Юрий Уфимцев, 21.Б10

ОБЗОР БИБЛИОТЕКИ UNITY

ГЛАВНОЕ

- **Unity Technologies** — американская компания по разработке видеоигр
- Основана в 2004 году
- **Unity** — кроссплатформенный игровой движок, выпущен в 2005 году
- Поддерживает 24 платформы, включая Windows, Oculus Rift, PlayStation 4, Linux, Android
- Используется для создания трехмерных (3D) и двумерных (2D) игр, интерактивных симуляций

НЕСКОЛЬКО ВАЖНЫХ ТЕРМИНОВ
АССЕТЫ (**ASSETS**)

Спрайты (sprites)	Аудио	Визуальные эффекты	Анимации	Скрипты (scripts)
Сцены (scenes)	Заготовки (prefabs)	Модели	Текстуры	Элементы интерфейса

UNITY. ДОСТОИНСТВА

Дает возможность разрабатывать игры, не требуя особых, глубоких знаний (компонентно-ориентированный подход)

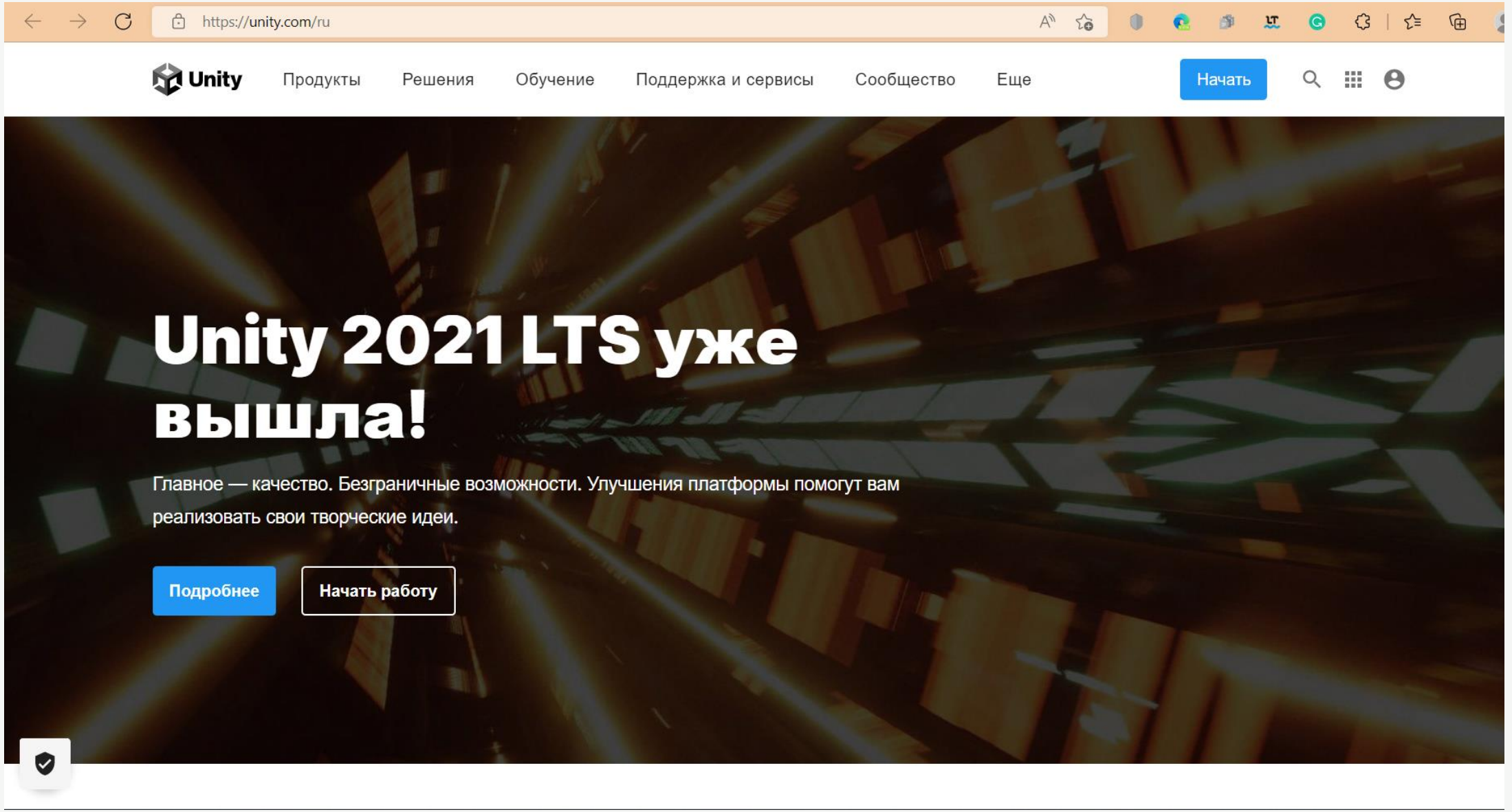
Реалистичная графика, физика твердых тел (глобальный свет, трассировка лучей, физика отражений)

Наличие большой библиотеки ассетов (Unity Asset Store)

Доступен бесплатно

UNITY. НЕДОСТАТКИ ~~ОТСУТСТВУЮТ~~

- Закрытый исходный код движка
- Медлительность
- Большой вес приложений


https://unity.com/ru
Unity
Продукты
Решения
Обучение
Поддержка и сервисы
Сообщество
Еще
Начать
Unity 2021 LTS уже вышла!
Главное — качество. Безграничные возможности. Улучшения платформы помогут вам реализовать свои творческие идеи.
Подробнее
Начать работу

PLANS AND PRICING

Start creating with Unity

All plans are **royalty-free.** You keep what you earn.

All plans include access to the **Unity Asset Store,** a marketplace of assets for your projects.

All plans include access to **Unity Learn.** Support your team's expertise at every level.

