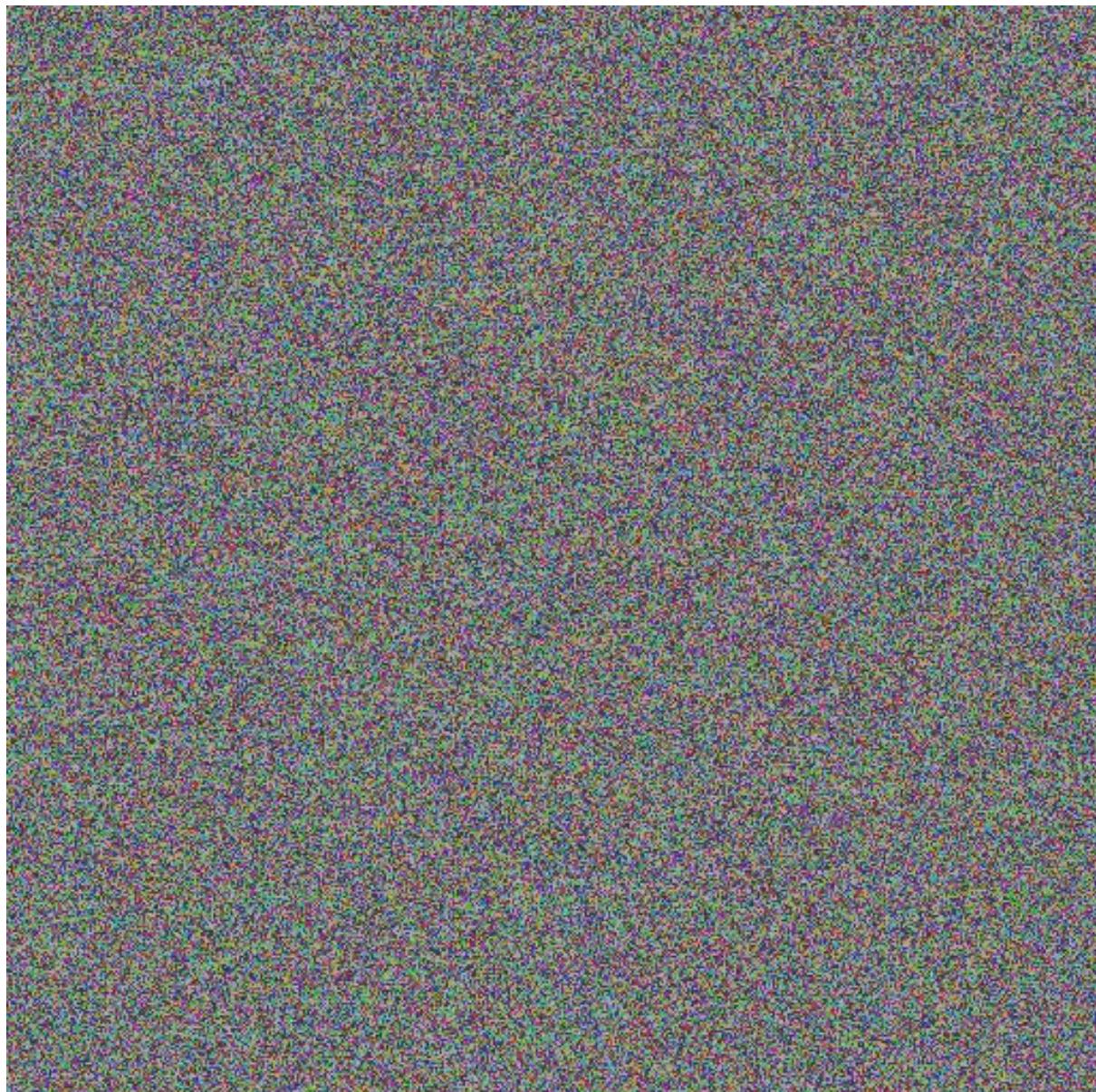
Color

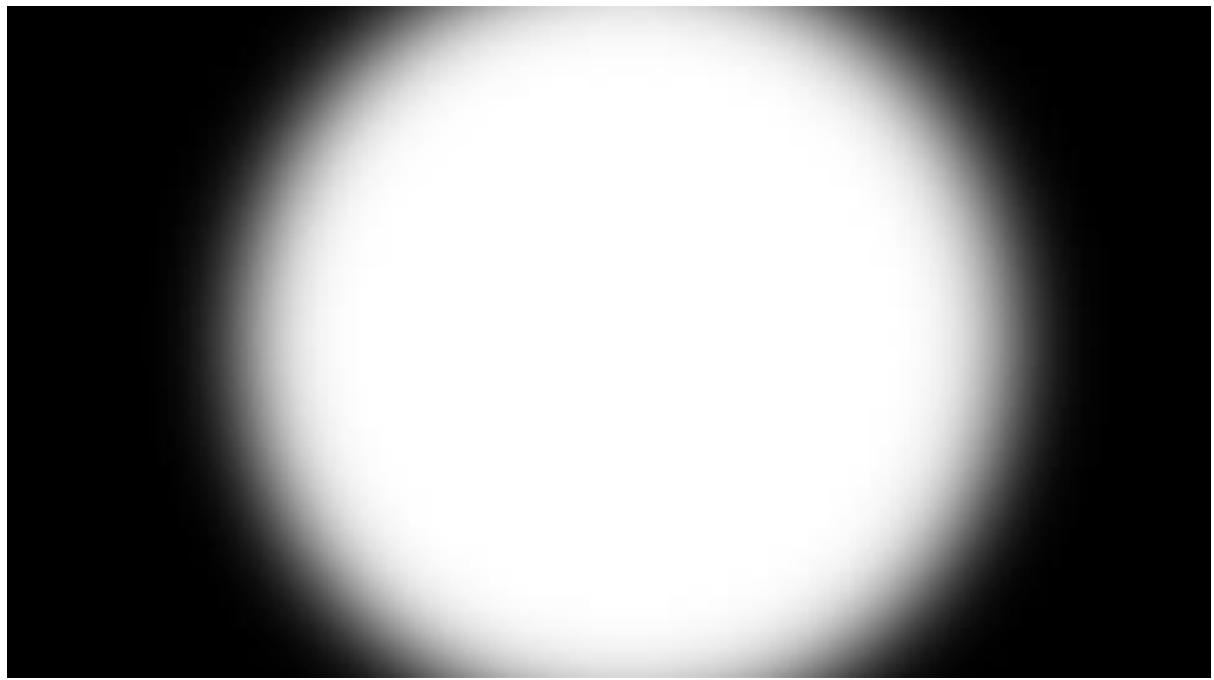
x





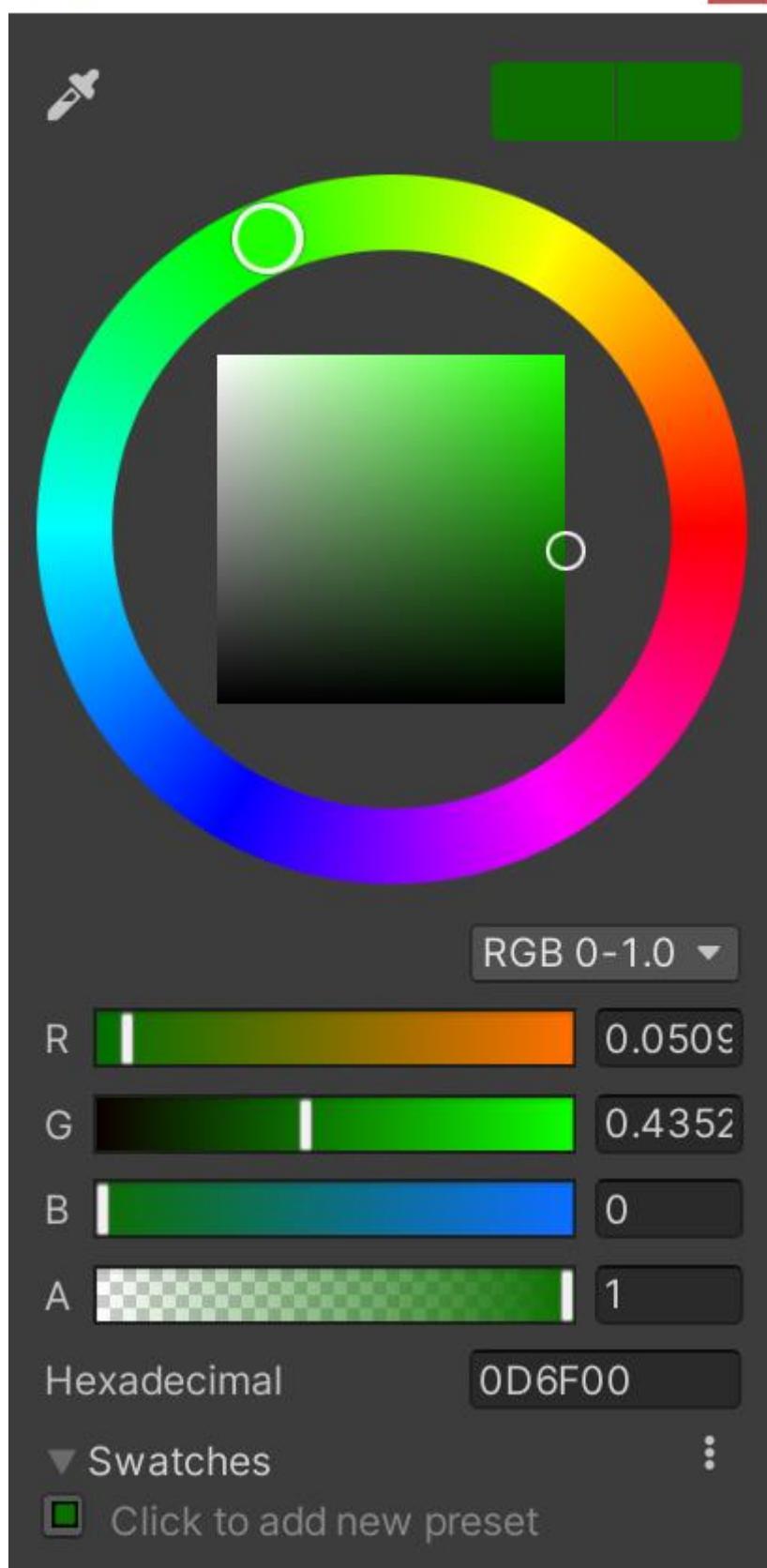


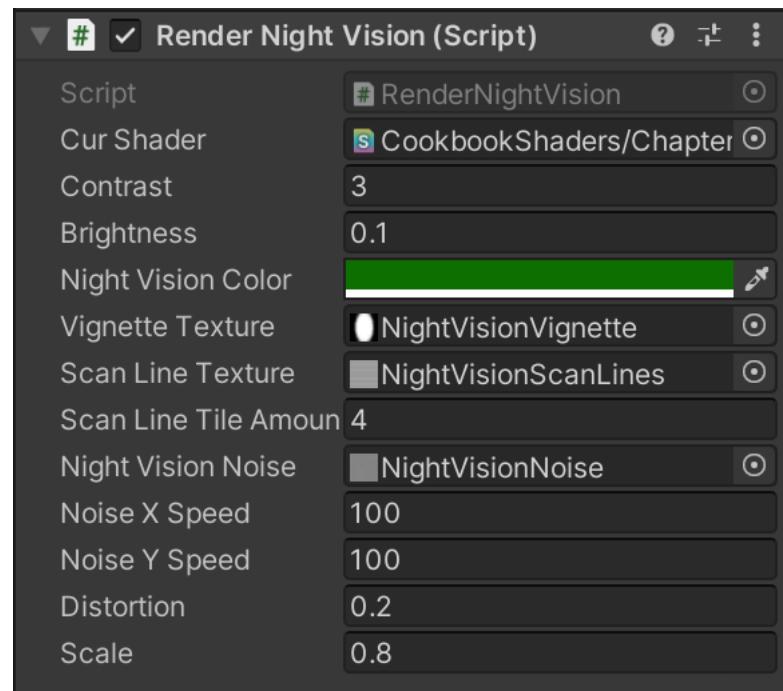




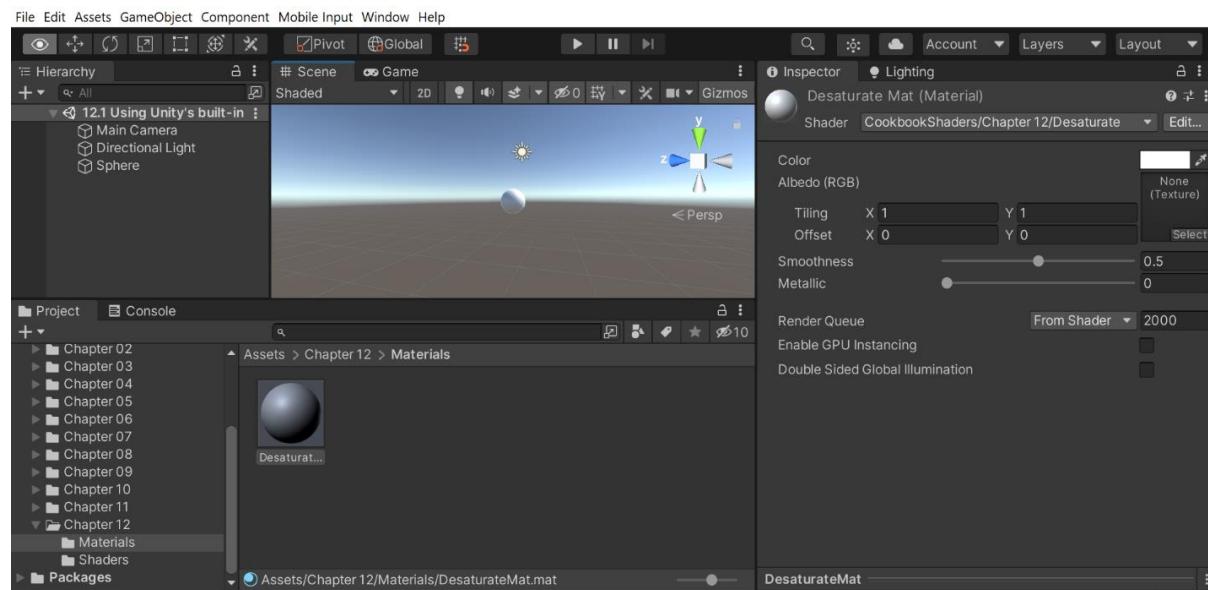
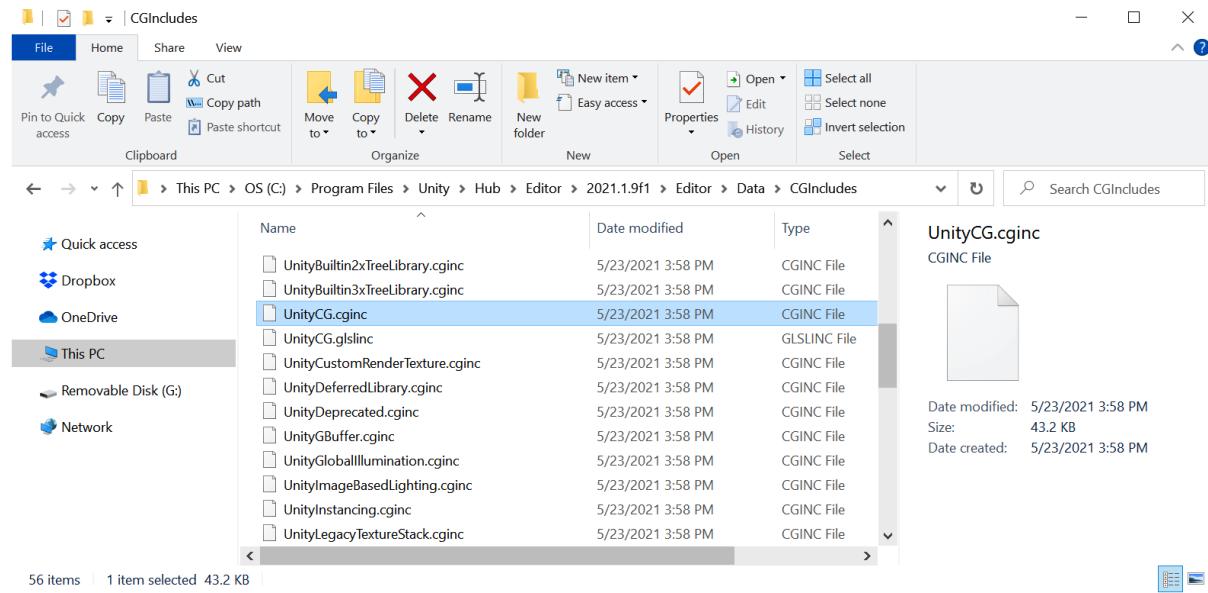
Color

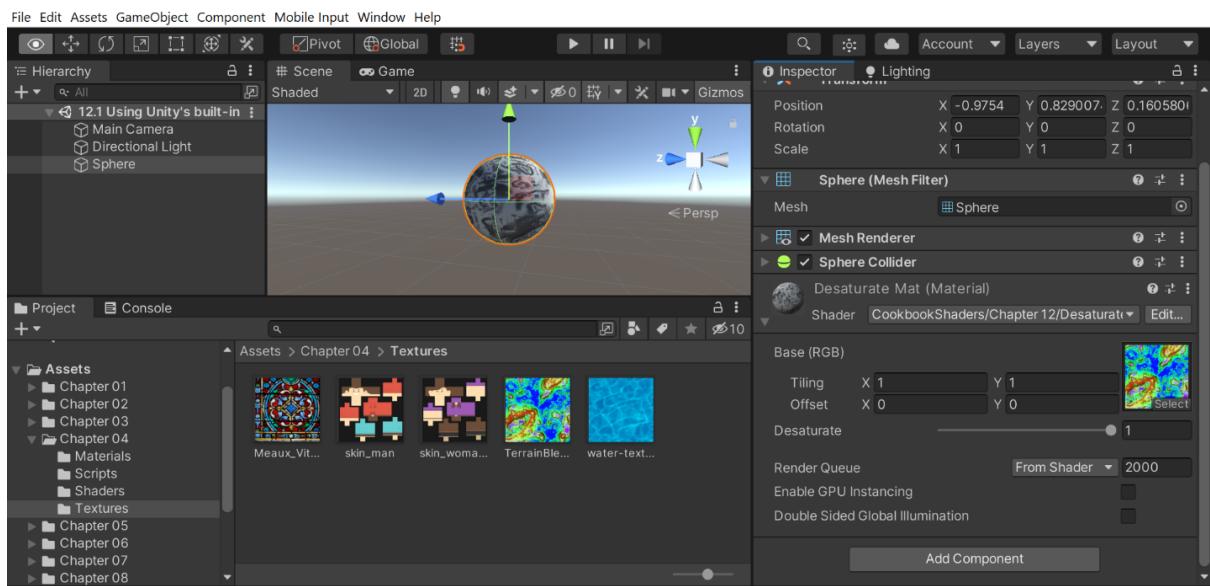
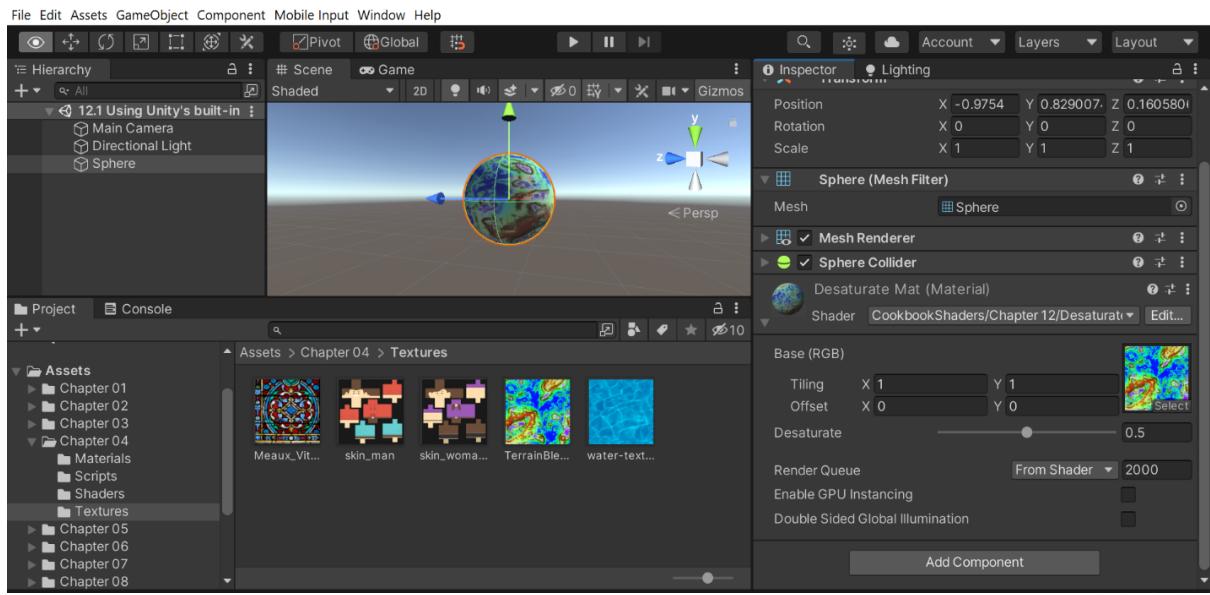
x

