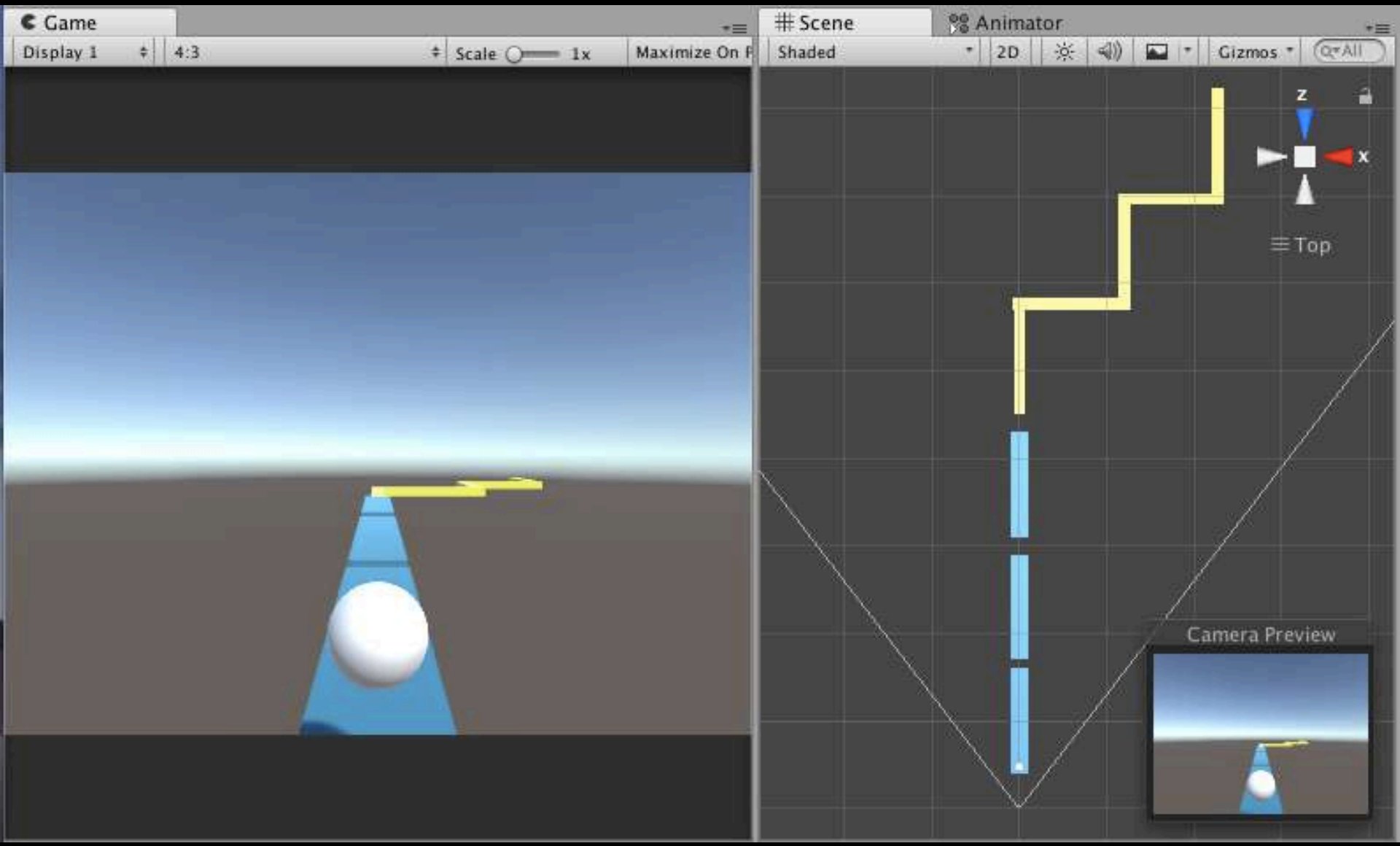
Lab 4.1 Unity Game: 3D Ball Runner

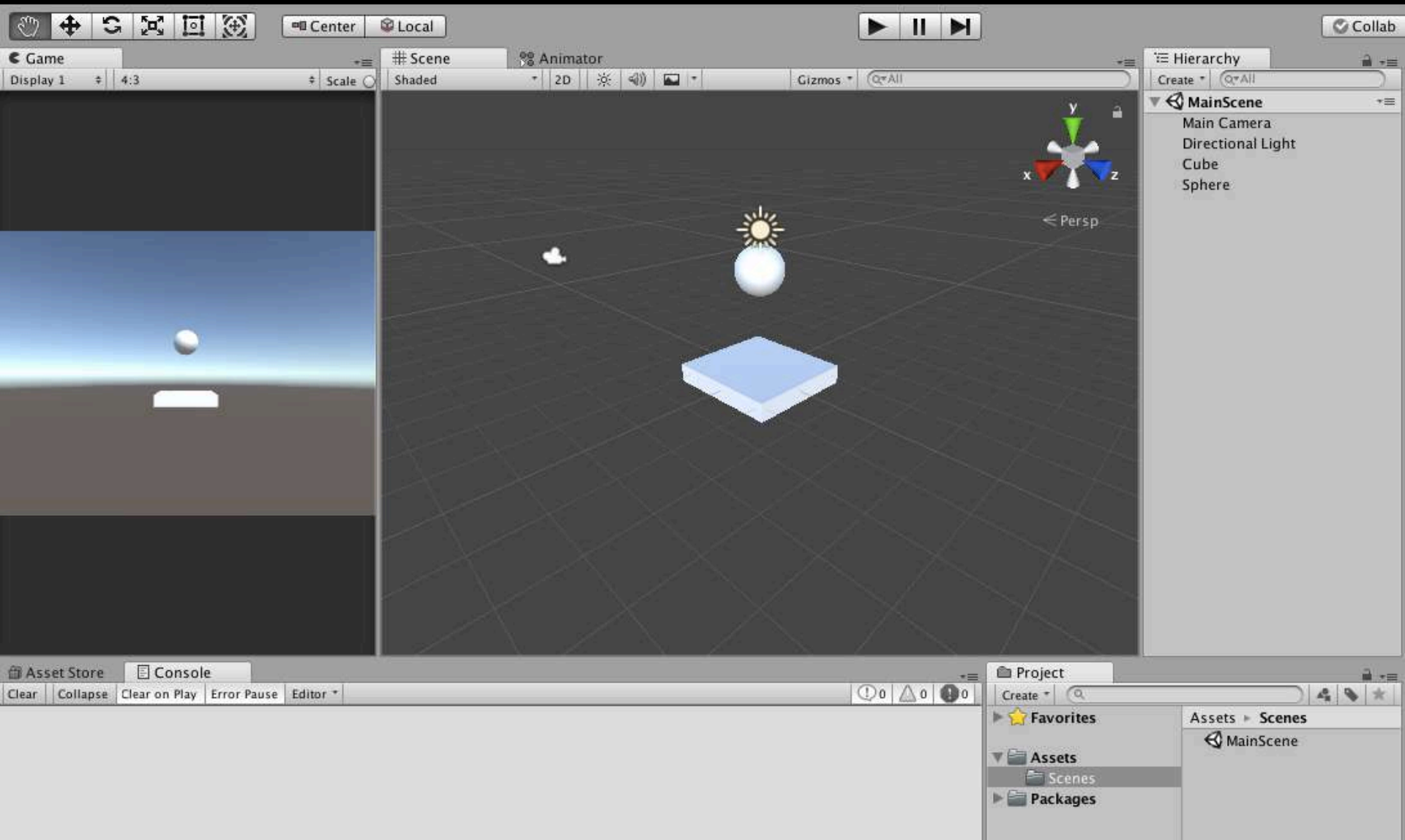
Based on Udemy course:
"Build Virtual Reality Games for Google Cardboard using Unity"

Part 1: Platforms & Player

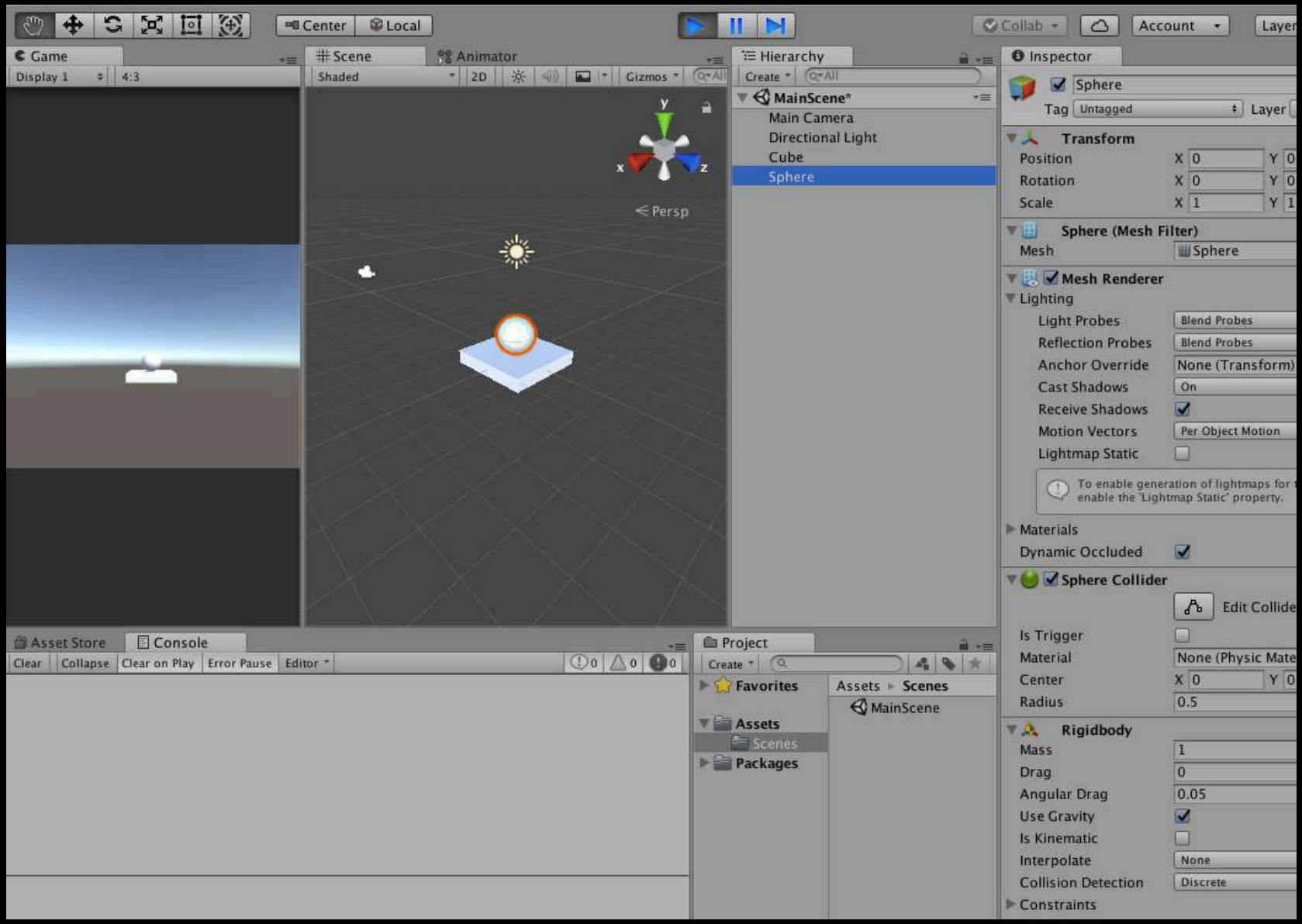


Create a New Unity Project: Ball Runner

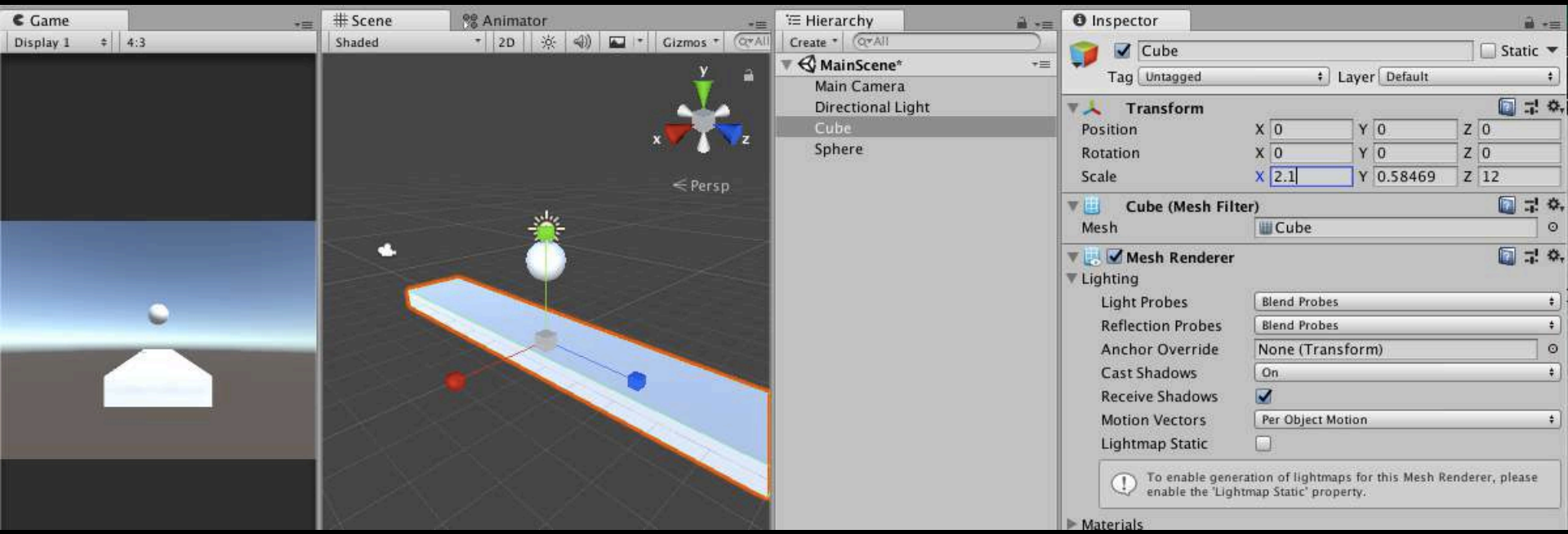
Add a cube and a sphere to the Main Scene



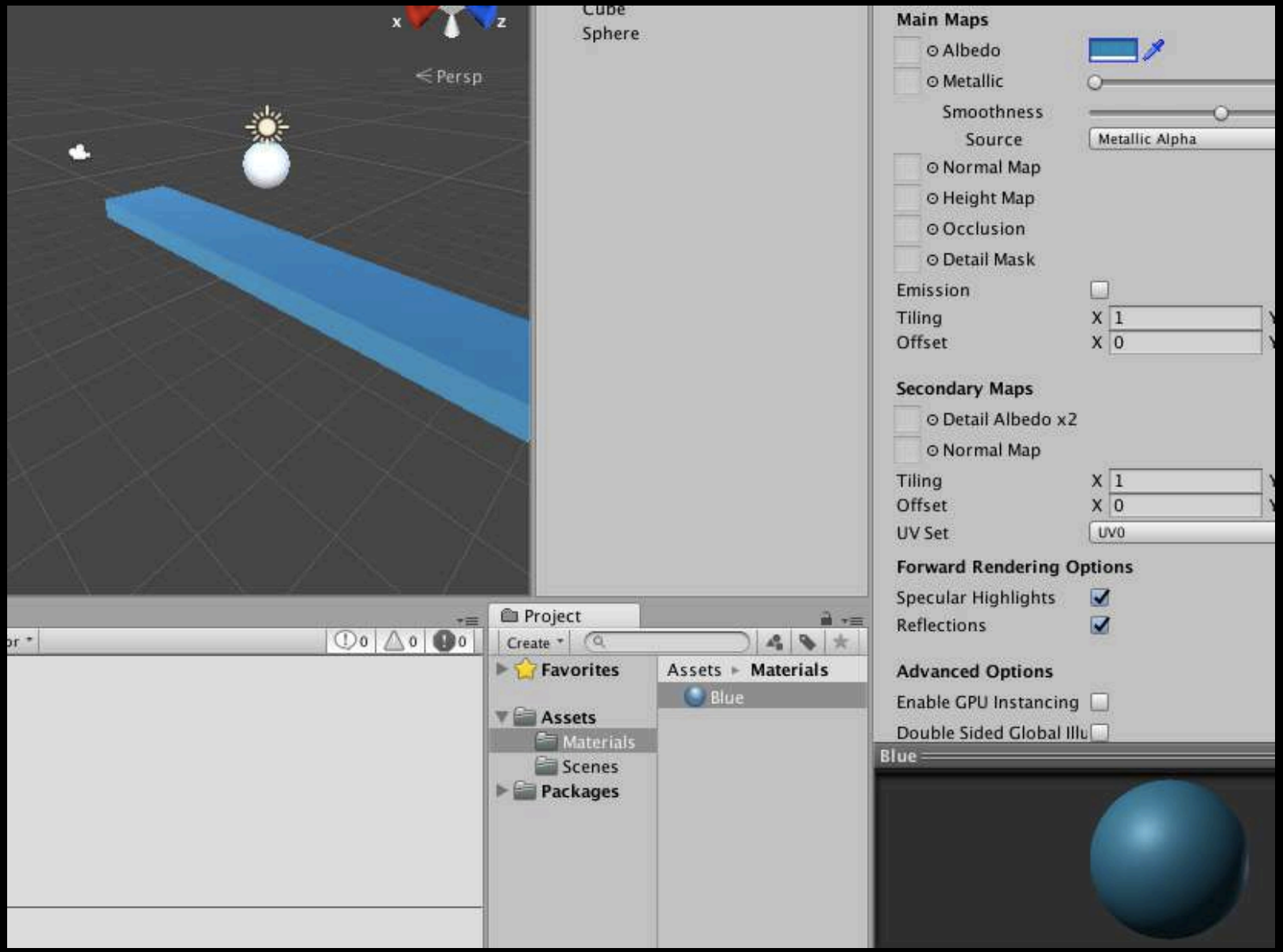
Add a rigidbody component to the sphere and play it