Student and hobbyist | Individuals and teams | Enterprise and industrial

Student

Learn the tools and workflows professionals use on the job

Free

Sign up

Eligibility:
Students 16 years and older who are enrolled in an

Personal

Start creating with the free version of Unity

Free

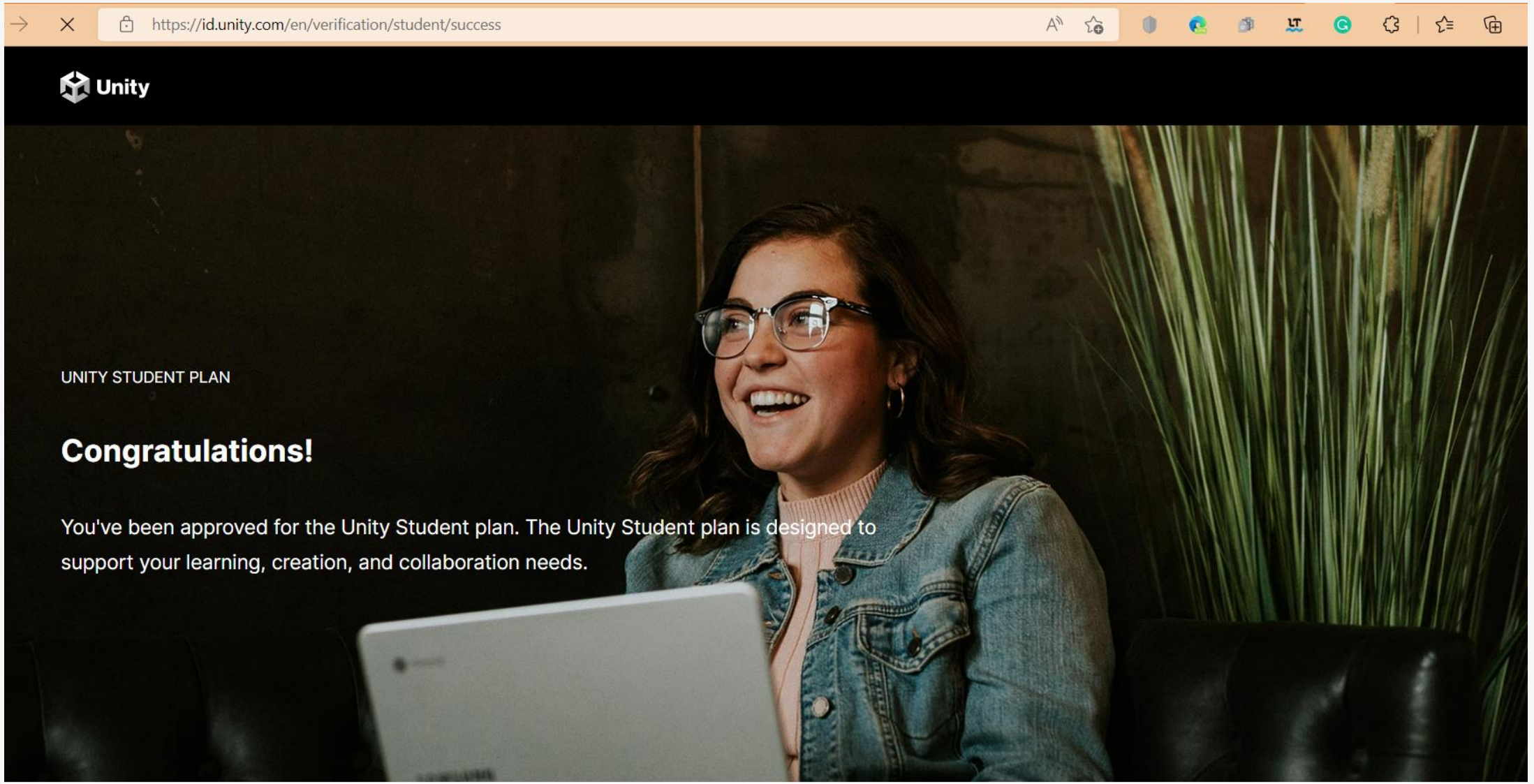
Get started Learn more

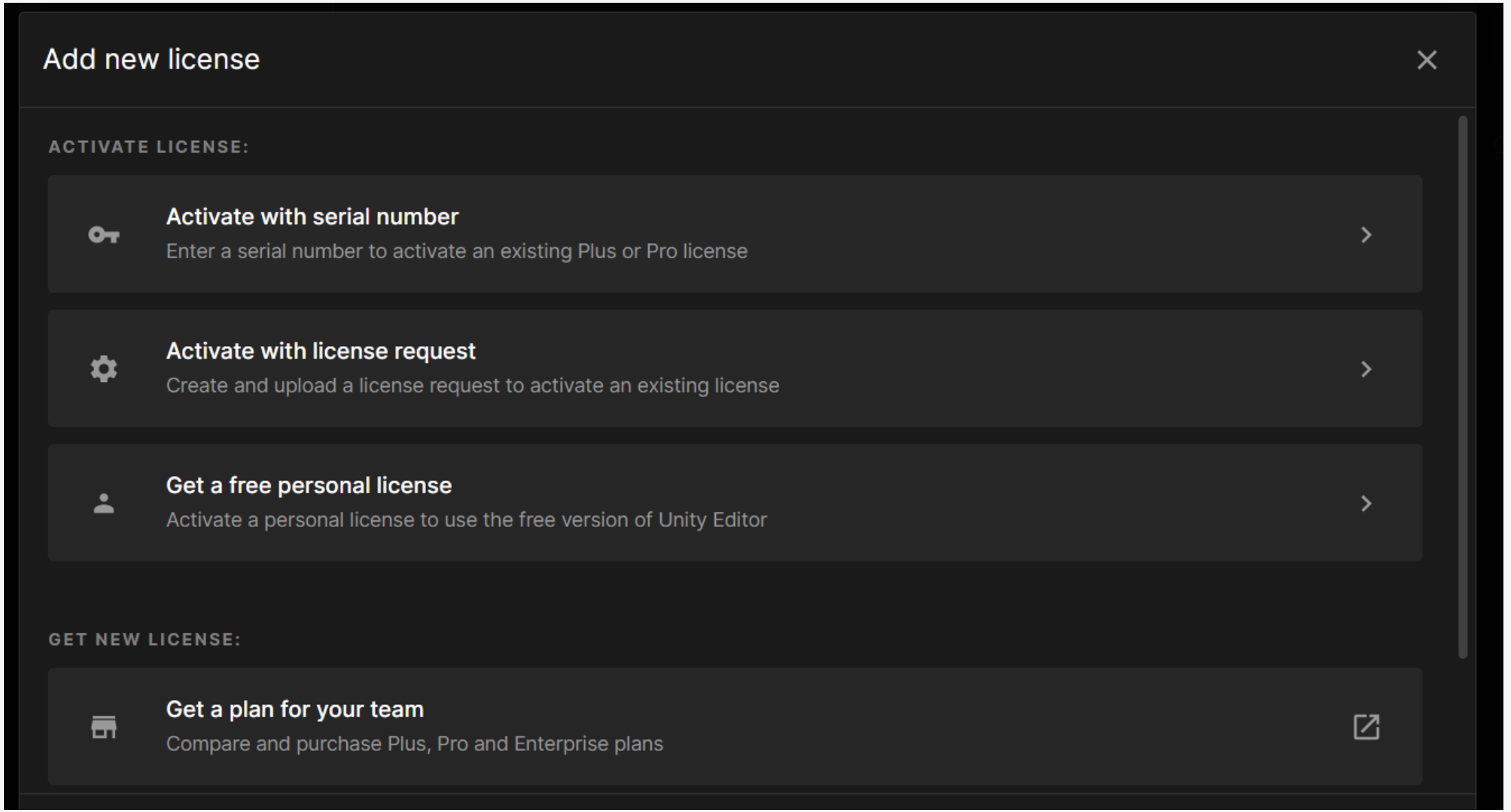
Eligibility:
Revenue or funding less than $100K in the last 12