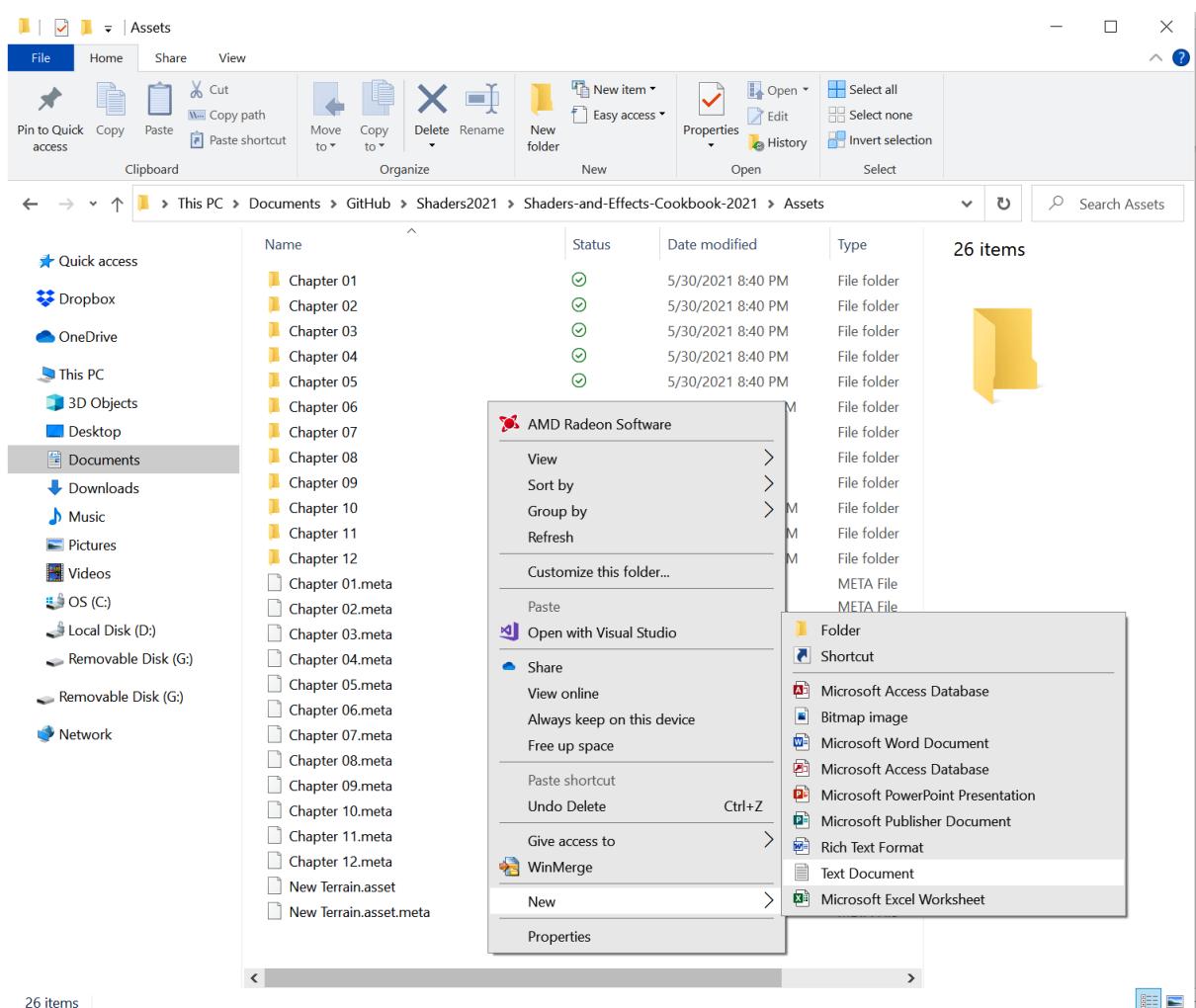
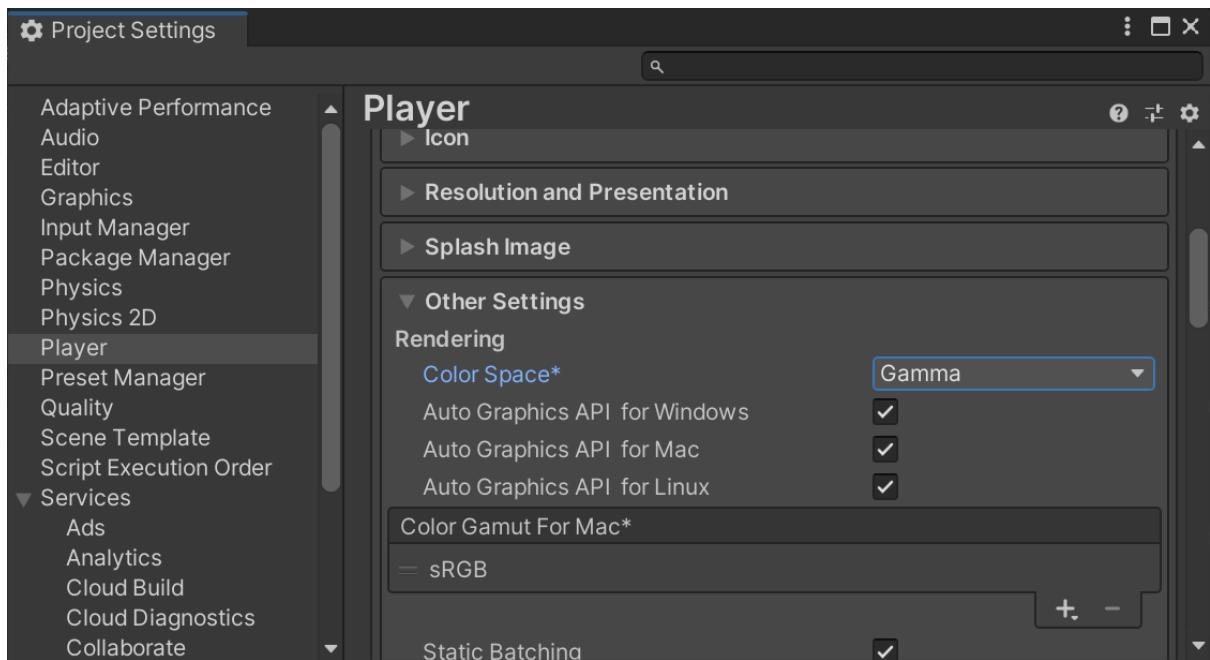


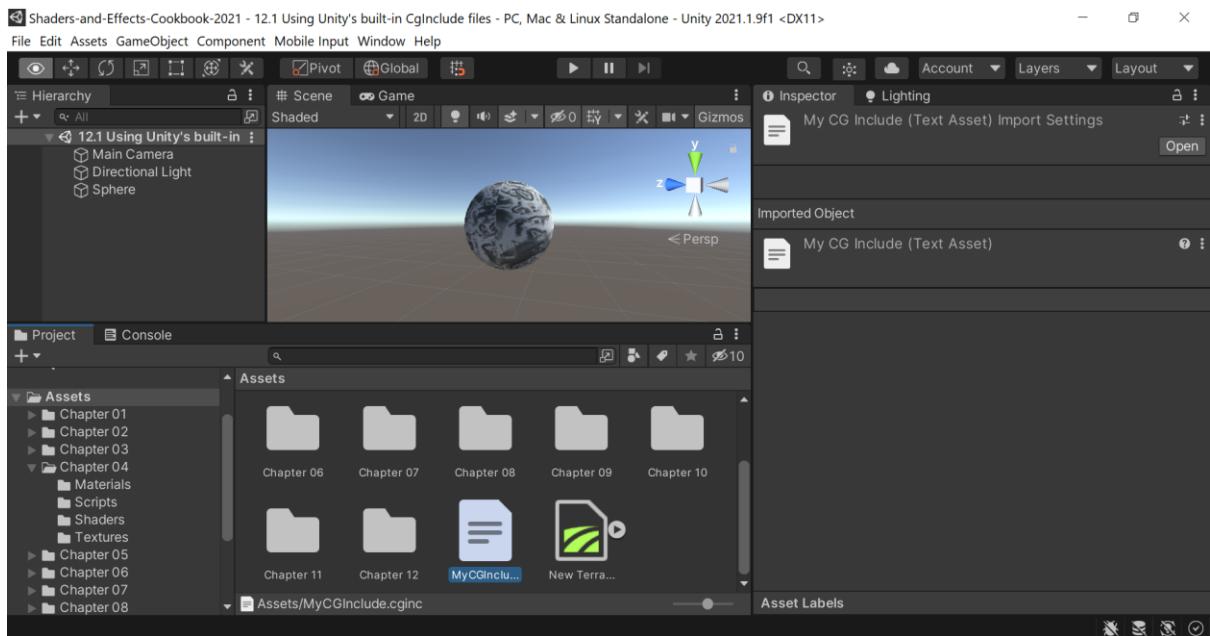
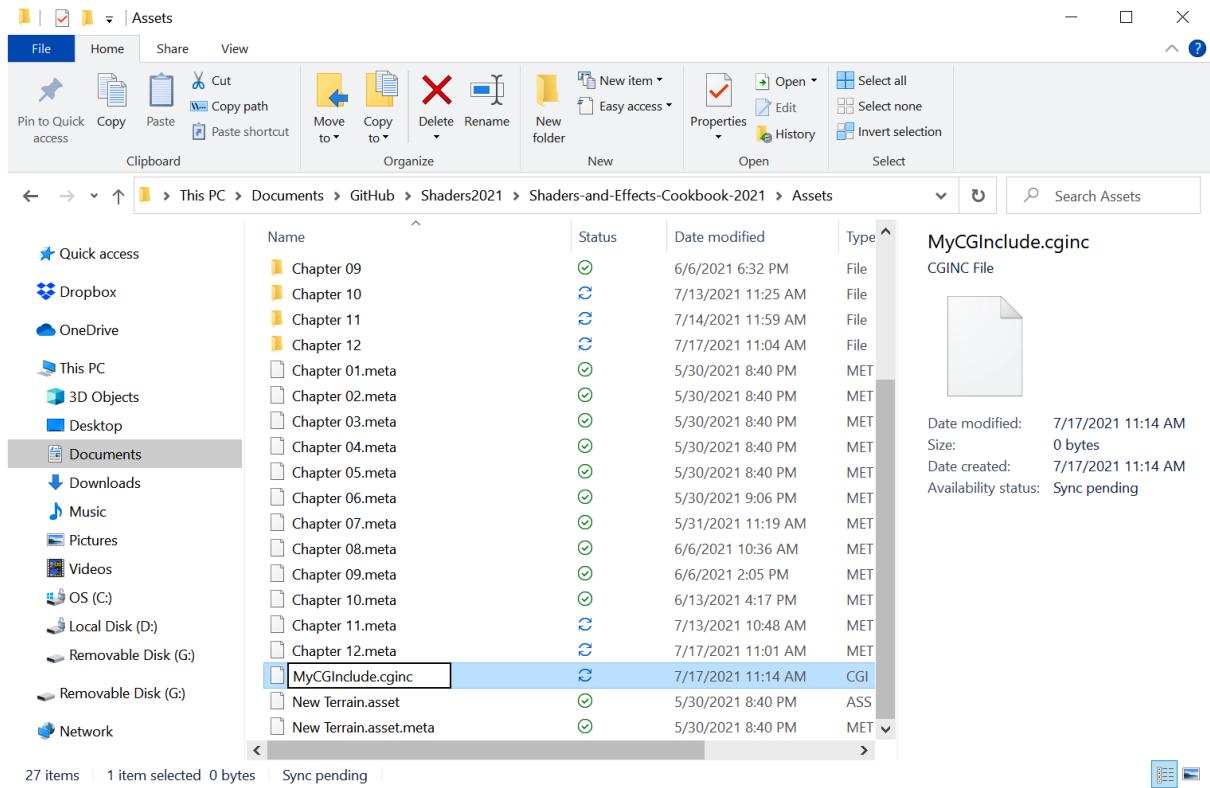


Chapter 12: Advanced Shading Techniques

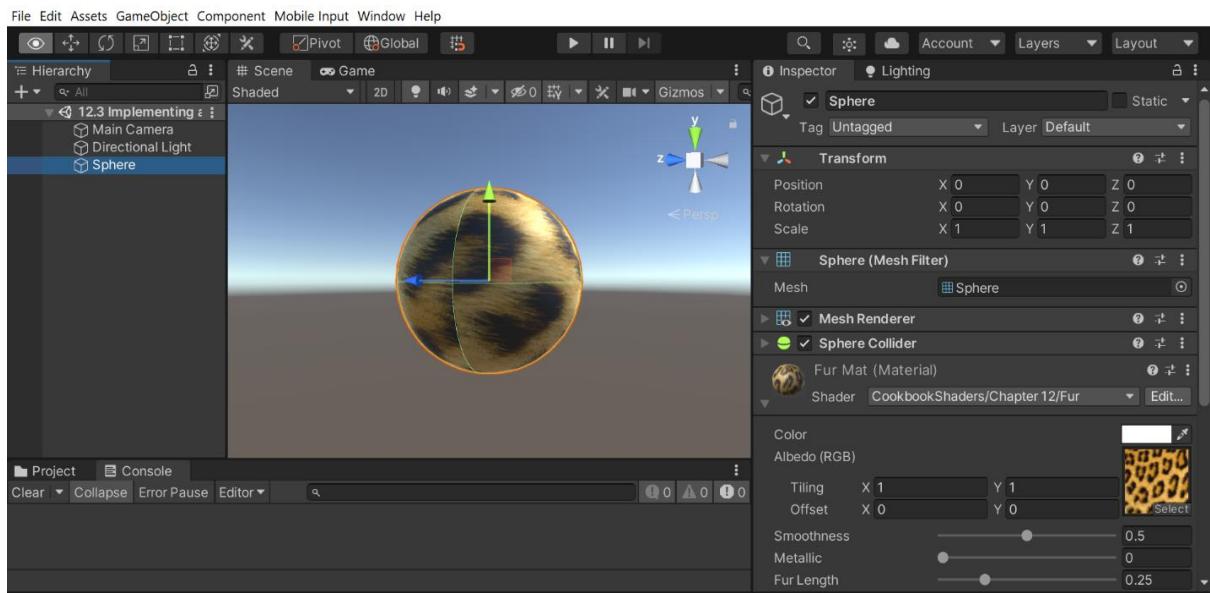
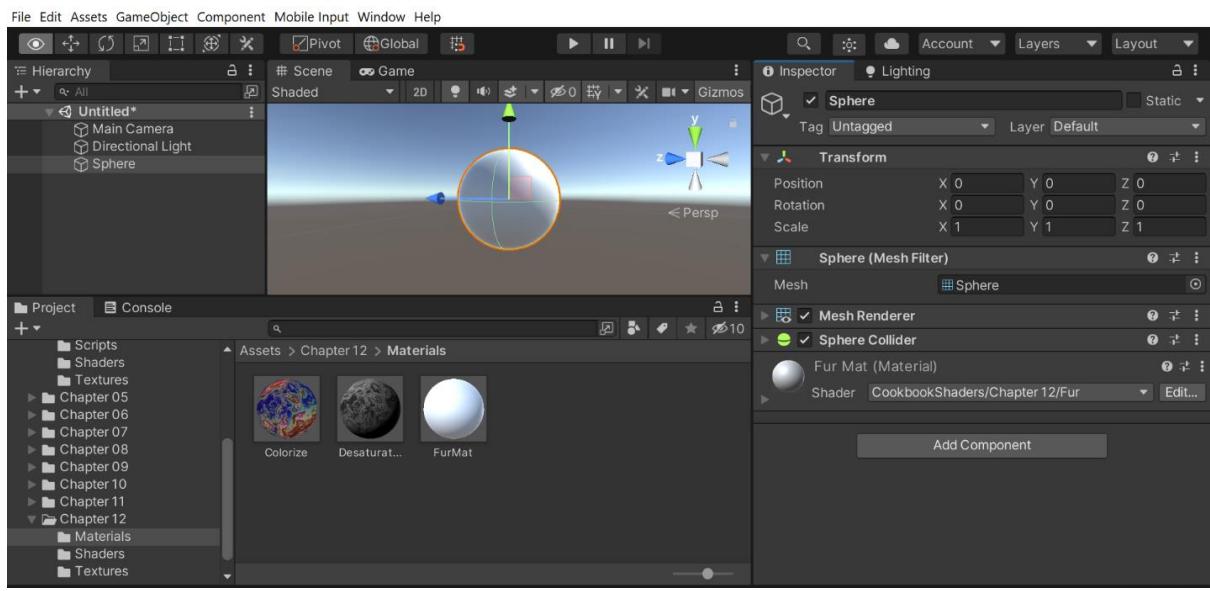


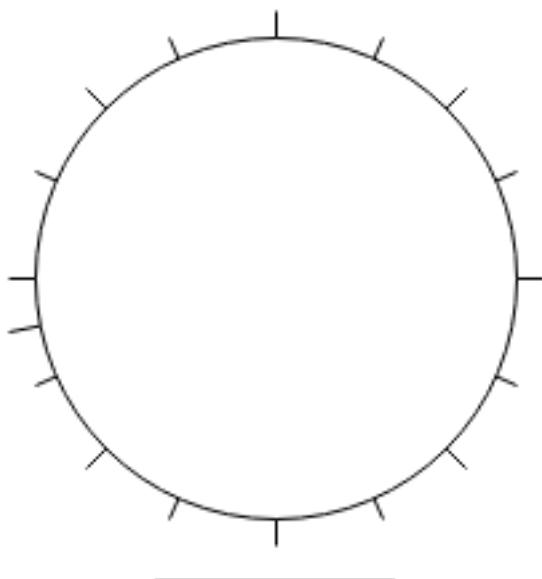
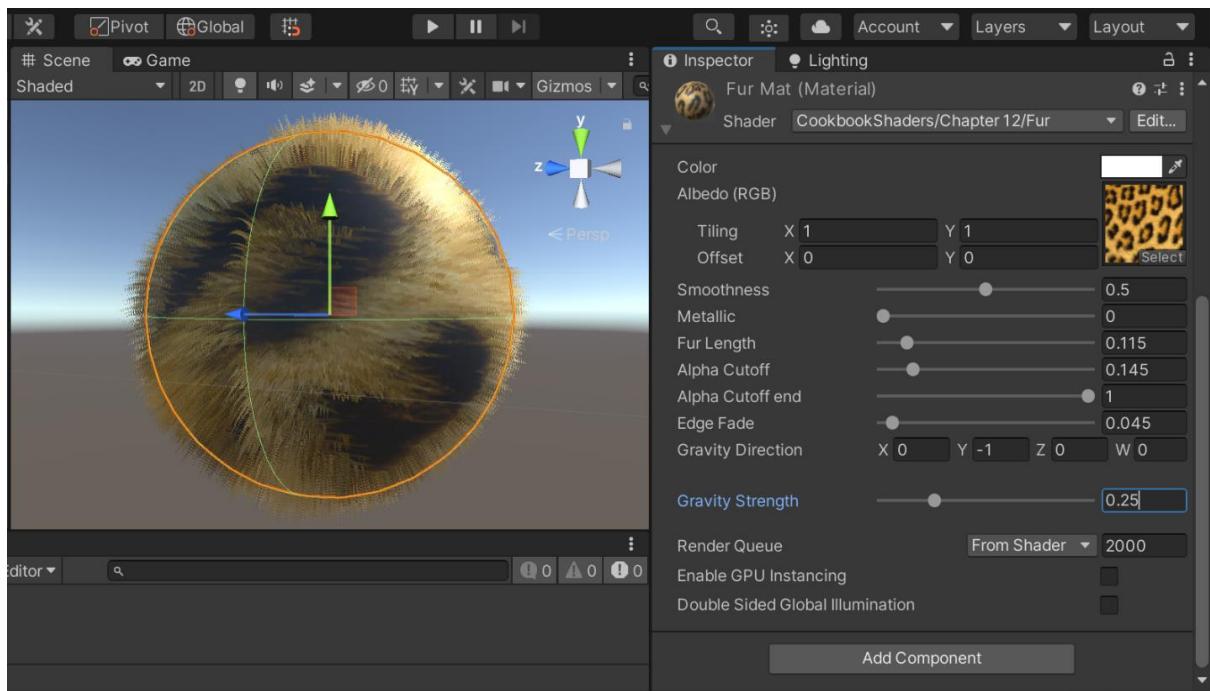




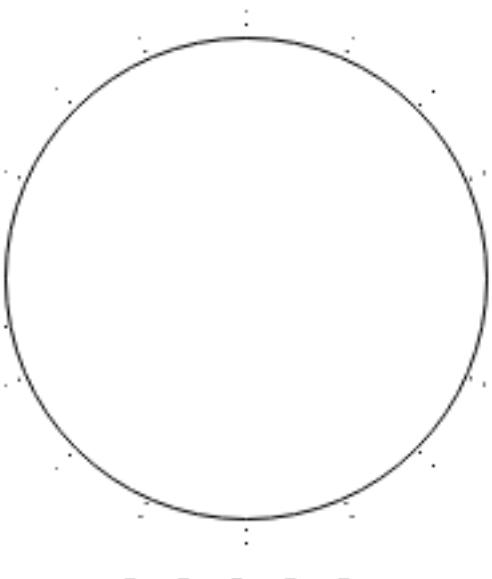




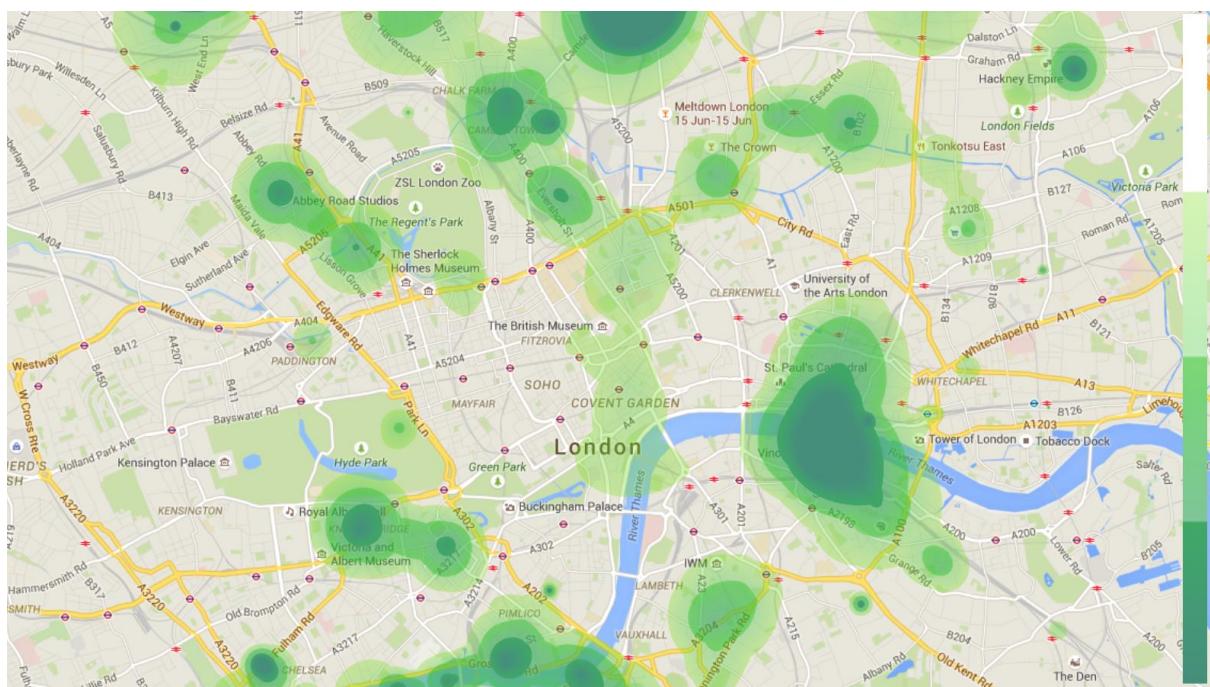
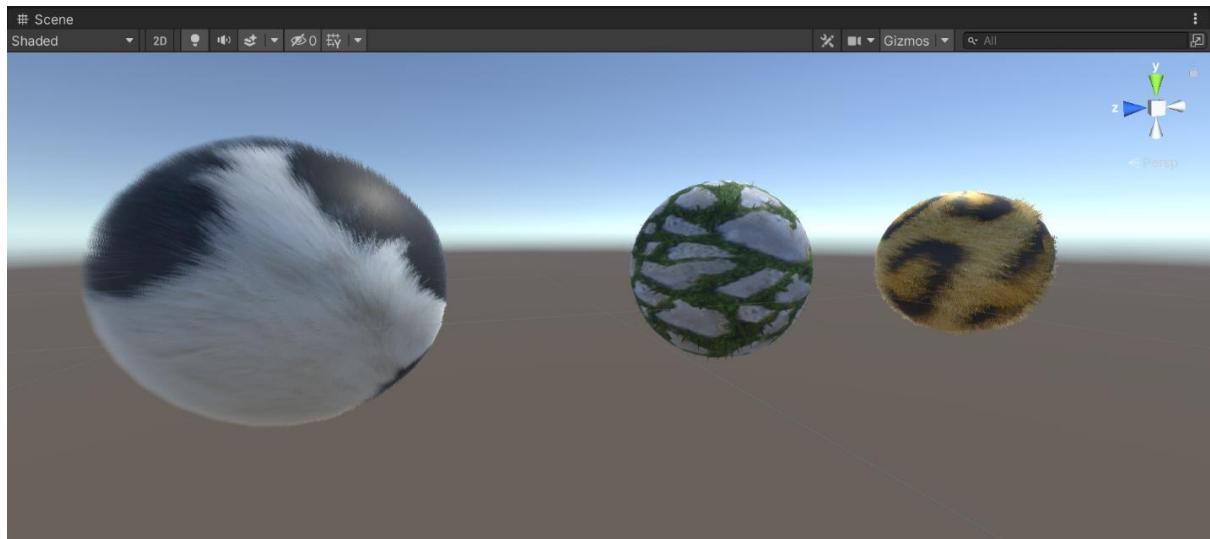