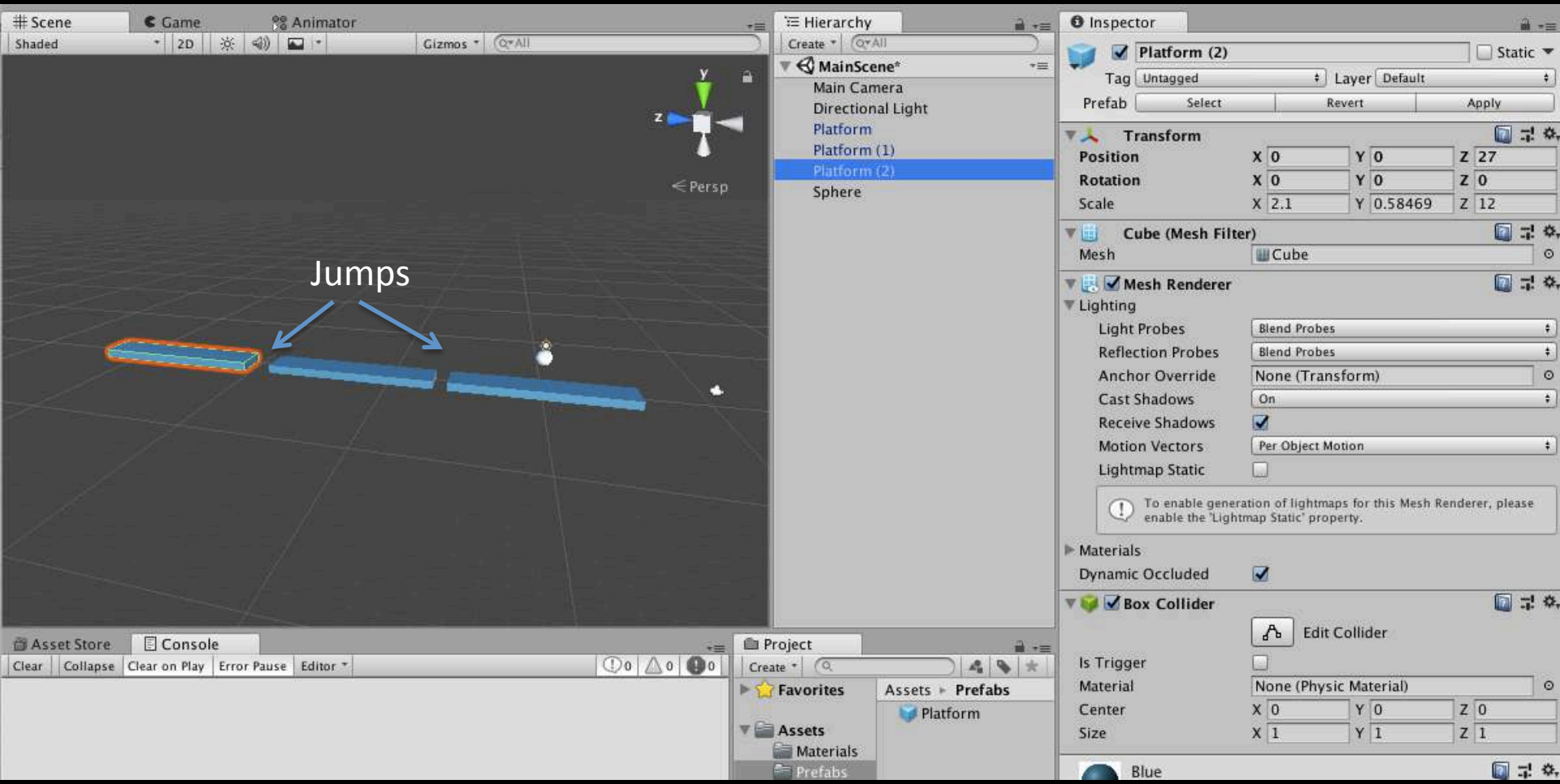
Resize the cube to make it a running ‘corridor’



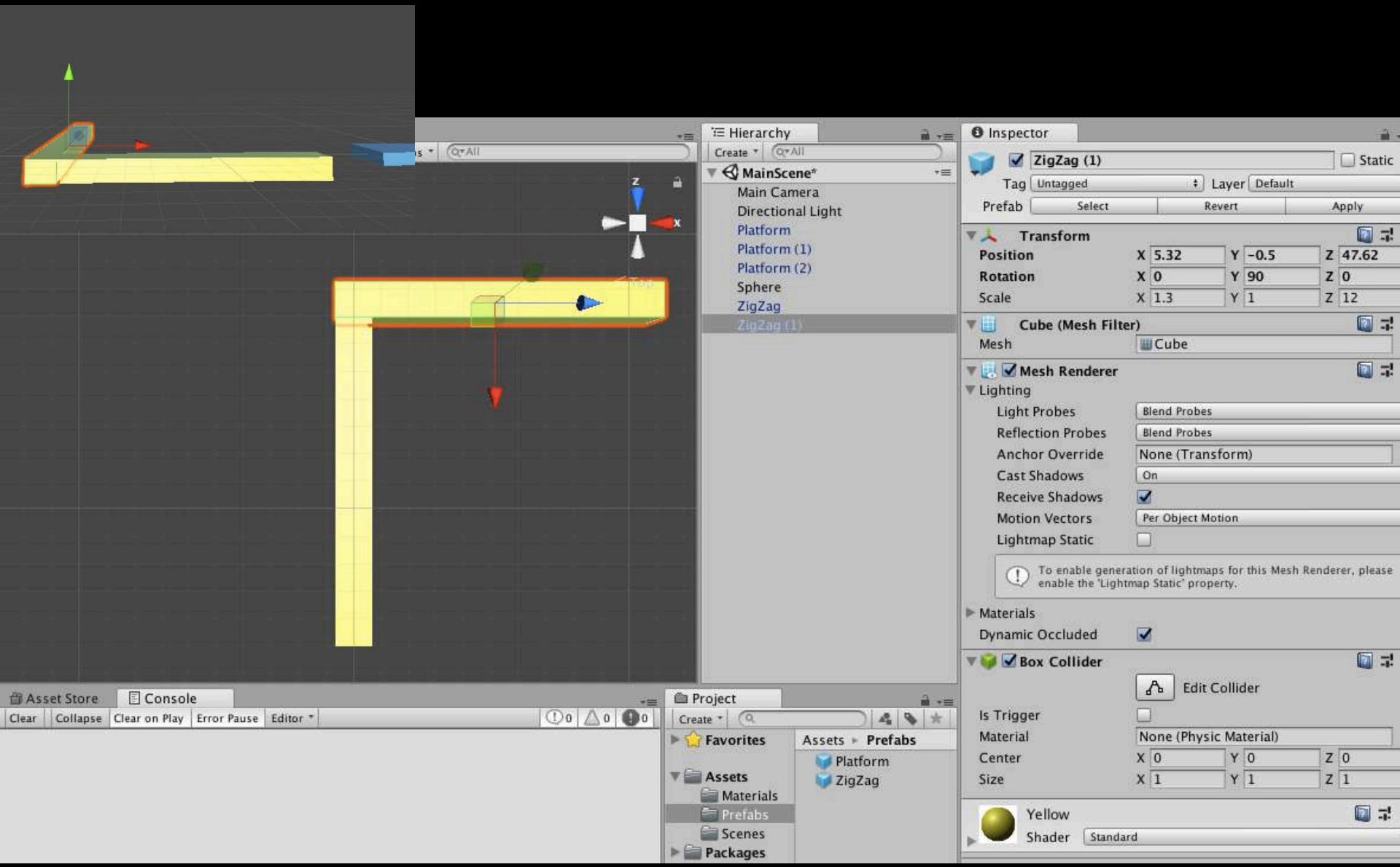
Give the platform a colour



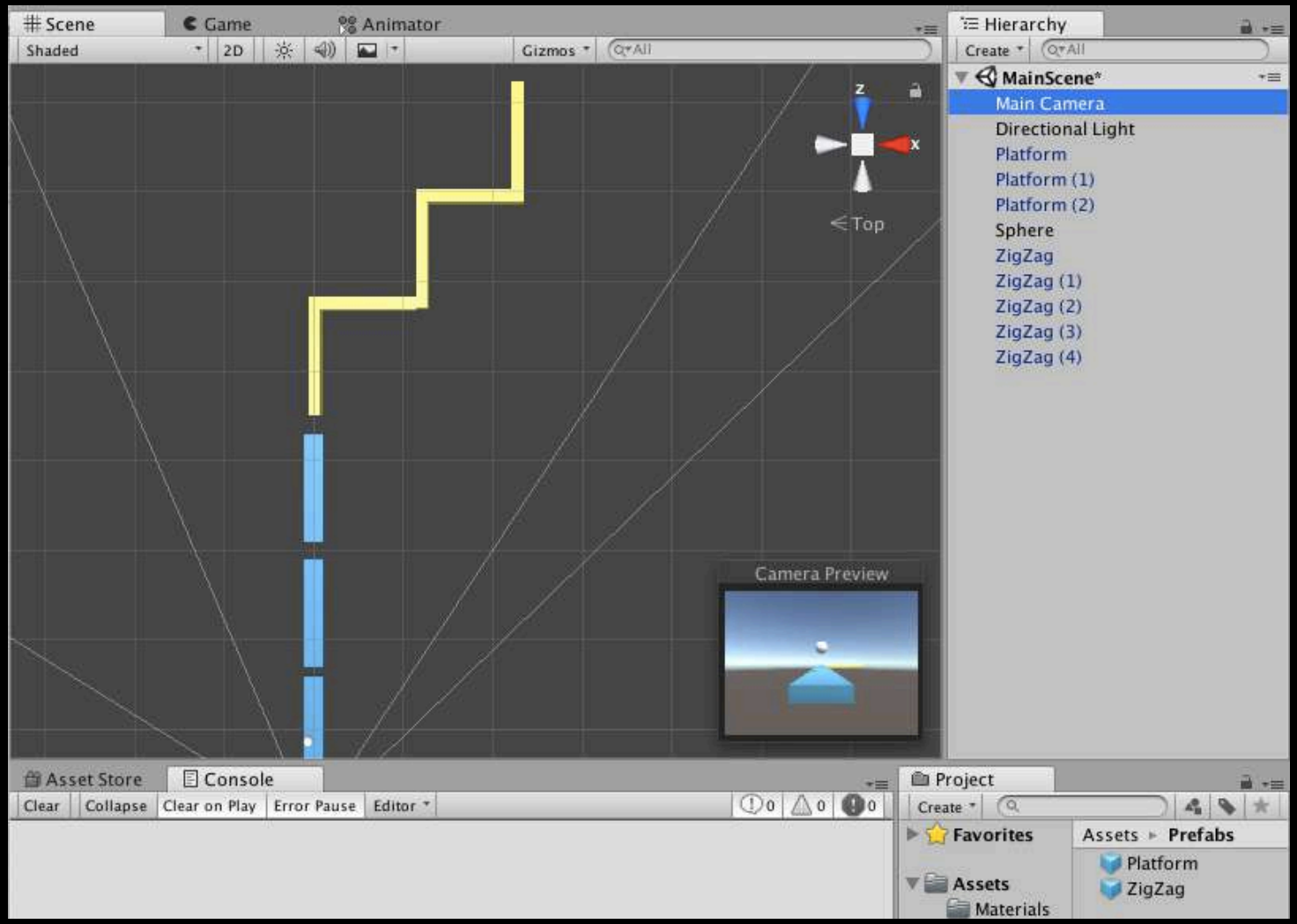
Create a Prefab and make 2 copies of Platform



Create a new narrower corridor and design a Zig-Zag

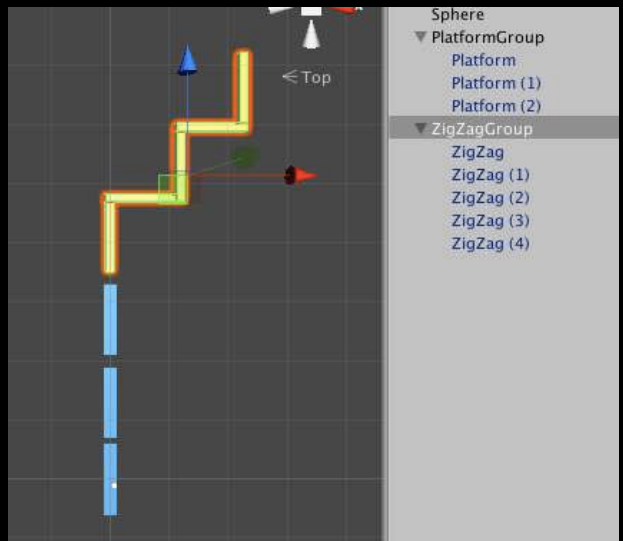


Create a new narrower corridor and design a Zig-Zag



Structure the platforms as a Parent-Child hierarchy

Reposition before grouping



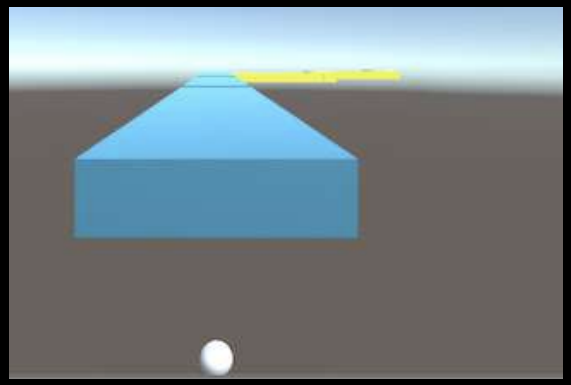
Create a script to move the ball

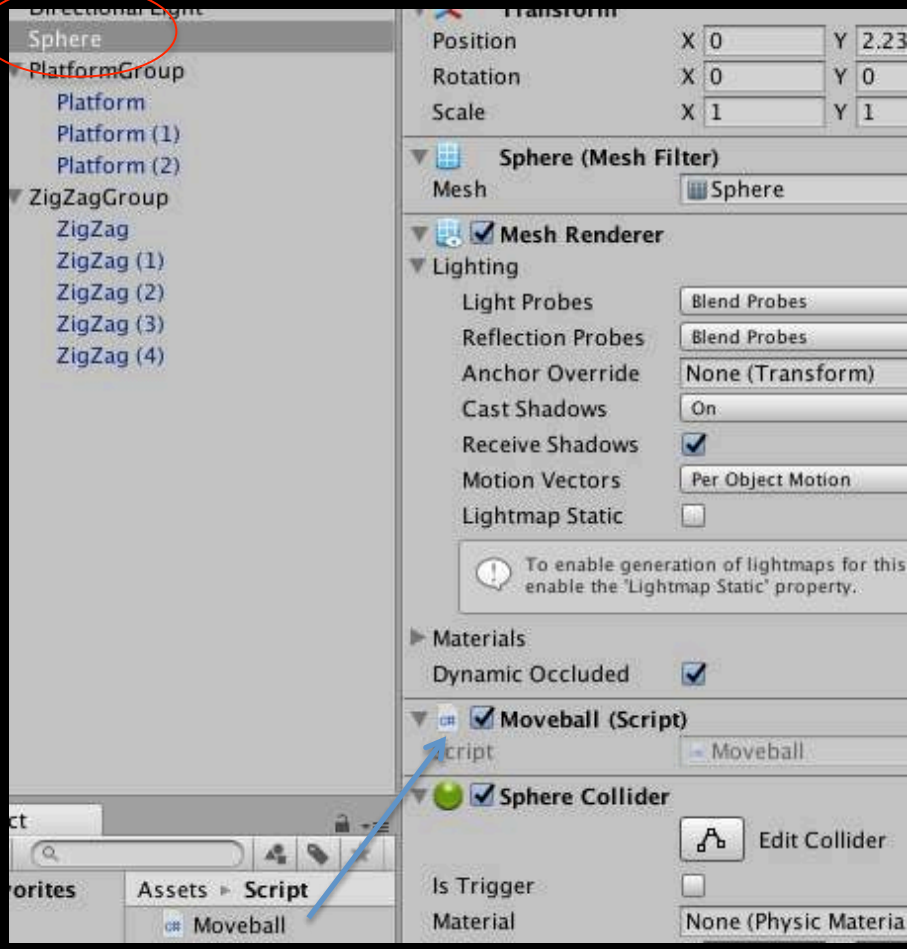
Moveball.cs

veball ▸ No selection

```
1  using System.Collections;
2  using System.Collections.Generic;
3  using UnityEngine;
4
5  public class Moveball : MonoBehaviour {
6
7      Rigidbody Rigidbody;
8
9      // Use this for initialization
10     void Start () {
11         Rigidbody = GetComponent<Rigidbody>();
12     }
13
14     // Update is called once per frame
15     void Update () {
16         float hmove = Input.GetAxis("Horizontal");
17         float vmove = Input.GetAxis("Vertical");
18
19         Vector3 ballmove = new Vector3(hmove,0.0f,vmove);
20
21         Rigidbody.AddForce(ballmove);
22
23     }
24 }
```