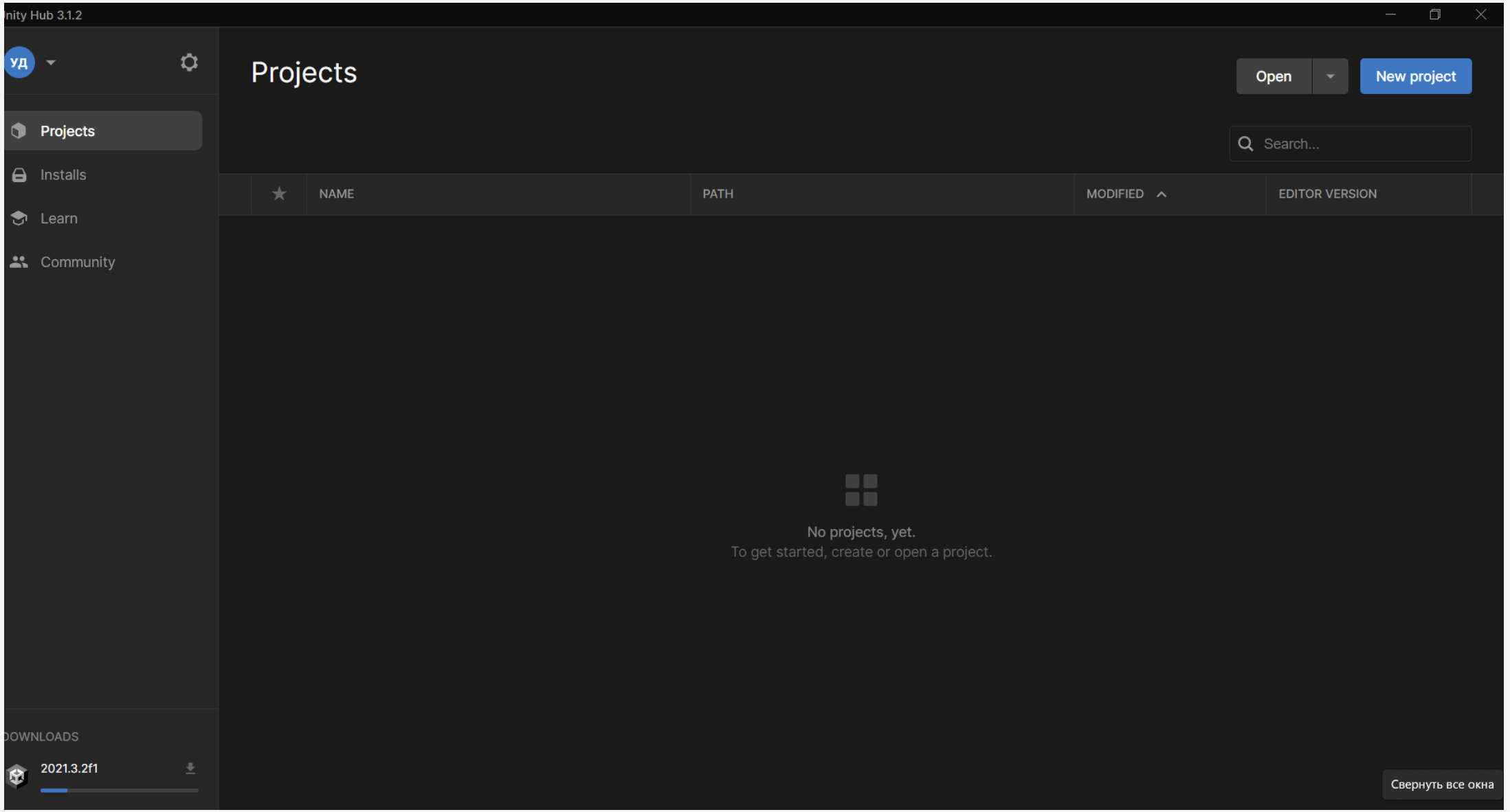
Unity Learn

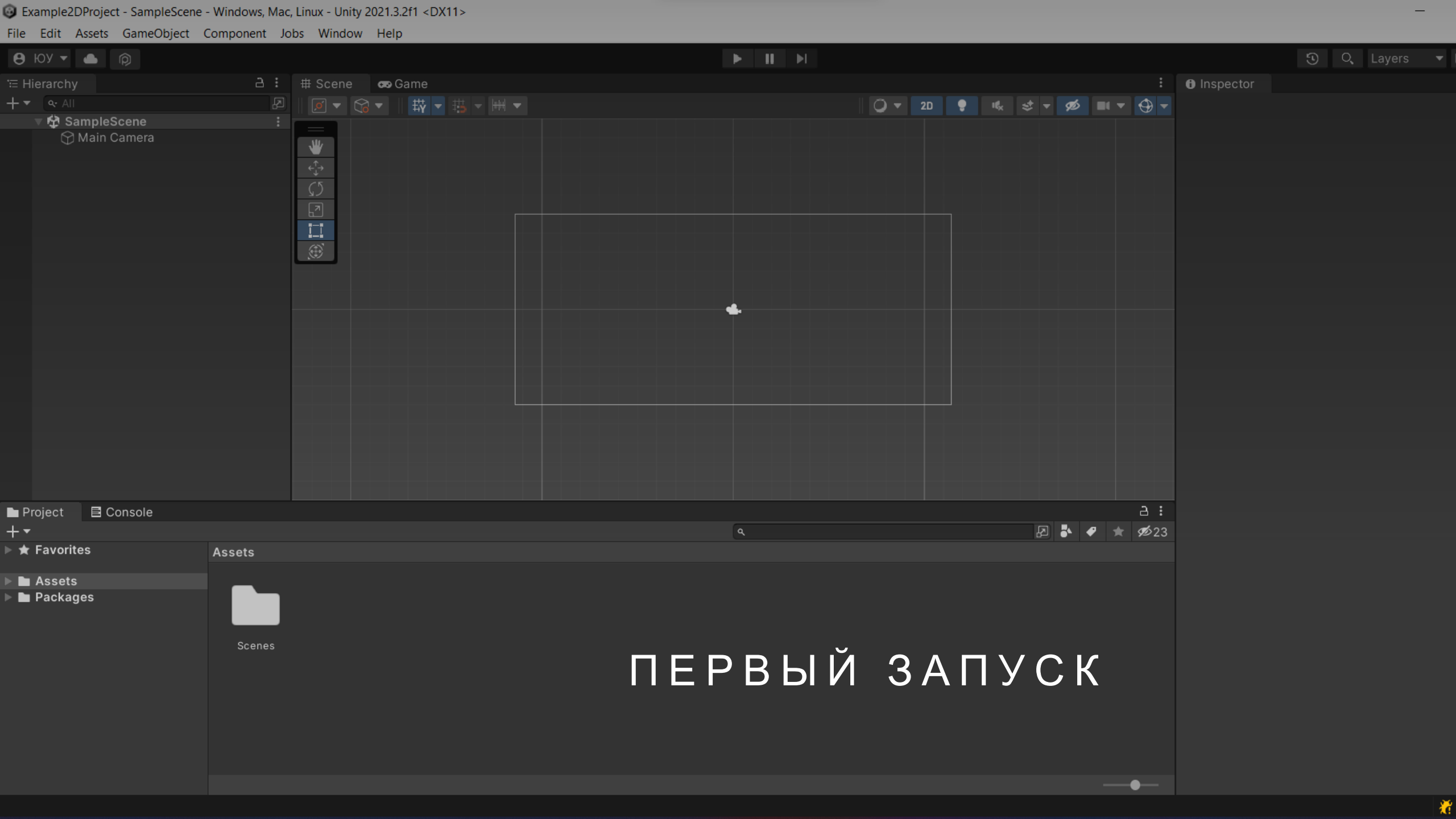
Master Unity with expert-led live sessions and on-demand learning