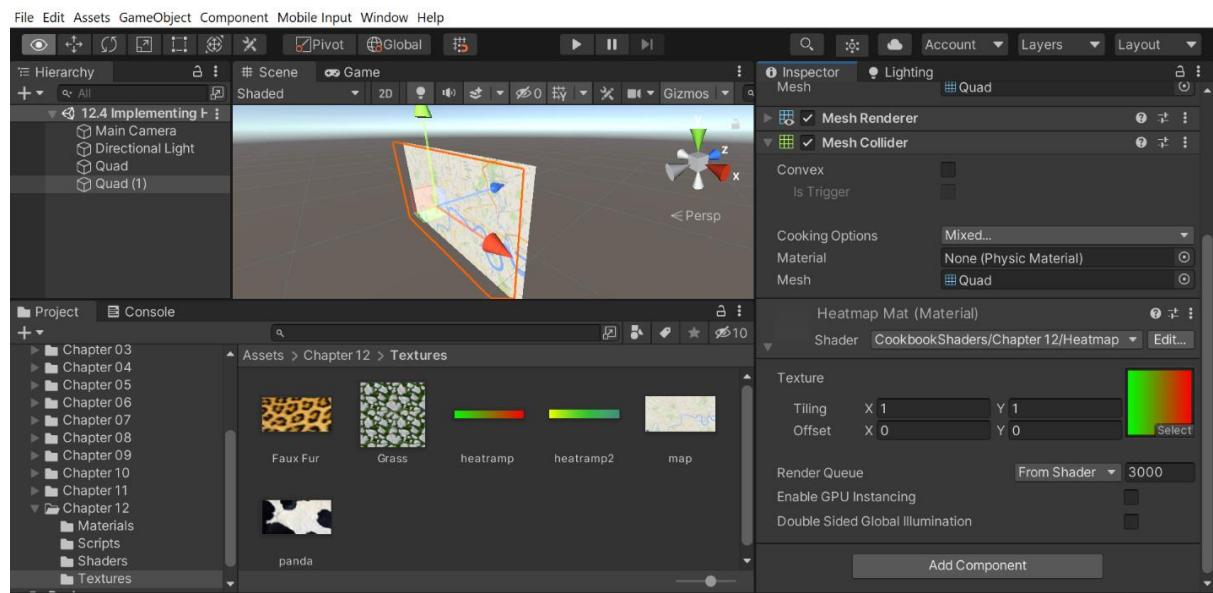
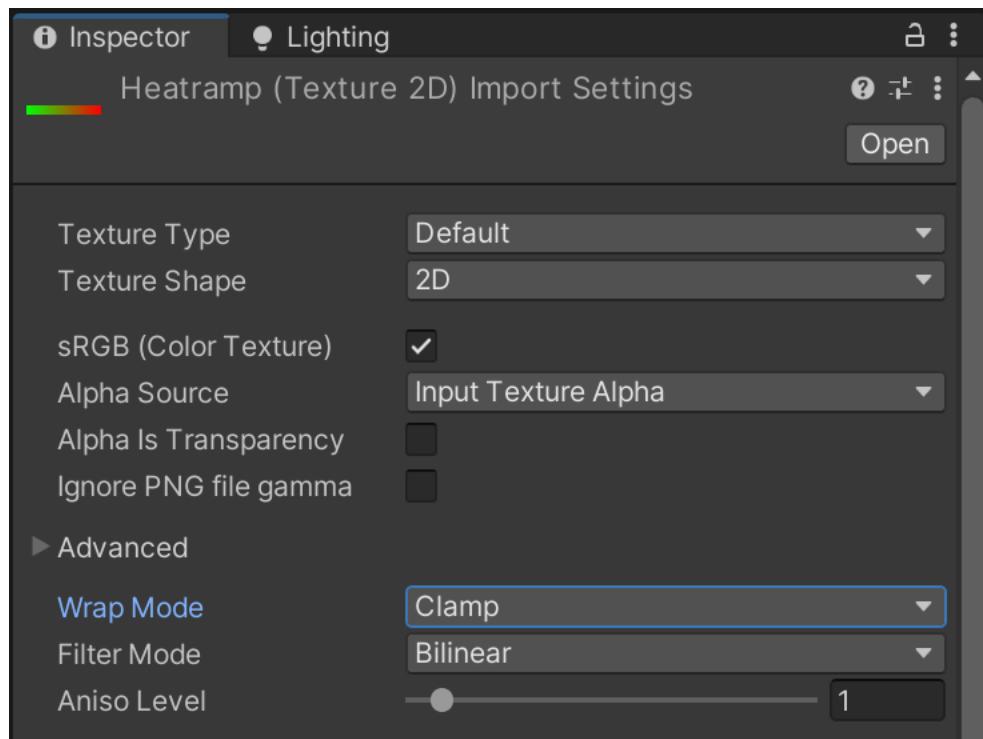
Real fur: solid geometry

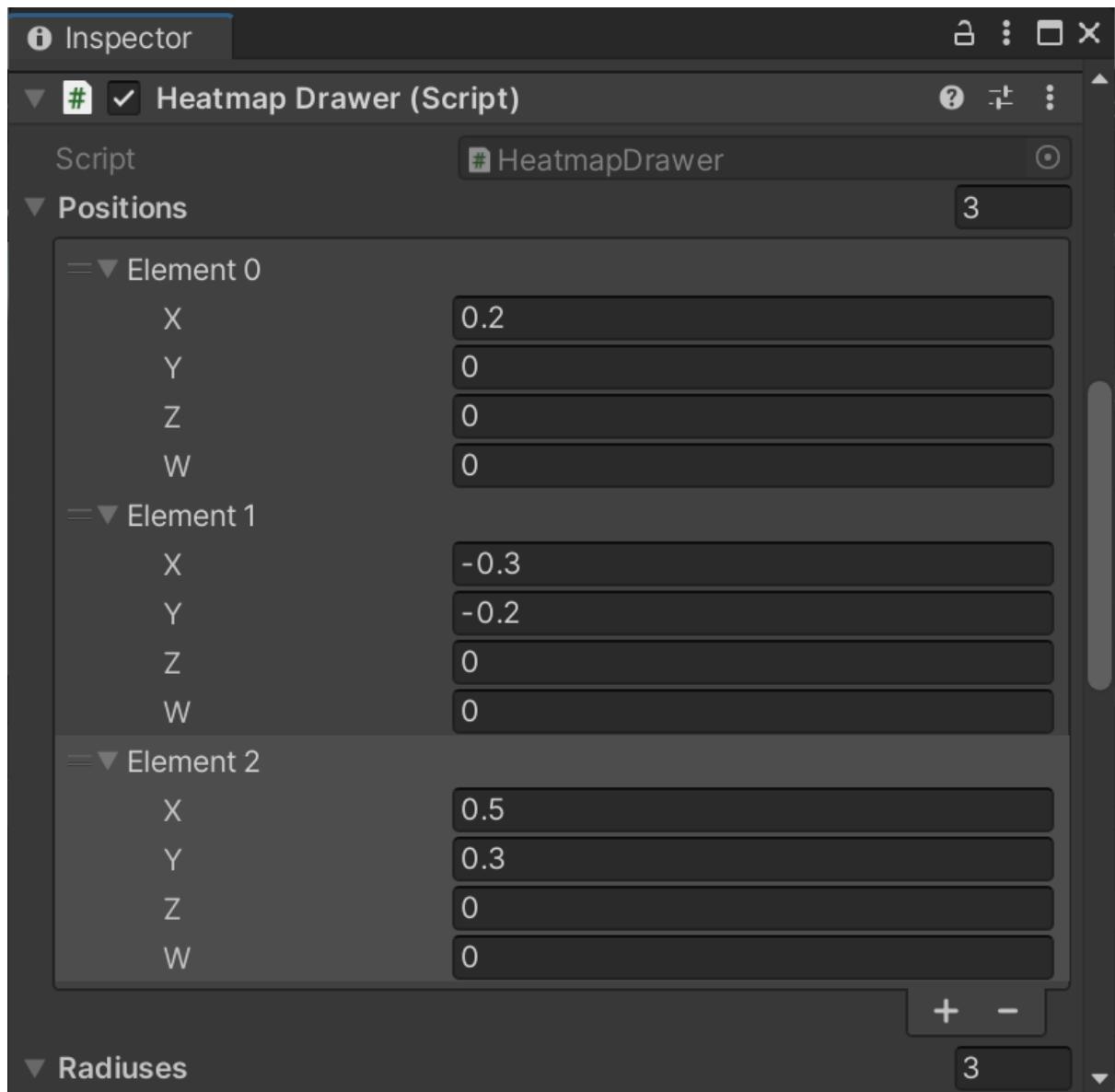


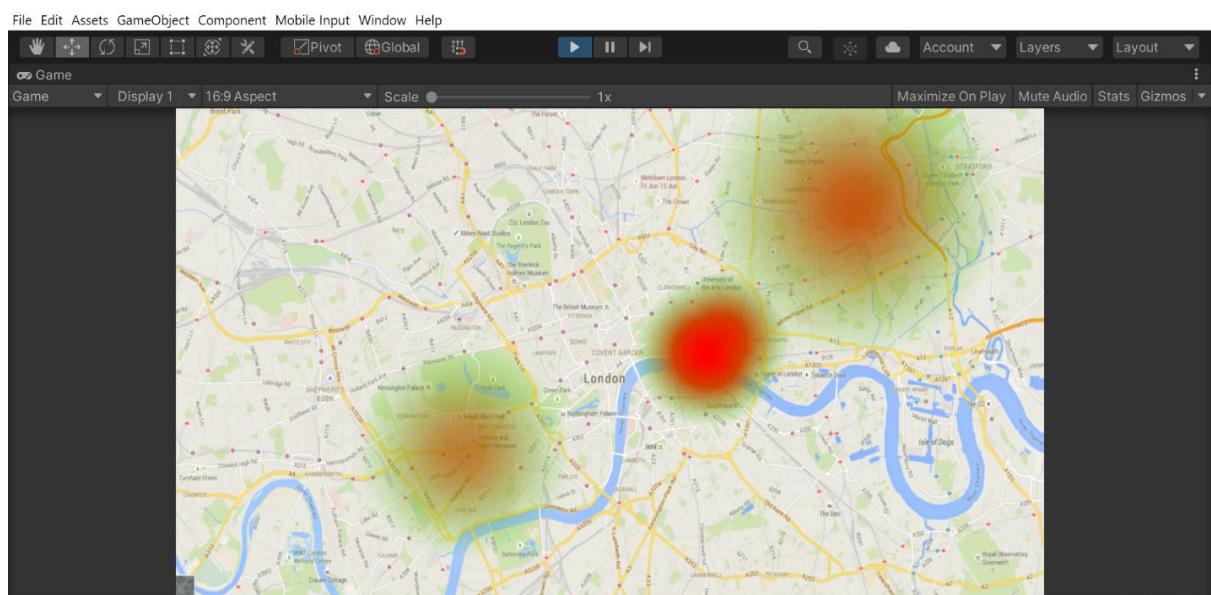
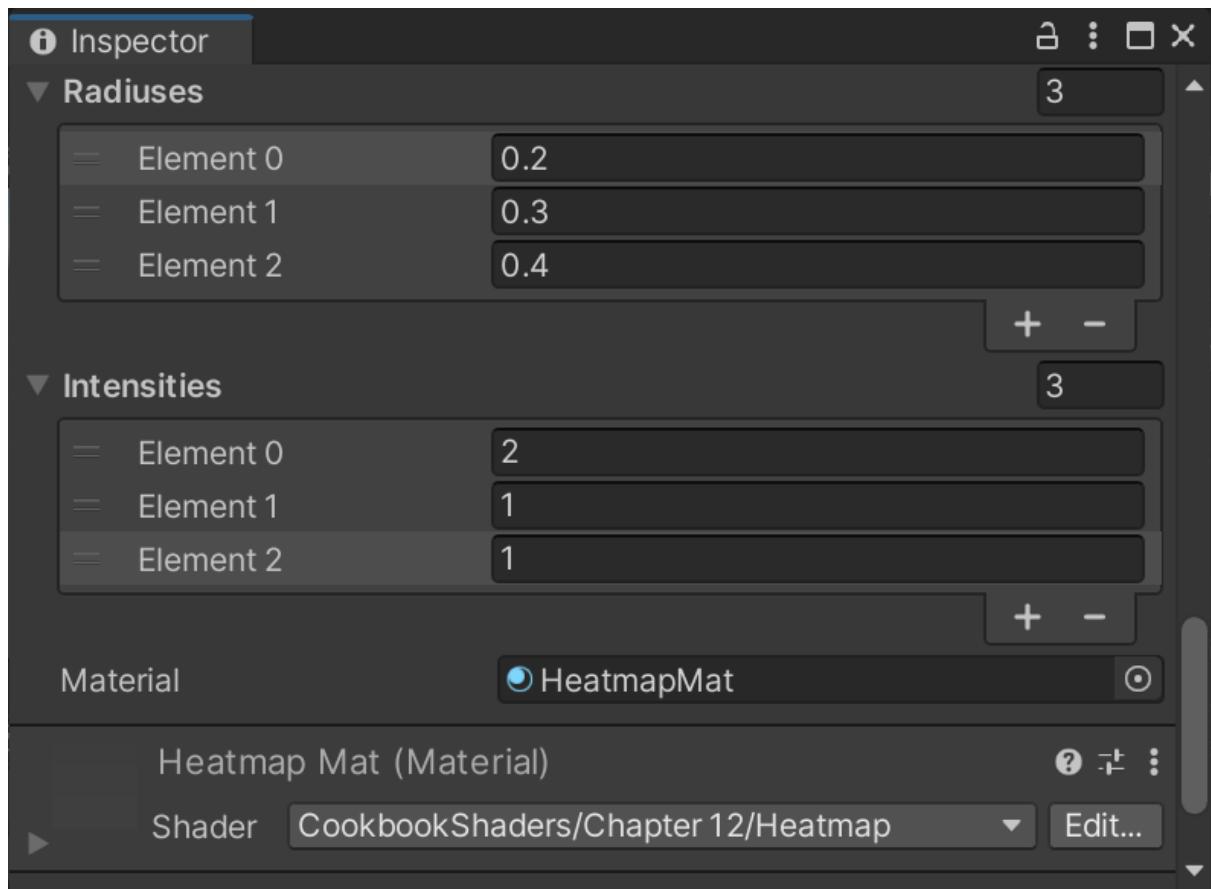
Shell fur: several spheres



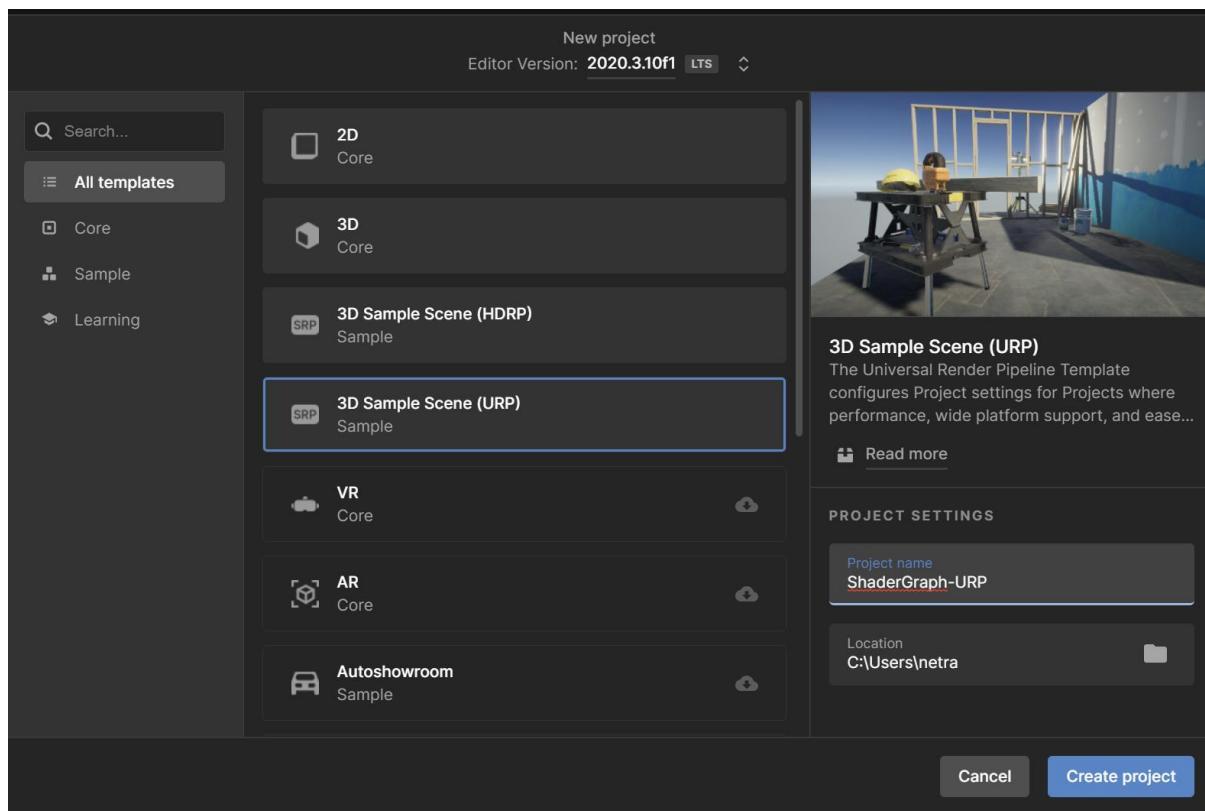
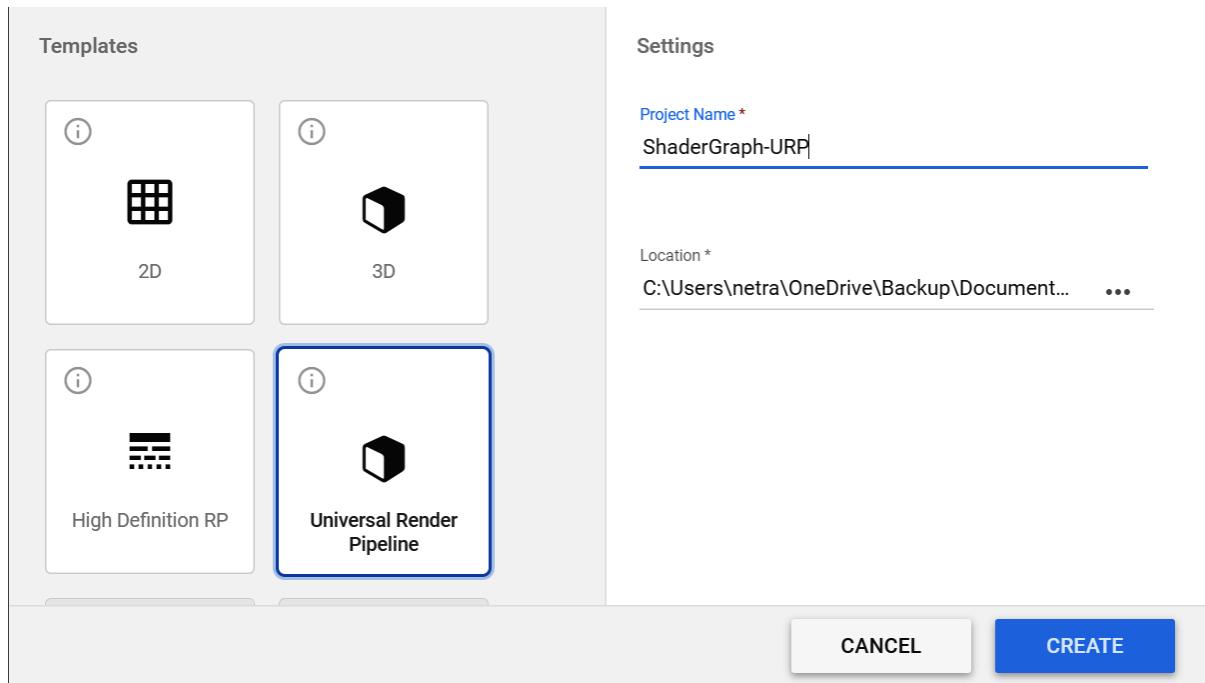
A screenshot of the Unity Editor interface. The top section shows a 3D view of a single orange-outlined quad object in a 3D space. The bottom section shows the Project and Assets panels. The Project panel lists chapters from Chapter 03 to Chapter 12, with 'Chapter 12' currently selected. The Assets panel shows a folder 'Materials' containing several materials: 'Colorize', 'Desaturat...', 'FurMat 1', 'FurMat 2', 'FurMat', 'Heatmap...', and 'Map'. The Inspector panel on the right is focused on the 'Quad (1)' object, showing its transform (Position: X 0, Y 0, Z -0.1; Rotation: X 0, Y 0, Z 0; Scale: X 1.9, Y 1, Z 1), mesh (Quad), and collider (Mesh Collider). The Lighting panel is also visible at the top right.

