Interactive Systems

Practice and Seminars

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Methodology

- Unity Basics -Today
- Scripting
- Tracking - To be defined
- Importing objects, animations
- Project development: real-time Full-Body Interactive experience.

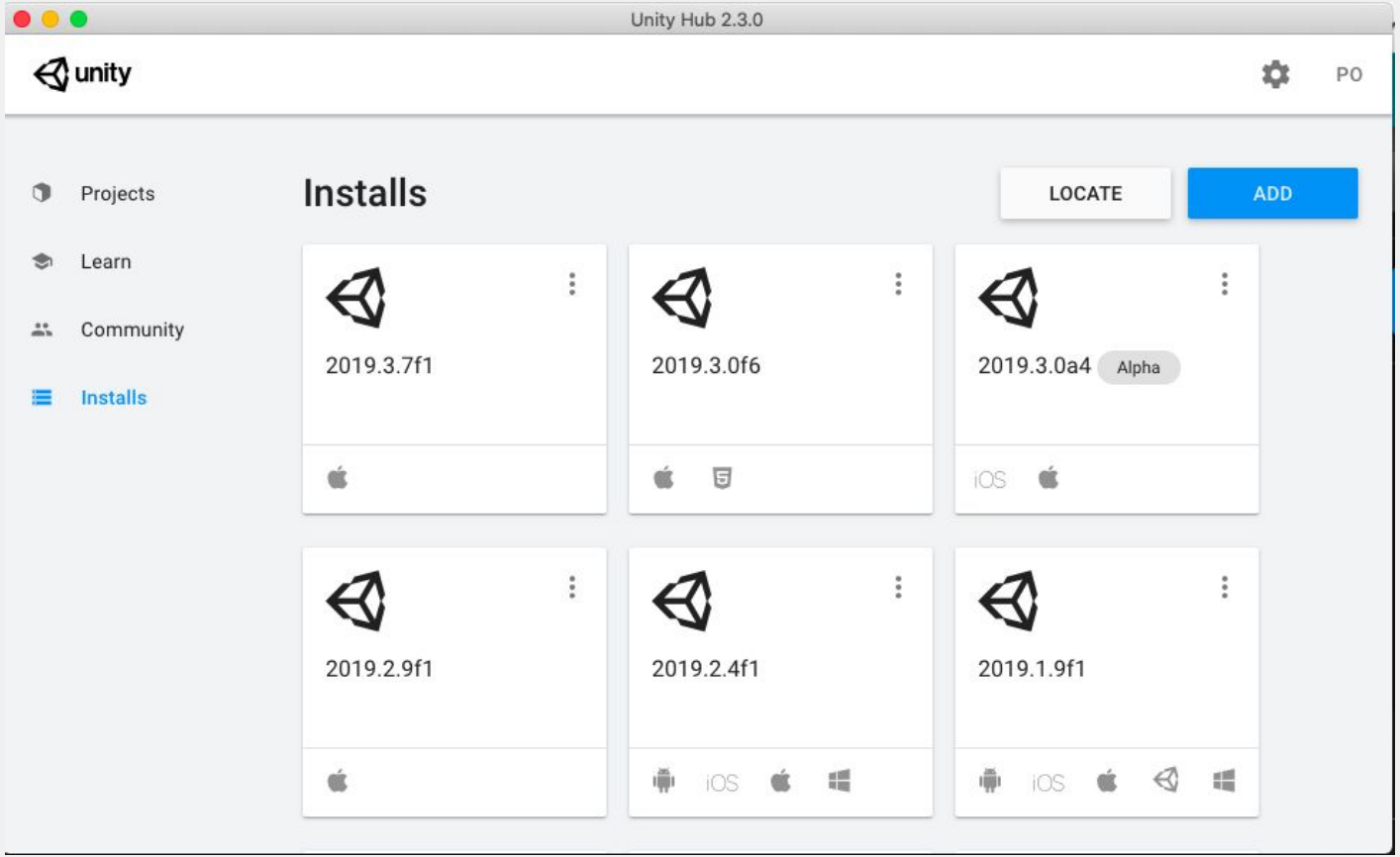
- Professional tool
- Prepared for developing both 3D and 2D.
- Multiplatform
- A lot of online information available (big community)
- Free for students and personal use
- Used by small and big companies.
- Not only for video games, also for arts, research, industry