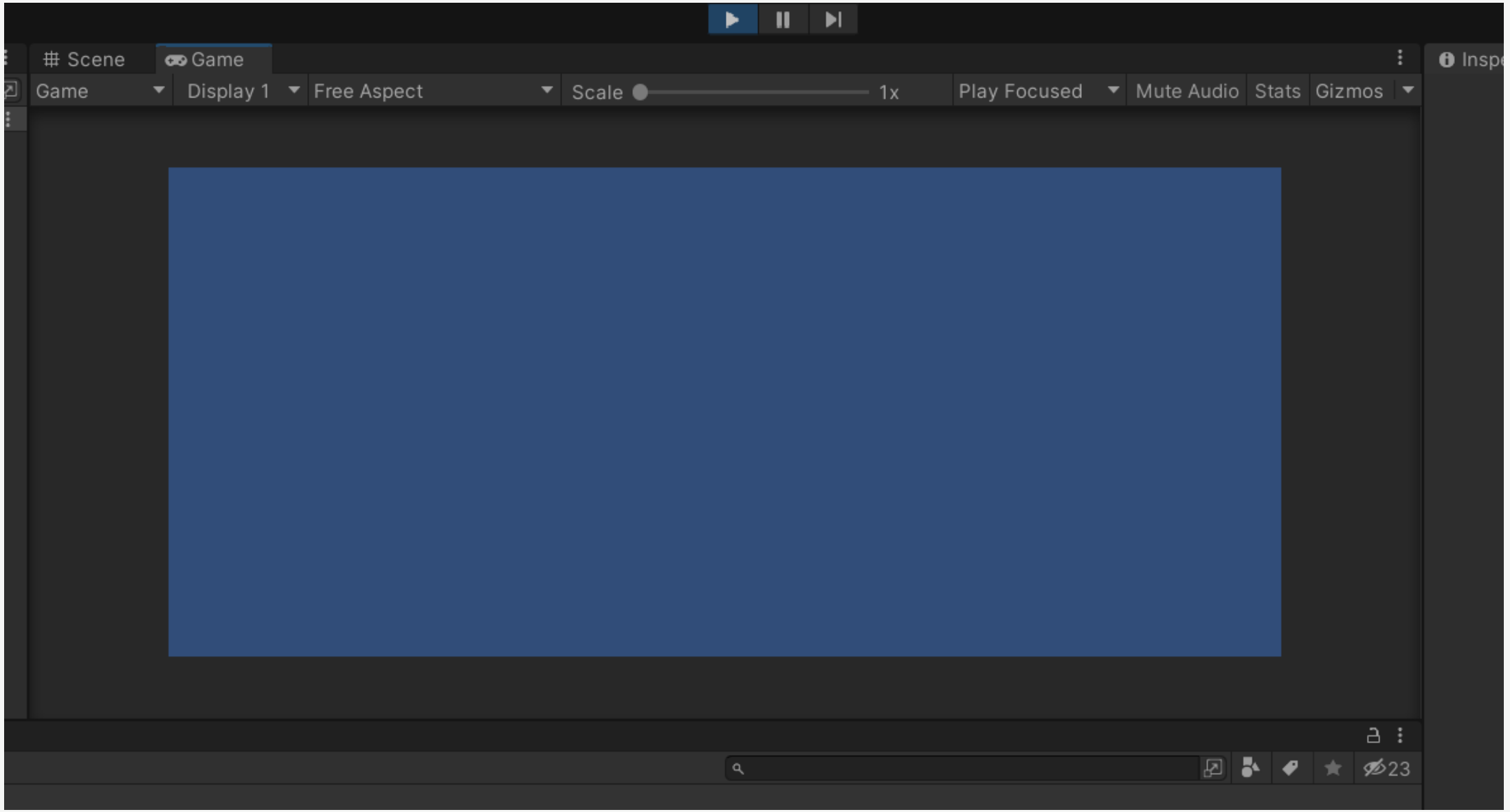
Start learning


https://id.unity.com/en/verification/student/success
Unity
UNITY STUDENT PLAN
Congratulations!
You've been approved for the Unity Student plan. The Unity Student plan is designed to support your learning, creation, and collaboration needs.


Add new license
ACTIVATE LICENSE:
Activate with serial number
Enter a serial number to activate an existing Plus or Pro license
Activate with license request
Create and upload a license request to activate an existing license
Get a free personal license
Activate a personal license to use the free version of Unity Editor
GET NEW LICENSE:
Get a plan for your team
Compare and purchase Plus, Pro and Enterprise plans


nity Hub 3.1.2
УД
Projects
Installs
Learn
Community
DOWNLOADS
2021.3.2f1
Projects
Open
New project
Search...
NAME
PATH
MODIFIED
EDITOR VERSION
No projects, yet.
To get started, create or open a project.
Свернуть все окна


Example2DProject - SampleScene - Windows, Mac, Linux - Unity 2021.3.2f1 <DX11>
File Edit Assets GameObject Component Jobs Window Help
Layers
Hierarchy
All
SampleScene
Main Camera
Scene
Game
2D
Inspector
Project
Console
23
Favorites
Assets
Packages
Assets
Scenes
ПЕРВЫЙ ЗАПУСК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Game
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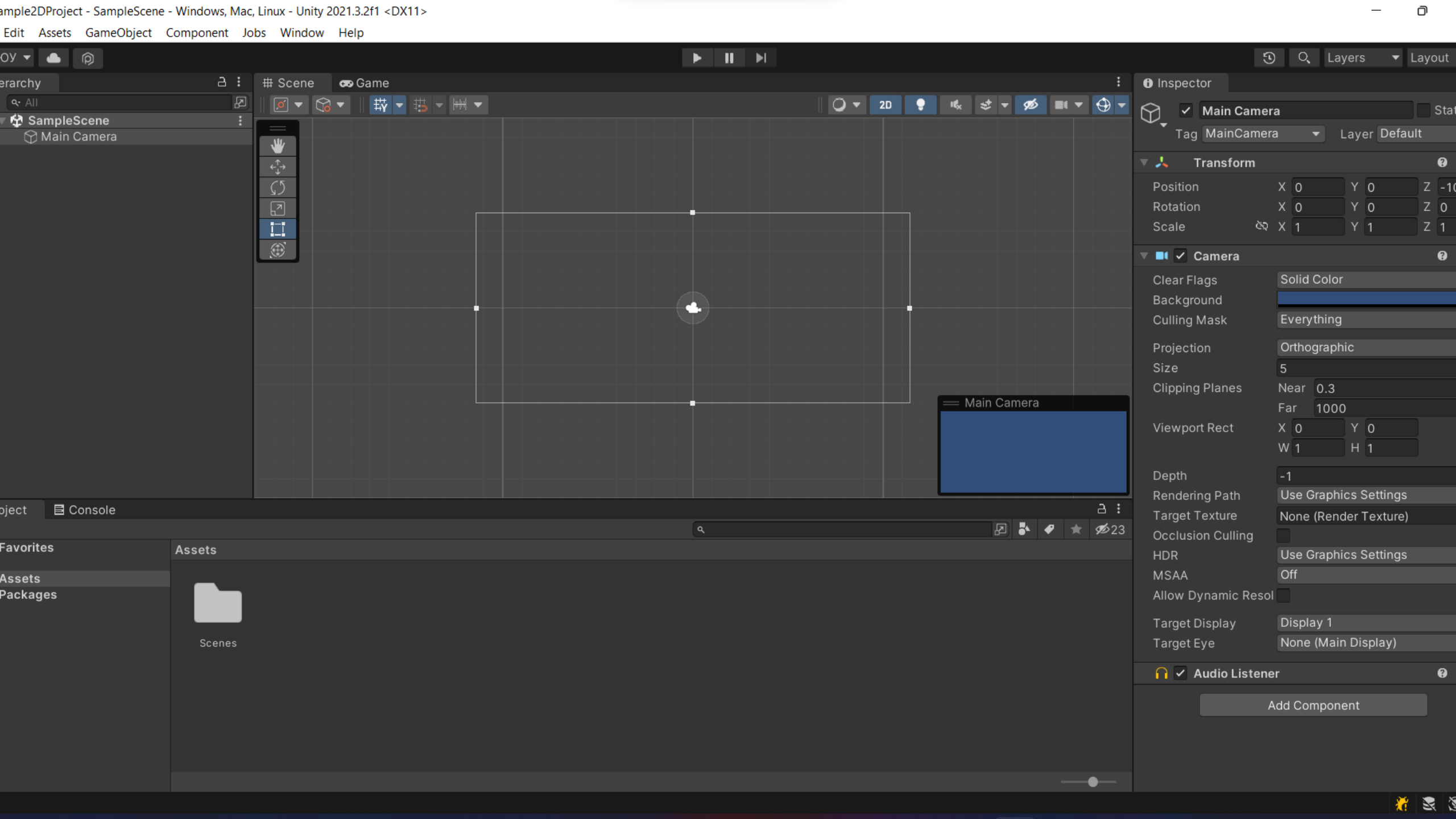
Scale
1x
Play Focused
Mute Audio
Stats
Gizmos
23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Edit Assets GameObject Component Jobs Window Help
Layers Layout
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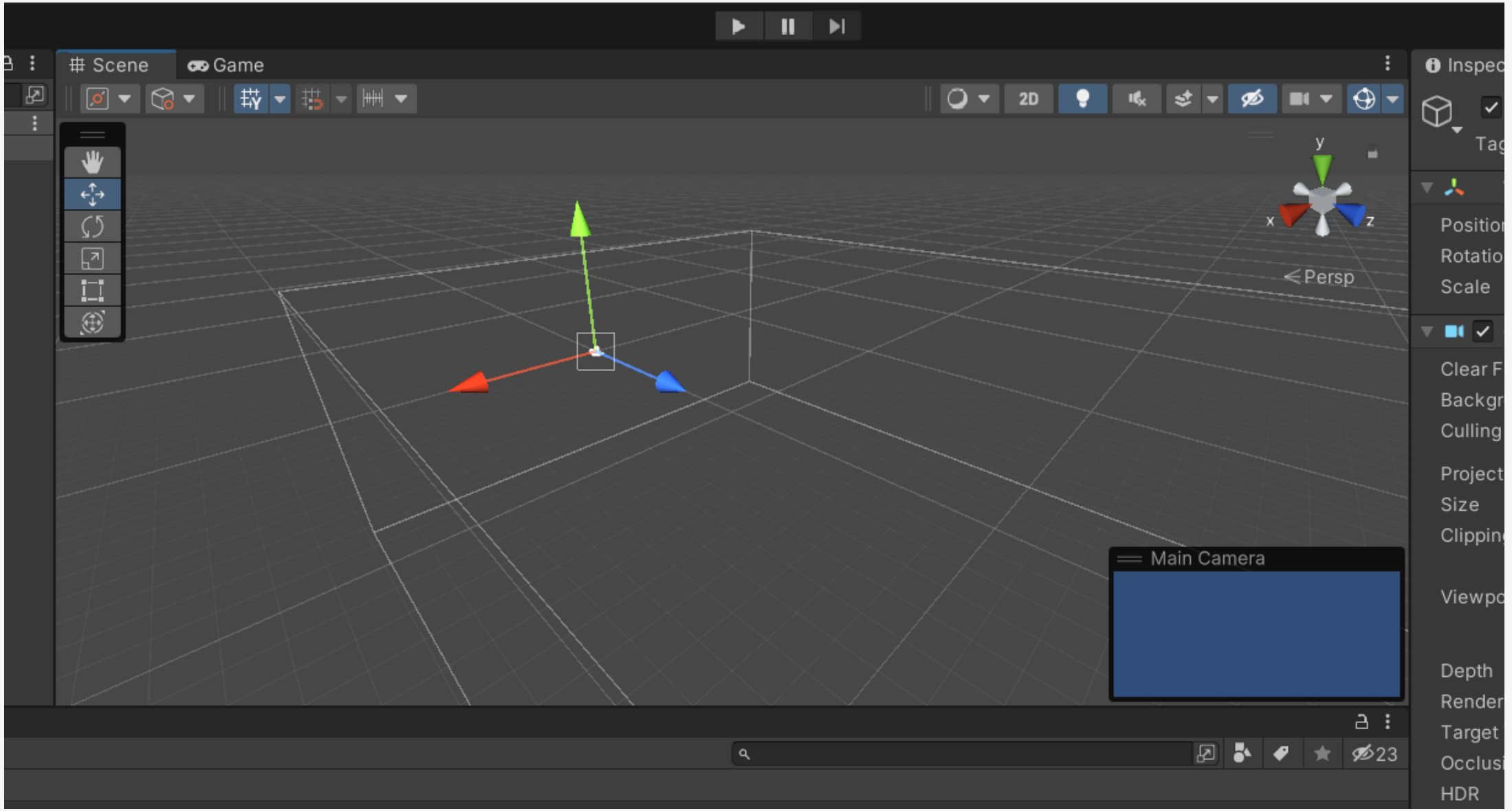
SampleScene
Main Camera
Scene Game
2D
Main Camera
Inspector
Main Camera
Tag MainCamera Layer Default
Transform
Position X 0 Y 0 Z -10
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1
Camera
Clear Flags Solid Color
Background
Culling Mask Everything
Projection Orthographic
Size 5
Clipping Planes Near 0.3
Far 1000
Viewport Rect X 0 Y 0
W 1 H 1
Depth -1
Rendering Path Use Graphics Settings
Target Texture None (Render Texture)
Occlusion Culling
HDR Use Graphics Settings
MSAA Off
Allow Dynamic Resol
Target Display Display 1
Target Eye None (Main Display)
Audio Listener
Add Component
oject
Console
Favorites
Assets
Packages
Assets
Scenes