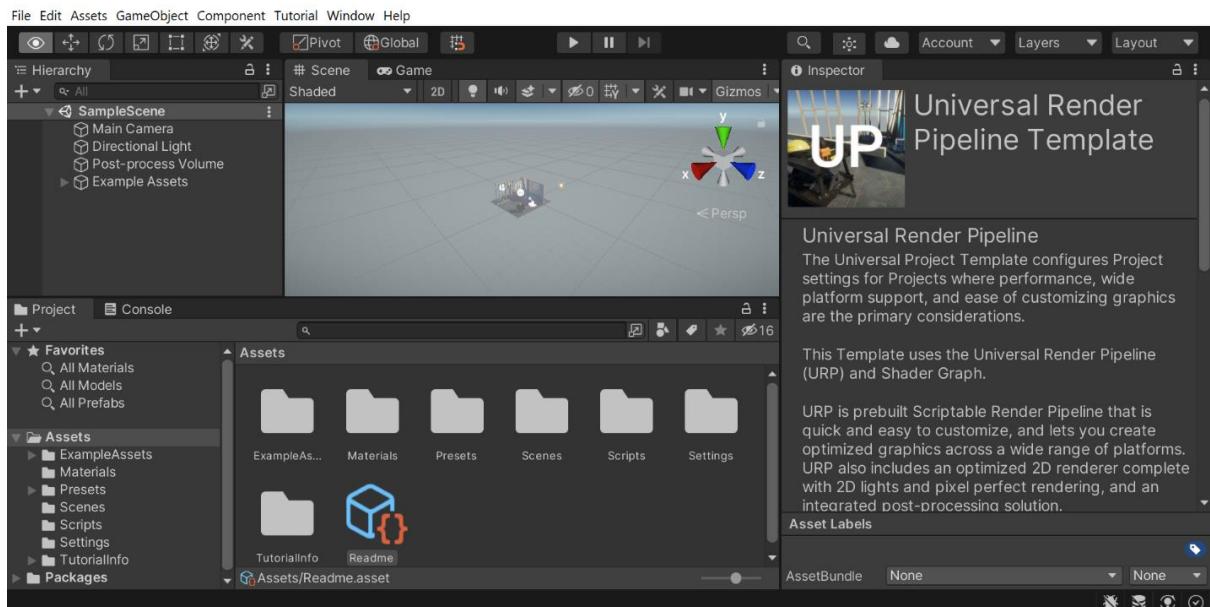






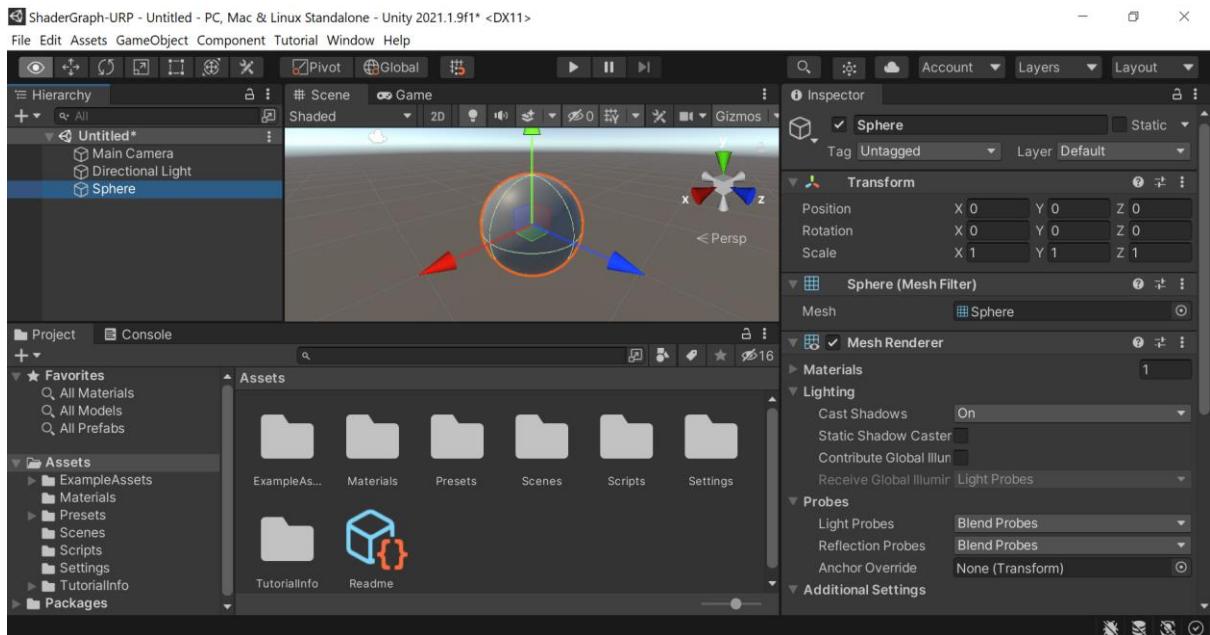
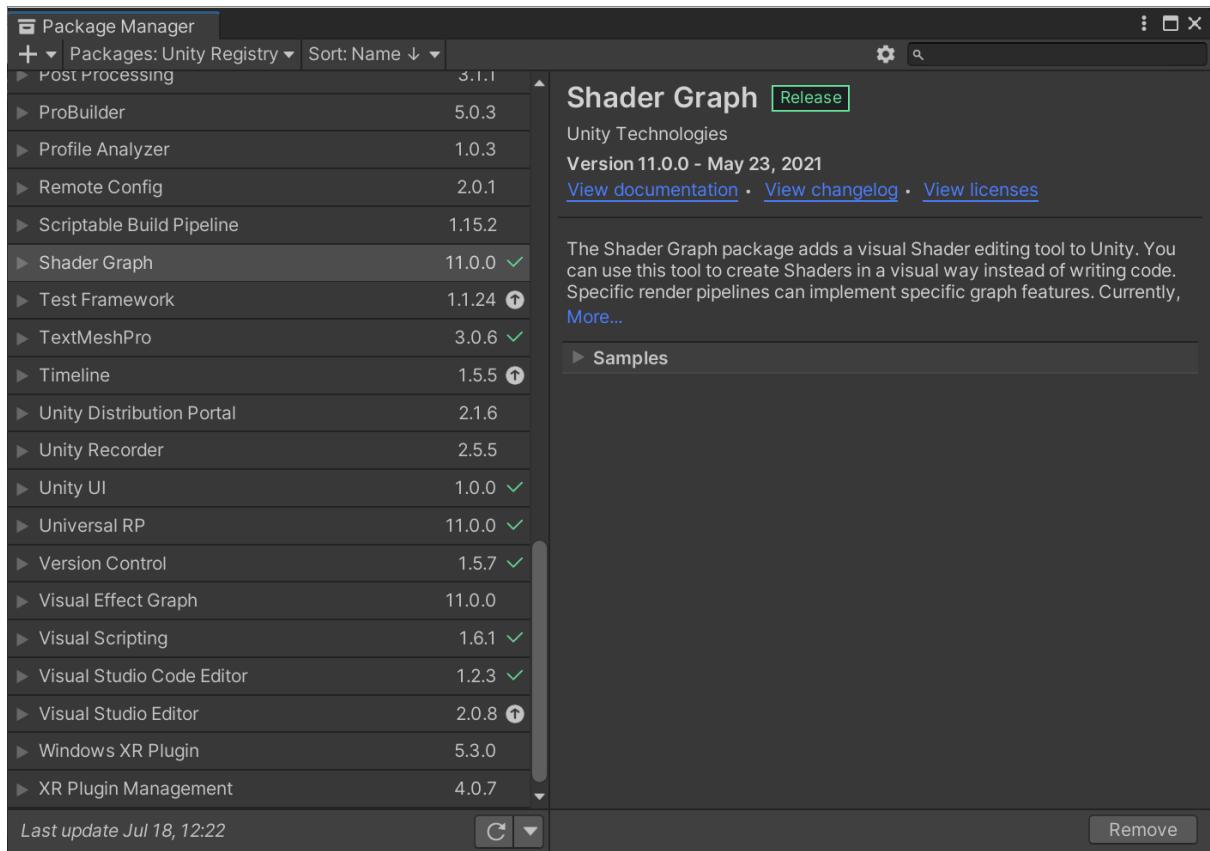
Chapter 13: Shader Graph – 2D

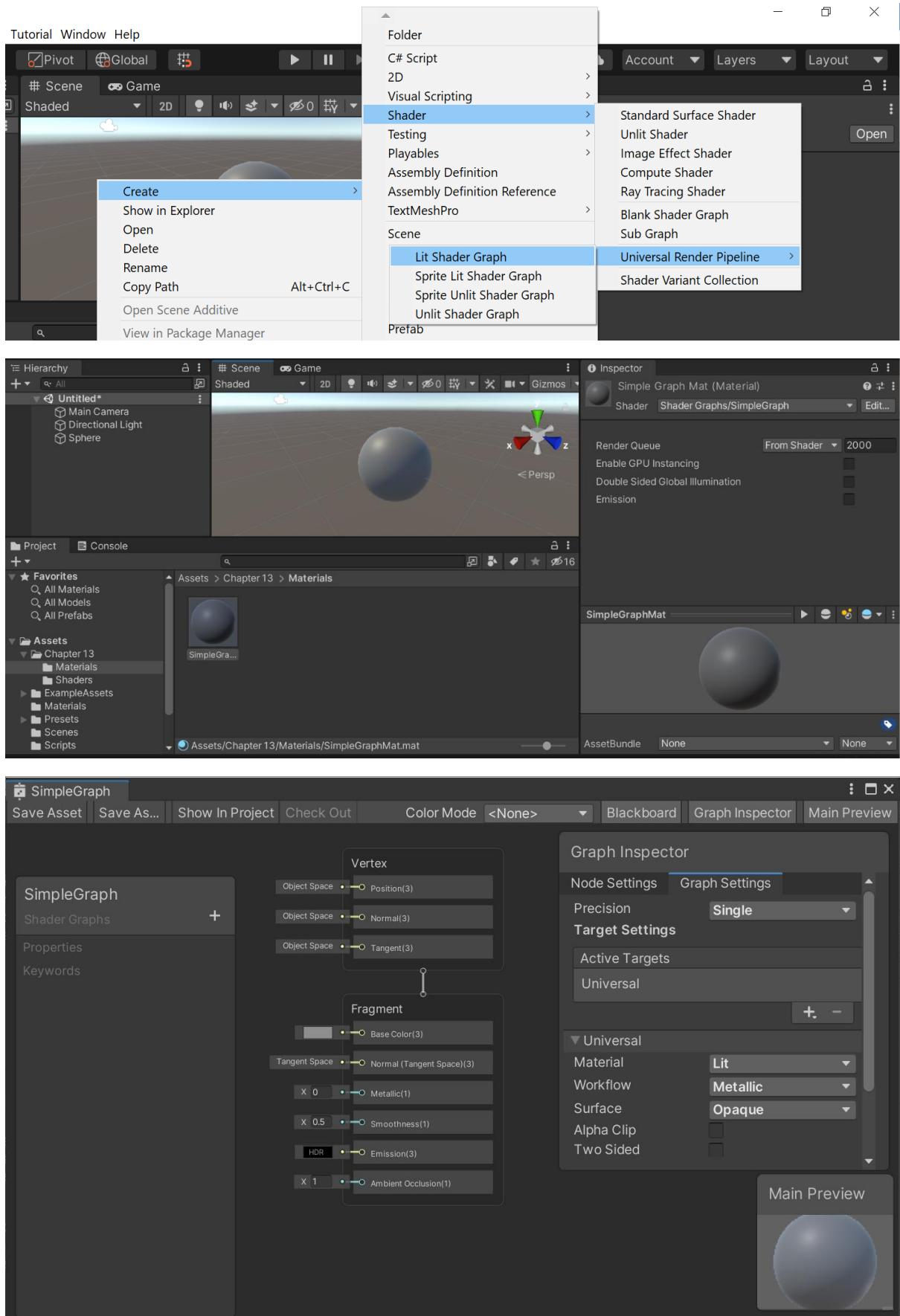


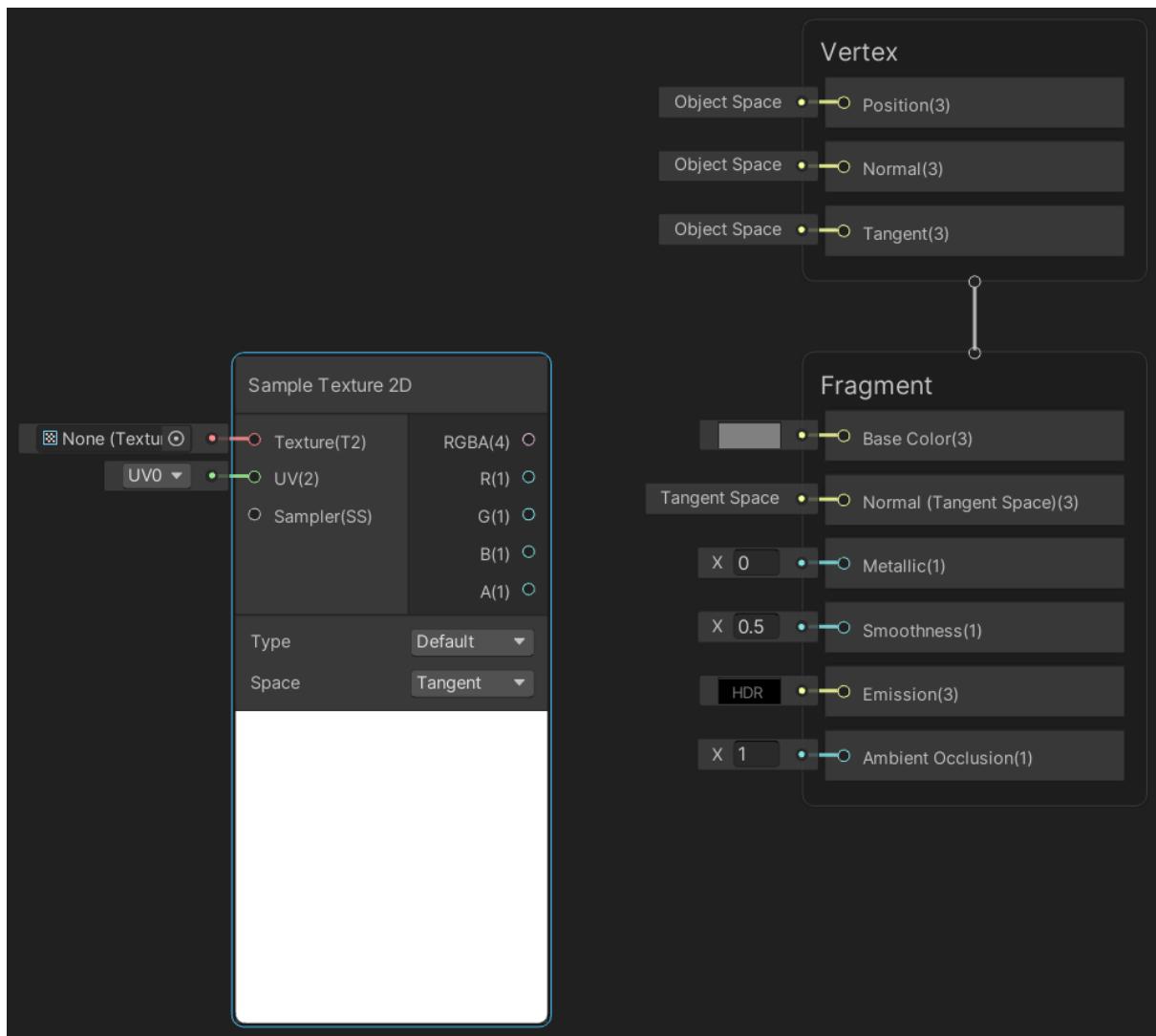


The screenshot shows the Unity Package Manager interface with the following details:

- Package Manager:** Shows Unity Technologies packages:
 - JetBrains Rider Editor (3.0.6)
 - Test Framework (1.1.24)
 - TextMeshPro (3.0.6)
 - Timeline (1.5.5)
 - Unity UI (1.0.0)
 - Universal RP (11.0.0)
 - Version Control (1.5.7)
 - Visual Scripting (1.6.1)
 - Visual Studio Code Editor (1.2.3)
 - Visual Studio Editor (2.0.8)
- JetBrains Rider Editor Detail:** Shows the package details:
 - Release:** Version 3.0.6 - April 20, 2021
 - Unity Technologies
 - View documentation · View changelog · View licenses
 - Description: The JetBrains Rider Editor package provides an integration for using the JetBrains Rider IDE as a code editor for Unity. It adds support for generating .csproj files for code completion and auto-discovery of installations.
 - More...
 - Registry · Unity
- Bottom Bar:** Last update Jul 18, 12:24, C, Update to 3.0.7, Remove.







