



新年好

欢迎加入LightDir (光向) 研习社
欢迎大家一同探索开源共享的知识分享模式

今日内容



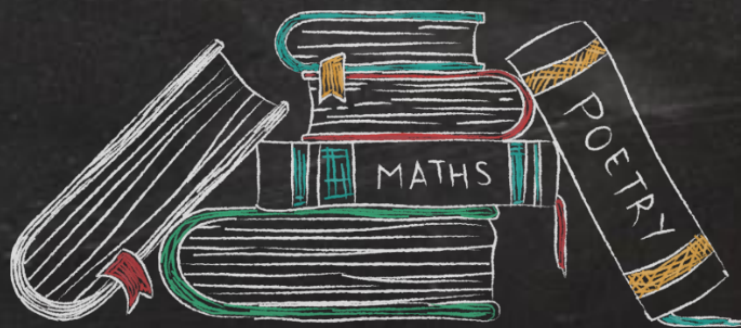
▣ 割透·场景相关内容介绍

▣ 忍具·筑基·Lightmap-Unity

$$\begin{array}{r} 24 \times 5 \\ \hline 33 \end{array}$$

1

剧透·场景相关内容



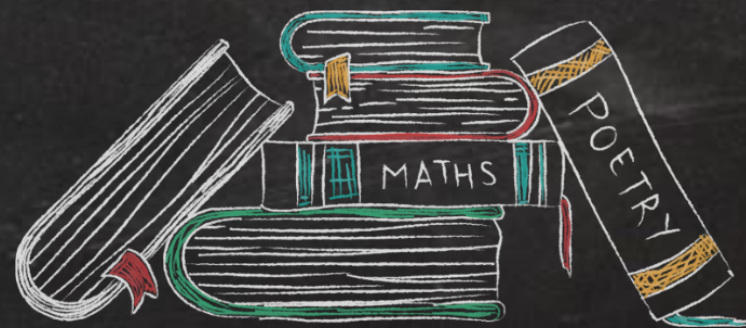
01 场景相关课程介绍

场景内容宽泛，且需要操作大量美术资源，全面介绍偏离入门课初衷；单点切入又难成体系；Lightmap作为记录光照结果或部分光照结果的一种载体方式，常用来替代实时渲染中性能昂贵的计算部分，故以此作为Shading入门内容的补完，后续课程内容如下：

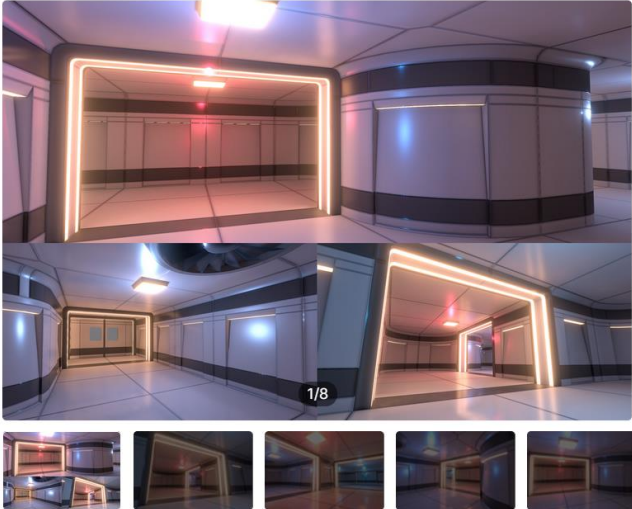
- L22: Unity内置Lightmap的使用；
- L23: 外部烘焙Lightmap在Unity中的使用，自定义Lightmap Shading；
- L24: Unity内置Lightmap的改造，全局参数控制；
- 入门课程终；

$$\begin{array}{r} 24 \times 5 \\ \hline 33 \end{array}$$

2 忍具・筑基・Lightmap-Unity



01 美术资产准备



1/8

3D Free Modular Kit

BD Barking Dog ★★★★★ 4 | 44 Reviews


FREE
Taxes/VAT calculated at checkout

File size	13.2 MB
Latest version	1.2
Latest release date	Sep 7, 2020
Supported Unity versions	2018.4.15 or higher
Support	Visit site

[Download](#) [View Full Details](#)

建筑资产：3D Free Modular Kit

1. 模组化资源;
2. 基于Unity Standard Shader;
3. 免费资源, 作者: Barking Dog;