Scene
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Culling
Project
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Target
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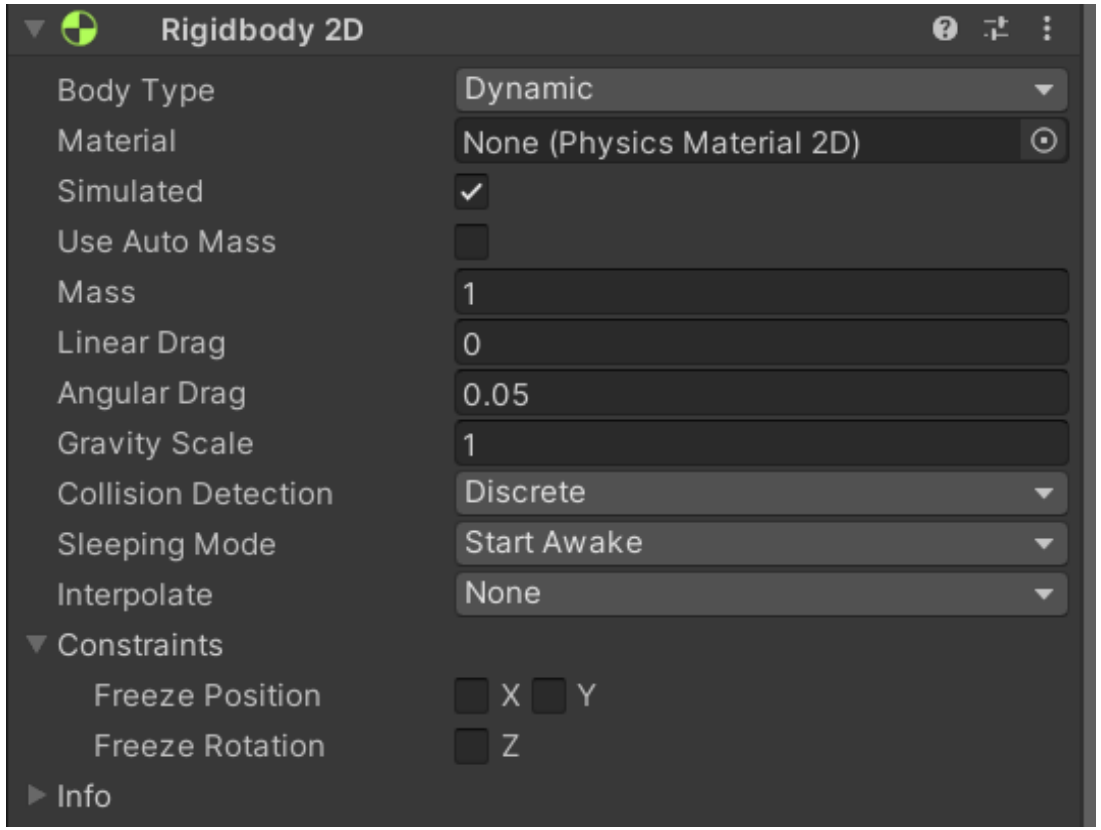
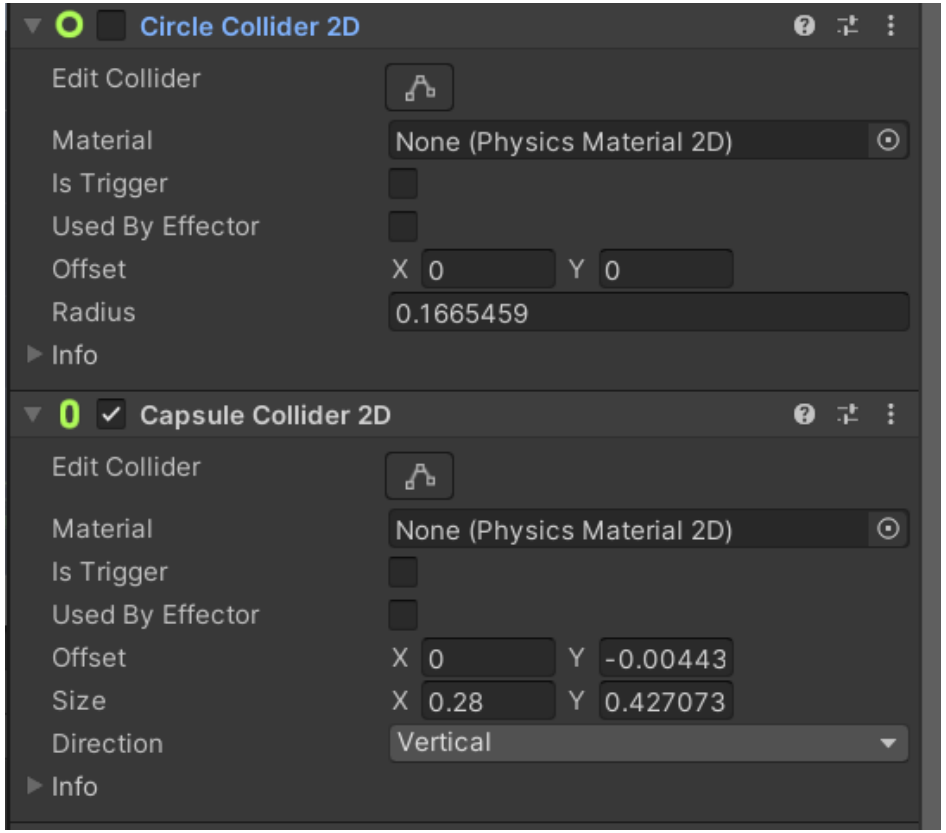
HDR
23