Select Texture



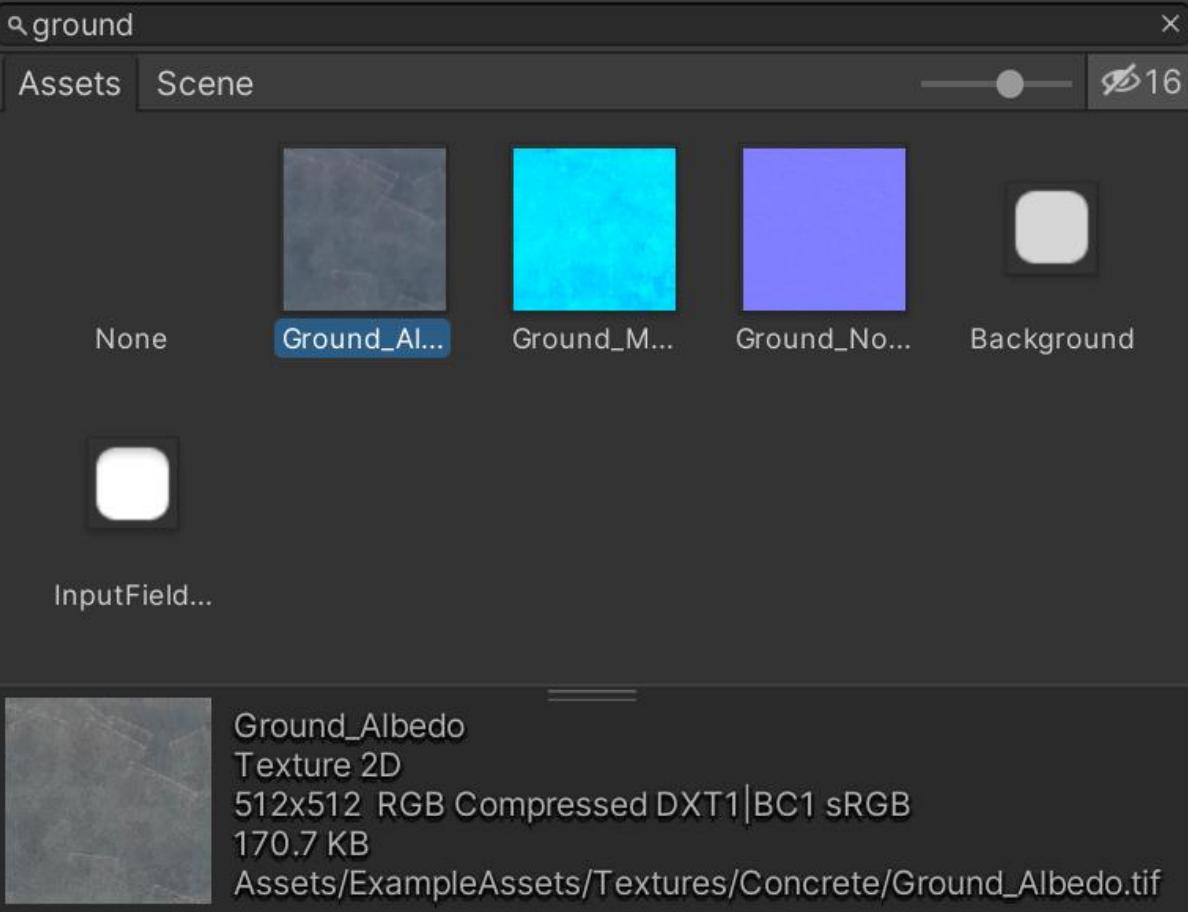
ground

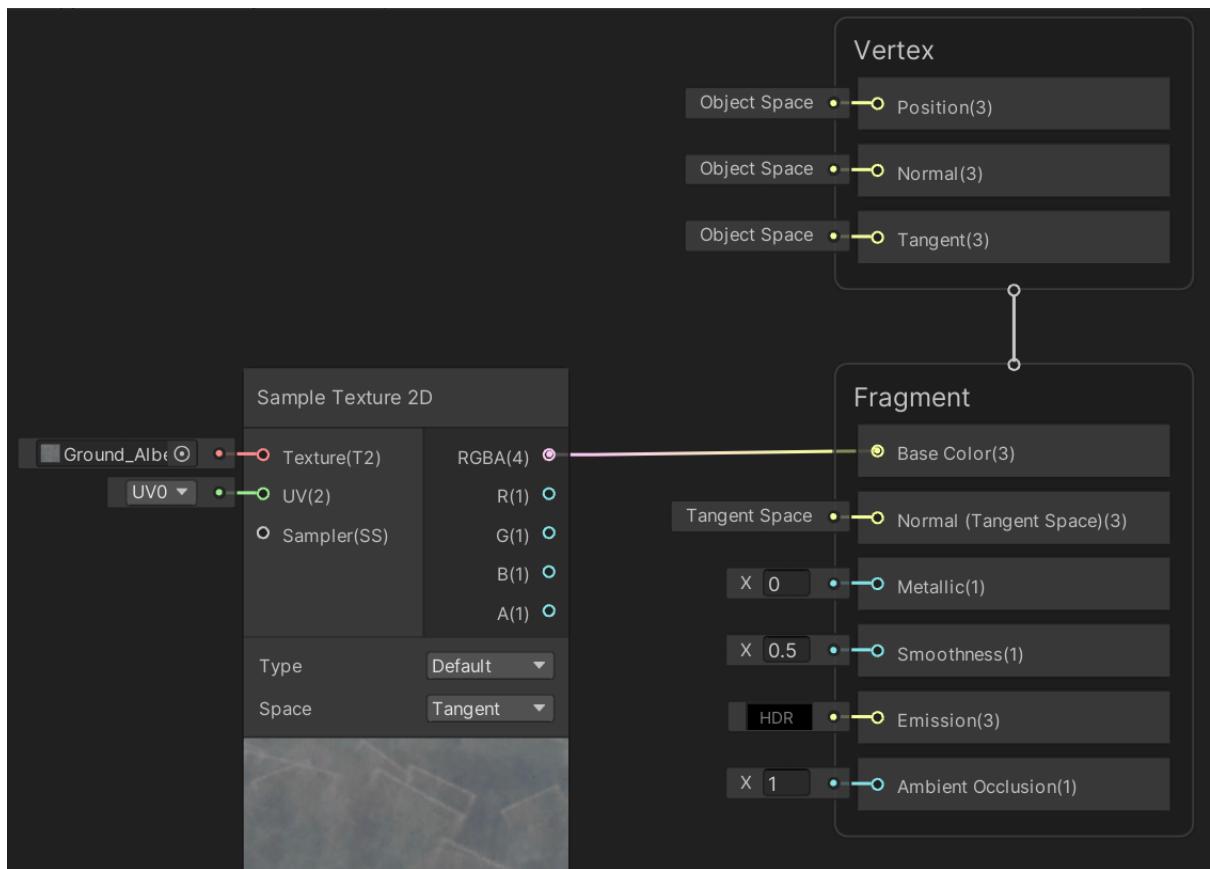
Assets Scene ⚡ 16

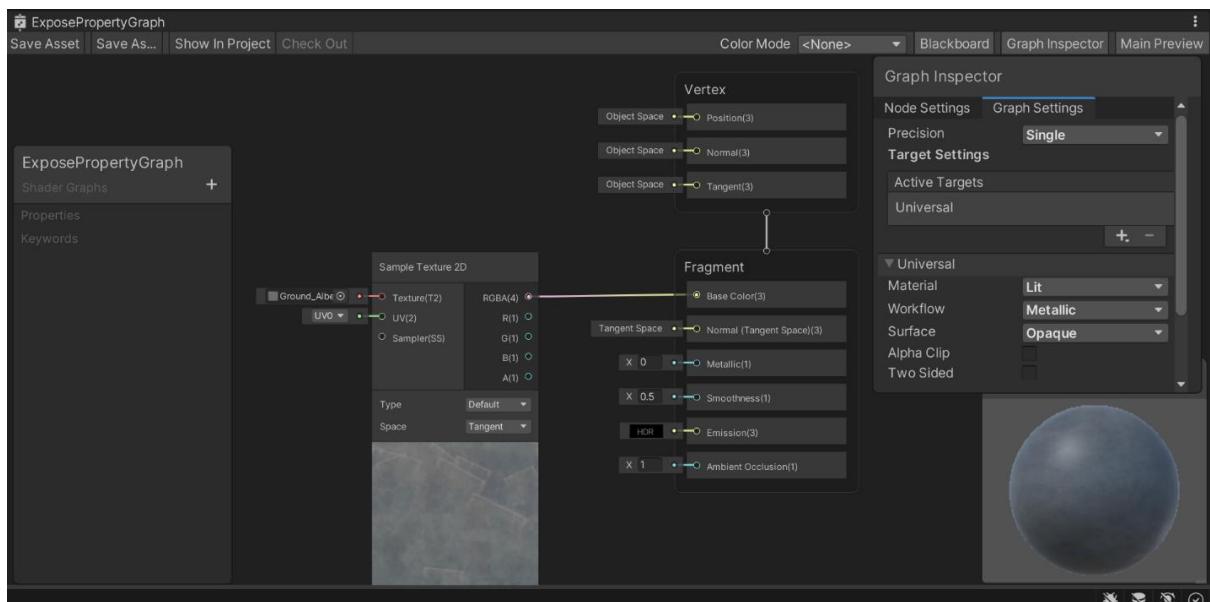
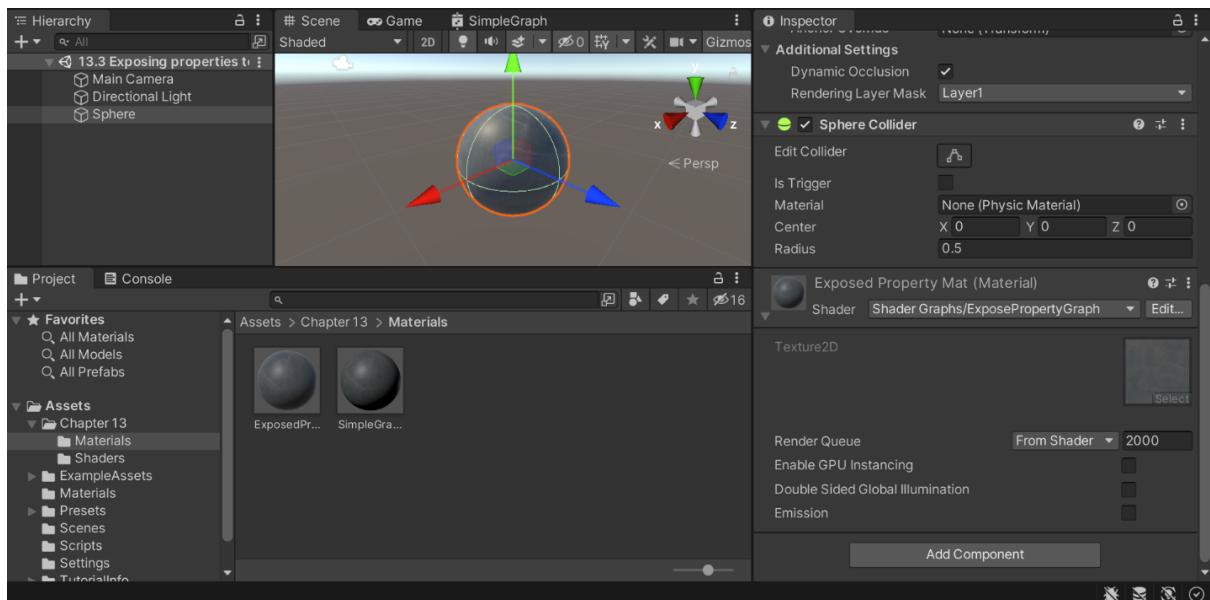
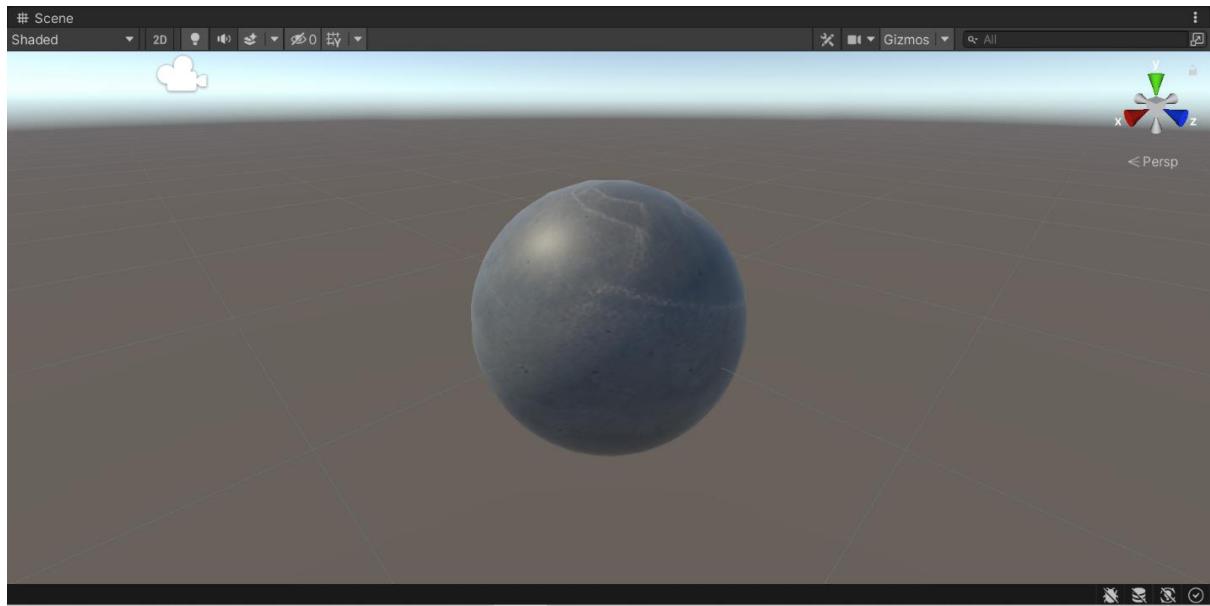
None Ground_Al... Ground_M... Ground_No... Background

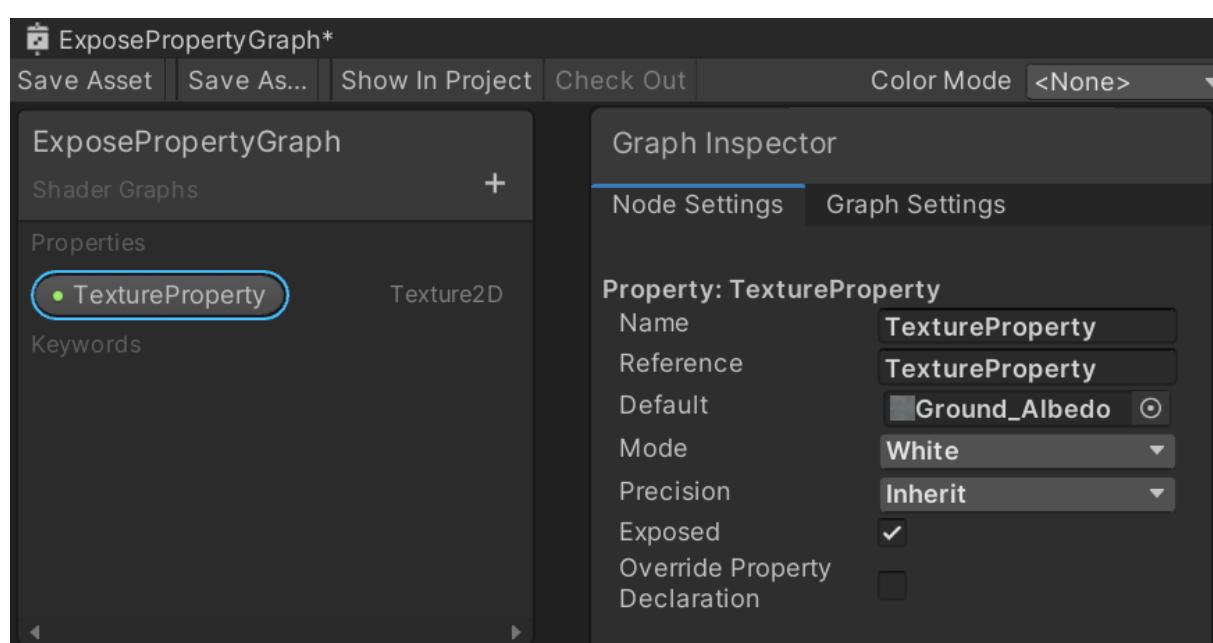
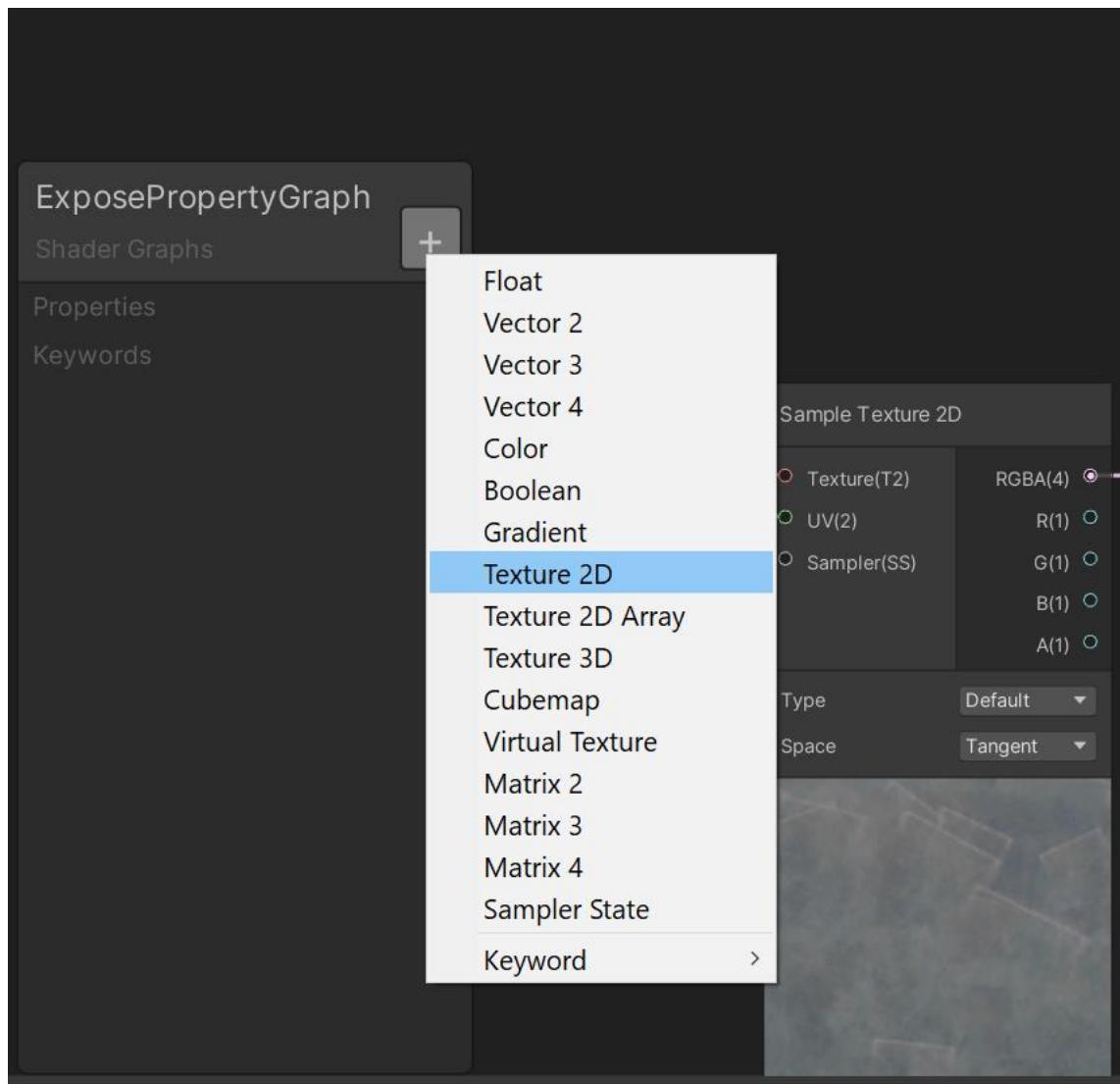
InputField...

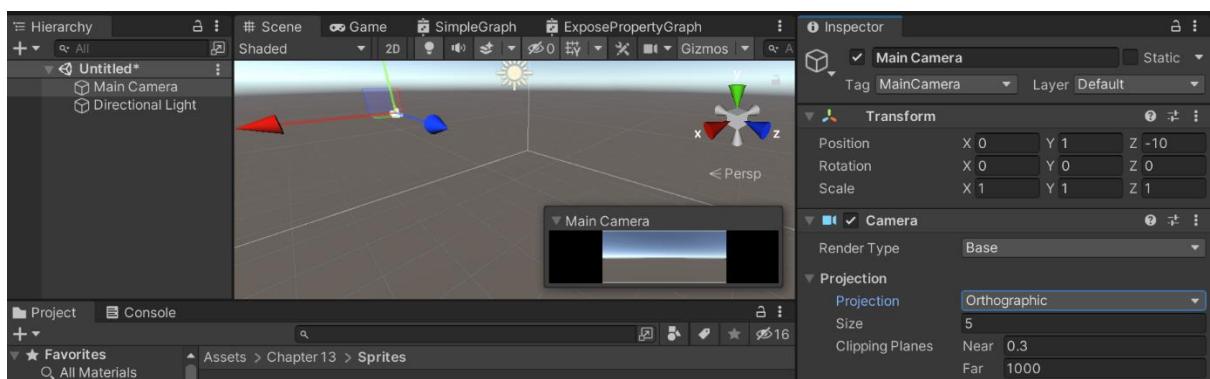
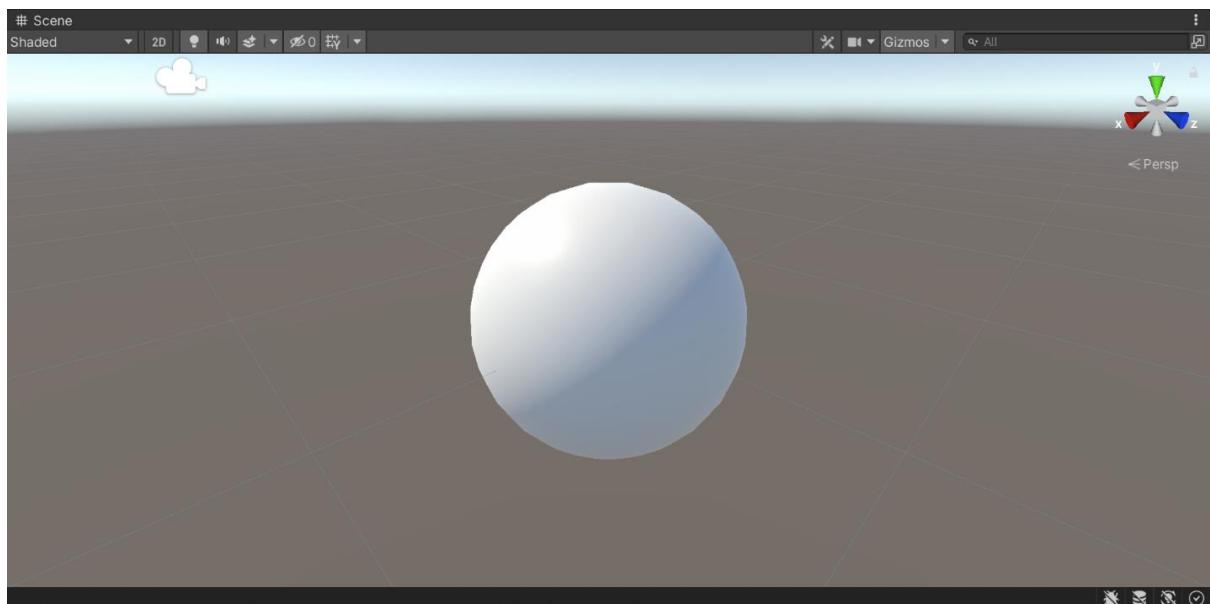
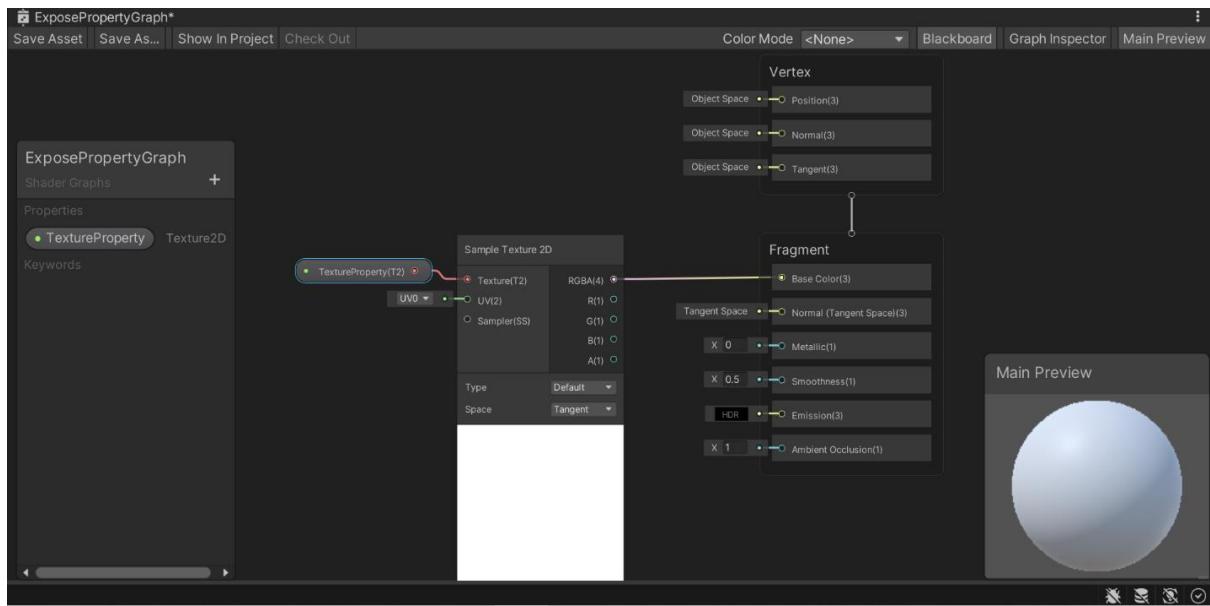
Ground_Albedo
Texture 2D
512x512 RGB Compressed DXT1|BC1 sRGB
170.7 KB
Assets/ExampleAssets/Textures/Concrete/Ground_Albedo.tif