1/11

AllSky Free - 10 Sky / Skybox Set

rpgwhitelock ★★★★★ 5 | 93 Reviews

FREE
Taxes/VAT calculated at checkout

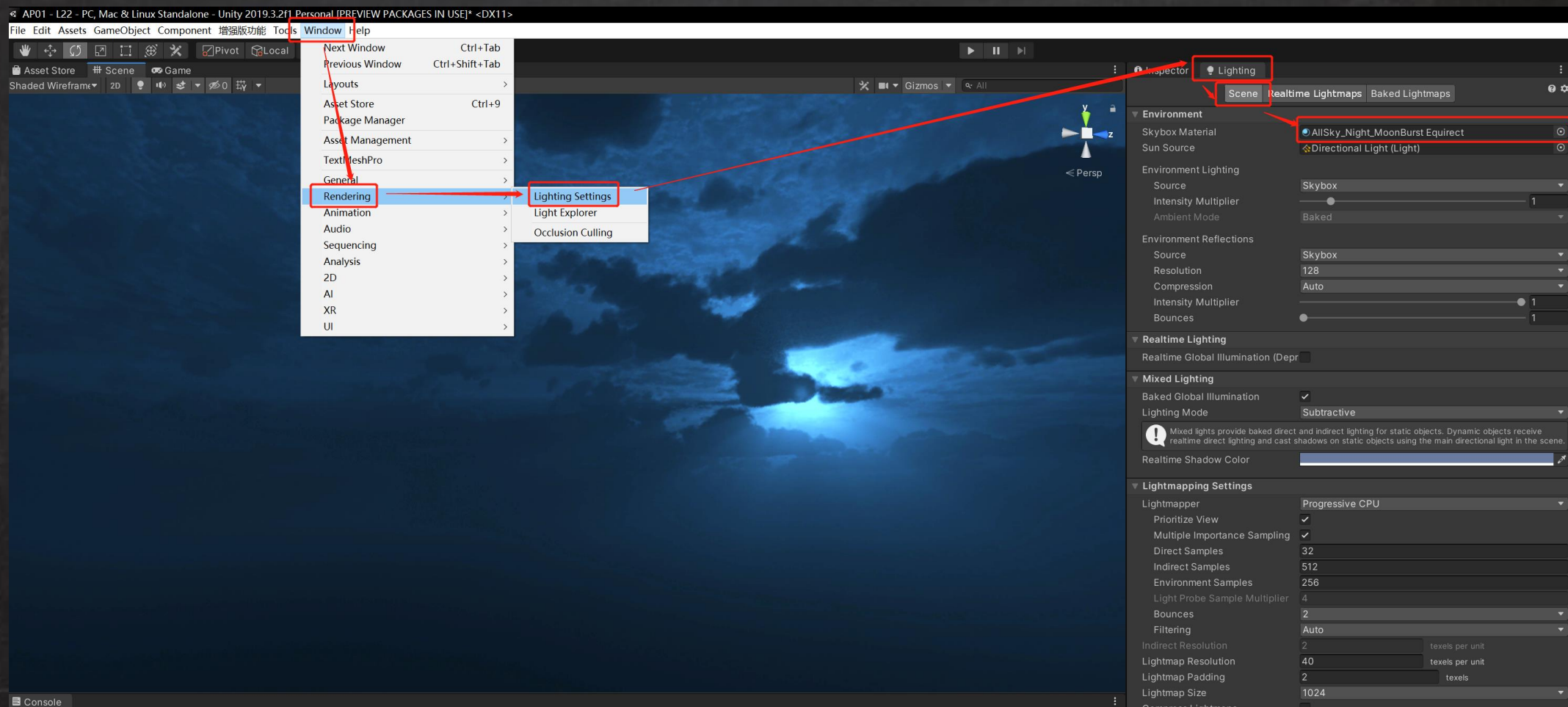
File size	312.5 MB
Latest version	1.0
Latest release date	May 17, 2019
Supported Unity versions	5.6.6 or higher
Support	Visit site

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天空资产：AllSky Free

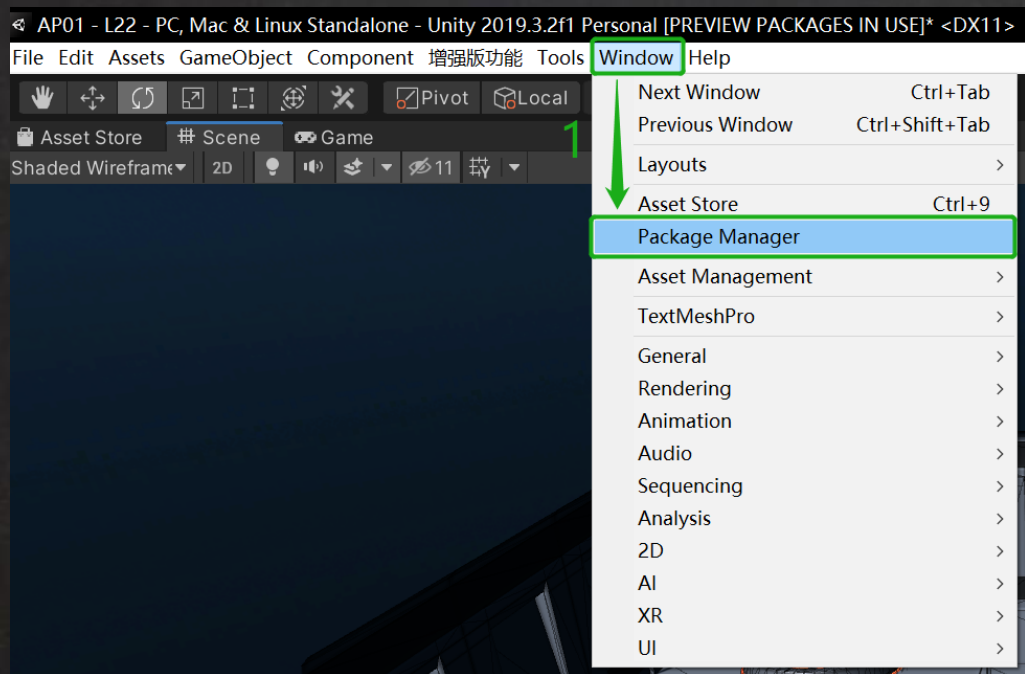
1. 传统6面盒Cubemap;
2. 基于Unity Skybox/Cubemap Shader;
3. 免费资源, 作者: rpgwhitelock;