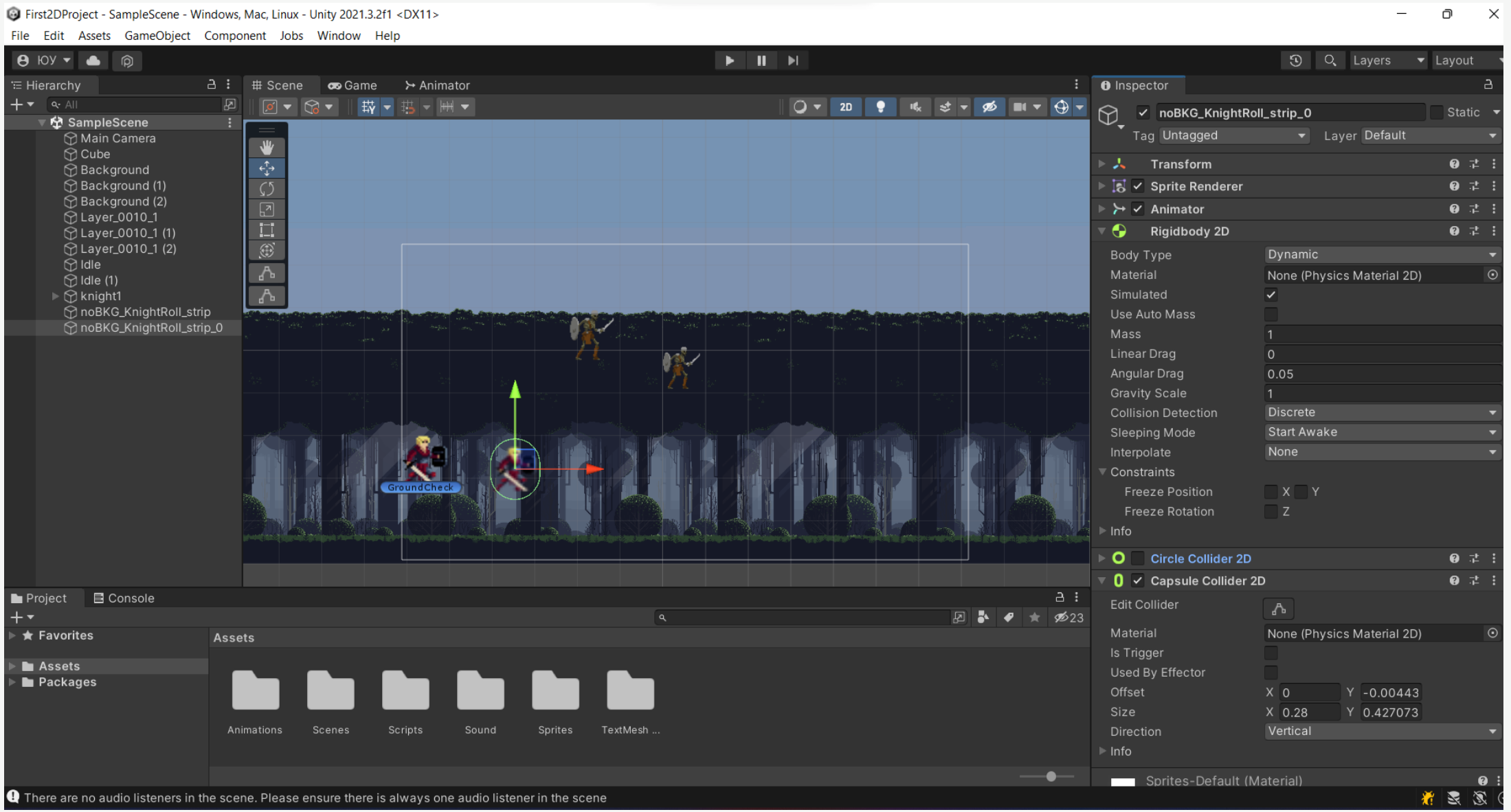
ВАЖНЫЕ КОМПОНЕНТЫ

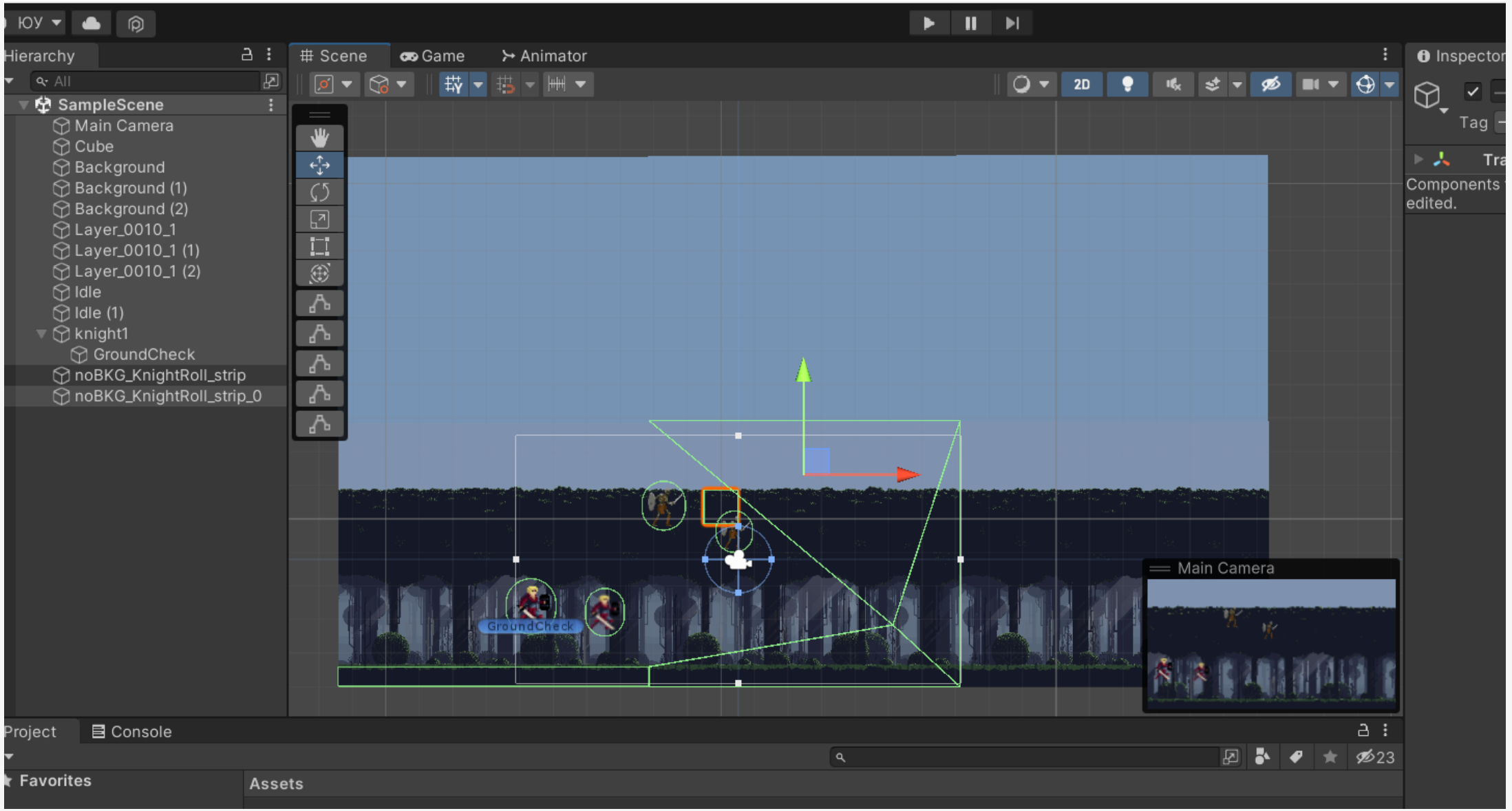
RIGID BODY 2D



COLLIDER 2D




First2DProject - SampleScene - Windows, Mac, Linux - Unity 2021.3.2f1 <DX11>
File Edit Assets GameObject Component Jobs Window Help
Hierarchy
SampleScene
Main Camera
Cube
Background
Background (1)
Background (2)
Layer_0010_1
Layer_0010_1 (1)
Layer_0010_1 (2)
Idle
Idle (1)
knight1
noBKG_KnightRoll_strip
noBKG_KnightRoll_strip_0
Scene
Game
Animator
GroundCheck
Inspector
noBKG_KnightRoll_strip_0
Static
Tag Untagged
Layer Default
Transform
Sprite Renderer
Animator
Rigidbody 2D
Body Type Dynamic
Material None (Physics Material 2D)
Simulated
Use Auto Mass
Mass 1
Linear Drag 0
Angular Drag 0.05
Gravity Scale 1
Collision Detection Discrete
Sleeping Mode Start Awake
Interpolate None
Constraints
Freeze Position X Y
Freeze Rotation Z