Too slow



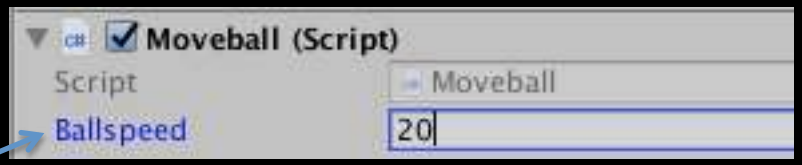


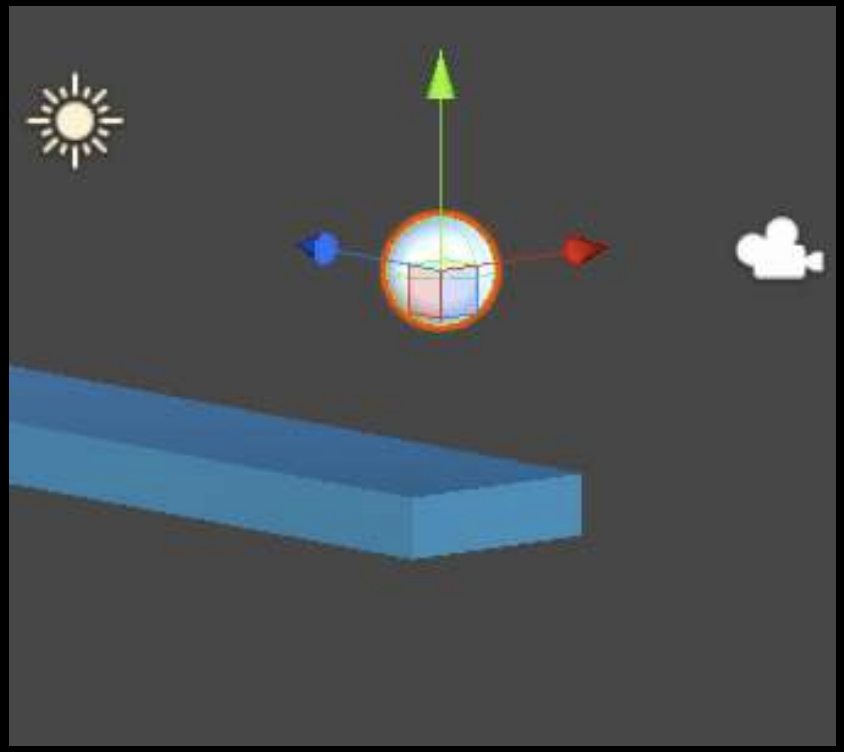
Updating the script and making camera adjustments

Moveball.cs

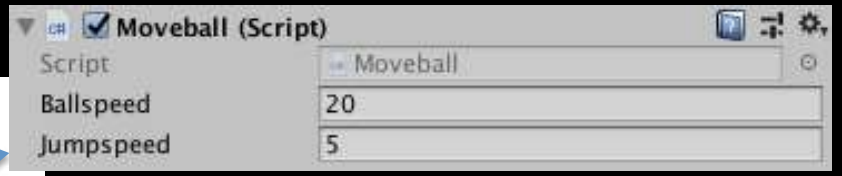
Moveball ▸ No selection

```
1  using System.Collections;
2  using System.Collections.Generic;
3  using UnityEngine;
4
5  public class Moveball : MonoBehaviour {
6
7      Rigidbody rigidbody;
8      public int ballspeed = 0;
9
10     // Use this for initialization
11     void Start () {
12         rigidbody = GetComponent<Rigidbody>();
13     }
14
15     // Update is called once per frame
16     void Update () {
17         float hmove = Input.GetAxis("Horizontal");
18         float vmove = Input.GetAxis("Vertical");
19
20         Vector3 ballmove = new Vector3(hmove,0.0f,vmove);
21
22         rigidbody.AddForce(ballmove*ballspeed);
23
24     }
25 }
26
```

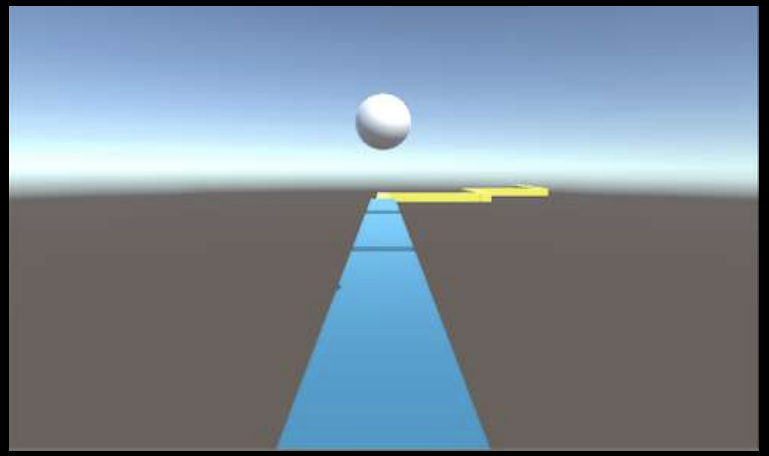




Everybody… JUMP!

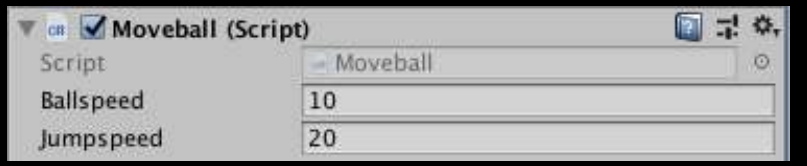


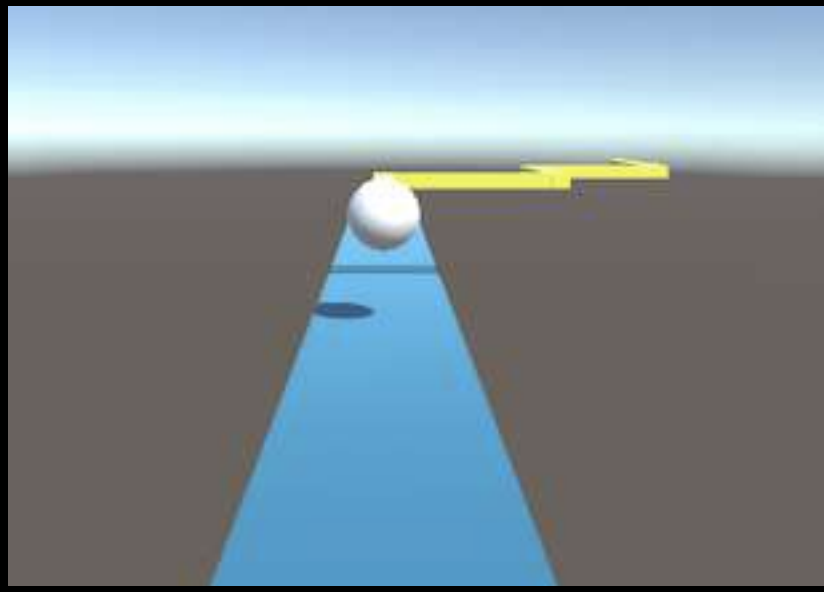

```
5  public class Moveball : MonoBehaviour {
6
7      private Rigidbody rb;
8      public int ballspeed = 0;
9      public int jumpspeed = 0;
10
11     // Use this for initialization
12     void Start () {
13         rb = GetComponent<Rigidbody>();
14     }
15
16     // Update is called once per frame
17     void Update () {
18         float hmove = Input.GetAxis("Horizontal");
19         float vmove = Input.GetAxis("Vertical");
20
21         Vector3 ballmove = new Vector3(hmove,0.0f,vmove);
22
23         rb.AddForce(ballmove*ballspeed);
24
25         if (Input.GetKey (KeyCode.Space))
26         {
27             Vector3 balljump = new Vector3(0.0f, 3.0f, 0.0f);
28             rb.AddForce(balljump * jumpspeed);
29         }
30     }
31 }
```



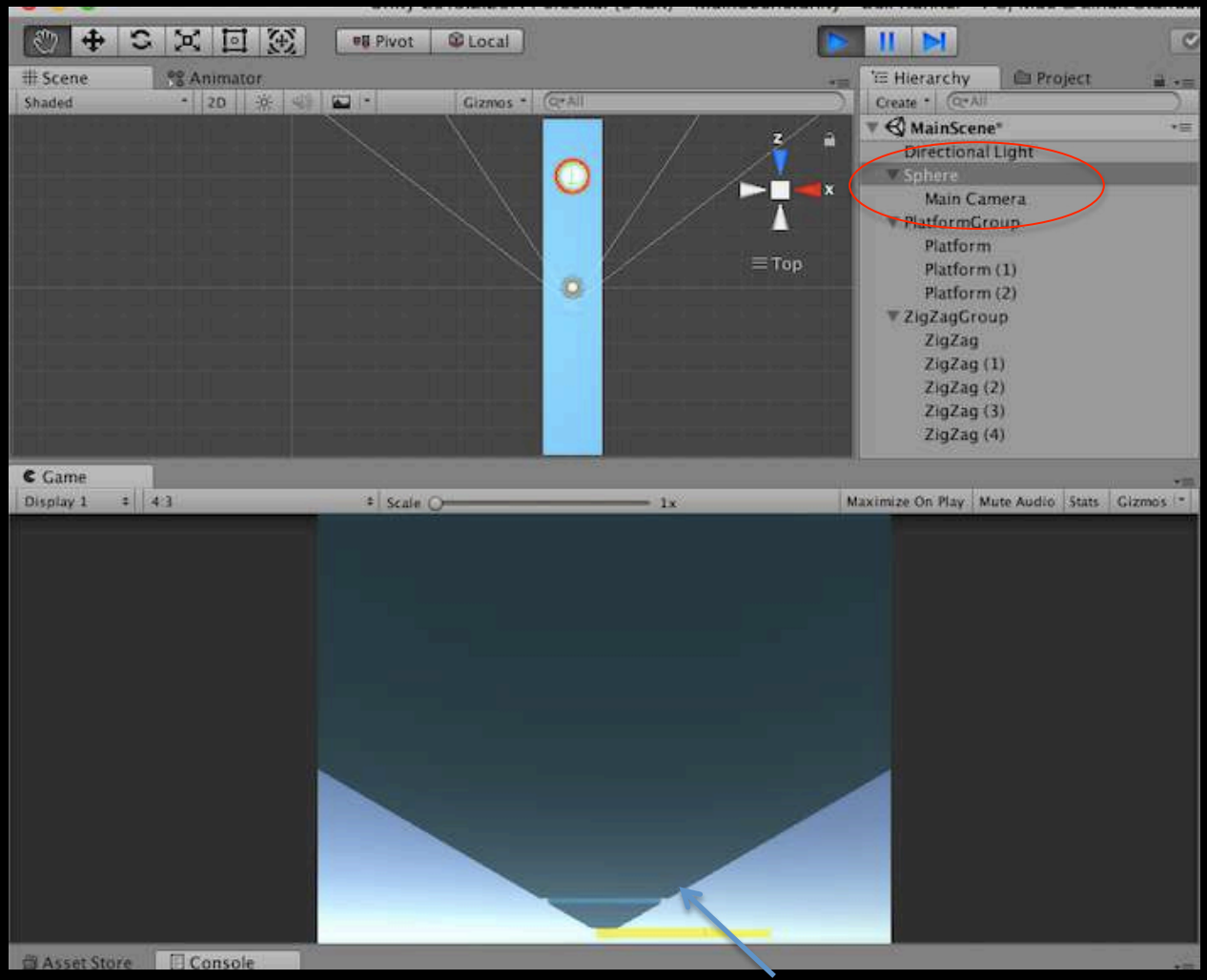
Single Jump

```
5  public class Moveball : MonoBehaviour {
6
7      private Rigidbody rb;
8      public int ballspeed = 0;
9      public int jumpspeed = 0;
10     private bool ballistouching = true;
11
12     // Use this for initialization
13     void Start () {
14         rb = GetComponent<Rigidbody>();
15     }
16
17     // Update is called once per frame
18     void Update () {
19         float hmove = Input.GetAxis("Horizontal");
20         float vmove = Input.GetAxis("Vertical");
21
22         Vector3 ballmove = new Vector3(hmove,0.0f,vmove);
23
24         rb.AddForce(ballmove*ballspeed);
25
26         if (Input.GetKey (KeyCode.Space) && ballistouching )
27         {
28             Vector3 balljump = new Vector3(0.0f, 6.0f, 0.0f);
29             rb.AddForce(balljump * jumpspeed);
30             ballistouching = false;
31         }
32     }
33
34     private void OnCollisionStay(Collision collision)
35     {
36         ballistouching = true;
37     }
38 }
```



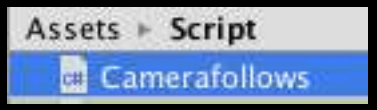


Camera follows the ball: First attempt



The camera rotates with the sphere

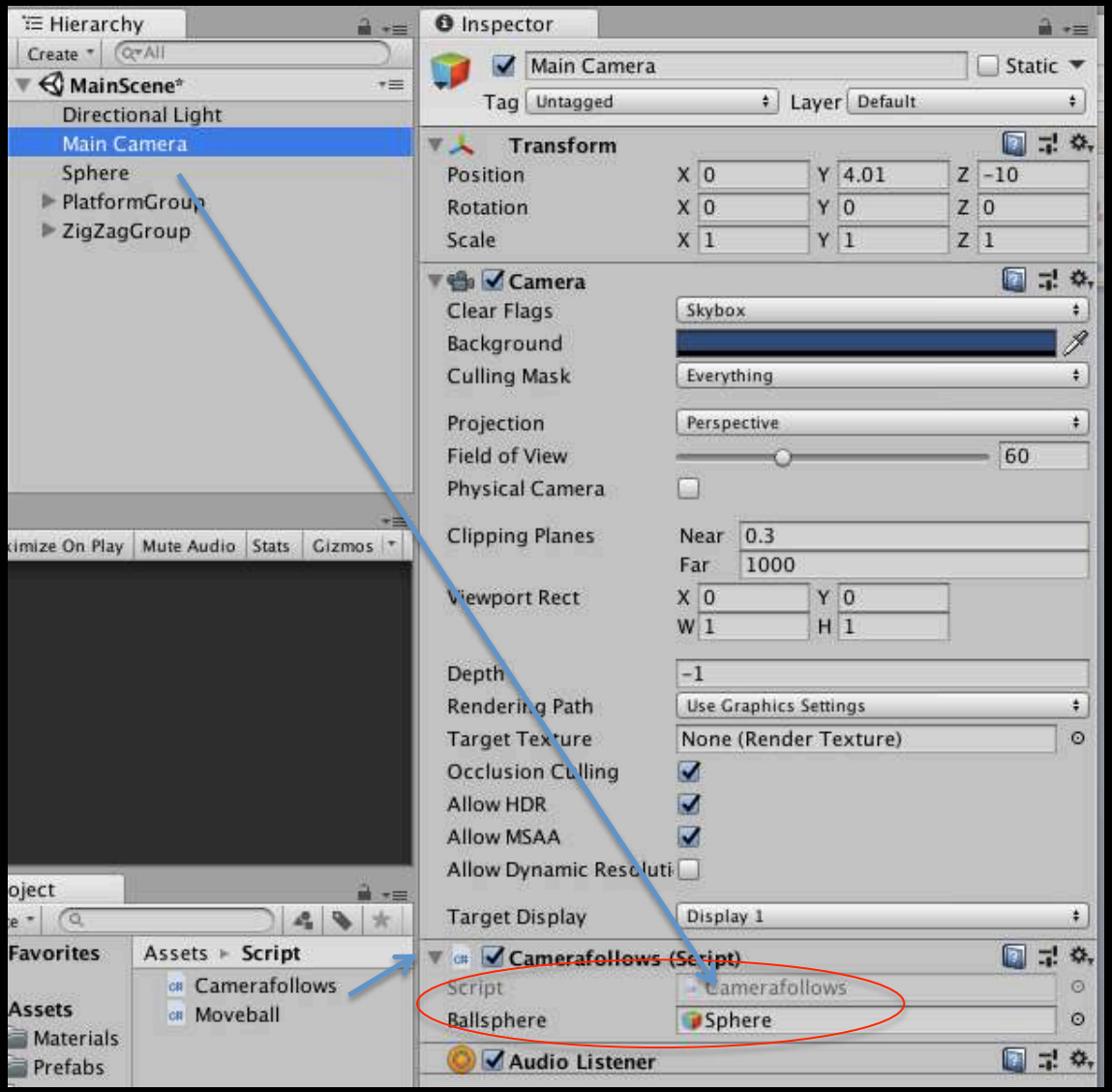
Camera follows the ball: Script

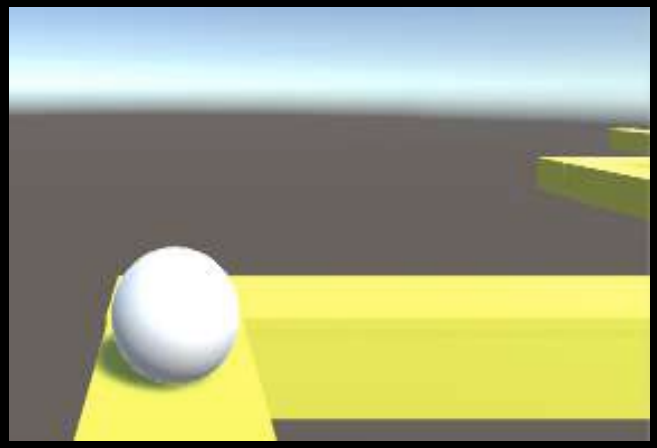


Camerafollows ▸ No selection

```
1  using System.Collections;
2  using System.Collections.Generic;
3  using UnityEngine;
4
5  public class Camerafollows : MonoBehaviour {
6
7      public GameObject ballsphere;
8      private Vector3 distance;
9
10     // Use this for initialization
11     void Start () {
12         distance = transform.position - ballsphere.transform.position;
13     }
14
15     // Update is called once per frame
16     void Update () {
17         transform.position = distance + ballsphere.transform.position;
18     }
19 }
```