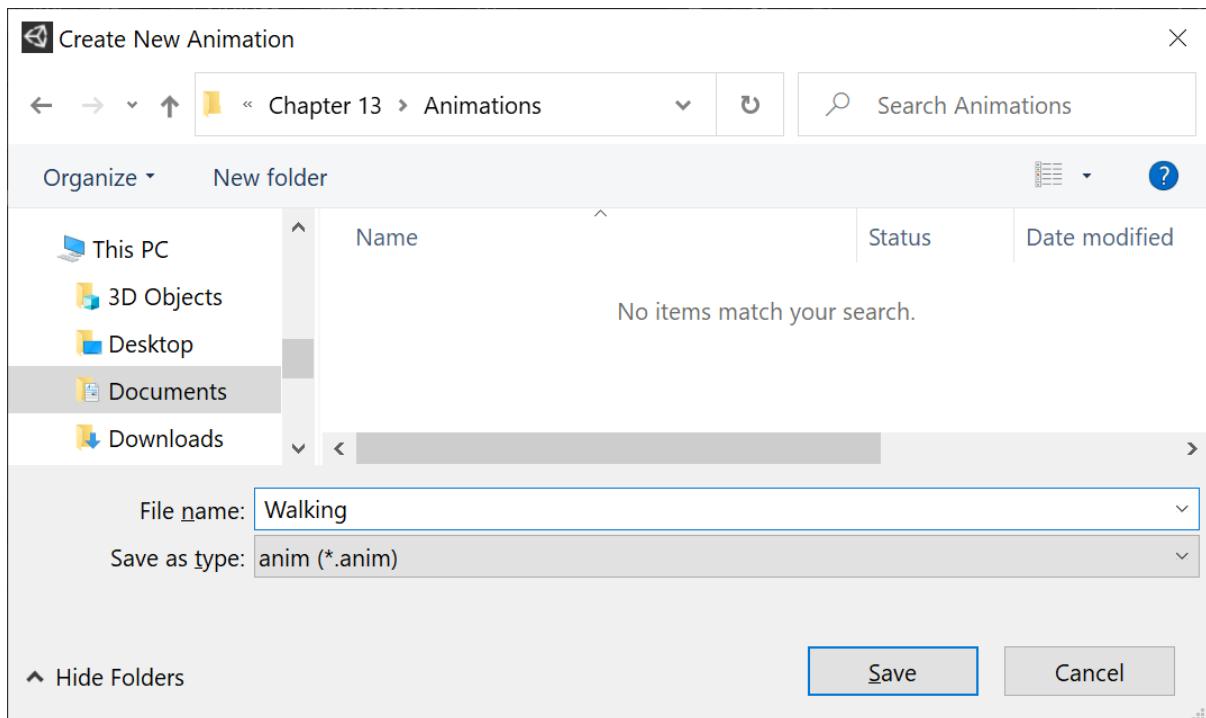
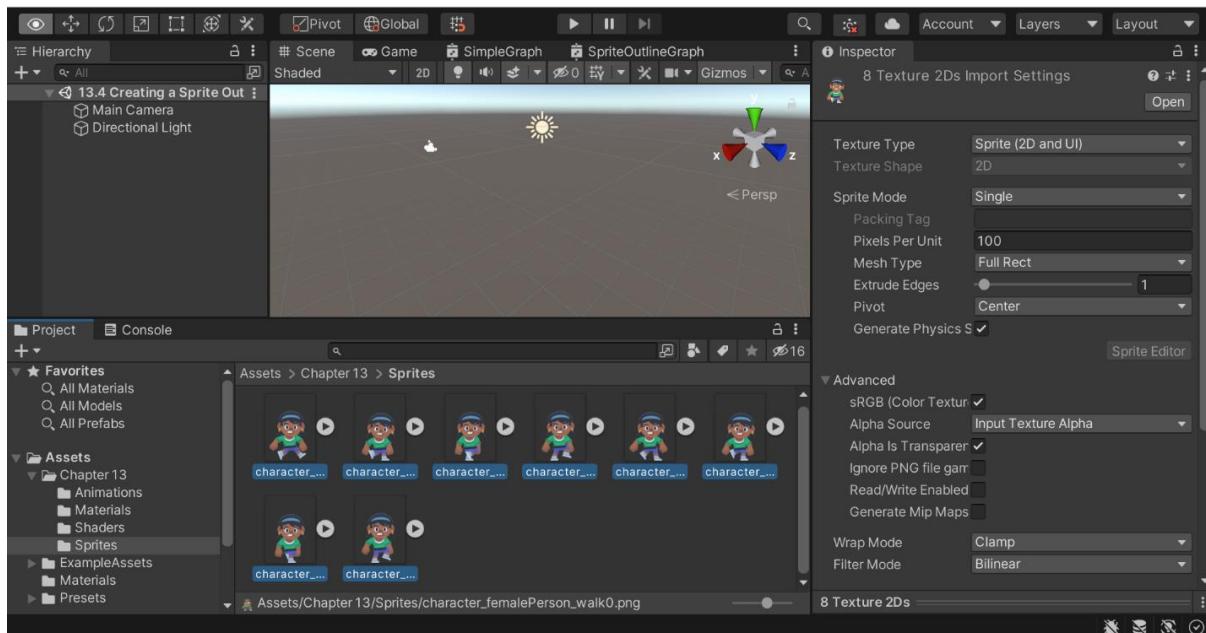


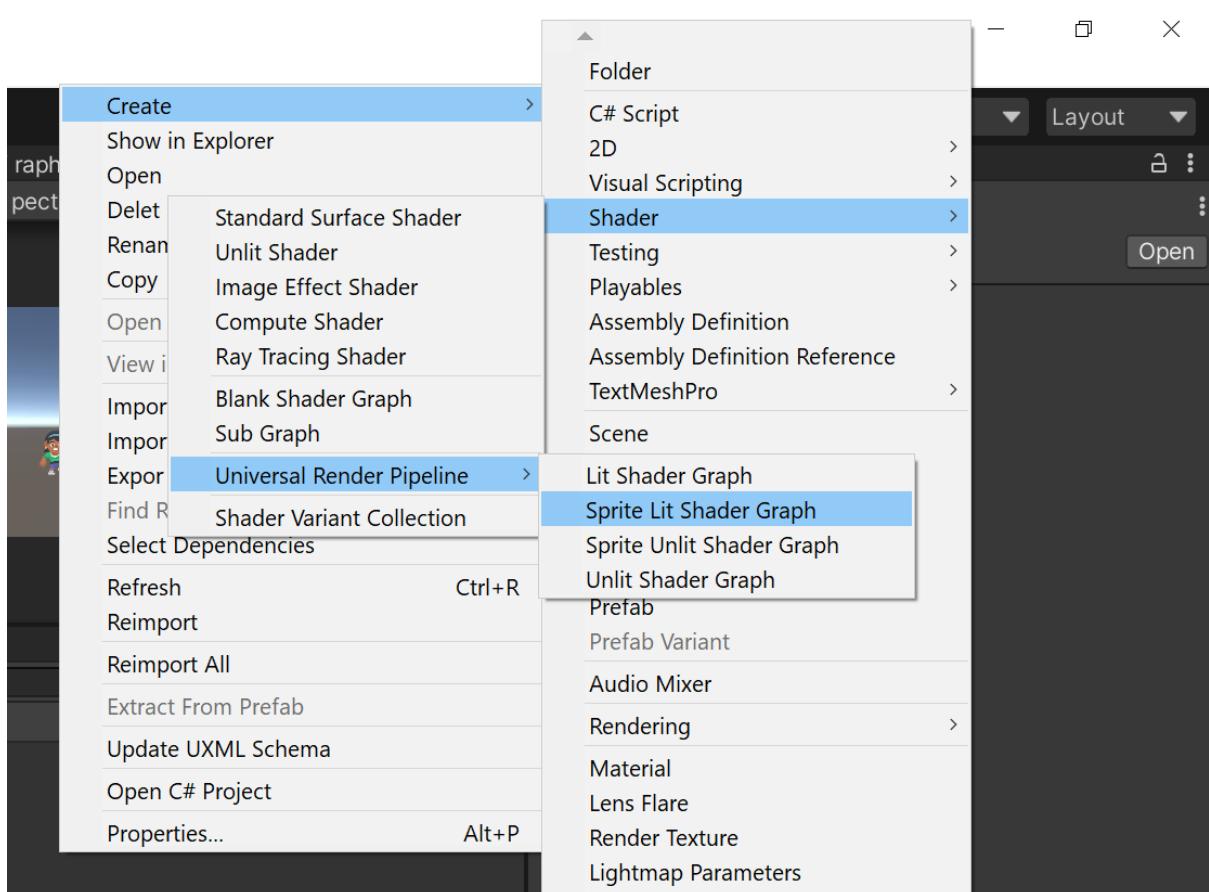
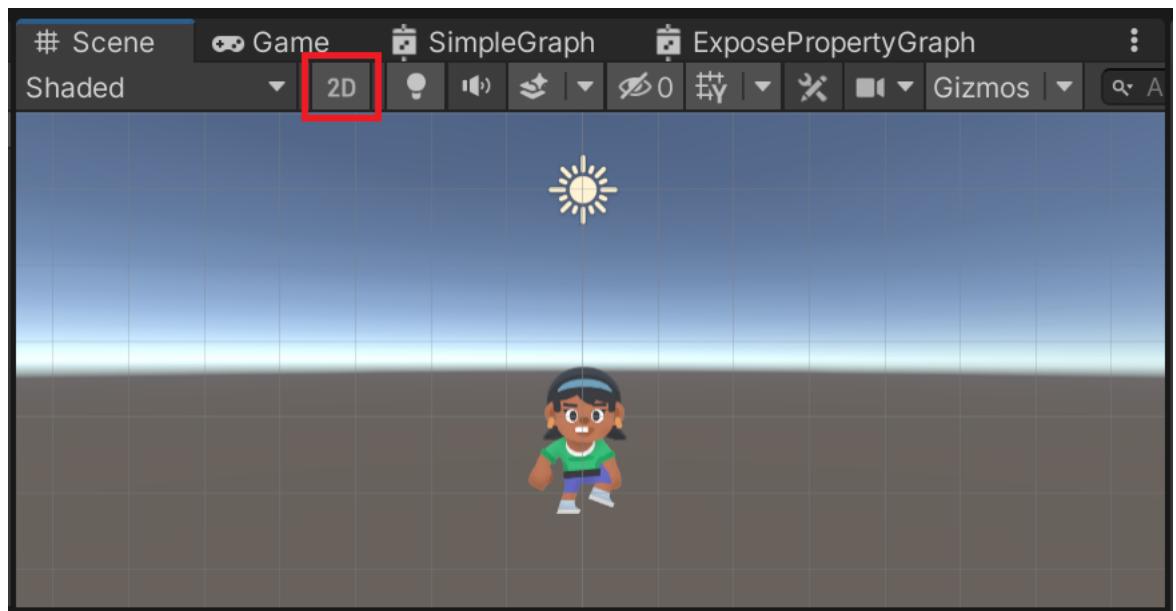


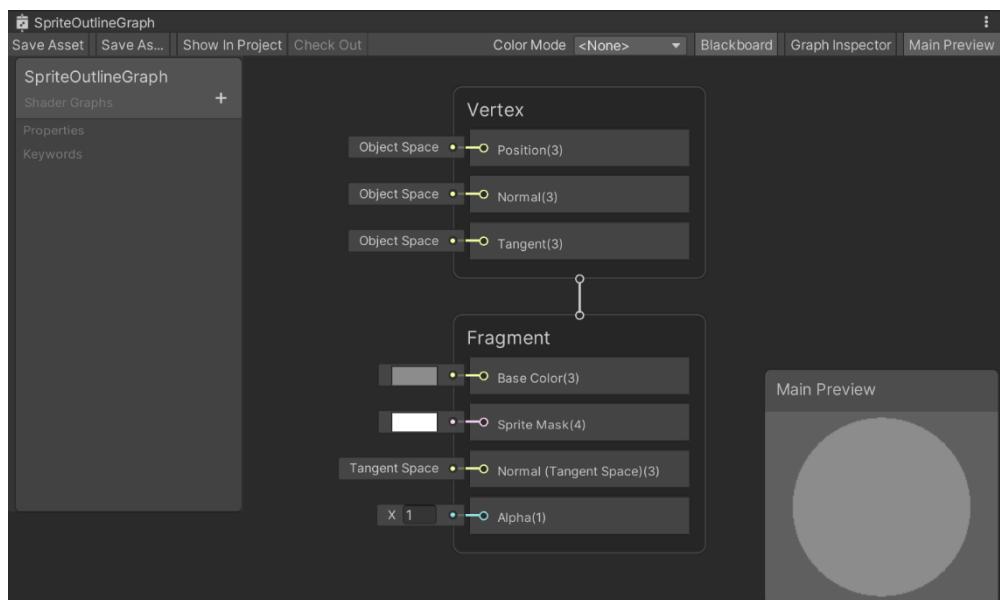
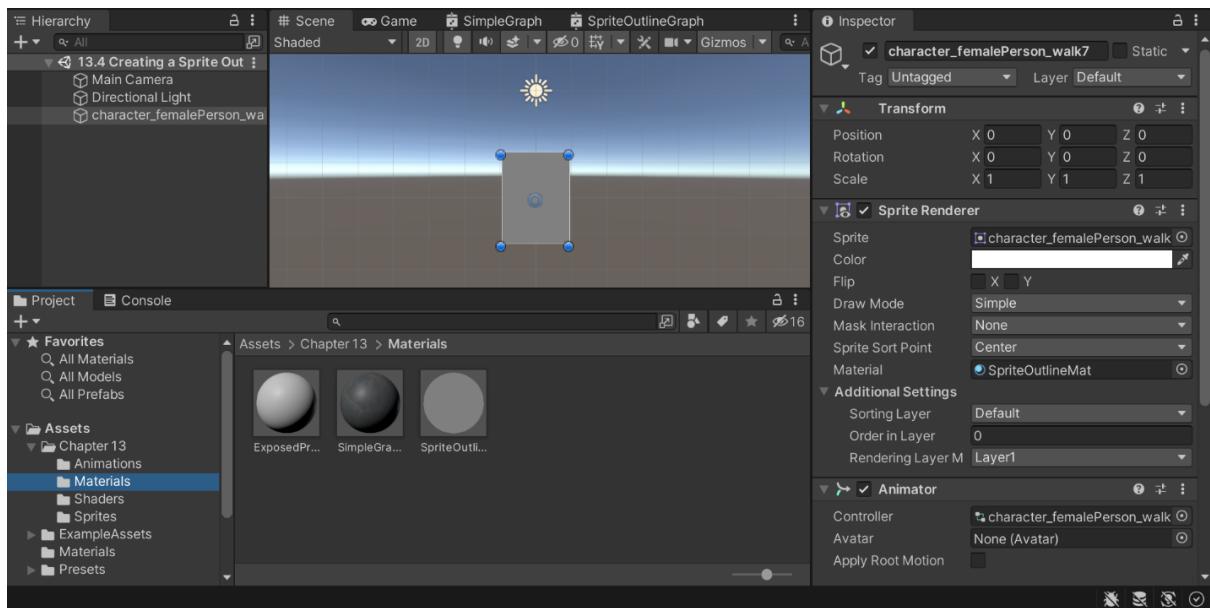


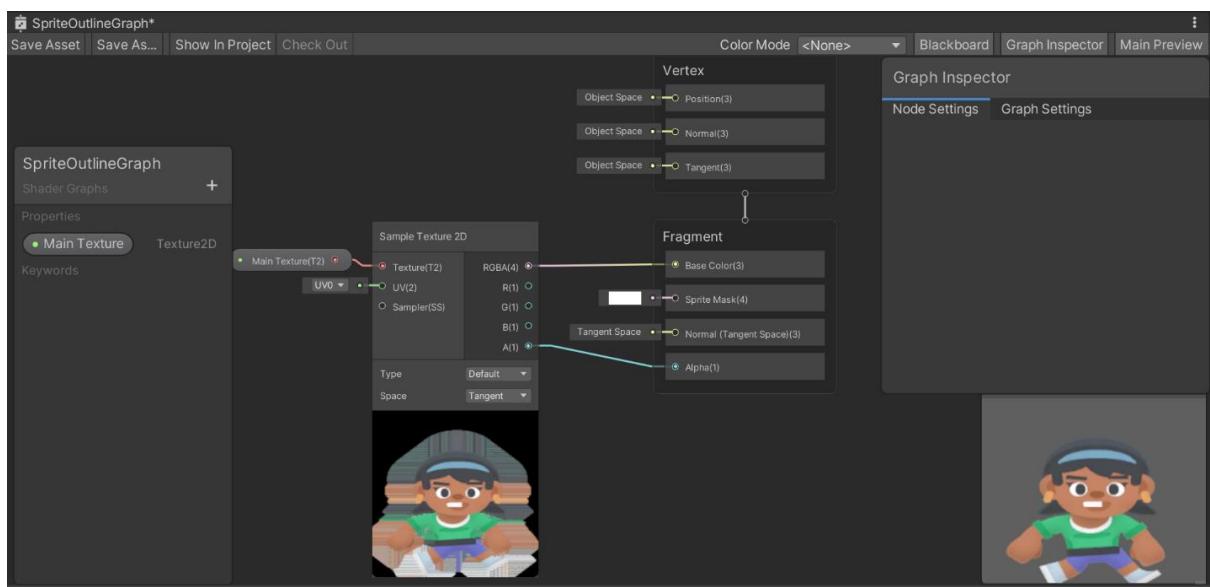
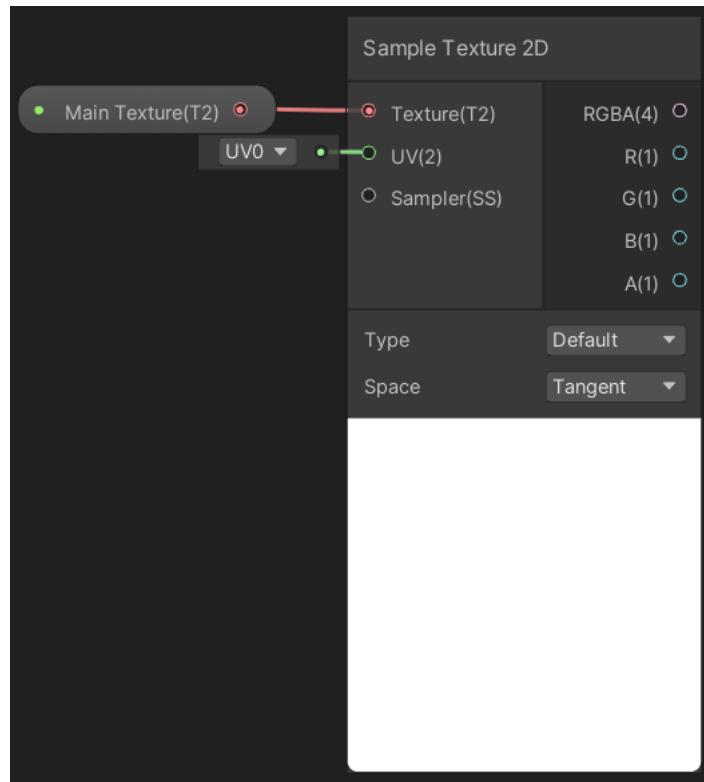


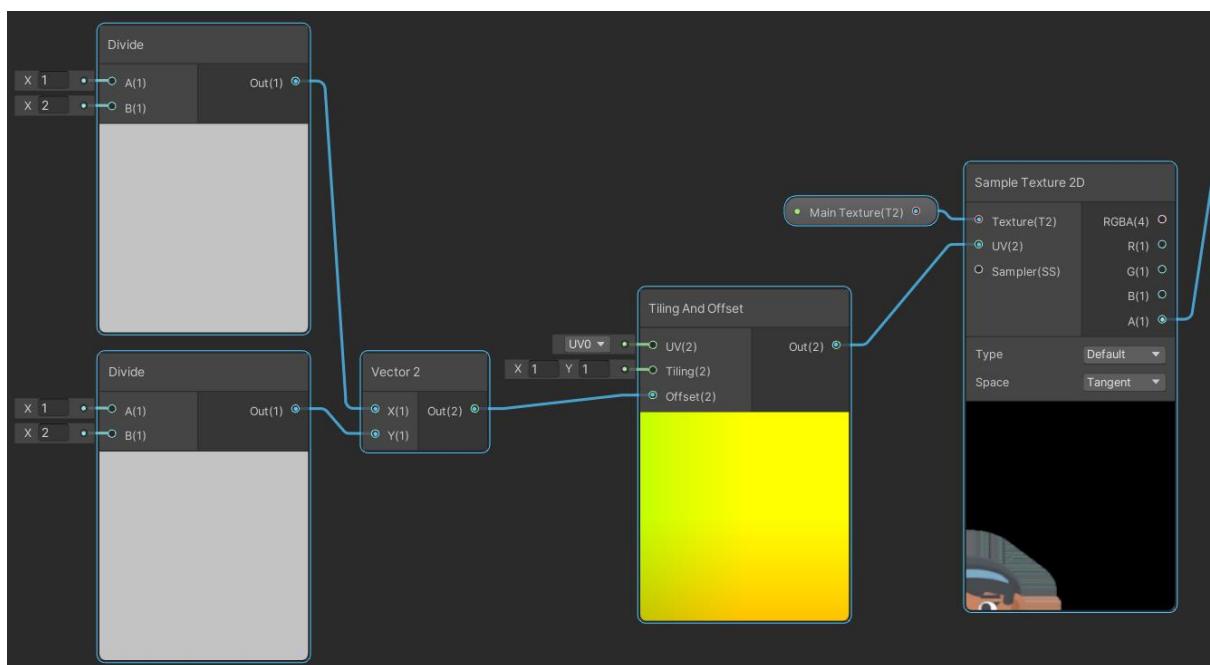
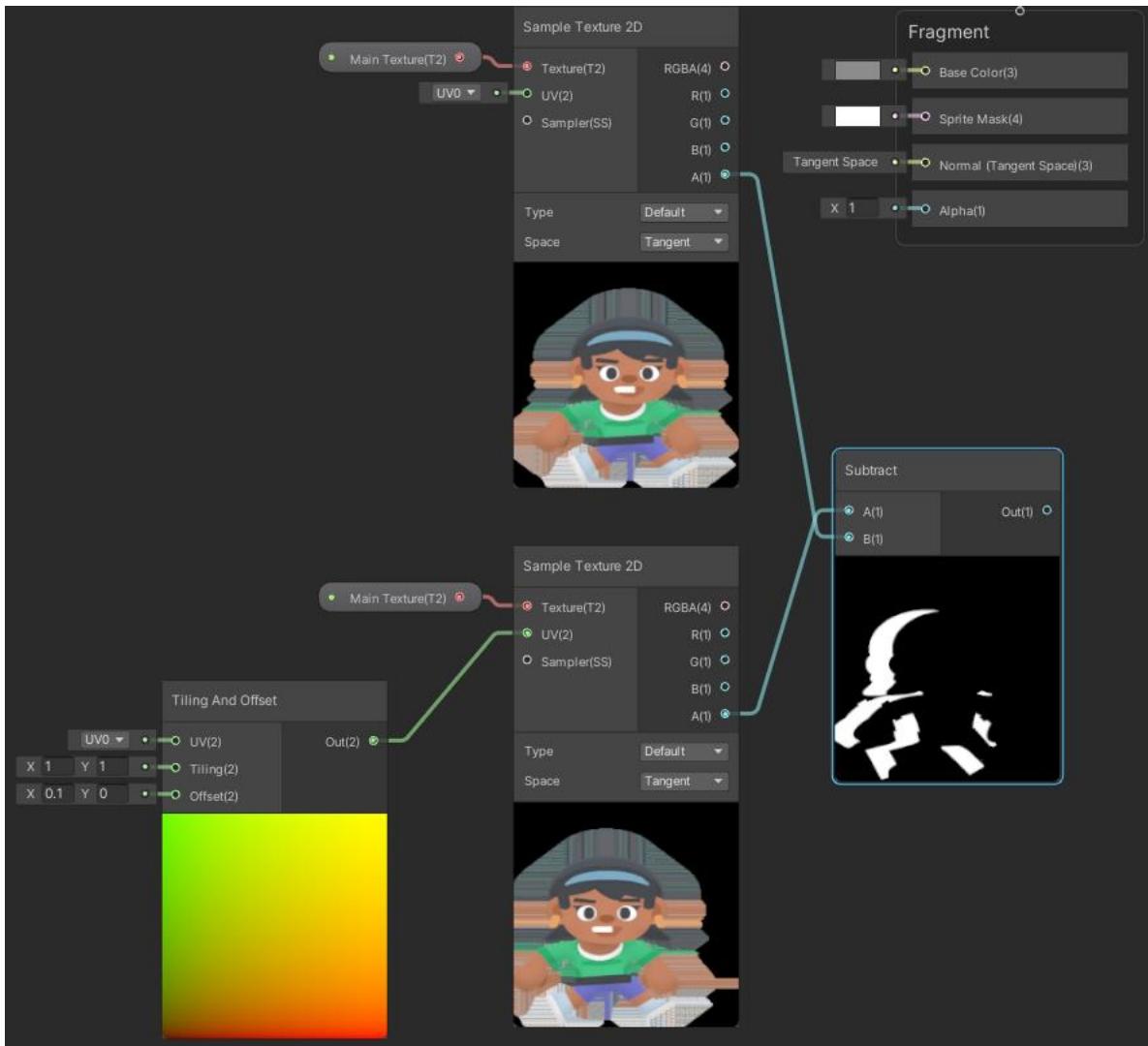