02 场景搭建-指认天空材质



1. 选取喜欢的天空材质;
2. 按上图方式进行指认;

03 场景搭建-启用ProGrids

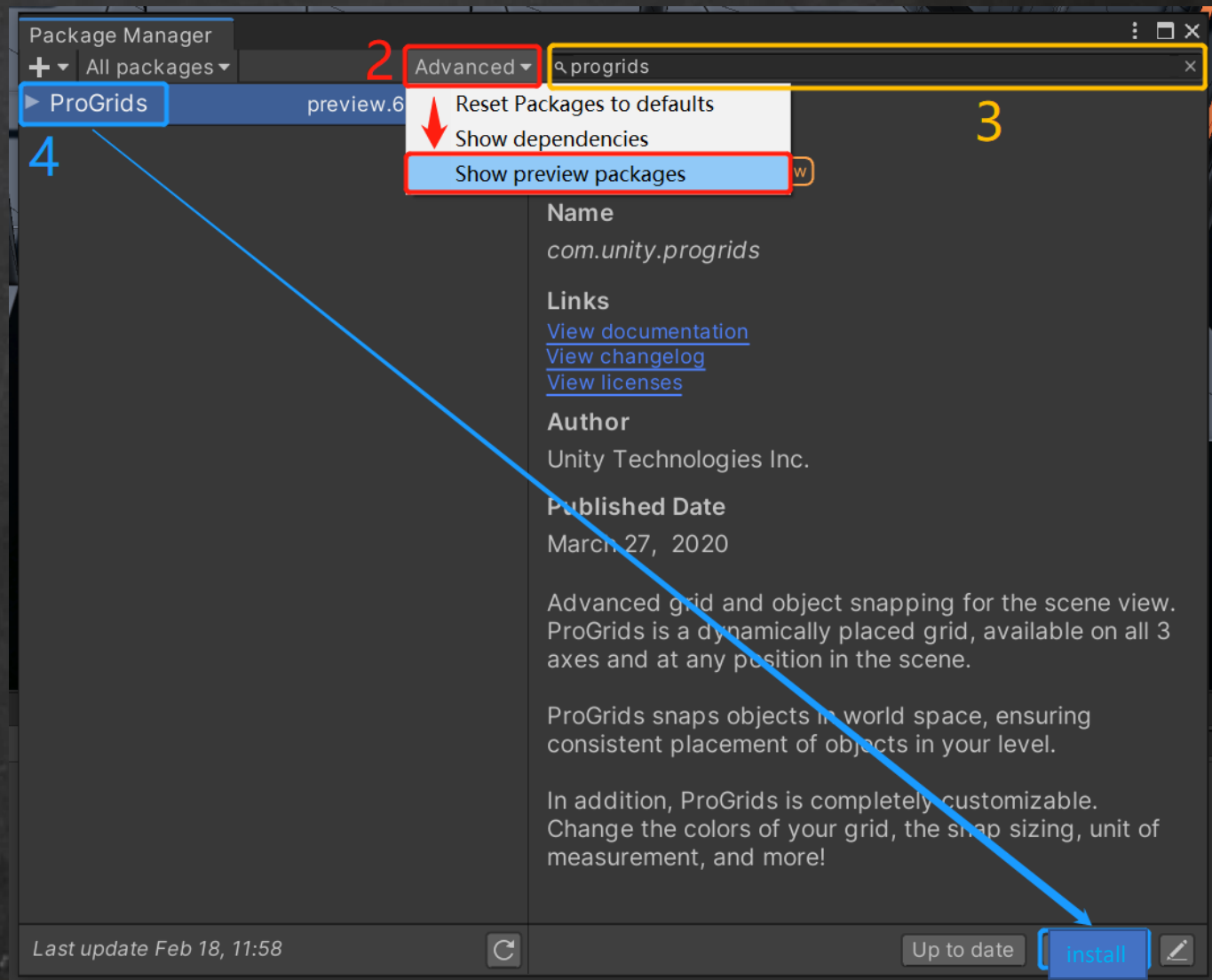


用途:

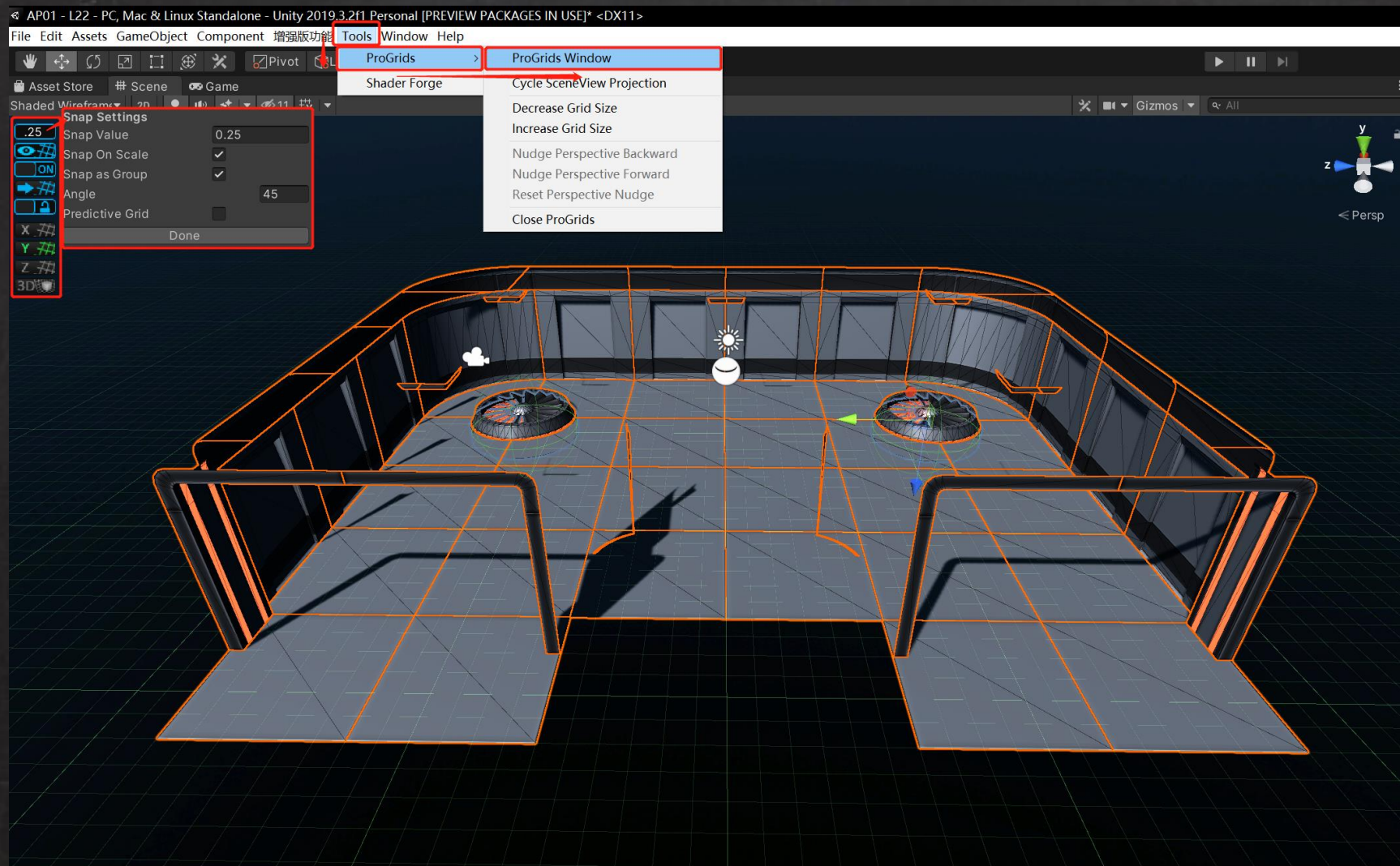
- 将物体的移动，放缩吸附在单位尺寸上;
- 配合单位尺寸模组化资源使用，效果极佳;

启用方法:

1. 打开Package Manager;
2. 开启展示Preview Packages;
3. 搜索ProGrids;
4. 点击Install;



04 场景搭建-拼装建筑



1. 开启ProGrids窗口，右键第一格配置工具参数；
2. 在ProGrids的辅助下，将模组化资产快速拼装为想要的建筑；
3. 将建筑保存为Prefab；



05 场景搭建-设置Static

Nothing: 全不选;

Everything: 全选;

Contribute GI: 响应全局光照;

Occluder/ Occludee Static: 响应OccCulling;

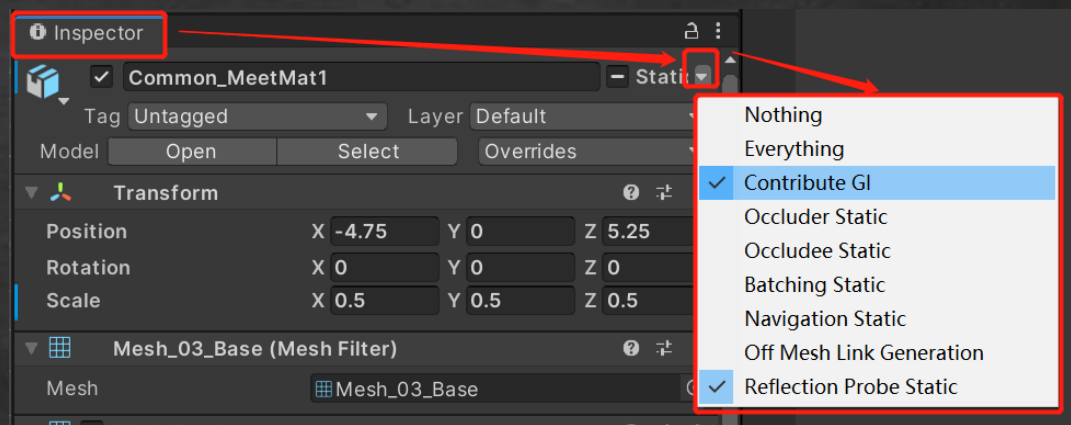
Batching Static: 响应合批;

Navigation Static/Off Mesh Link Generation: 响应导航;

Reflection Probe Static: 响应反射探头;