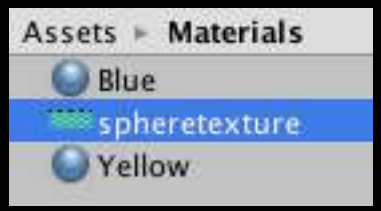
Camera follows the ball 👌

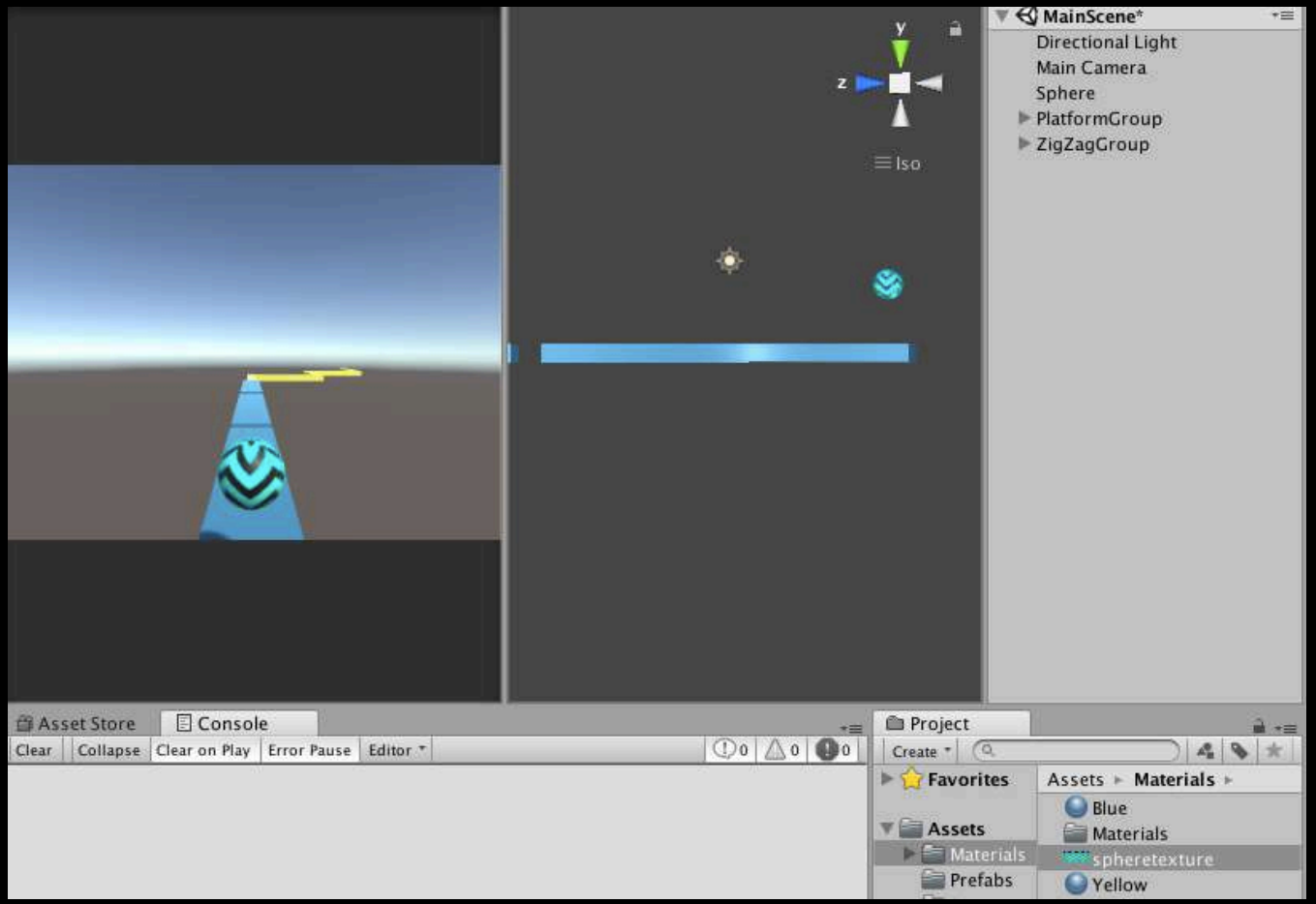




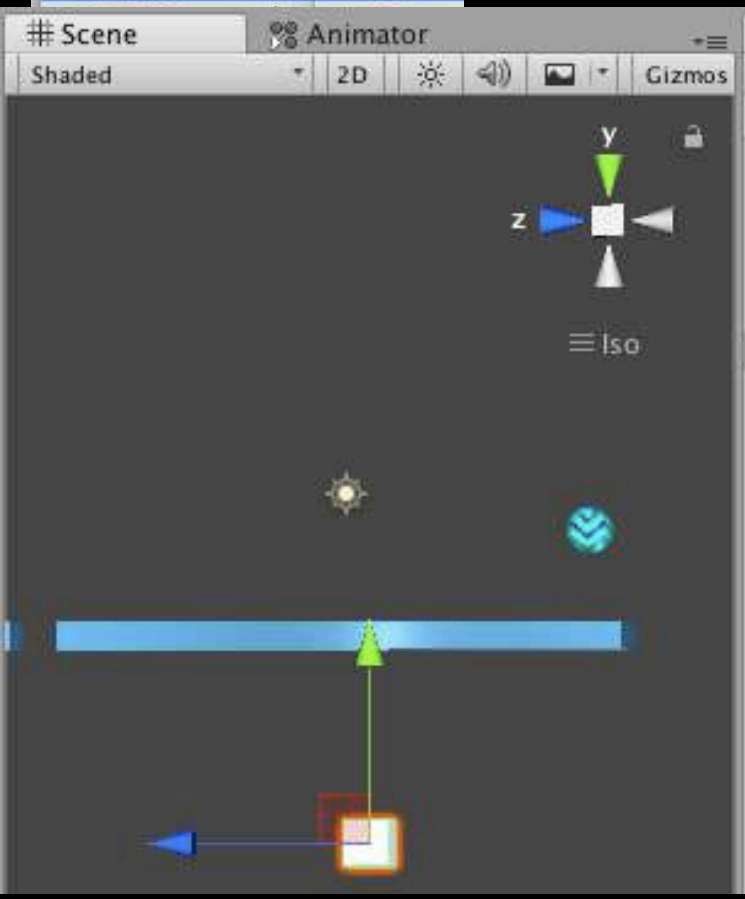
The camera keeps the distance with the sphere