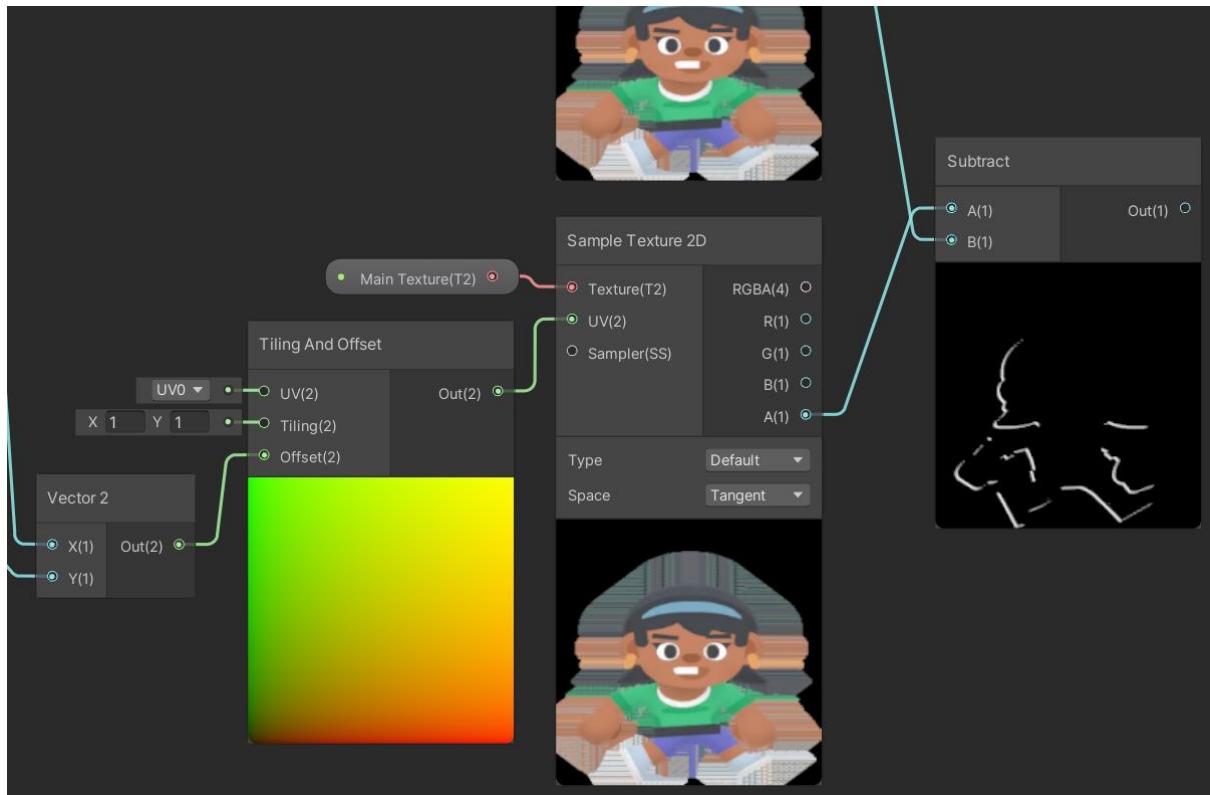
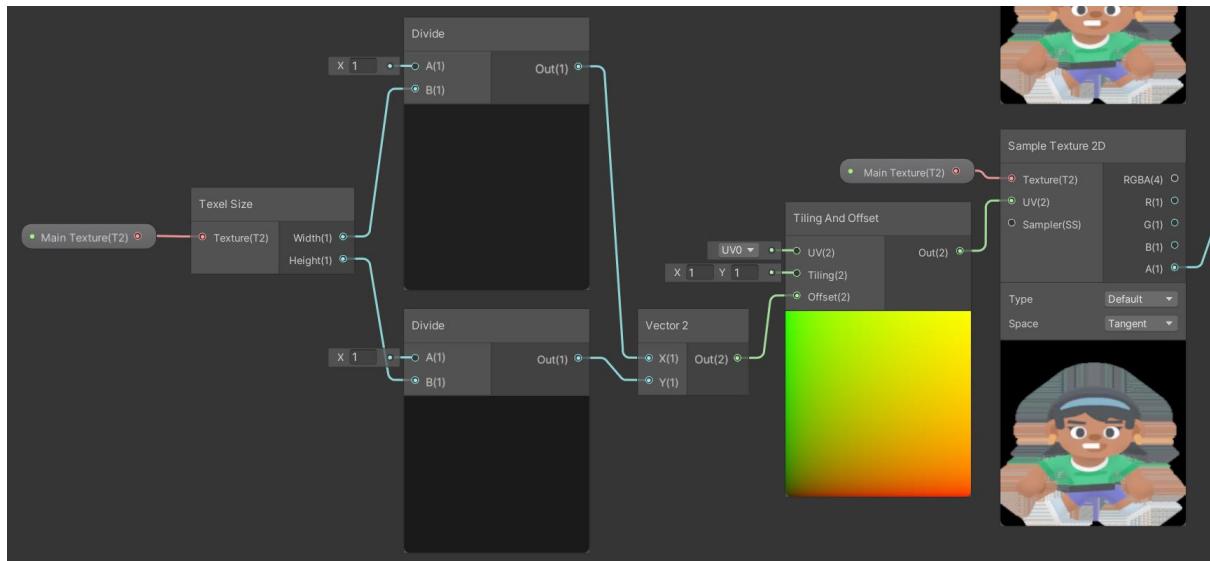






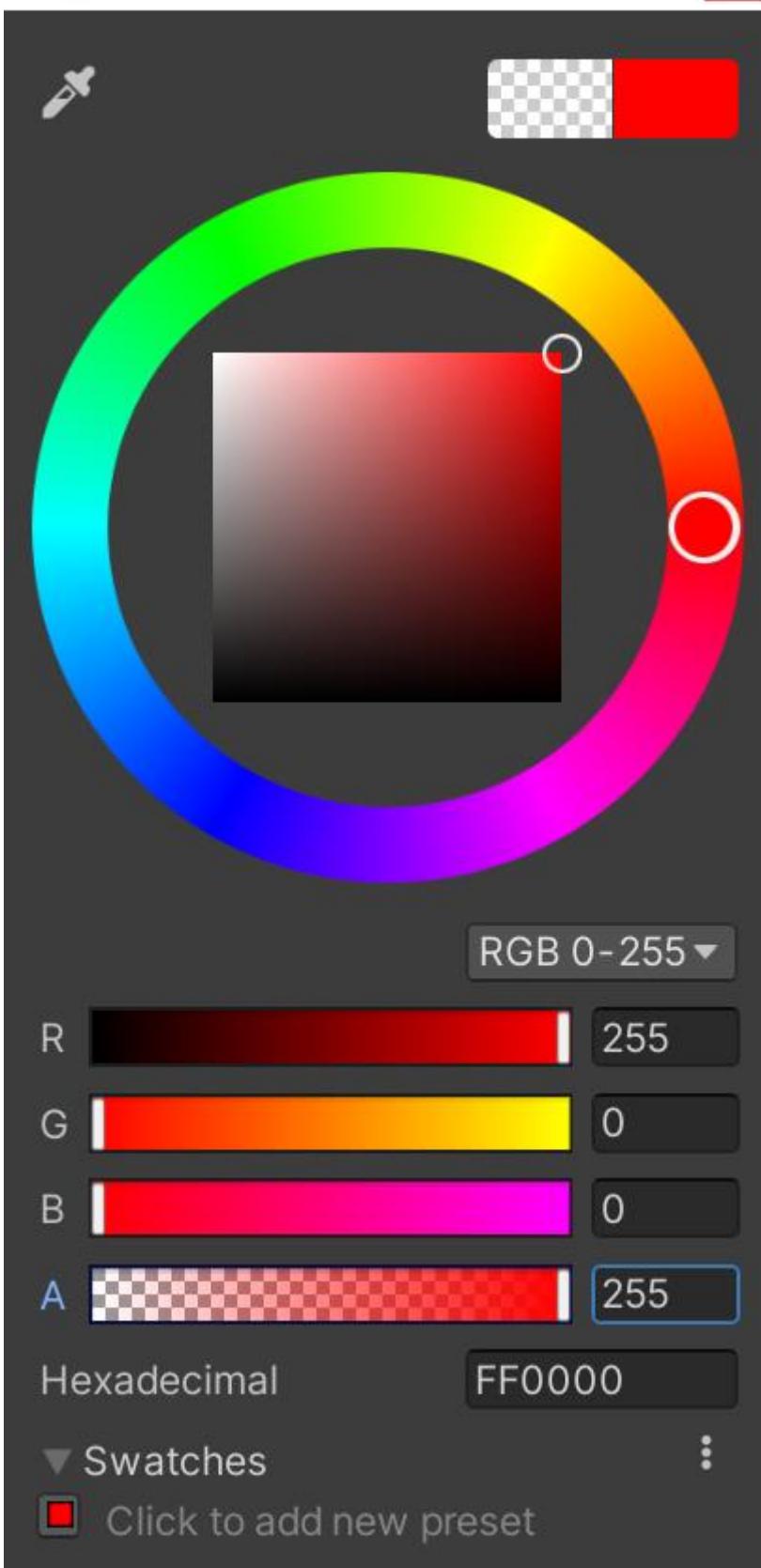


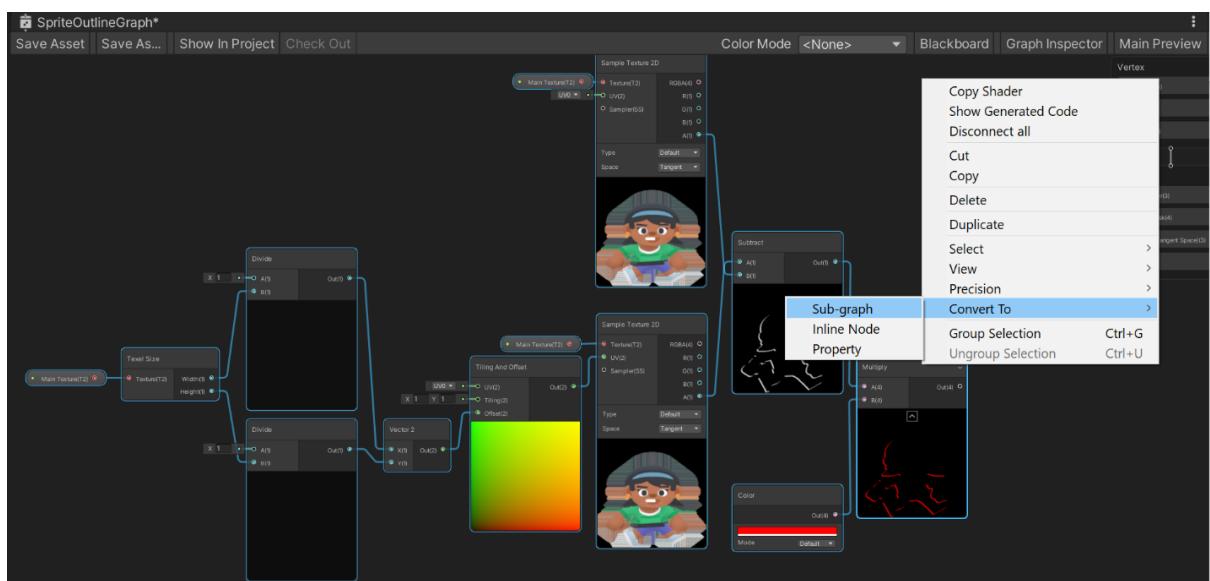
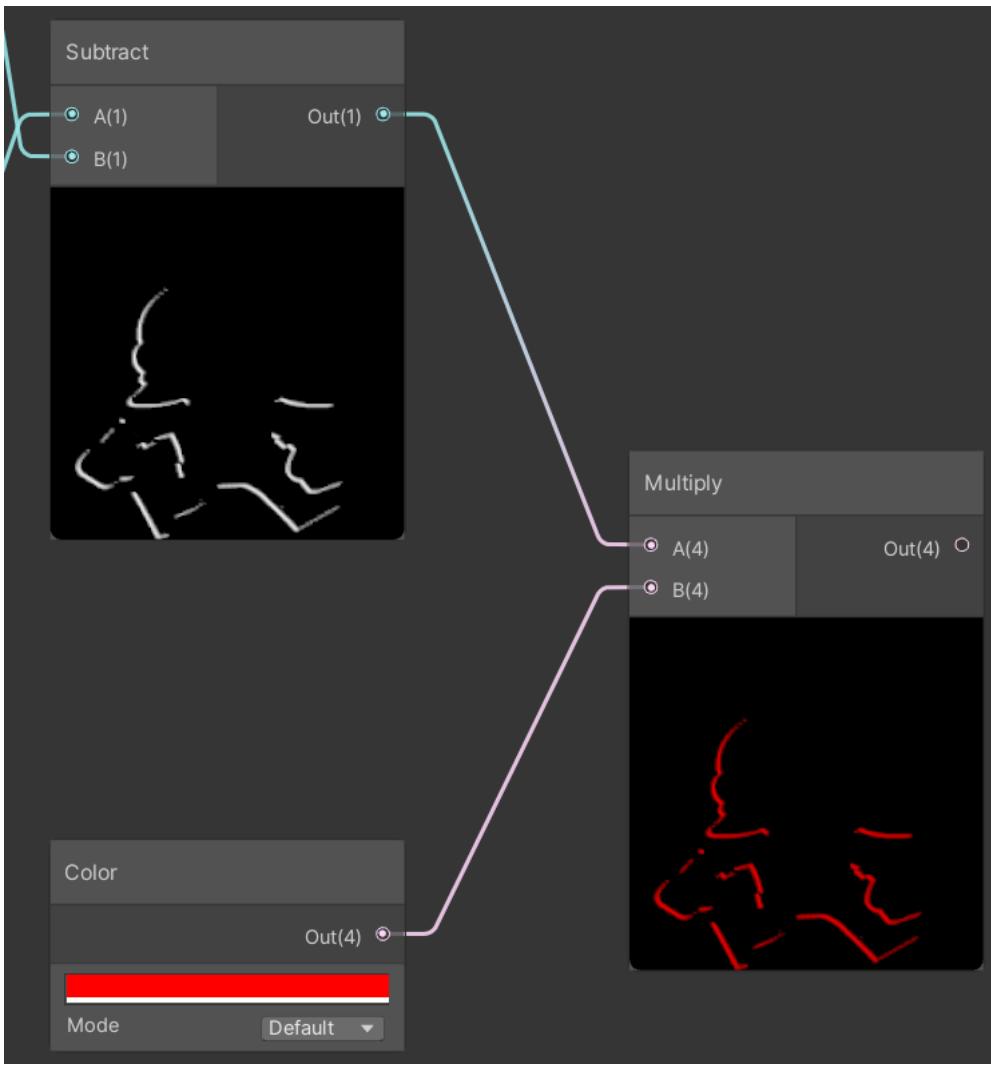


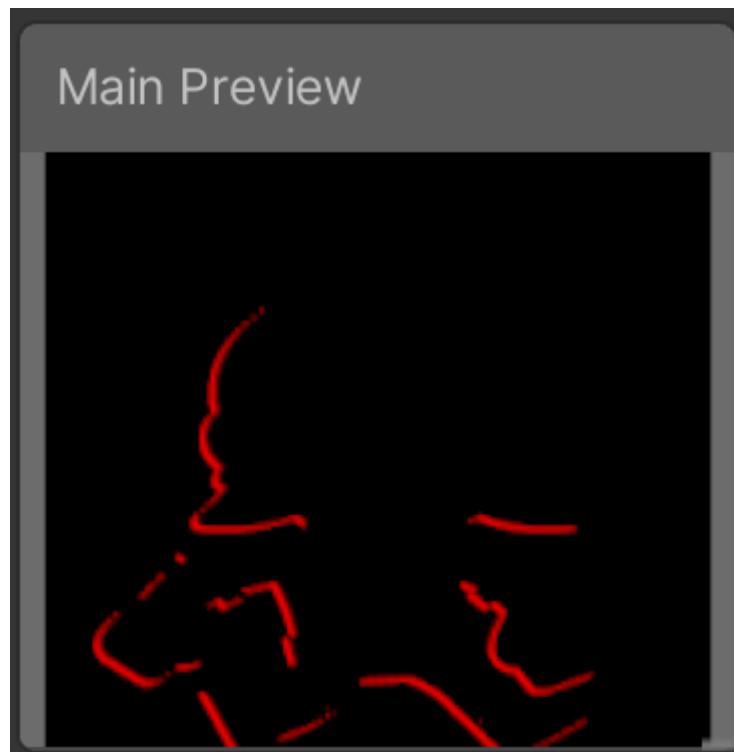
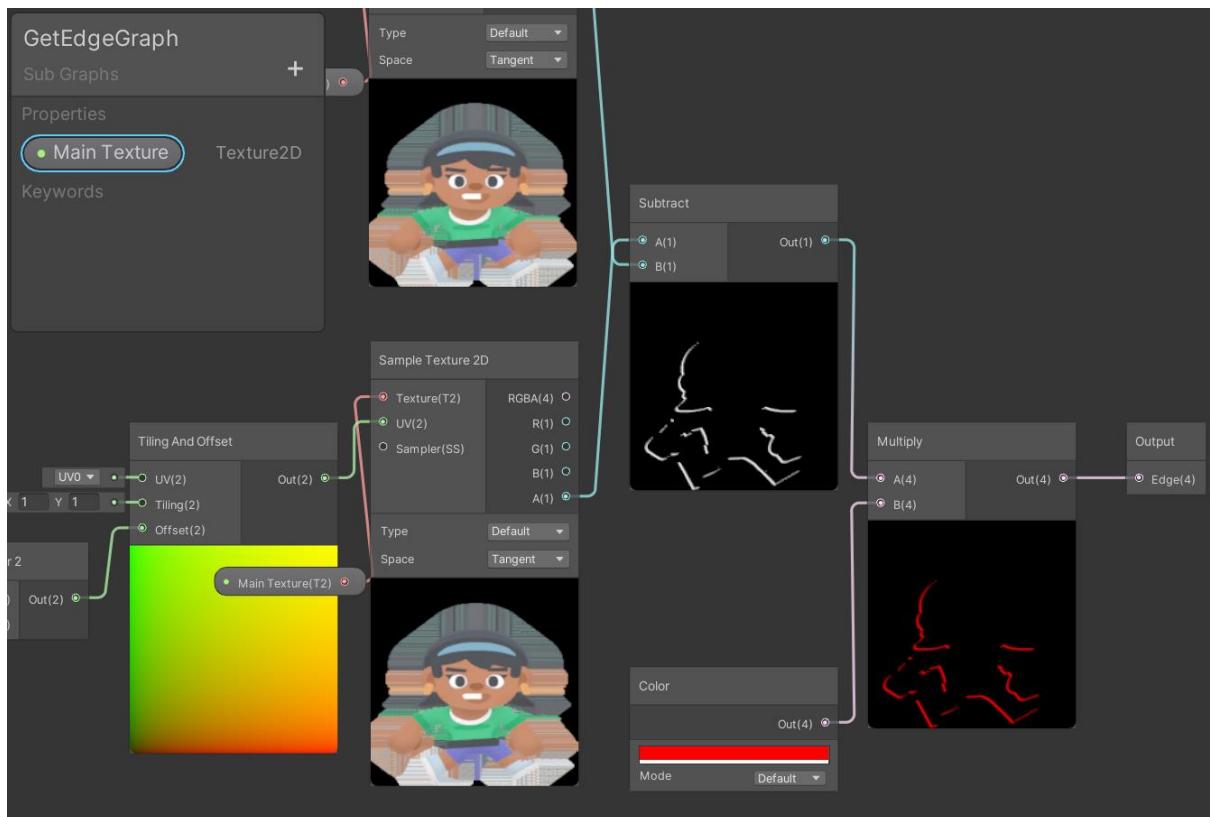


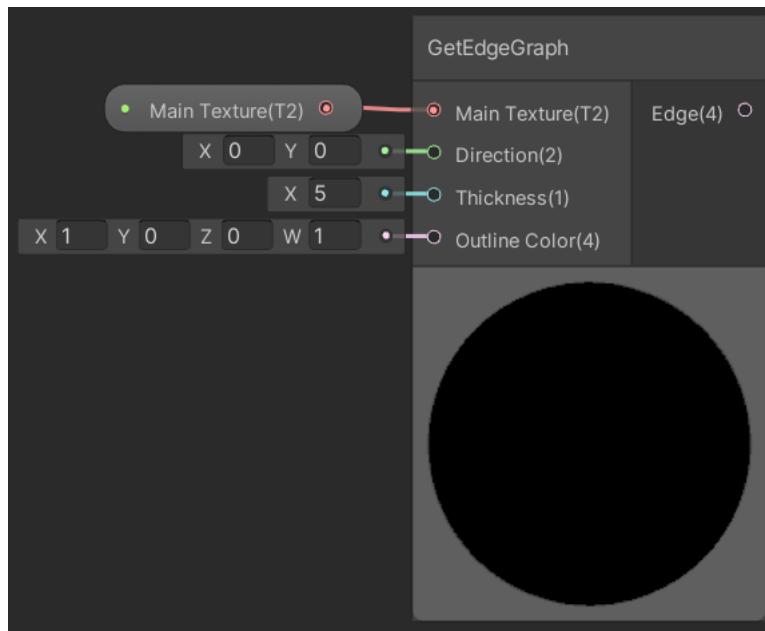
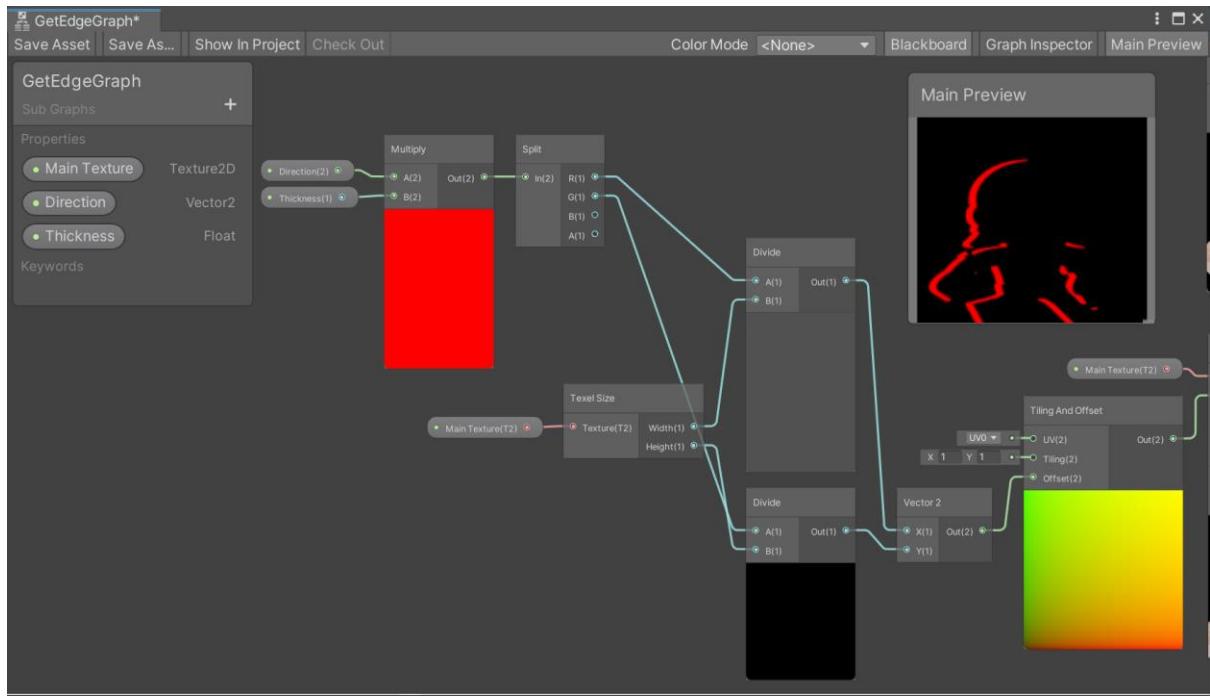
Color