Info
Circle Collider 2D
Capsule Collider 2D
Edit Collider
Material None (Physics Material 2D)
Is Trigger
Used By Effector
Offset X 0 Y -0.00443
Size X 0.28 Y 0.427073
Direction Vertical
Info
Sprites-Default (Material)
Project
Console
Favorites
Assets
Packages
Assets
Animations
Scenes
Scripts
Sound
Sprites
TextMesh ...
There are no audio listeners in the scene. Please ensure there is always one audio listener in the scene


Hierarchy
Scene
Game
Animator
Inspector
SampleScene
Main Camera
Cube
Background
Background (1)
Background (2)
Layer_0010_1
Layer_0010_1 (1)
Layer_0010_1 (2)
Idle
Idle (1)
knight1
GroundCheck
noBKG_KnightRoll_strip
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GroundCheck
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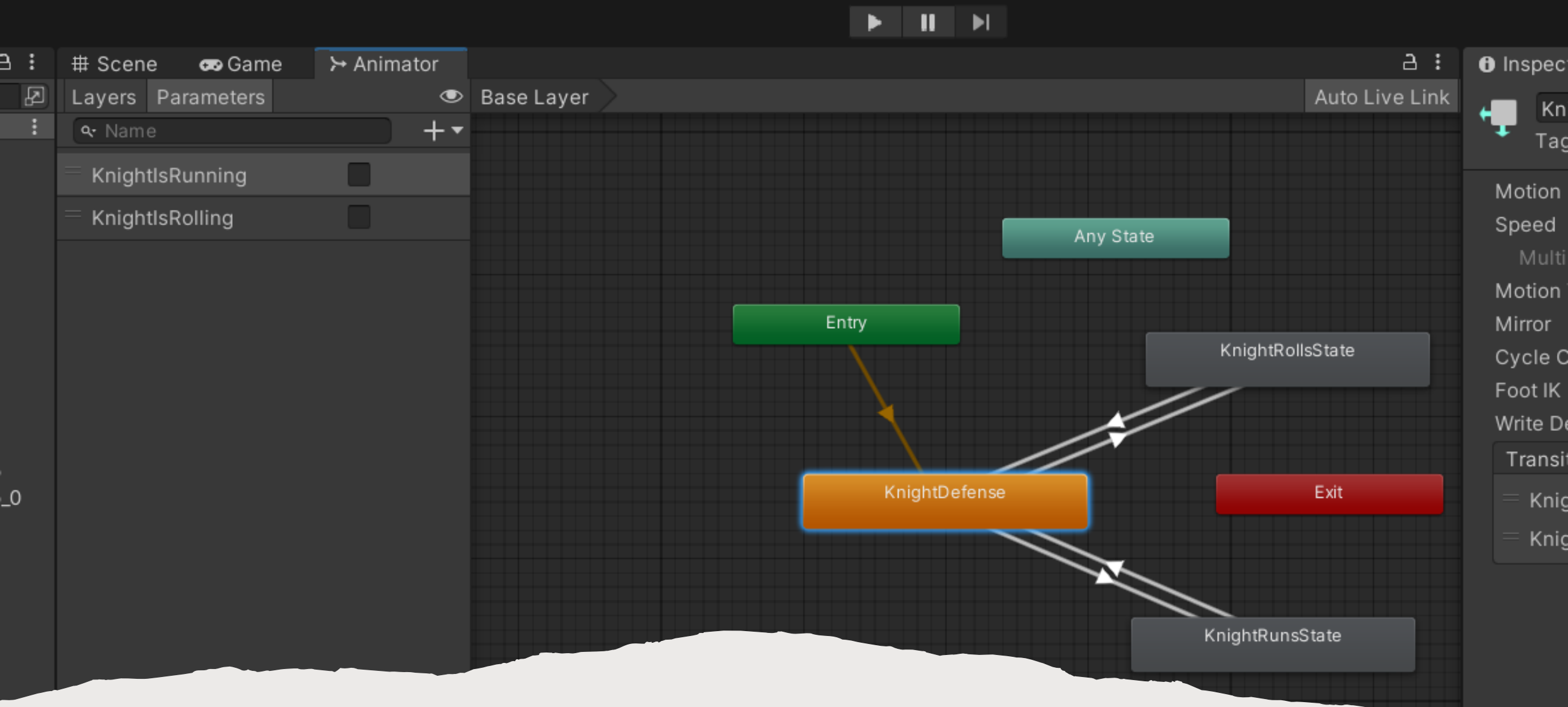
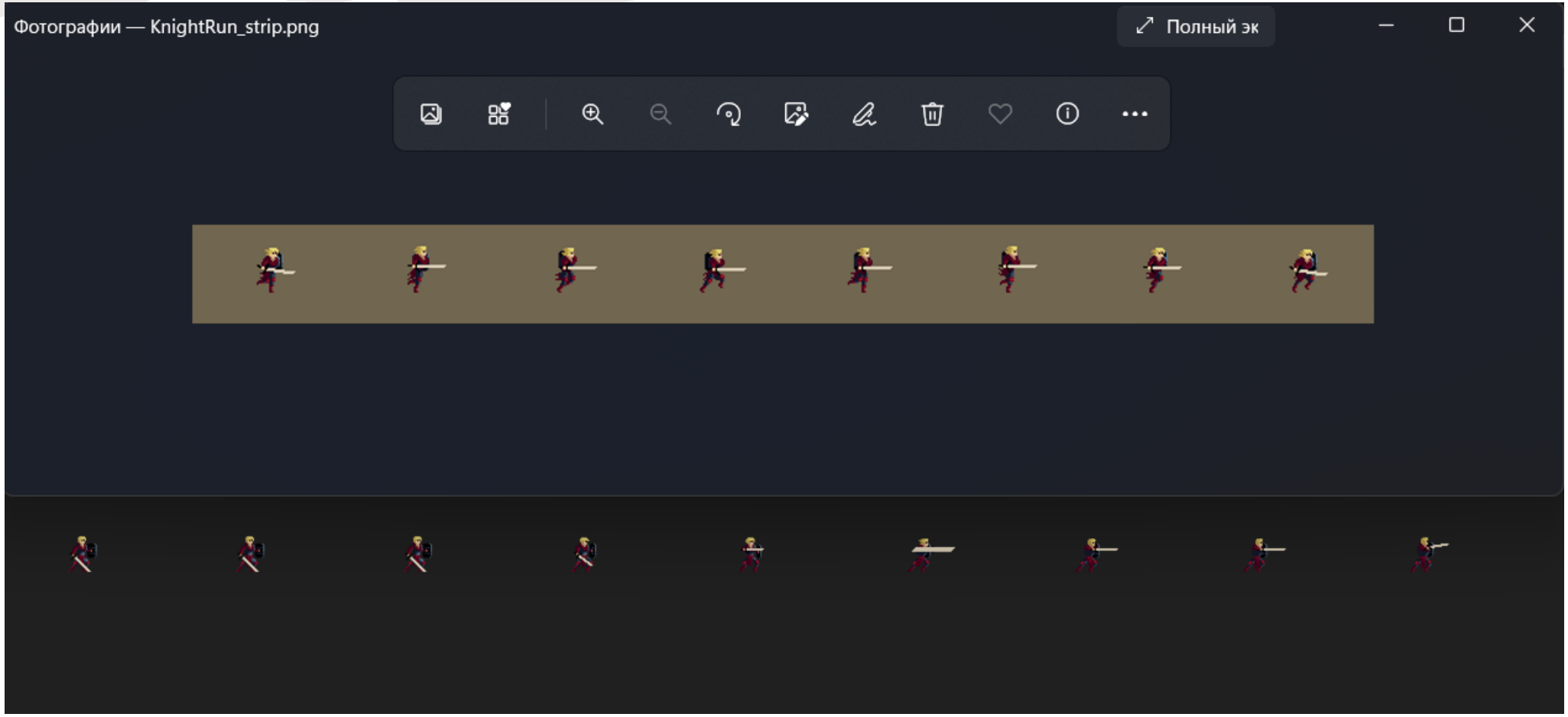
Assets