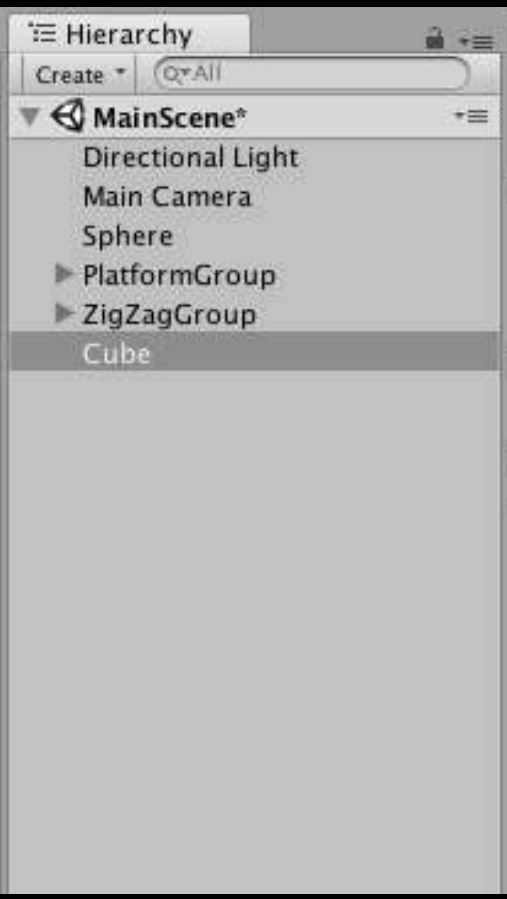
Giving texture to the ball

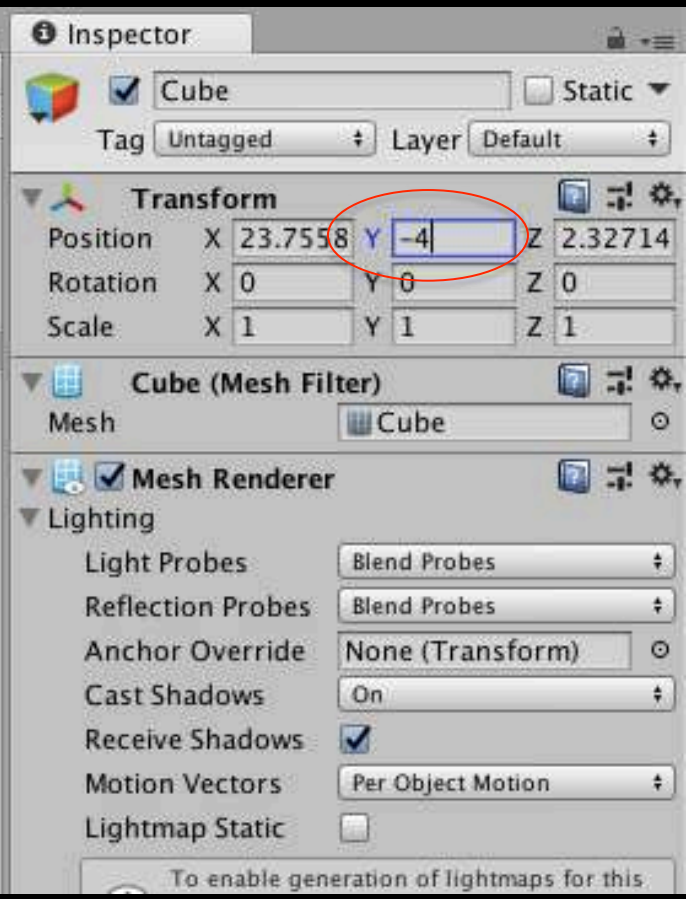


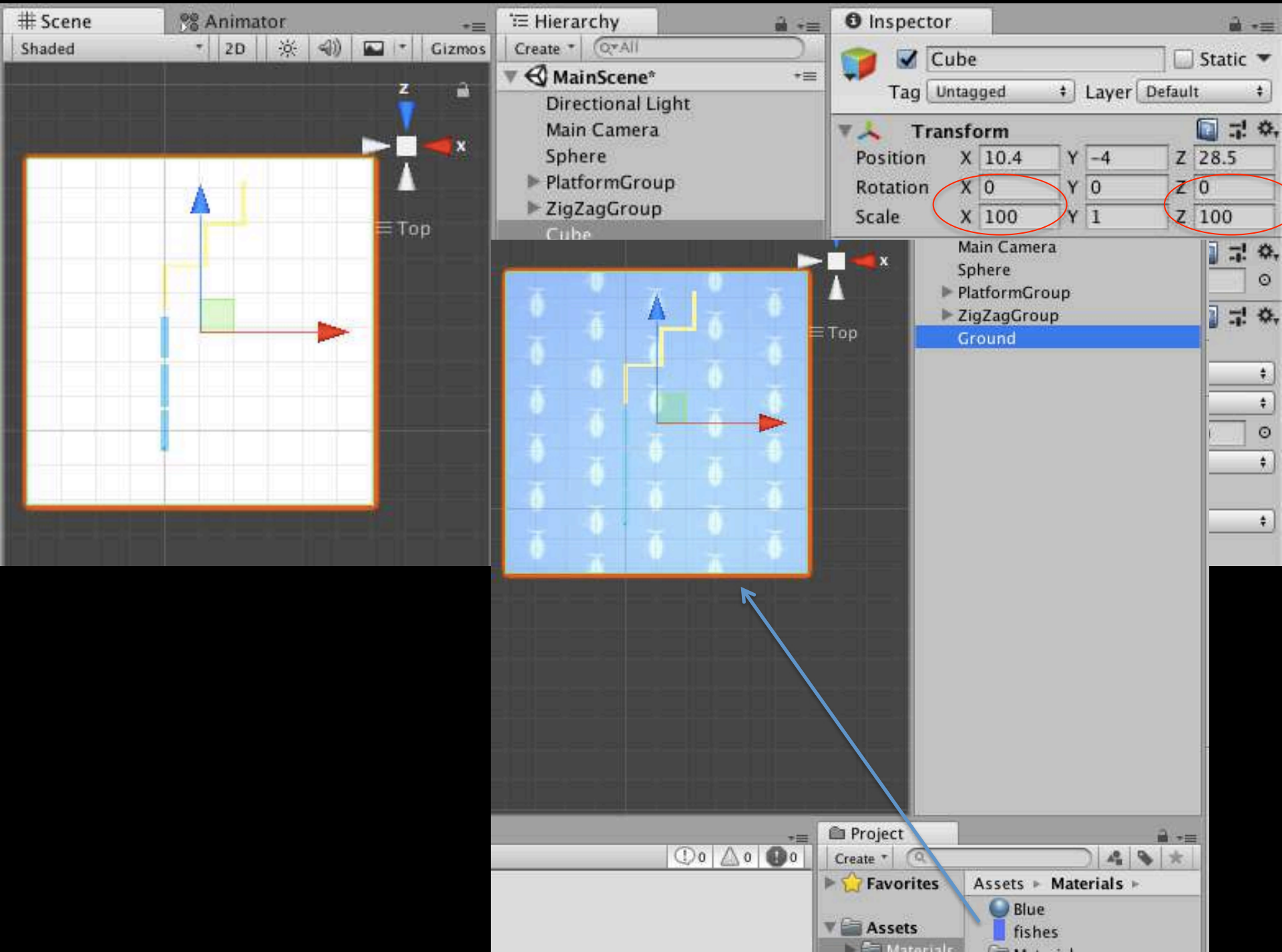


Create a ground to restart the game

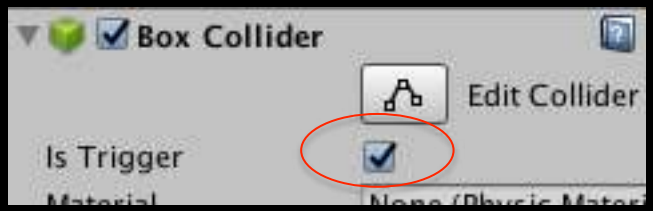






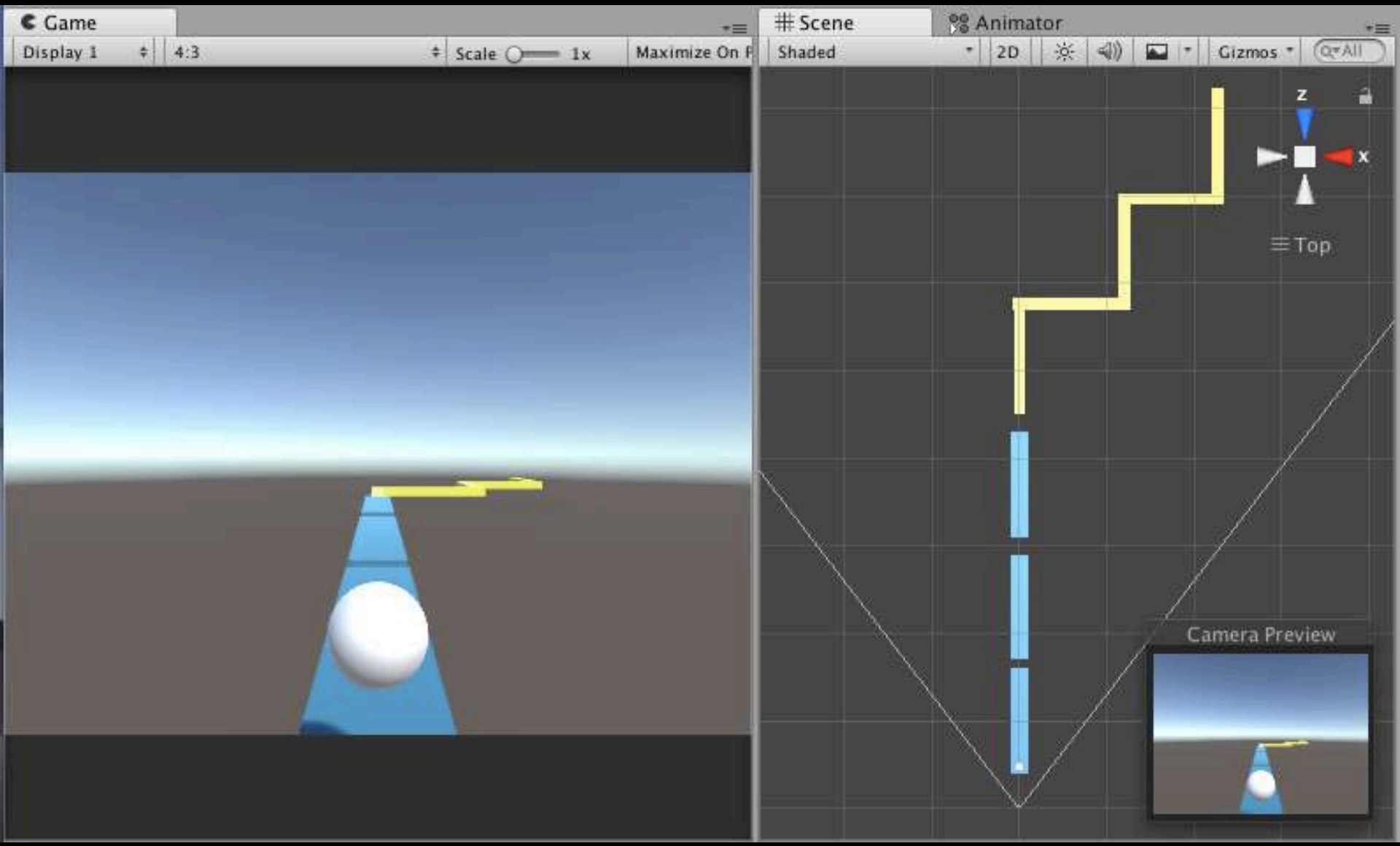

Scene
Animator
Shaded
2D
Gizmos
Top
Hierarchy
Create
MainScene*
Directional Light
Main Camera
Sphere
PlatformGroup
ZigZagGroup
Cube
Inspector
Cube
Static
Tag
Untagged
Layer
Default
Transform
Position
X 10.4
Y -4
Z 28.5
Rotation
X 0
Y 0
Z 0
Scale
X 100
Y 1
Z 100
Main Camera
Sphere
PlatformGroup
ZigZagGroup
Ground
Project
Create
Favorites
Assets
Materials
Blue
fishes
Assets

GroundRestart Script




```
1  using System.Collections;
2  using System.Collections.Generic;
3  using UnityEngine;
4  using UnityEngine.SceneManagement;
5
6  public class GroundRestart : MonoBehaviour {
7
8      private void OnTriggerEnter()
9      {
10         SceneManager.LoadScene("MainScene");
11     }
12 }
13
```

Part 2: Polishing



Coins

Sphere
PlatformGroup
ZigZagGroup
Ground
Cylinder

Position X -0.6445 Y 2.43 Z -3.4365
Rotation X 0 Y 0 Z -90
Scale X 1 Y 1 Z 1

Cylinder (Mesh Filter)
Mesh Cylinder

Mesh Renderer
Lighting
Light Probes Blend Probes
Reflection Probes Blend Probes
Anchor Override None (Transform)

Global | Collab | Account | Layers | Layout

Scene | Animator
Shaded | 2D | Gizmos

Hierarchy
Create | All
MainScene*
Directional Light
Main Camera
Sphere
PlatformGroup
ZigZagGroup
Ground
Cylinder

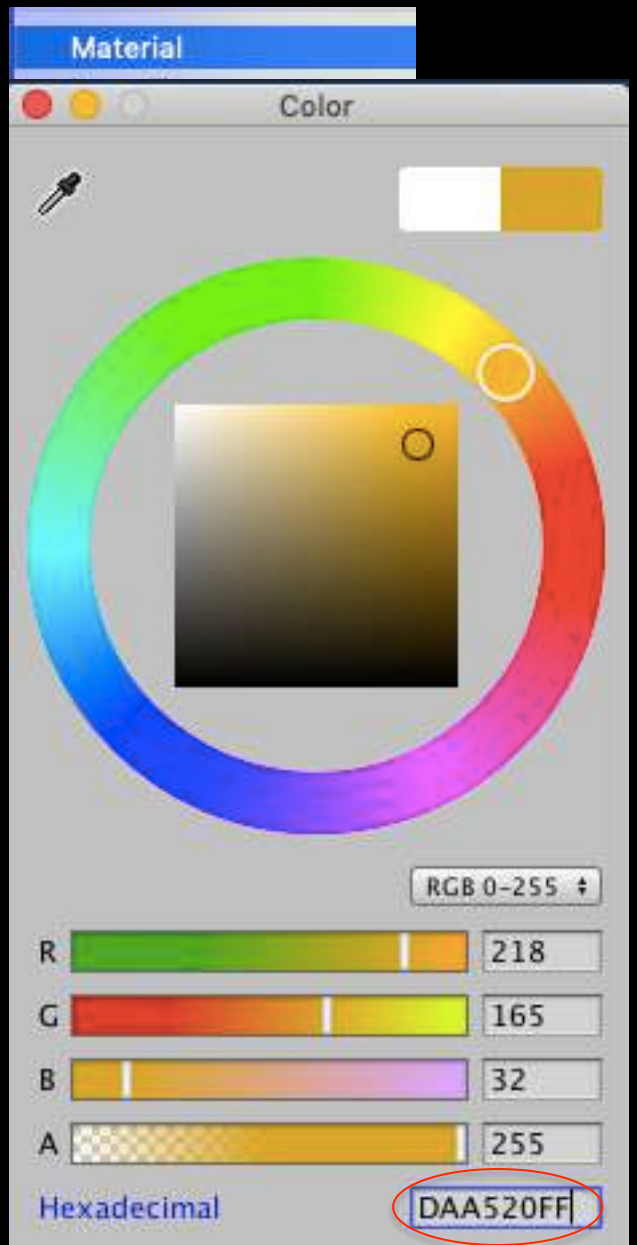
Inspector
Cylinder | Static
Tag Untagged | Layer Default

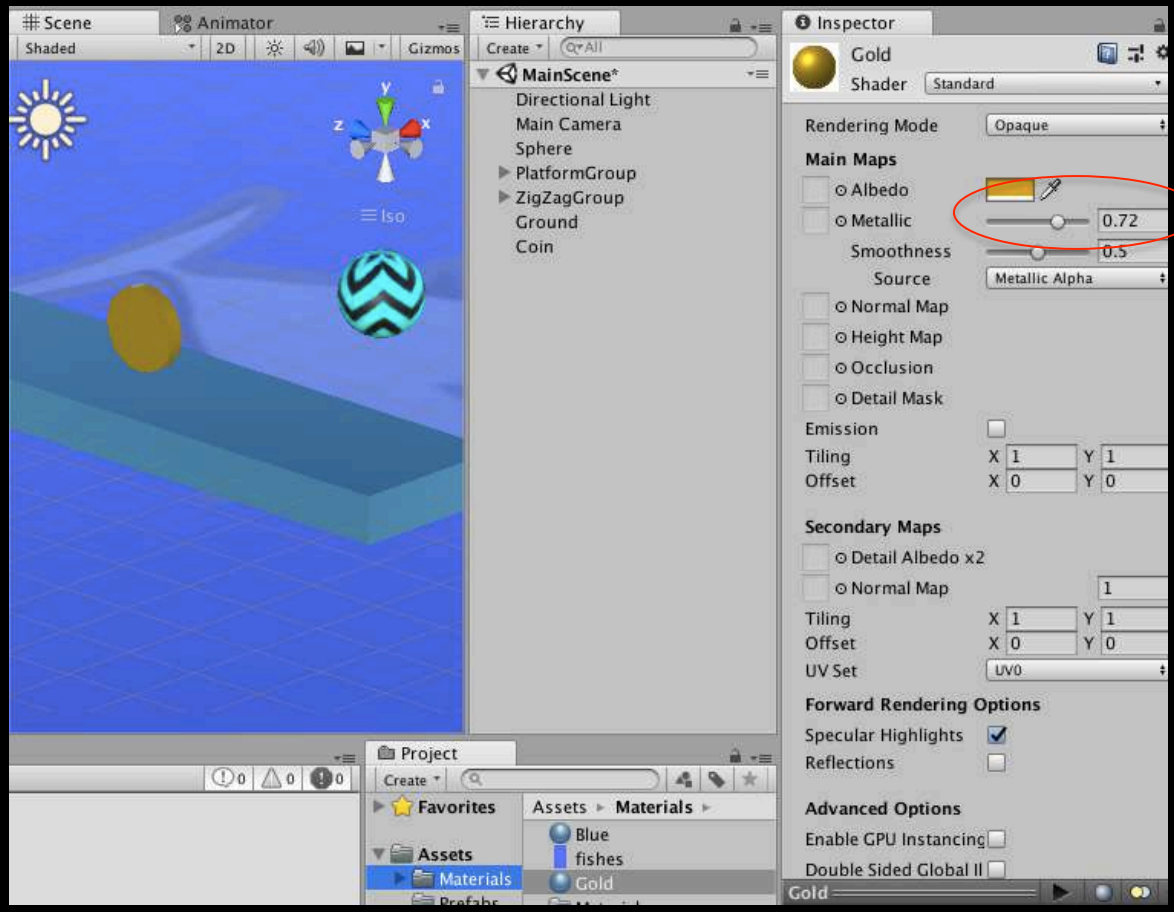
Transform
Position X -0.6445 Y 2.43 Z -3.4365
Rotation X 0 Y 0 Z -90
Scale X 1 Y 0.08 Z 1

Cylinder (Mesh Filter)
Mesh Cylinder

Mesh Renderer
Lighting
Materials

Money money money



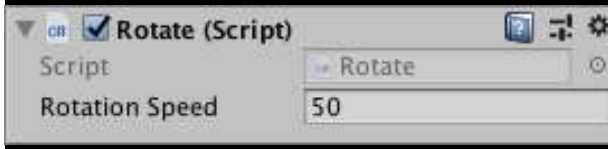


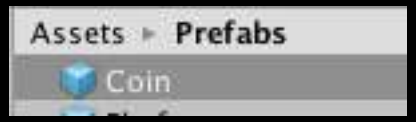
Rotate Coins

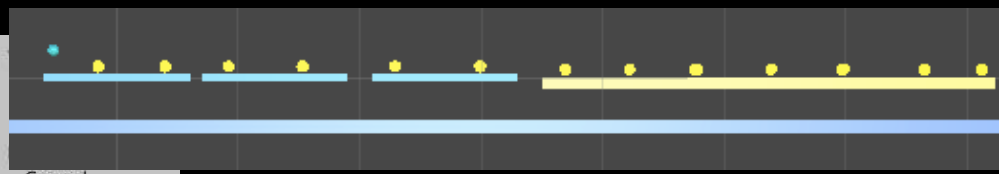
C# Script

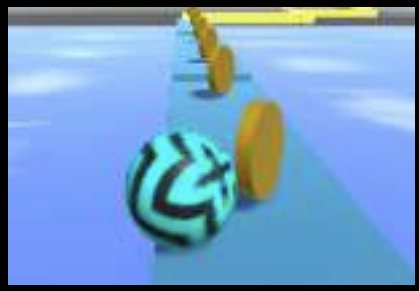
Rotate ▸ rotationSpeed

```
1  using System.Collections;
2  using System.Collections.Generic;
3  using UnityEngine;
4
5  public class Rotate : MonoBehaviour {
6
7      public float rotationSpeed = 20;
8
9      // Update is called once per frame
10     void Update () {
11         transform.Rotate(Vector3.left * Time.deltaTime * rotationSpeed);
12     }
13 }
14
```

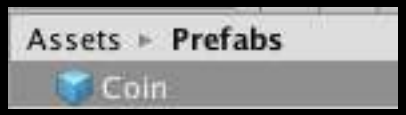


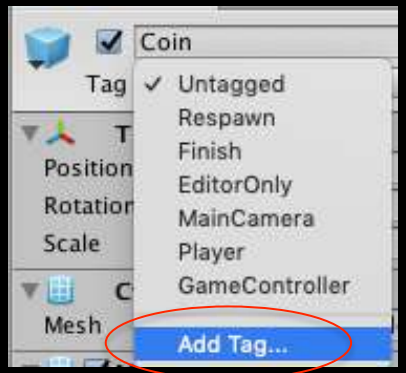


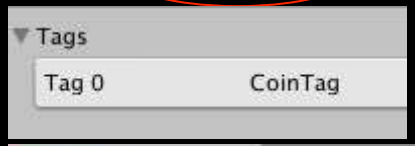




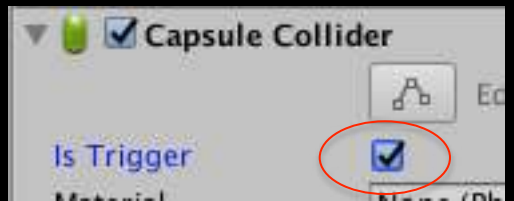
Making Money 💰💰💰



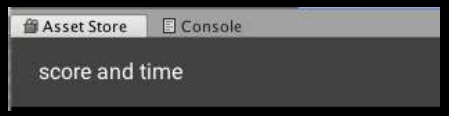


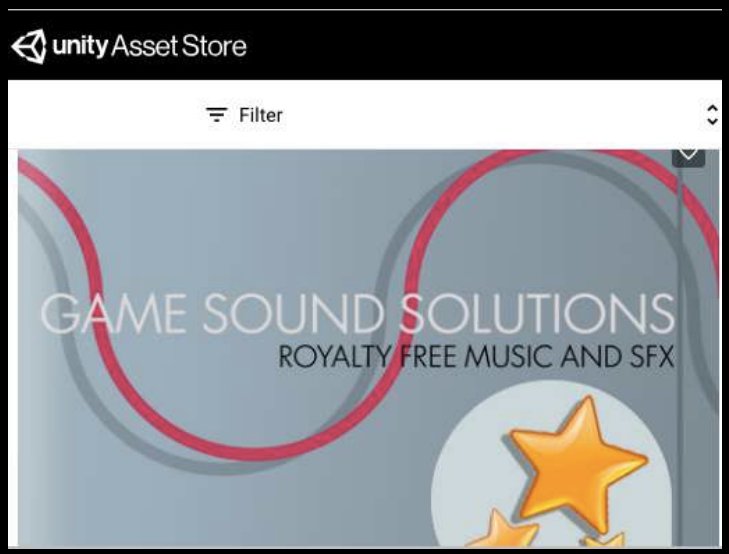


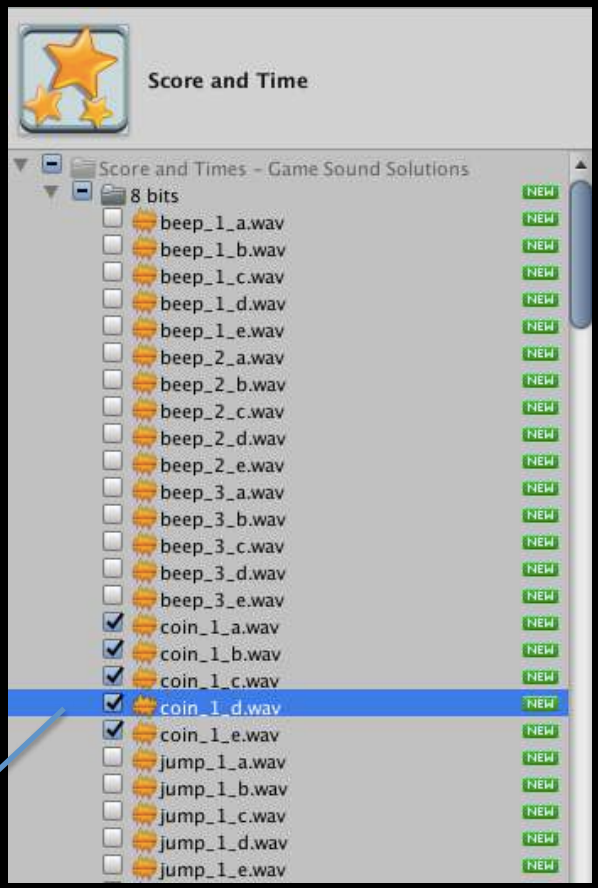

```
private void OnTriggerEnter(Collider other)
{
    if (other.gameObject.CompareTag("CoinTag"))
        other.gameObject.SetActive(false);
}
```