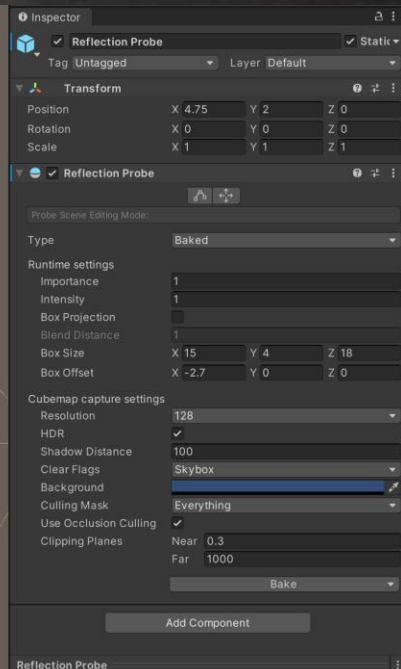
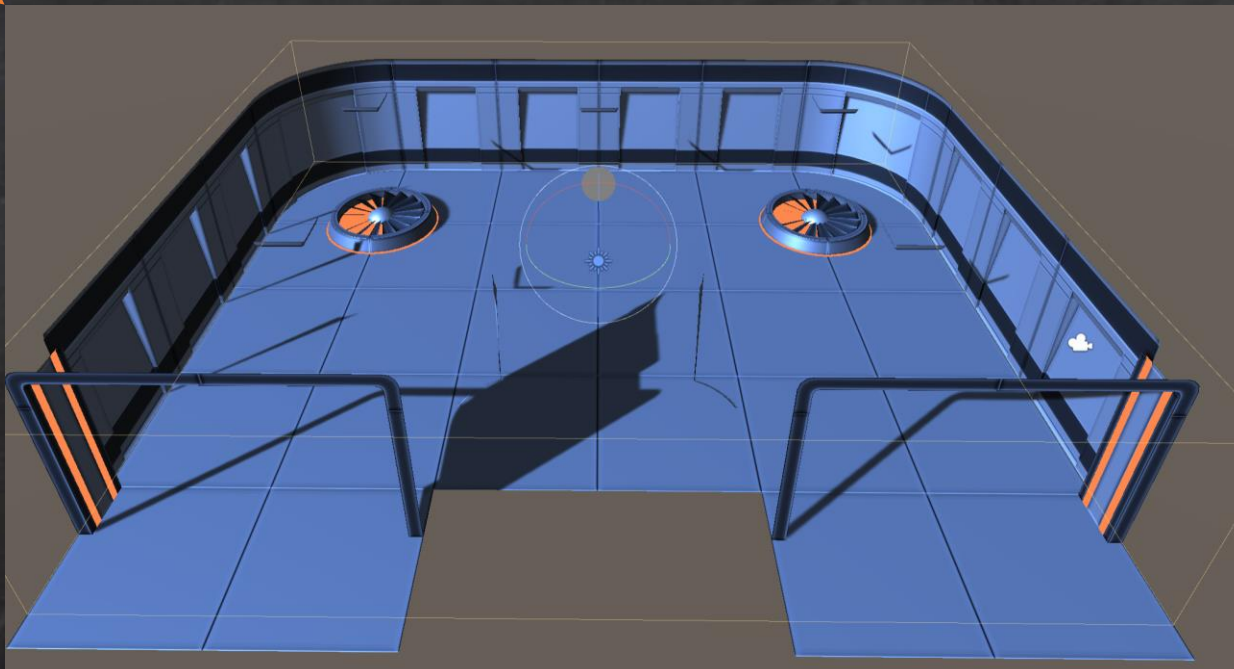
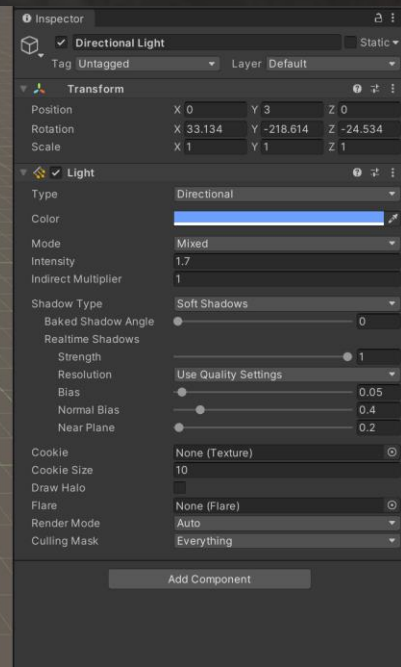
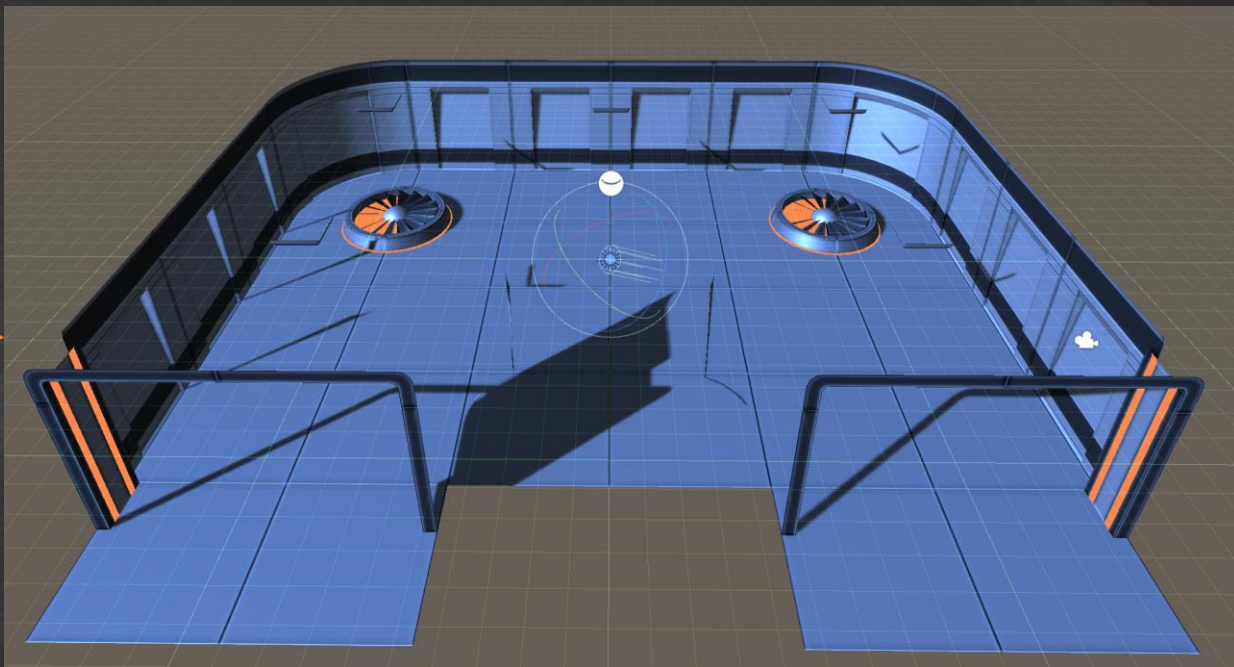
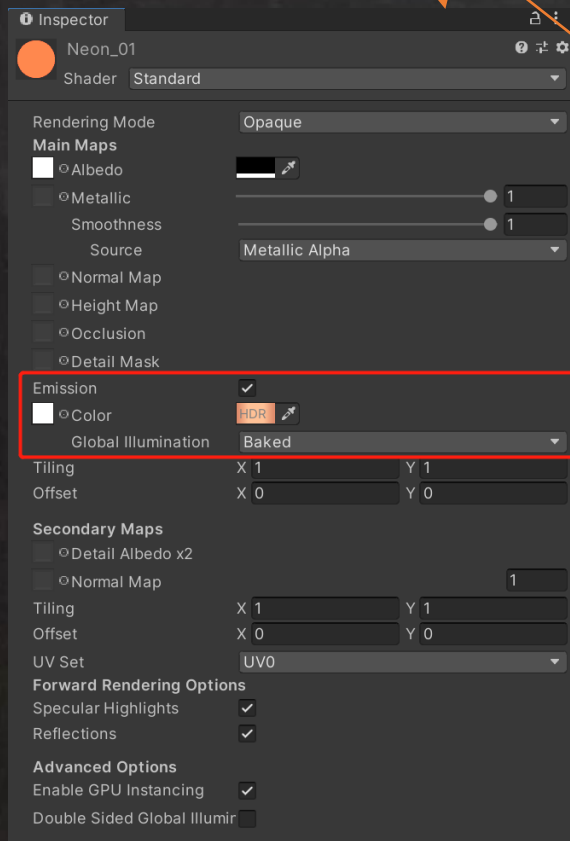
课程案例中:

- 将所有场景物件都设置为静态;
- 仅渲染效果相关, 启用ContributeGI, ReflectionProbeStatic即可;



06 打光烘焙-打光

1. 创建设置主平行光;
2. 设置自发光材质;
3. 创建设置反射探头;



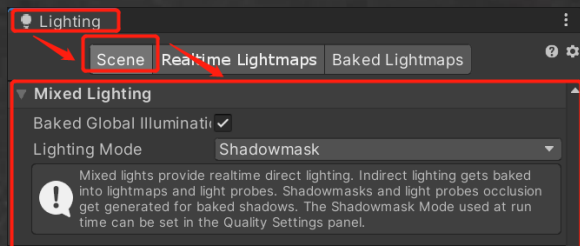
07 场景搭建-关于Mixed Lighting

Baked Indirect:

- 当关闭Baked Global Illumination时;
 - 场景所有光照和物体均表现为Runtime;
- 当开启Baked Global Illumination时: (LM=Lightmap, DL=DirectLighting)
 - 如光照为Runtime:
 - $LM = GI = \text{EmitLighting} + \text{SkyLighting}$;
 - 投影: 实时投影;
 - 如光照为Mixed:
 - $LM = GI = \text{EmitLighting} + \text{SkyLighting} + \text{LightsGI}$;
 - 投影: 实时投影;
 - 如光照为Baked:
 - $LM = GI + DL = (\text{EmitLighting} + \text{SkyLighting} + \text{LightsGI}) + \text{LightsLighting}$;
 - 投影: 静态物-LM上; 动态物-无;

Subtractive:

- 当关闭Baked Global Illumination时;
 - 场景所有光照和物体均表现为Runtime;
- 当开启Baked Global Illumination时:
 - 如光照为Runtime:
 - $LM = GI = \text{EmitLighting} + \text{SkyLighting}$;
 - 投影: 实时投影; Reatime Shadow Color设置无效;
 - 如光照为Mixed:
 - $LM = GI + DL = (\text{EmitLighting} + \text{SkyLighting} + \text{LightsGI}) + \text{LightsLighting}$;
 - 投影: 静态物-LM上; 动态物-实时; Reatime Shadow Color设置有效;
 - 如光照为Baked:
 - $LM = GI + DL = (\text{EmitLighting} + \text{SkyLighting} + \text{LightsGI}) + \text{LightsLighting}$;
 - 投影: 静态物-LM上; 动态物-无; Reatime Shadow Color设置无效;



ShadowMask:

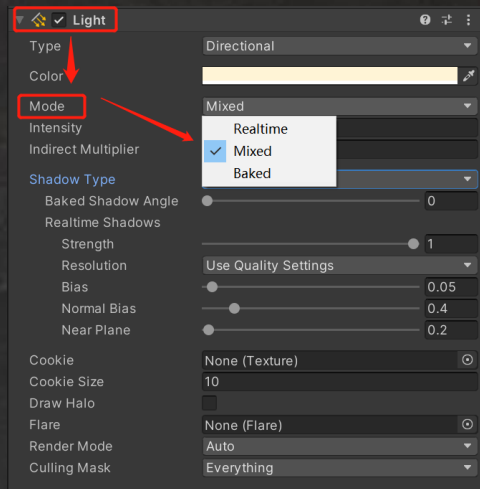
- 当关闭Baked Global Illumination时;
 - 场景所有光照和物体均表现为Runtime;
- 当开启Baked Global Illumination时:
 - 如光照为Runtime:
 - $LM\text{-light} = GI = \text{EmitLighting} + \text{SkyLighting}$;
 - $LM\text{-shadowmask} = \text{null}$;
 - 投影: 实时投影;
 - 如光照为Mixed:
 - $LM\text{-light} = GI = \text{EmitLighting} + \text{SkyLighting} + \text{LightsGI}$;
 - $LM\text{-shadowmask} = \text{LightsShadow}$;
 - 投影: 静态物-LM上; 动态物-实时;
 - 如光照为Baked:
 - $LM = GI + DL = (\text{EmitLighting} + \text{SkyLighting} + \text{LightsGI}) + \text{LightsLighting}$;
 - $LM\text{-shadowmask} = \text{null}$;
 - 投影: 静态物-LM上; 动态物-无;

常用策略:

- 全实时光照: 可忽略;
- 全实时直接光照: Baked Indirect;
- 对静态物烘焙, 动态物实时: Subtractive / ShadowMask;

课程案例为: Subtractive + Baked;

(烘焙演示 加深感性认识)



08 场景搭建-烘培设置

1. 使用Progressive CPU烘培;
2. Lightmap Resolution为烘培精度, 可以调低预览调整打光, 确定后调高输出成品;
3. DirectionalMode手游一般不开启, 效果改善有限, Lightmap翻倍;
4. 其他参数按效果需要调整;