АНИМАЦИЯ.КОНЕЧНЫЕ АВТОМАТЫ В АНИМАЦИИ (ОКНО ANIMATOR)

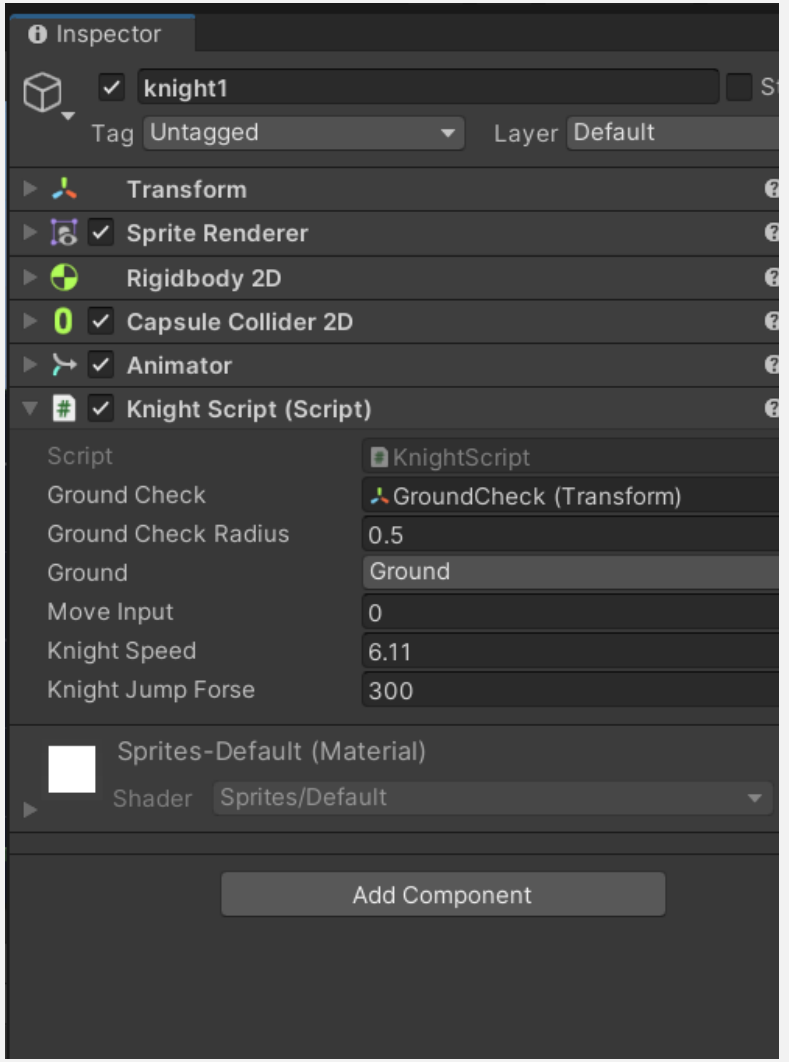
ЛЕНТЫ СПРАЙТОВ



C# SCRIPT(1)

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
public class KnightScript : MonoBehaviour
{
    private Rigidbody2D knightRigidbody2D;
    private Animator knightAnimator;

    private bool knightIsFacingRight = true;
    private bool knightIsJumping = false;
    private bool knightIsGrounded = false;
```



C# SCRIPT(2)

```
public Transform groundCheck;
public float groundCheckRadius;
public LayerMask ground;
public float moveInput;
public float knightSpeed;
public float knightJumpForse;
void Start()
{
    knightRigidbody2D = GetComponent<Rigidbody2D>();
     knightAnimator = GetComponent<Animator>();
}
```

```
    void Update()
    {
        knightIsGrounded = Physics2D.OverlapCircle(groundCheck.position, groundCheckRadius,
ground);
        moveInput = Input.GetAxis("Horizontal");


        knightAnimator.SetBool("KnightIsRunning", !(moveInput == 0));


        if (Input.GetKeyDown(KeyCode.UpArrow) && knightIsGrounded)
        {
            knightIsJumping = true;
        }
        if (Input.GetKeyDown(KeyCode.DownArrow) && knightIsGrounded)
        {
            knightAnimator.SetBool("KnightIsRolling", true);
        }
```

```
else if (Input.GetKeyUp(KeyCode.DownArrow))
    {
        knightAnimator.SetBool("KnightIsRolling", false);
    }
}
private void FlipKnight()
{
    knightIsFacingRight = !knightIsFacingRight;
    Vector3 knightScale = transform.localScale;
    knightScale.x *= -1;
    transform.localScale = knightScale;
}
```

```
private void FixedUpdate()
{
    knightRigidbody2D.velocity = new Vector2(moveInput * knightSpeed,
knightRigidbody2D.velocity.y);


    if (!knightIsFacingRight && moveInput > 0 || knightIsFacingRight && moveInput < 0)
    {
        FlipKnight();
    }
    if (knightIsJumping)
    {
        knightRigidbody2D.AddForce(new Vector2(0f, knightJumpForse));
        knightIsJumping = false;
    }
}
```

ДЕМОНСТРАЦИЯ

- Работает, работает
  Unity – Google Диск

- Скрипт с последних 4 слайдов