Money sounds 💰💰💰

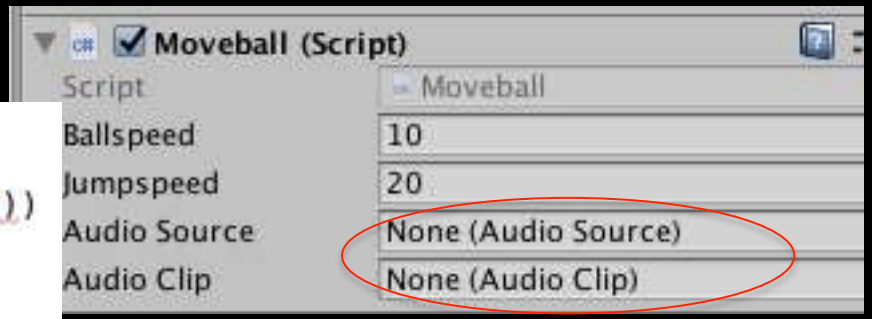




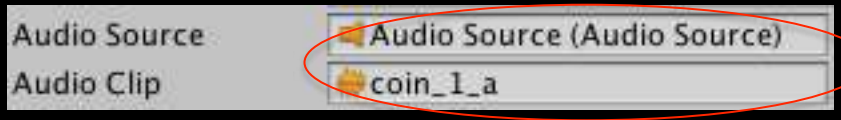


Money sounds 💰💰💰

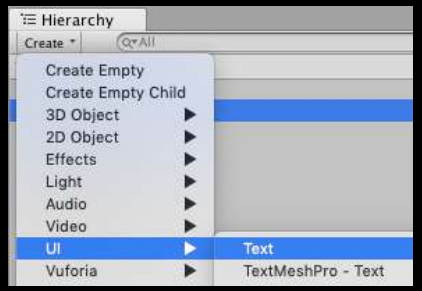

```
public class Moveball : MonoBehaviour {

    private Rigidbody rb;
    public int ballspeed = 0;
    public int jumpspeed = 0;
    private bool ballistouching = true;
    public AudioSource audioSource;
    public AudioClip audioClip;
```

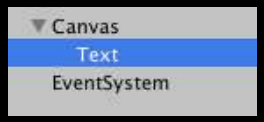


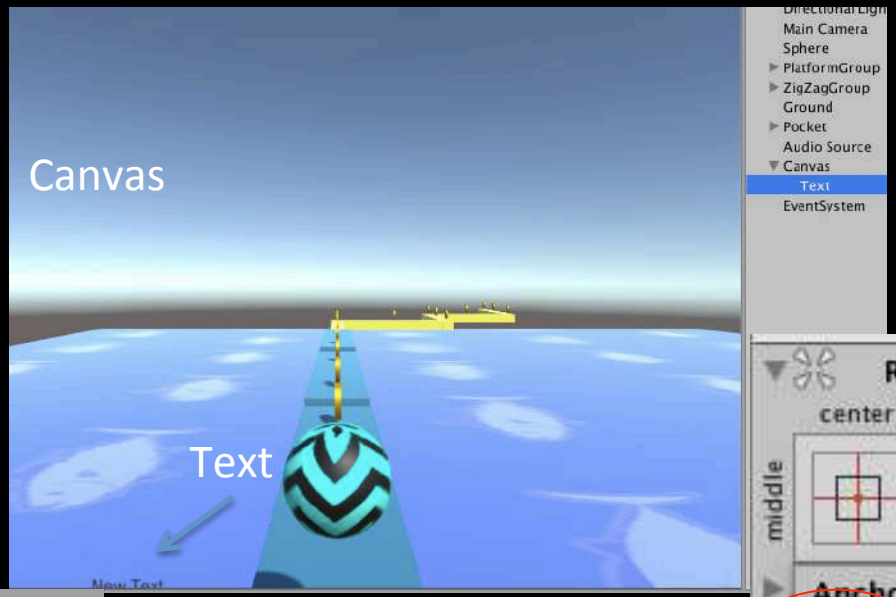

```
private void OnTriggerEnter(Collider other)
{
    if (other.gameObject.CompareTag("CoinTag"))
    {
        other.gameObject.SetActive(false);
        audioSource.PlayOneShot(audioClip);
    }
}
```



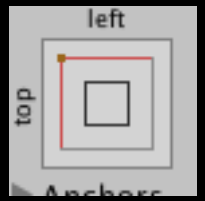
Score 💰💰💰

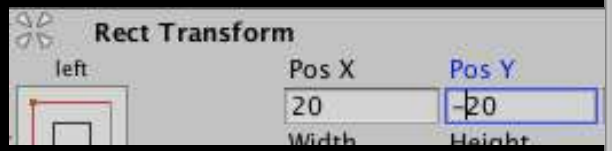


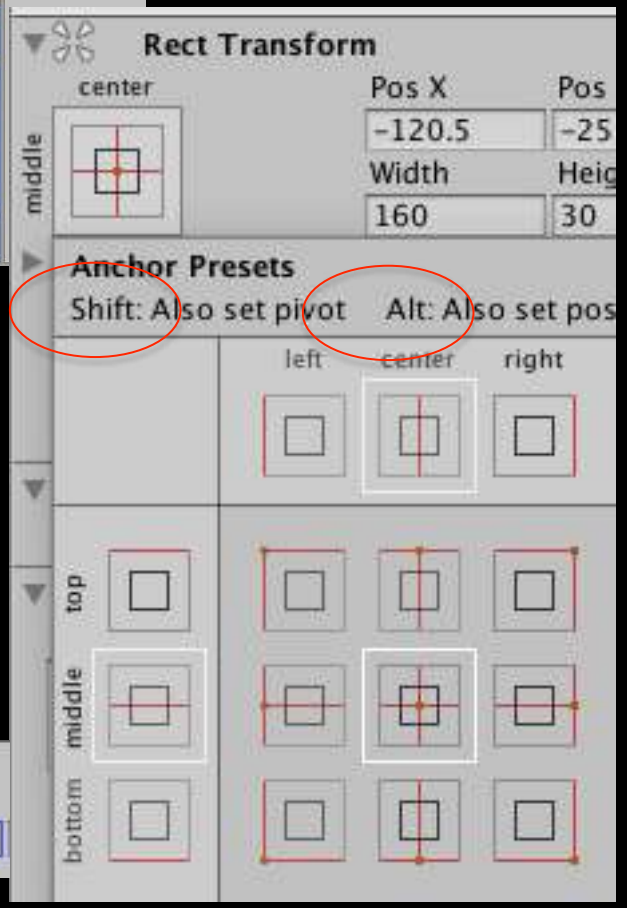




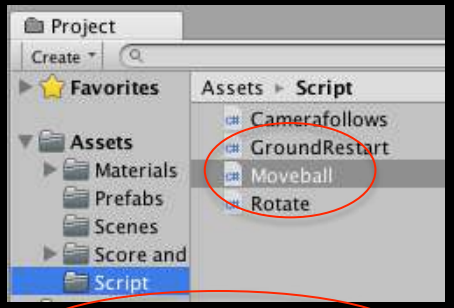
Option + Shift







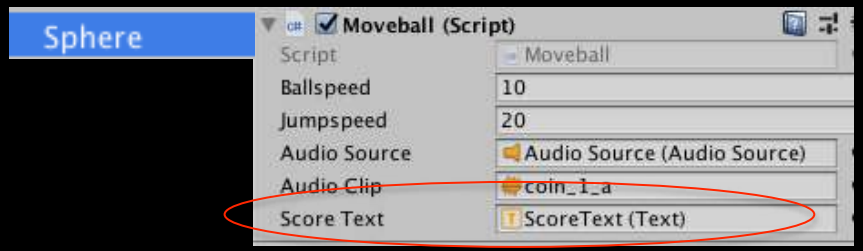
Score 💰💰💰




```
using UnityEngine.UI;

public class Moveball : MonoBehaviour {

    private Rigidbody rb;
    public int ballspeed = 0;
    public int jumpspeed = 0;
    private bool ballistouching = true;
    public AudioSource audioSource;
    public AudioClip audioClip;
    private int score;
    public Text scoreText;
```

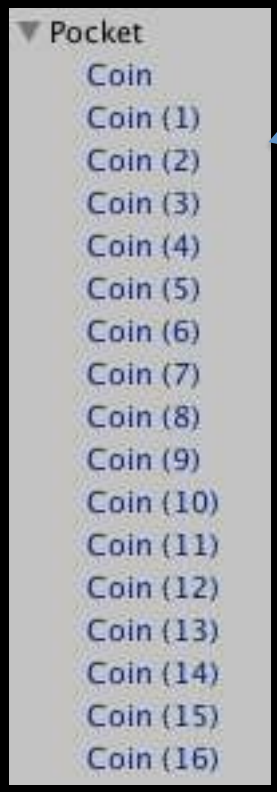
```
void Start () {
    rb = GetComponent<Rigidbody>();
    score = 0;
    updateScore();
}
```

```
private void OnTriggerEnter(Collider other)
{
    if (other.gameObject.CompareTag("CoinTag"))
    {
        other.gameObject.SetActive(false);
        audioSource.PlayOneShot(audioClip);
        score++;
        updateScore();
    }
}
```




```
private void updateScore()
{
    scoreText.text = "Coins: " + score;
}
```

Decrementing Score: Reaching a goal

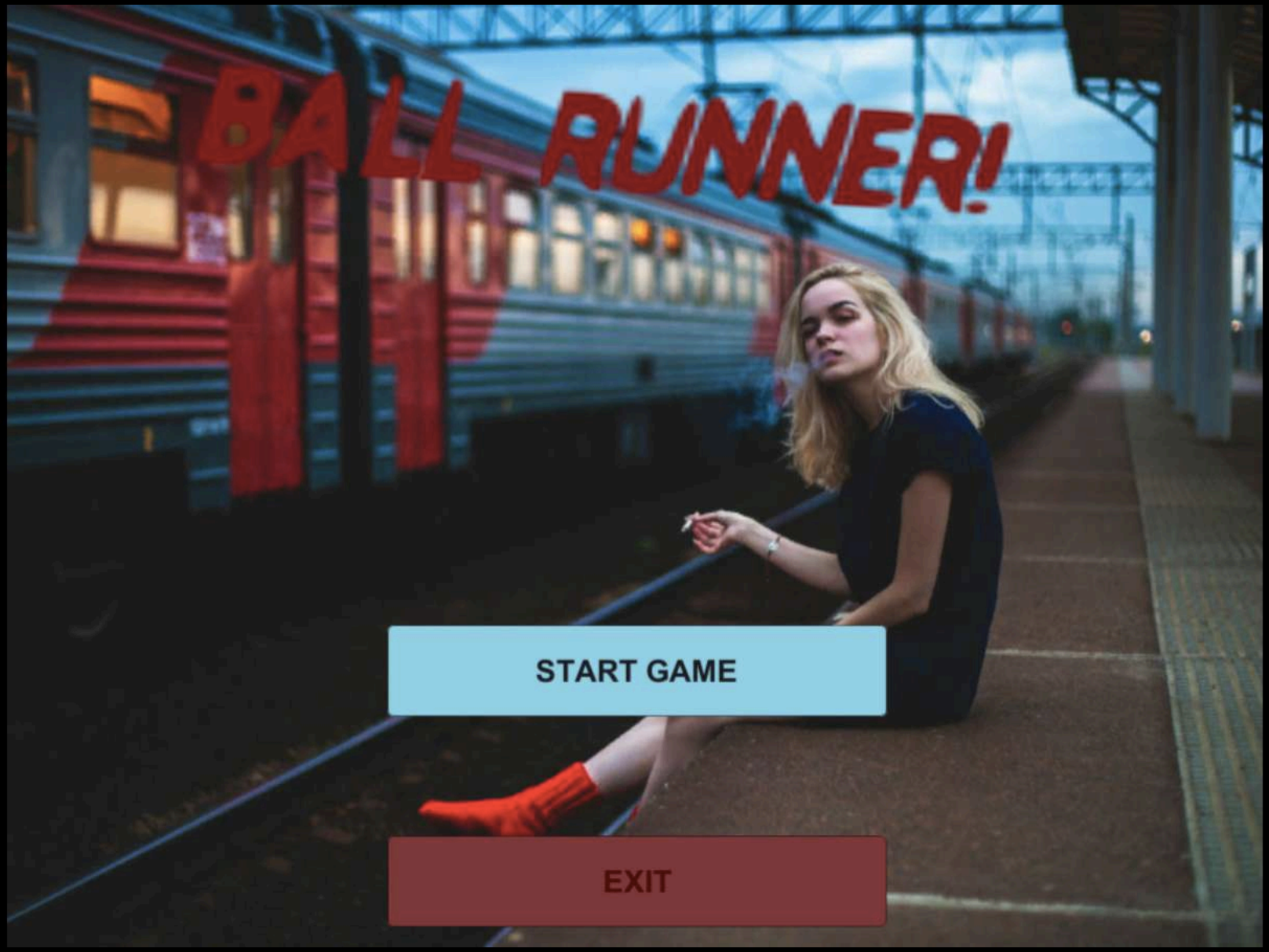


17 Coins

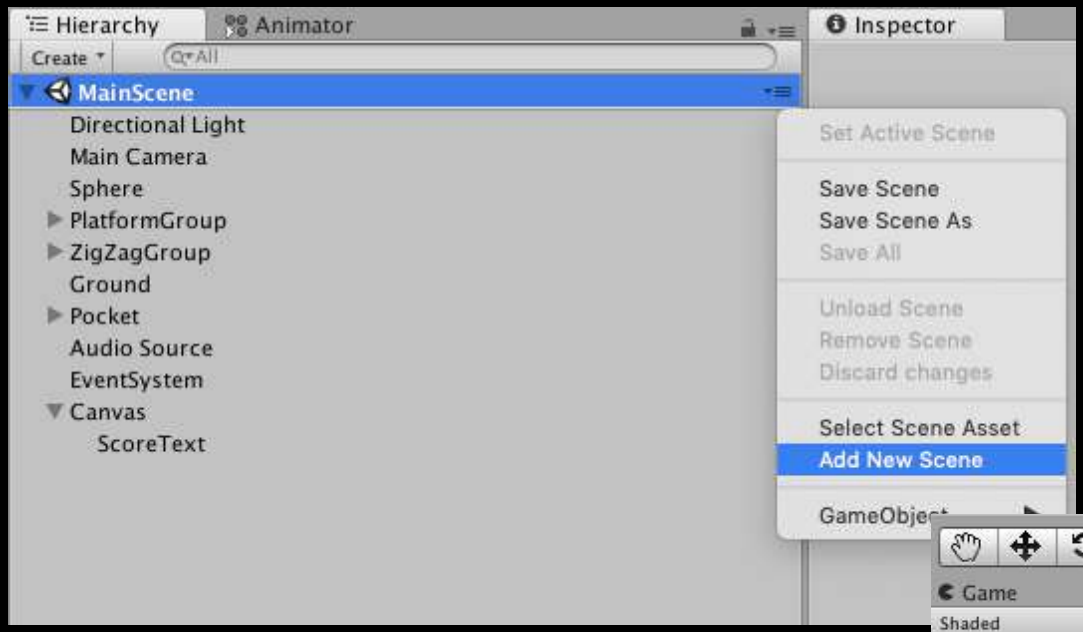
```
void Start () {
    rb = GetComponent<Rigidbody>();
    score = 17;
    updateScore();
}
```

```
private void OnTriggerEnter(Collider other)
{
    if (other.gameObject.CompareTag("CoinTag"))
    {
        other.gameObject.SetActive(false);
        audioSource.PlayOneShot(audioClip);
        score--;
        updateScore();
    }
}

private void updateScore()
{
    scoreText.text = "Coins: " + score;
}
```