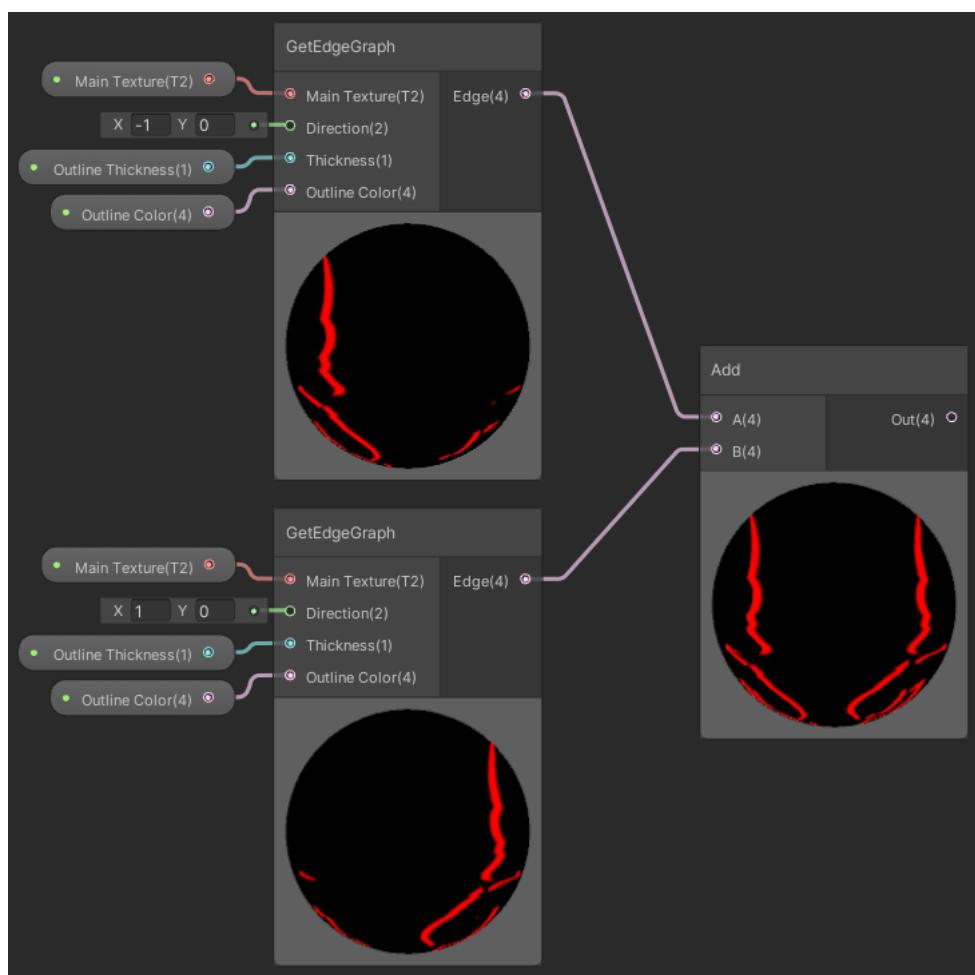
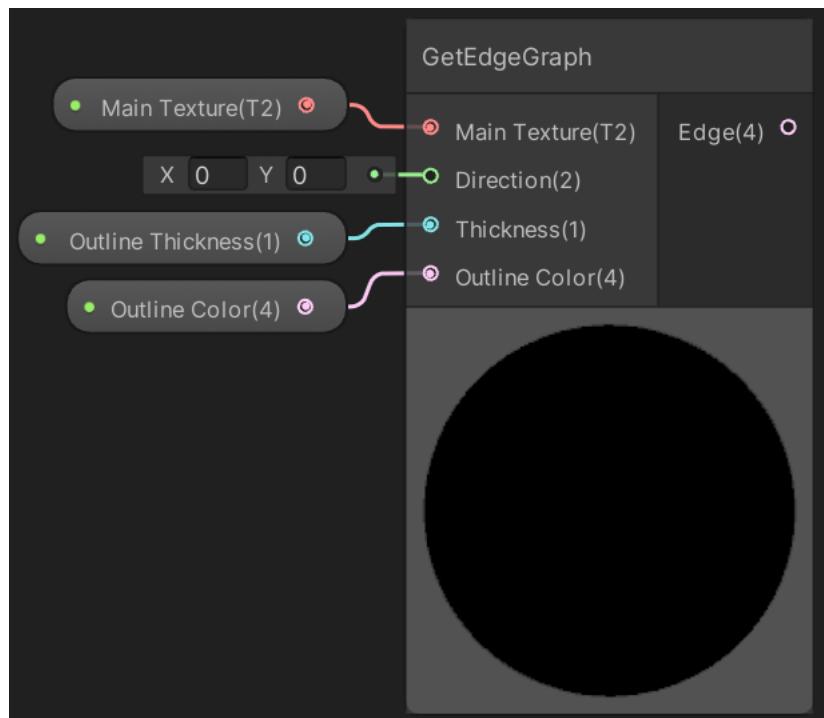
x

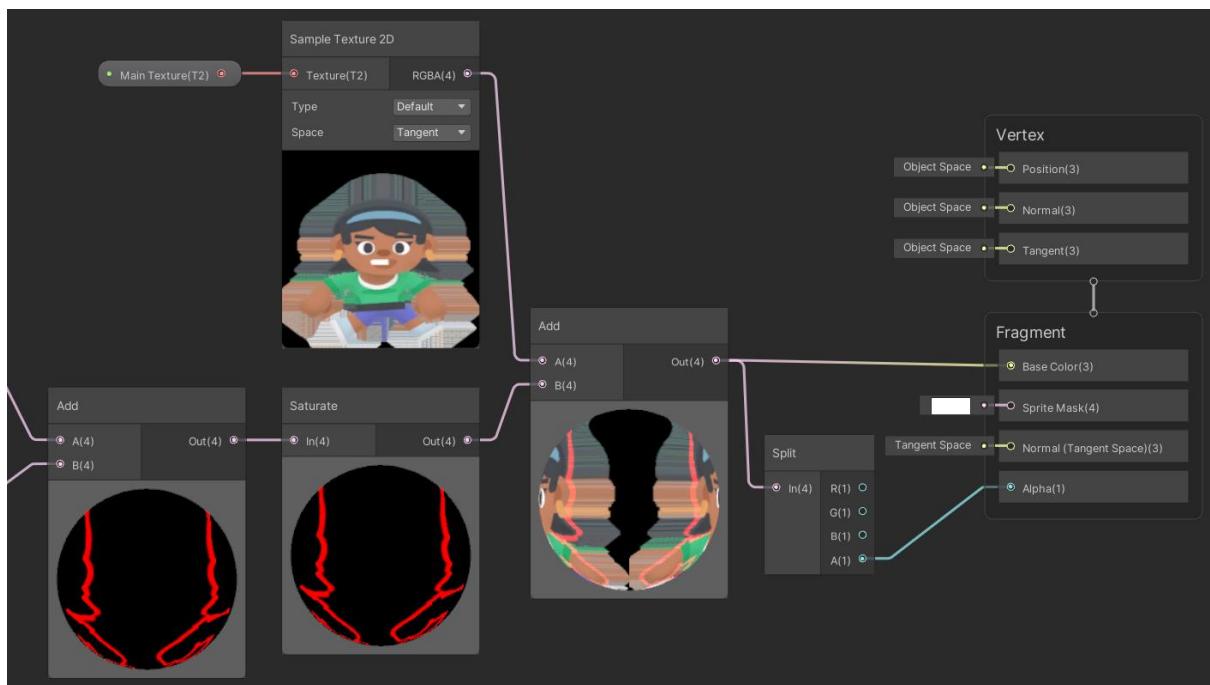


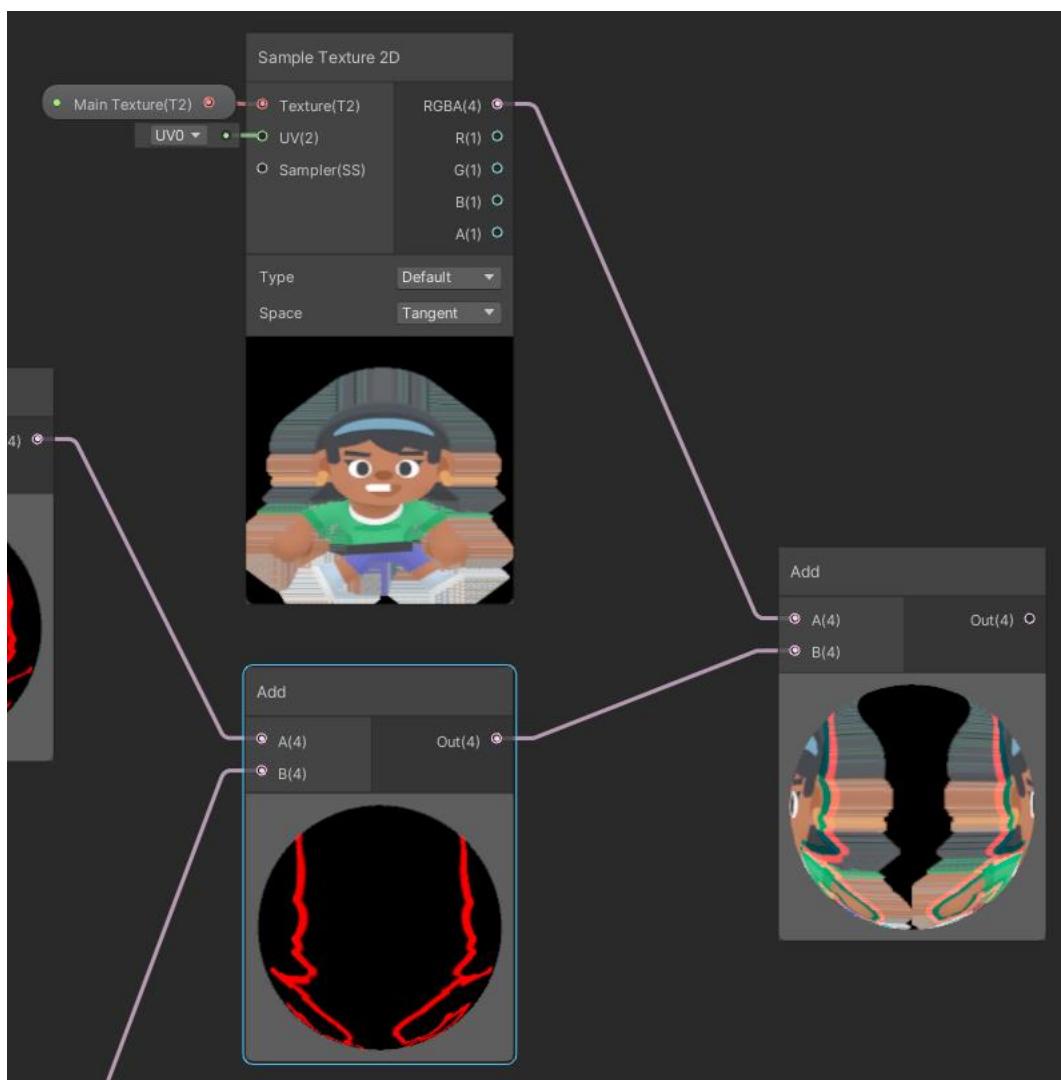
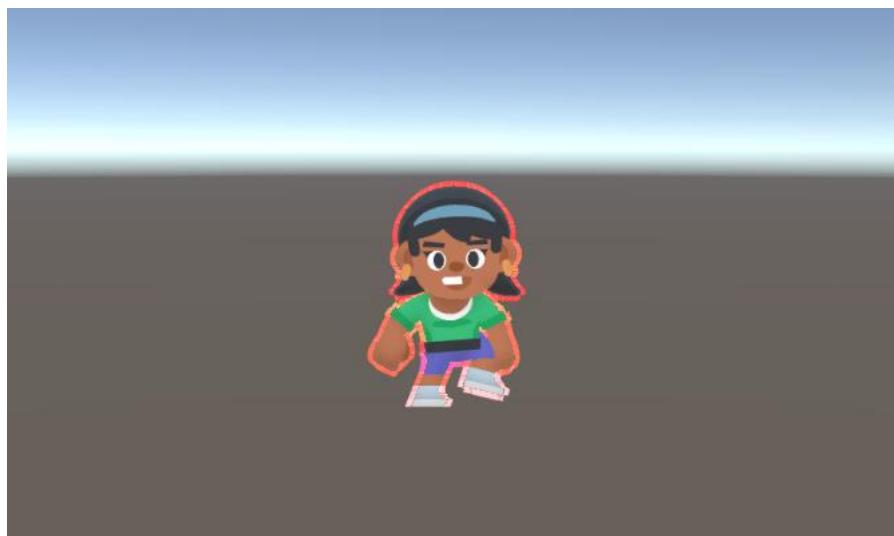




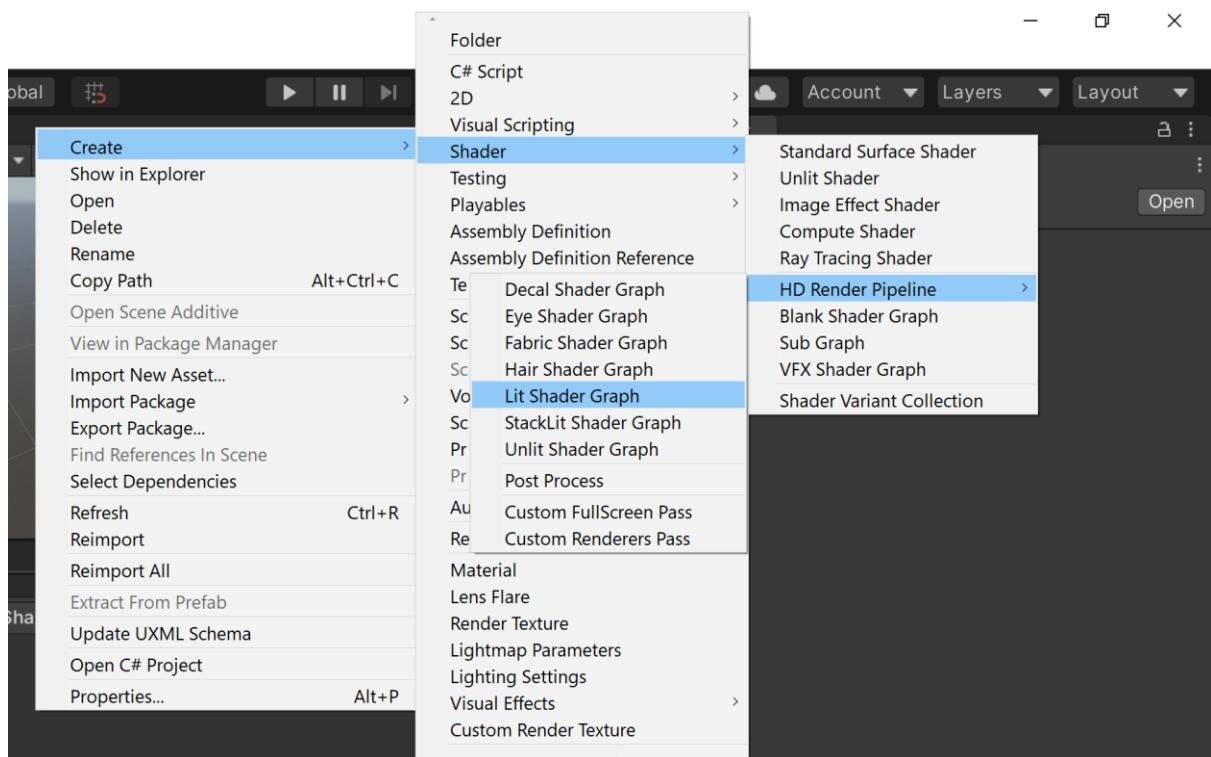
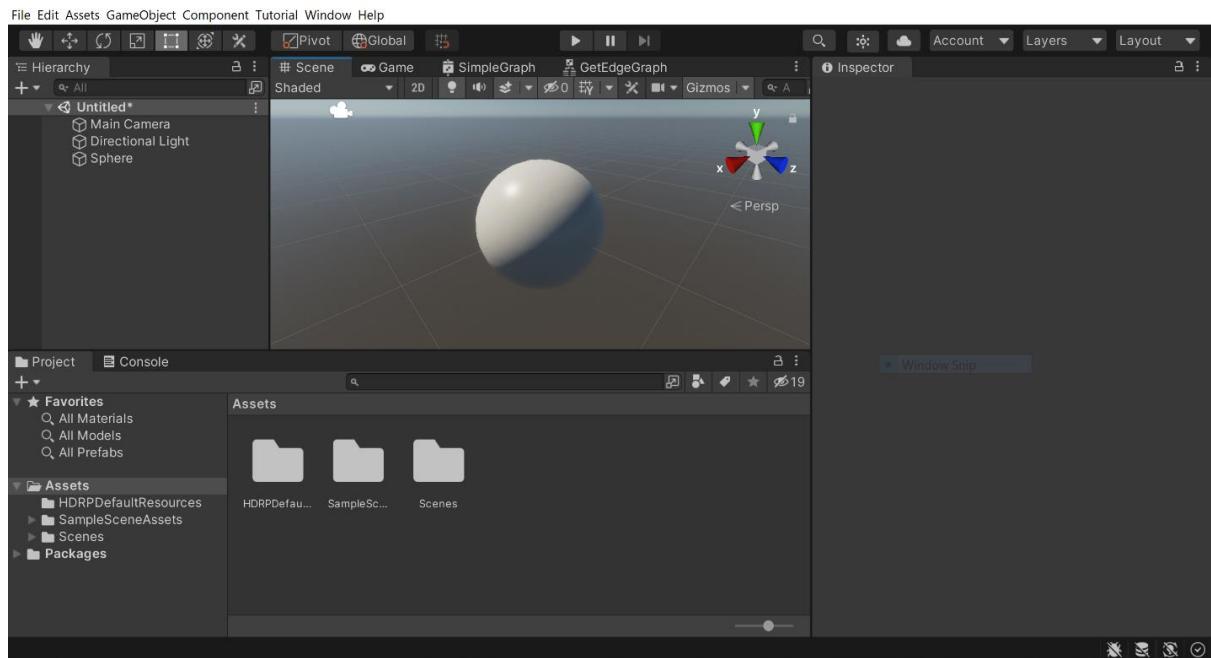


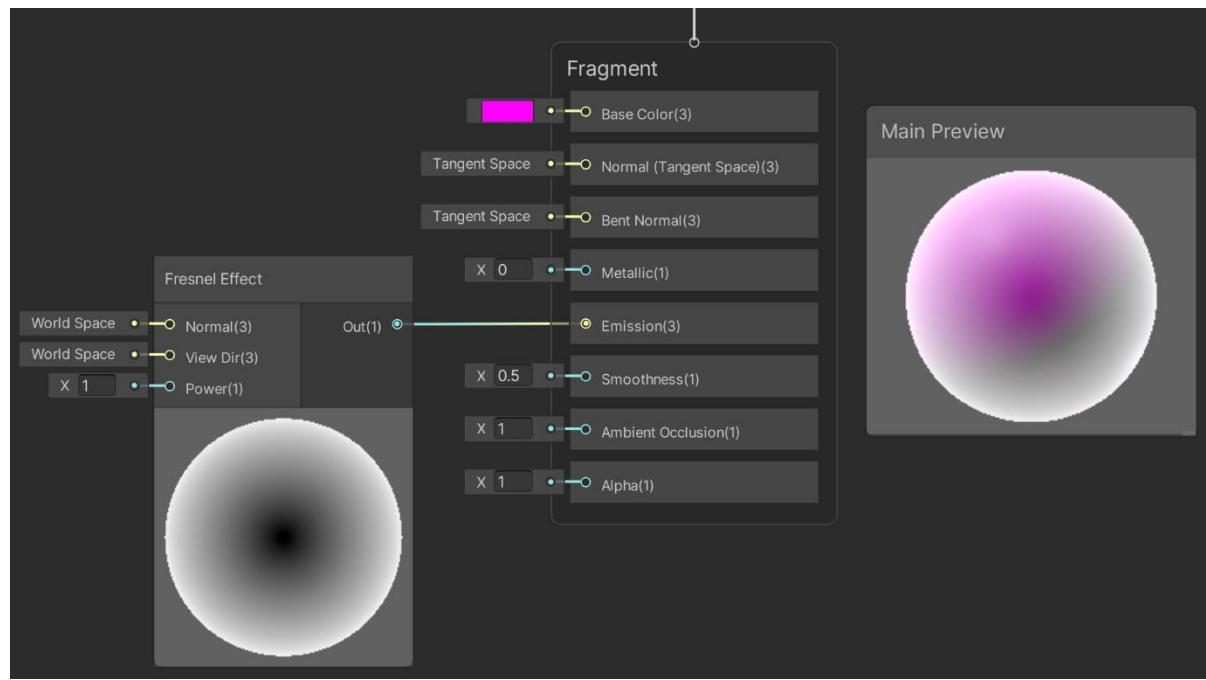






Chapter 14: Shader Graph – 3D





HDR Color

x