▼ Lightmapping Settings

Lightmapper

Progressive CPU

Prioritize View

✓

Multiple Importance S

✓

Direct Samples

32

Indirect Samples

512

Environment Samples

256

Light Probe Sample M

4

Bounces

2

Filtering

Auto

Indirect Resolution

2

texels per unit

Lightmap Resolution

40

texels per unit

Lightmap Padding

2

texels

Lightmap Size

1024

Compress Lightmaps

Ambient Occlusion

✓

Max Distance

1

Indirect Contribution

1

Direct Contribution

0

Directional Mode

Non-Directional

Indirect Intensity

1

Albedo Boost

1

Lightmap Parameters

Default-HighResolution

View

► Other Settings

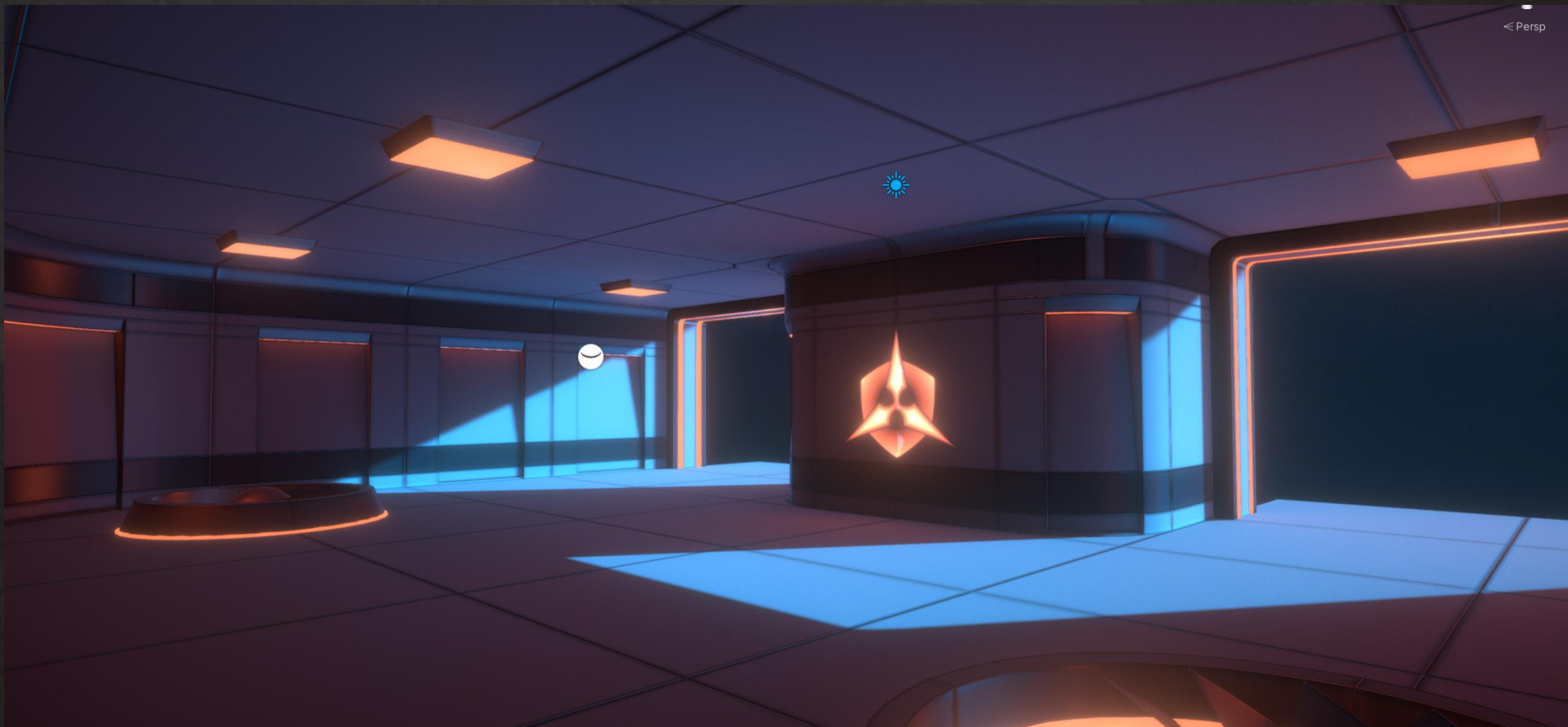
► Debug Settings

Auto Generate

Generate Lighting

09 场景搭建-最终渲染

LightDir. 光向研习社

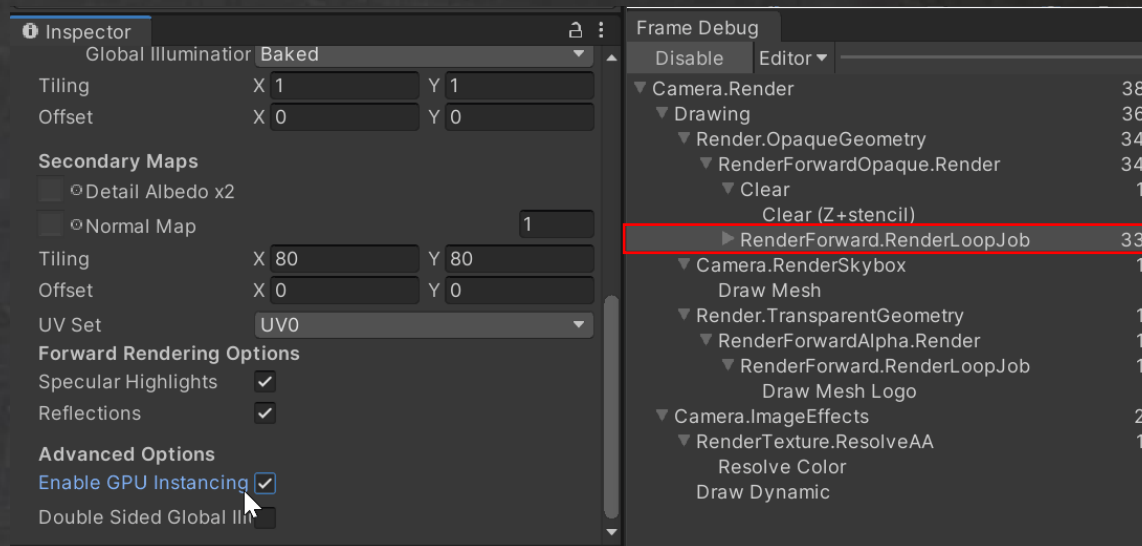


10 场景搭建-关于合批

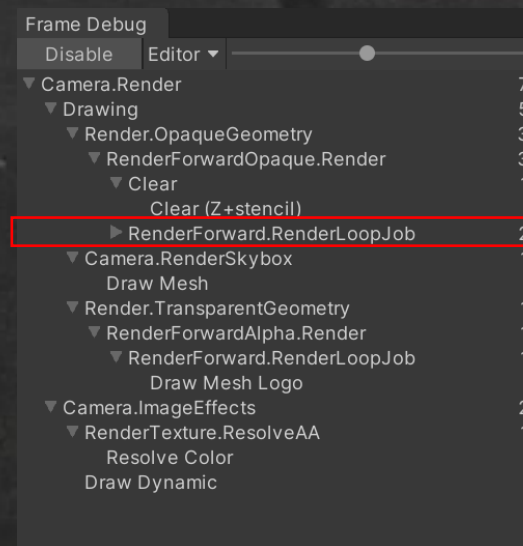
合批：合并渲染，减少渲染批次，以优化性能；

常用策略：

1. Unity提供的静态核批；
2. Unity提供的SRPBatching（SRP管线支持）；
3. GPU Instancing；
4. 手动合批；



GPU Instancing开关对比



手工合批结果



Thanks