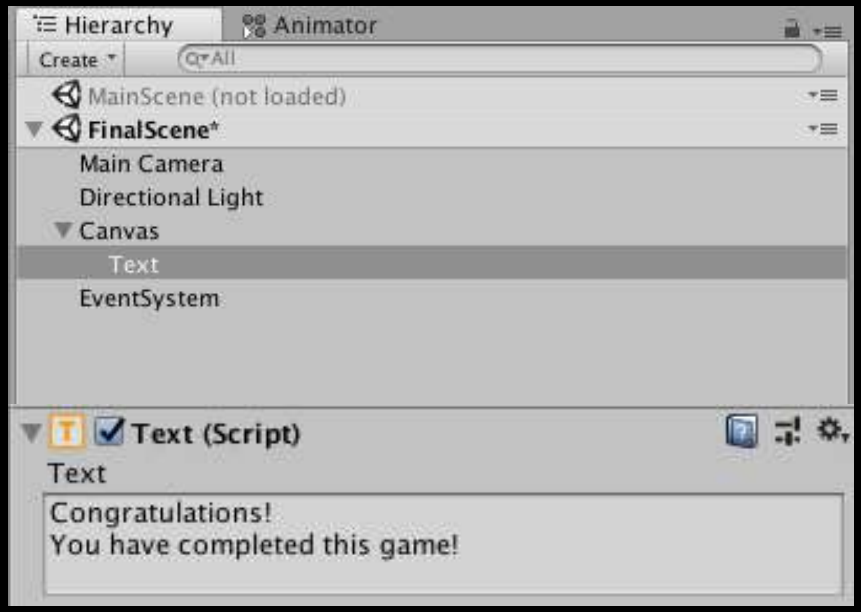
Part 3: Scenes & Menus

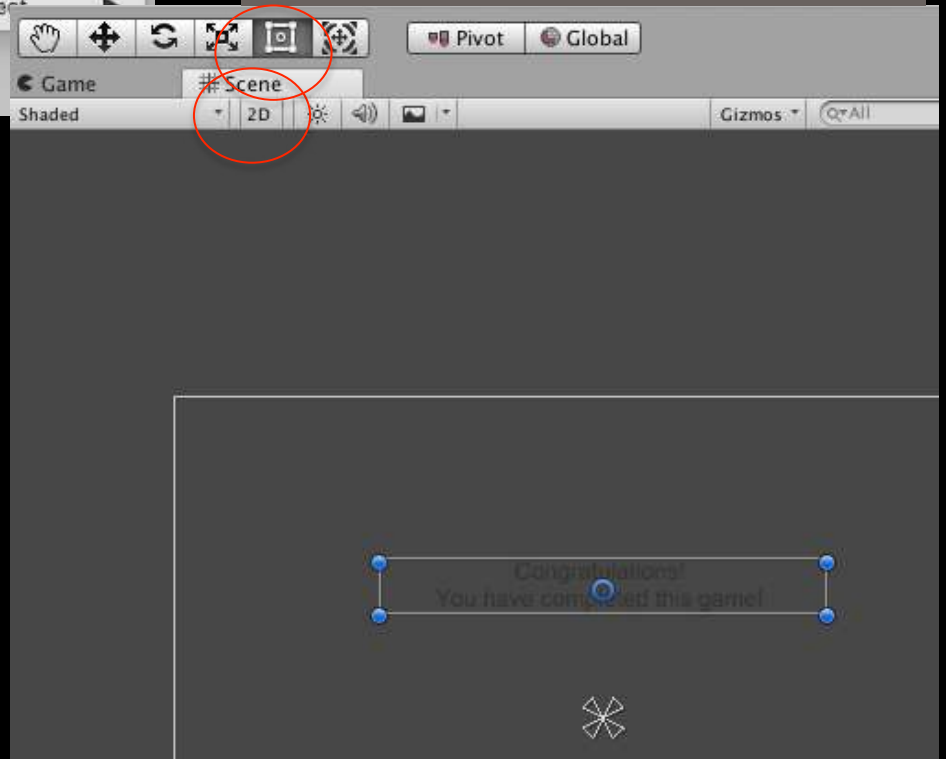


Final Scene


Hierarchy
Animator
Inspector
Create
All
MainScene
Directional Light
Main Camera
Sphere
PlatformGroup
ZigZagGroup
Ground
Pocket
Audio Source
EventSystem
Canvas
ScoreText
Set Active Scene
Save Scene
Save Scene As
Save All
Unload Scene
Remove Scene
Discard changes
Select Scene Asset
Add New Scene
GameObject


Congratulations!
You have completed this game!


Hierarchy
Animator
Create
All
MainScene (not loaded)
FinalScene*
Main Camera
Directional Light
Canvas
Text
EventSystem
Text (Script)
Text
Congratulations!
You have completed this game!

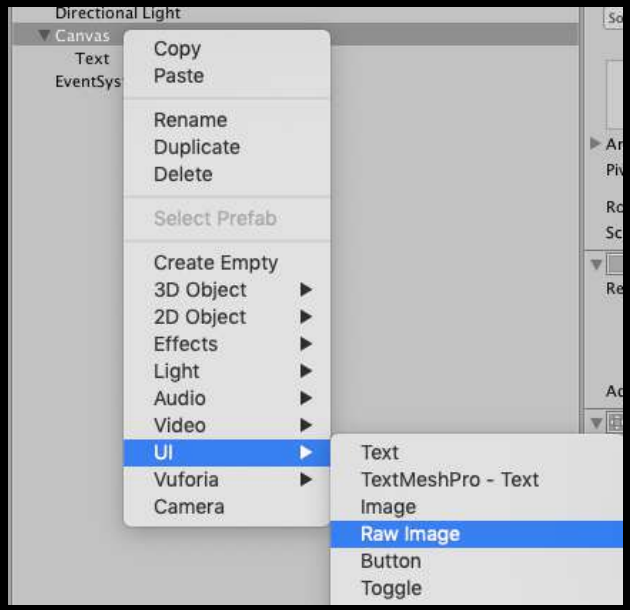

Pivot
Global
Game
Scene
Shaded
2D
Gizmos
All

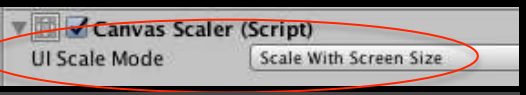
Background Image

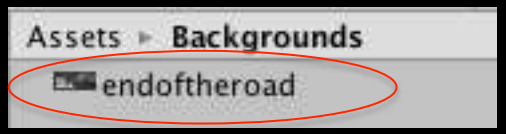
Moveball.cs

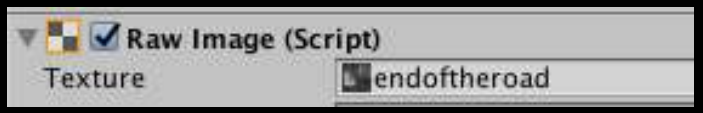
```
using UnityEngine.SceneManagement;
```

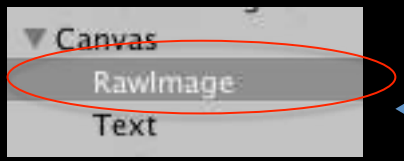
```
private void OnTriggerEnter(Collider other)
{
    if (other.gameObject.CompareTag("CoinTag"))
    {
        other.gameObject.SetActive(false);
        audioSource.PlayOneShot(audioClip);
        score--;
        updateScore();
        if (score == 0)
            SceneManager.LoadScene("FinalScene");
    }
}
```





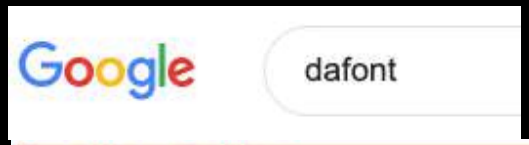


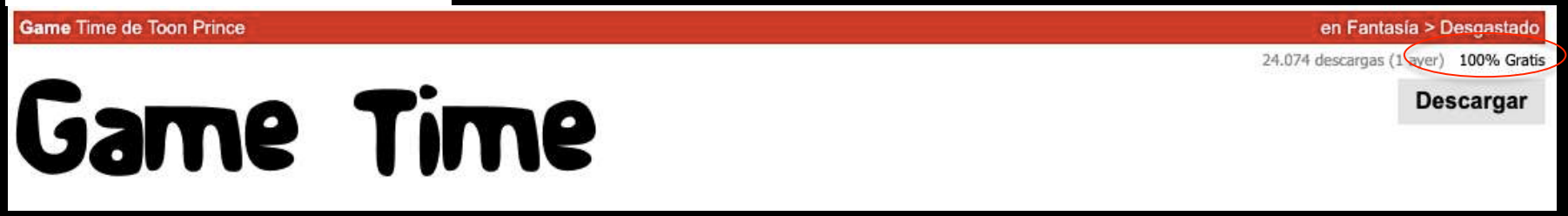


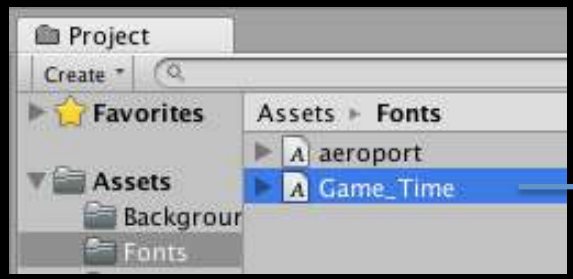


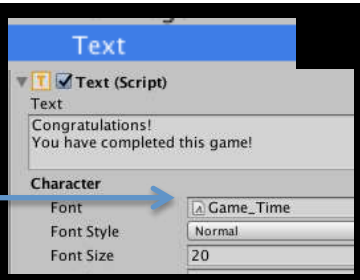
Order matters!!

Font


Google
dafont


Game Time de Toon Prince
en Fantasía > Desgastado
24.074 descargas (1 ayer)
100% Gratis
Descargar
Game Time

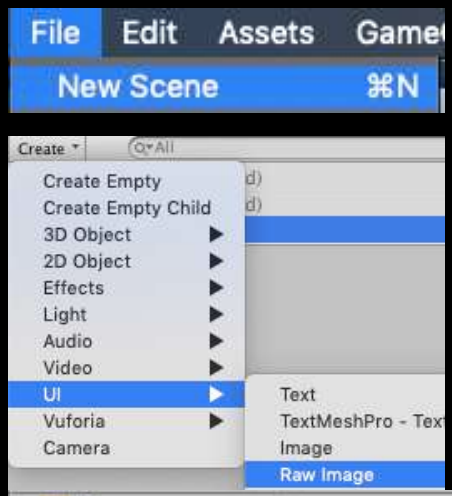

Project
Create
Favorites
Assets
Fonts
aeroport
Game_Time
Assets
Backgrour
Fonts

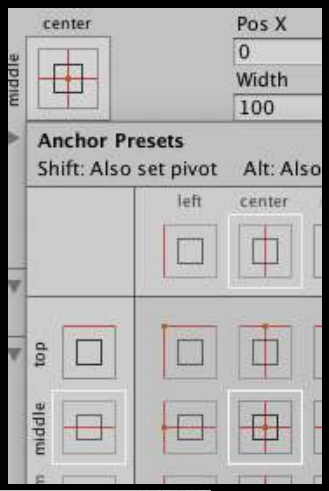

Text
Text (Script)
Text
Congratulations!
You have completed this game!
Character
Font
Game_Time
Font Style
Normal
Font Size
20

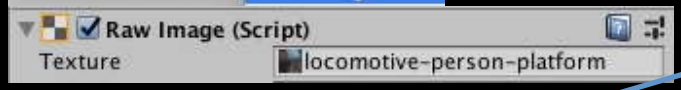

Game
Scene
Display 1
4:3
Scale
1x
Maximize On Play
Mute Audio
Stats
Gizmos
Congratulations!
You have completed this game!
END
OF THE
ROAD

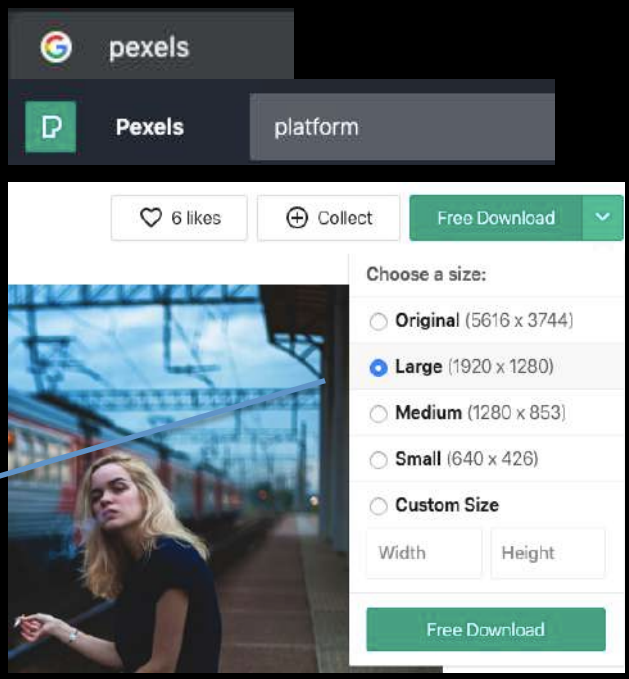

Congratulations!
You have completed this game!

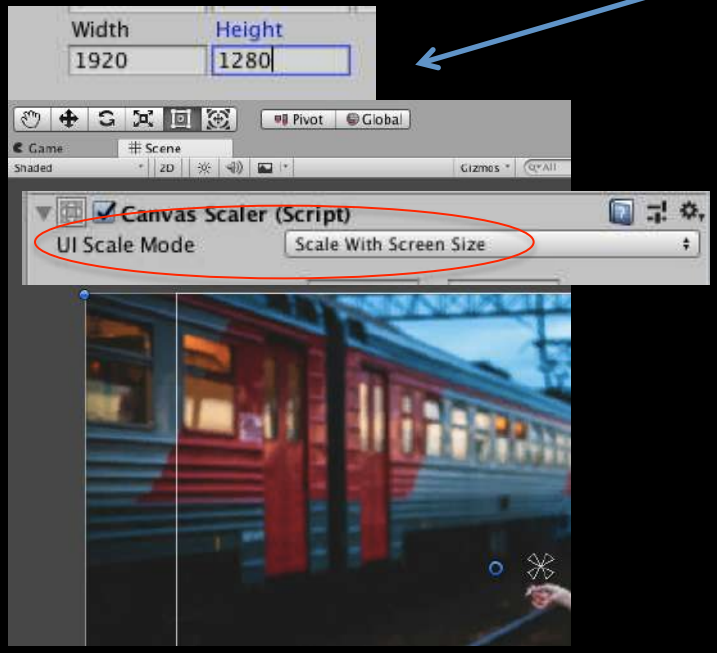
Start Scene

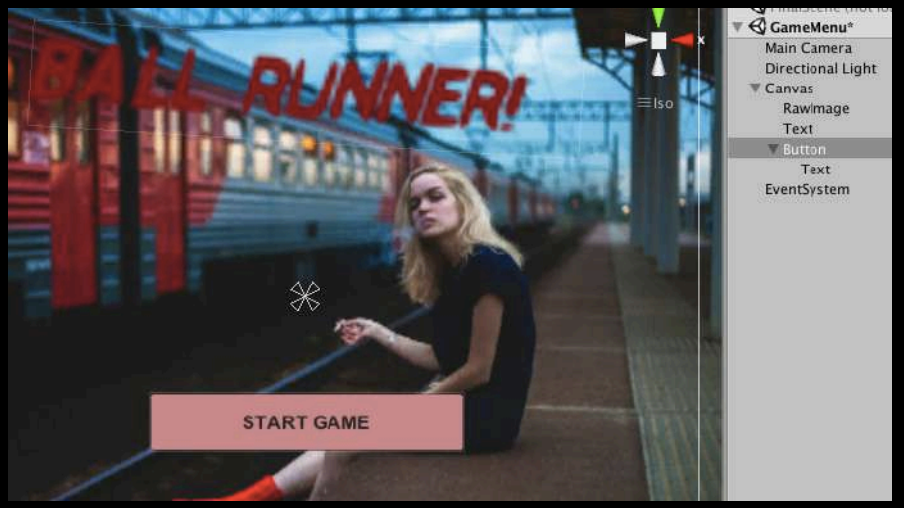

File
Edit
Assets
Game
New Scene
⌘N
Create
Create Empty
Create Empty Child
3D Object
2D Object
Effects
Light
Audio
Video
UI
Vuforia
Camera
Text
TextMeshPro - Tex
Image
Raw Image


center
middle
Pos X
0
Width
100
Anchor Presets
Shift: Also set pivot
Alt: Also
left
center
top
middle

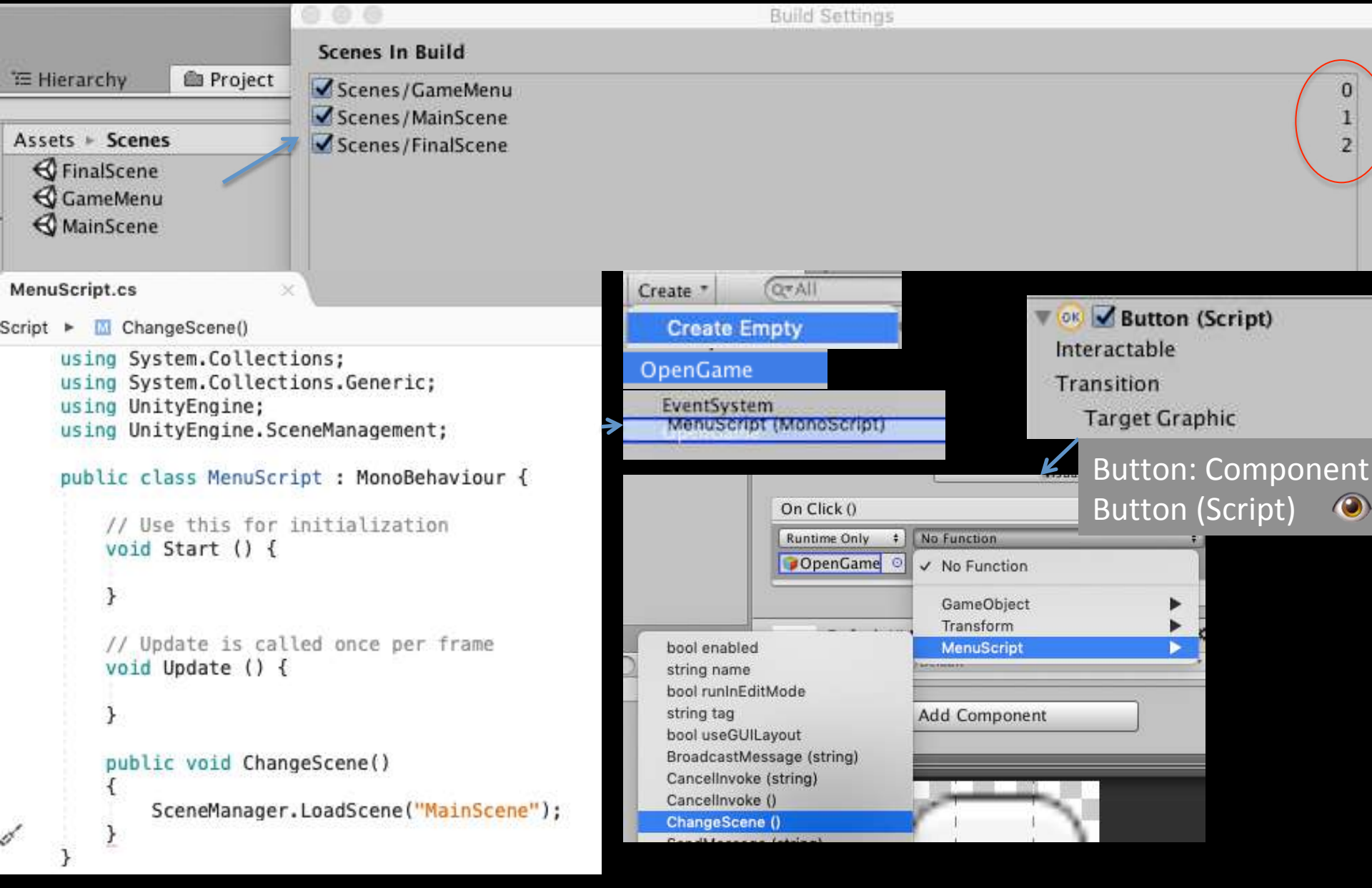

Raw Image (Script)
Texture
locomotive-person-platform


pexels
Pexels
platform
6 likes
Collect
Free Download
Choose a size:
Original (5616 x 3744)
Large (1920 x 1280)
Medium (1280 x 853)
Small (640 x 426)
Custom Size
Width
Height
Free Download

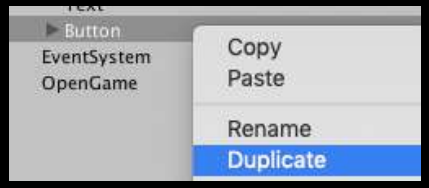

Width
Height
1920
1280
Pivot
Global
Game
Scene
Shaded
2D
Gizmos
Canvas Scaler (Script)
UI Scale Mode
Scale With Screen Size

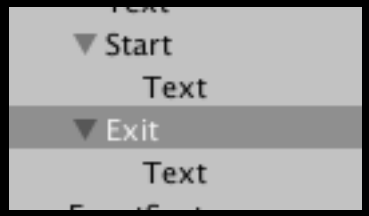

BALL RUNNER!
START GAME
GameMenu*
Main Camera
Directional Light
Canvas
RawImage
Text
Button
Text
EventSystem

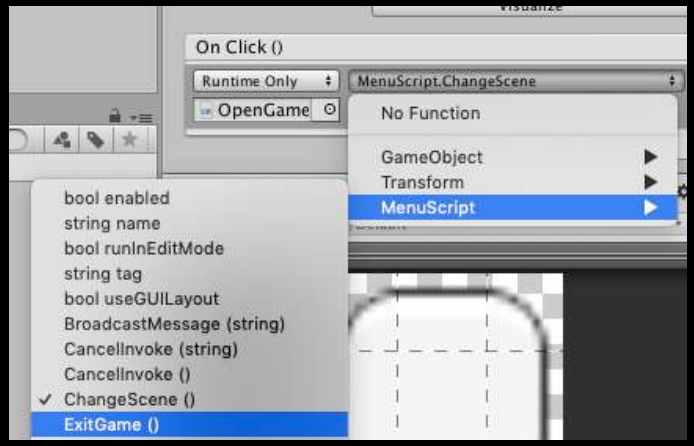
Scene Transition

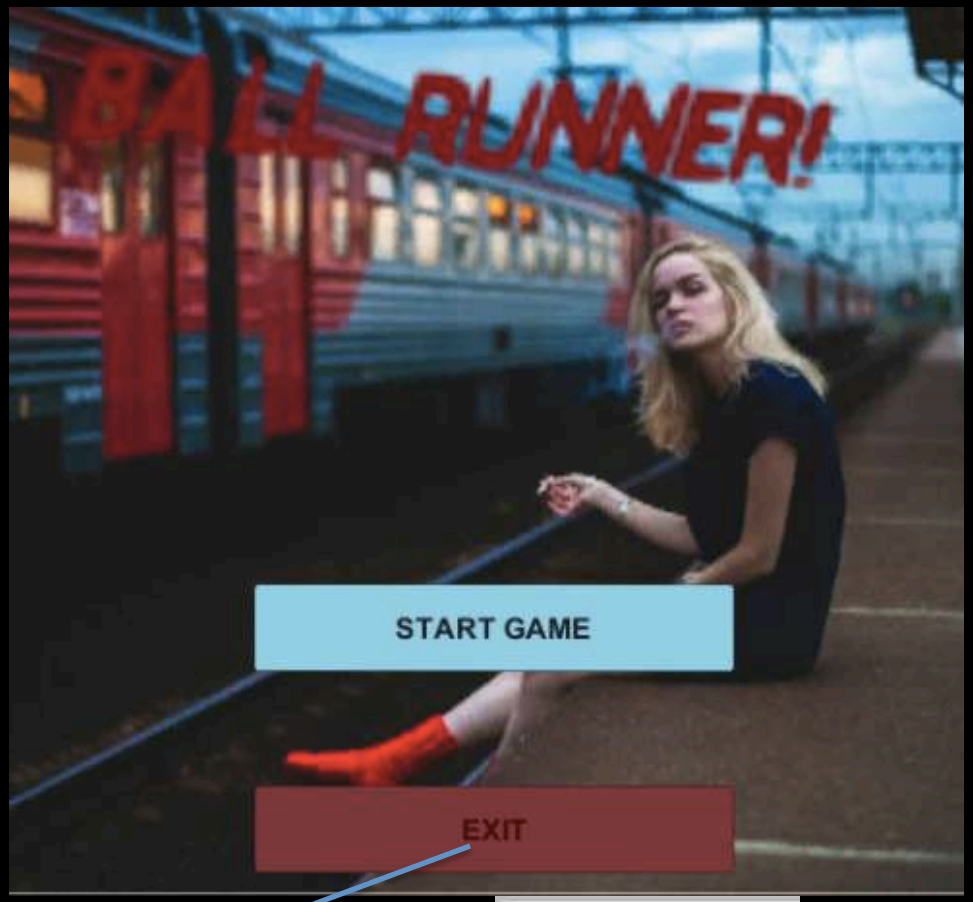


Exit Game

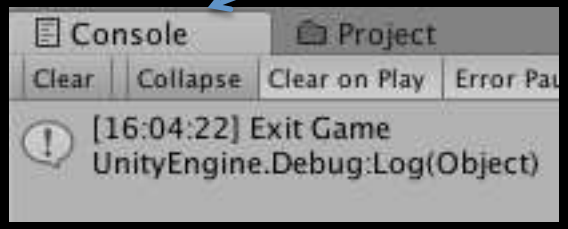








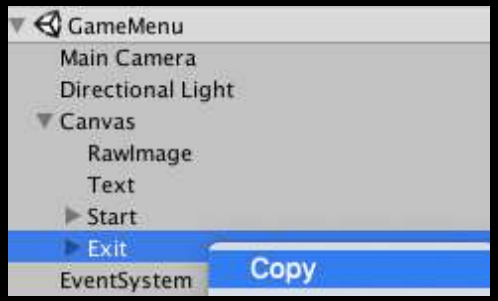

```
public void ExitGame()
{
    Debug.Log("Exit Game");
    Application.Quit();
}
```

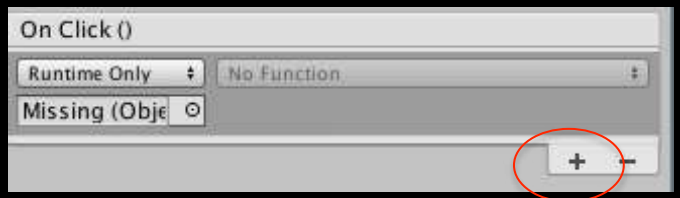


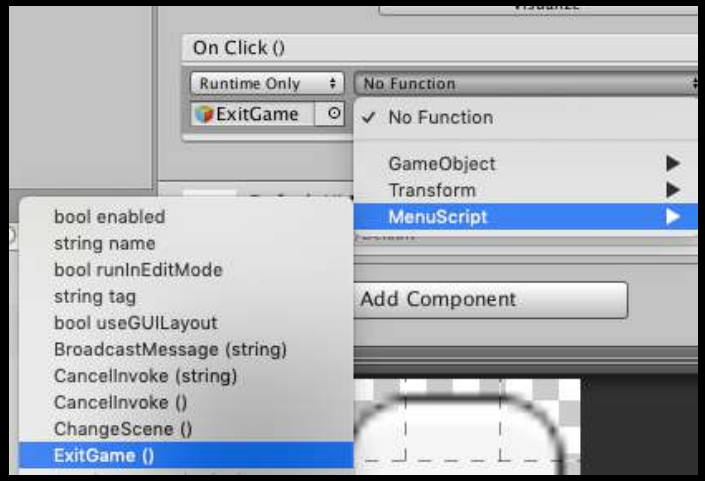
GroundRestart.cs

```
private void OnTriggerEnter()
{
    SceneManager.LoadScene("GameMenu");
}
```

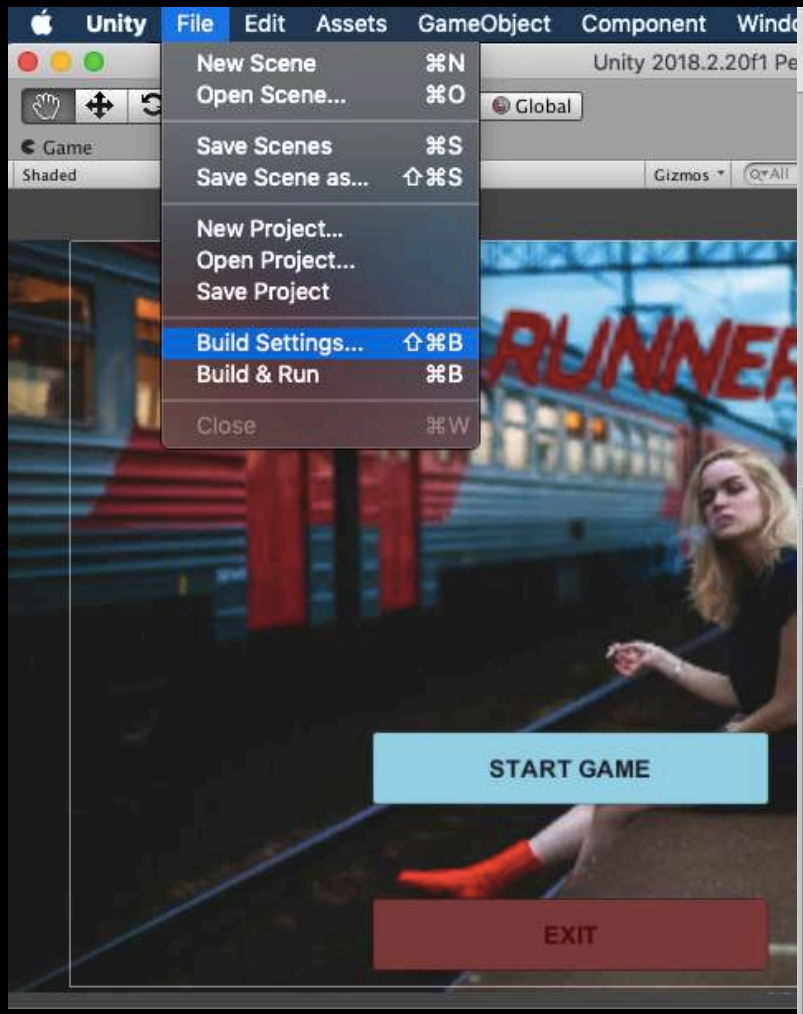
Restart & Exit (FinalScene)

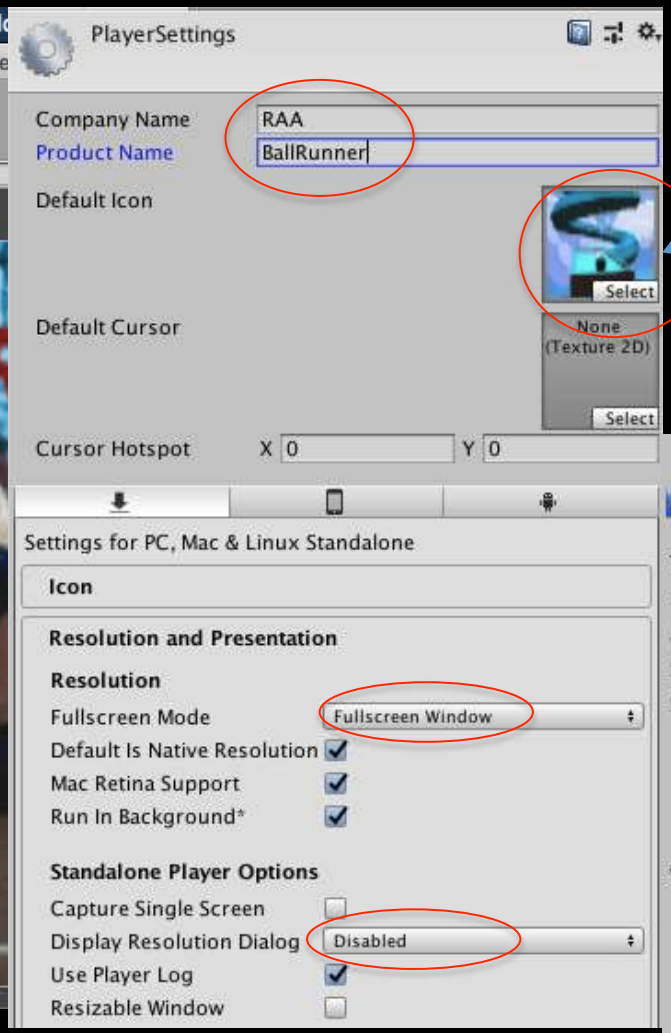


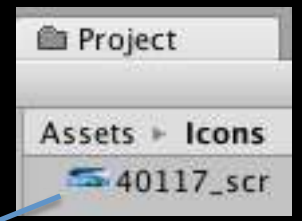




Build & Enjoy!


Unity
File
Edit
Assets
GameObject
Component
New Scene ⌘N
Open Scene... ⌘O
Save Scenes ⌘S
Save Scene as... ⇧⌘S
New Project...
Open Project...
Save Project
Build Settings... ⇧⌘B
Build & Run ⌘B
Close ⌘W
Unity 2018.2.20f1 Pe
Global
Game
Shaded
Gizmos
START GAME
EXIT


PlayerSettings
Company Name
RAA
Product Name
BallRunner
Default Icon
Select
Default Cursor
None
(Texture 2D)
Select
Cursor Hotspot
X 0
Y 0
Settings for PC, Mac & Linux Standalone
Icon
Resolution and Presentation
Resolution
Fullscreen Mode
Fullscreen Window
Default Is Native Resolution
Mac Retina Support
Run In Background*
Standalone Player Options
Capture Single Screen
Display Resolution Dialog
Disabled
Use Player Log
Resizable Window


Project
Assets
Icons
40117_scr


PC, Mac & Linux Standalone
Target Platform
Mac OS X
Development Build
Autoconnect Profiler
Script Debugging
Scripts Only Build
Compression Method
Default
Learn abo
Build