Resources

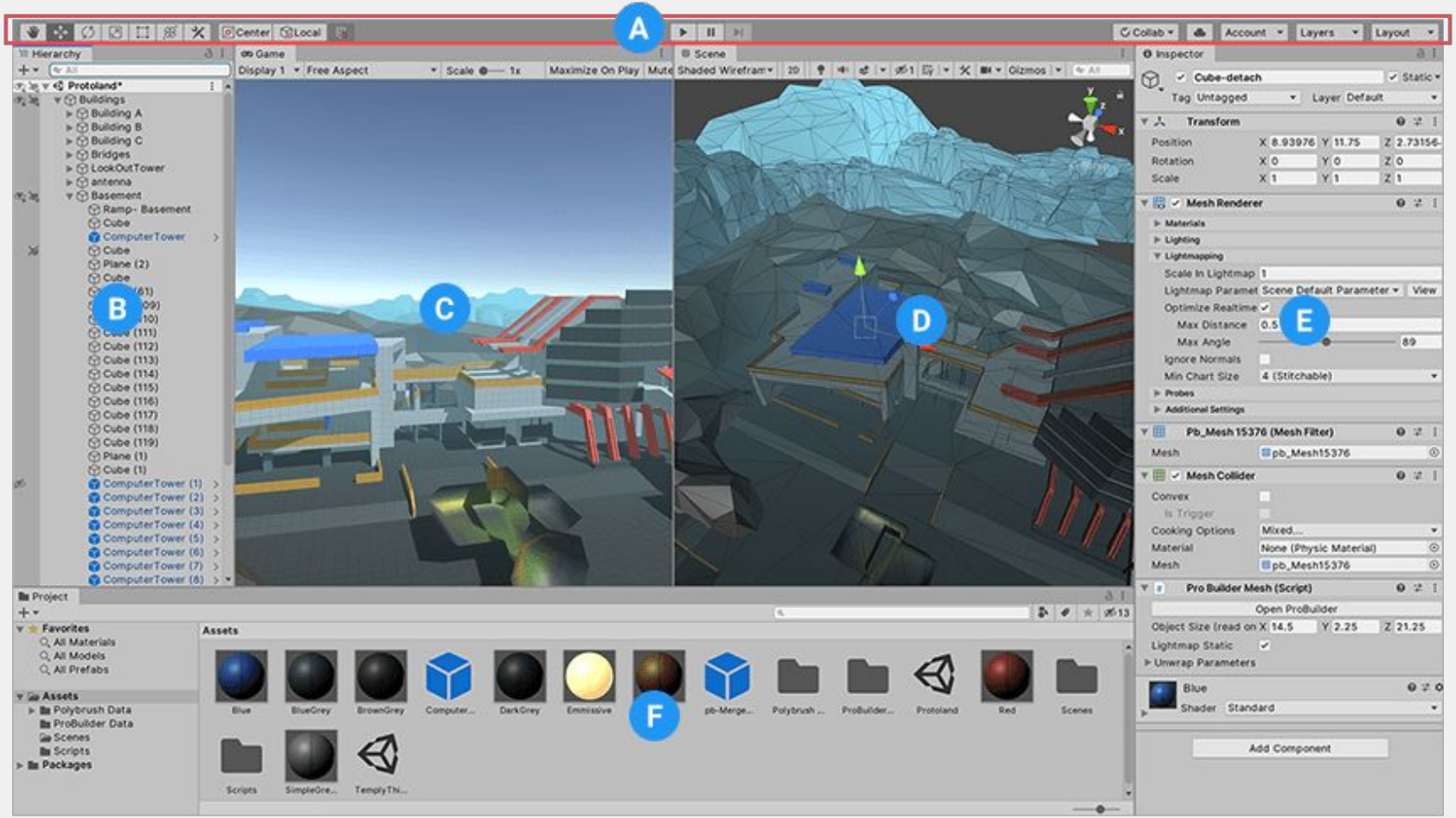
- www.unity.com

- Unity version: 2019.3.7f1
  - Download Unity Hub
  - Use Unity Hub to get the specific Unity version

Intalling Unity - Unity Hub



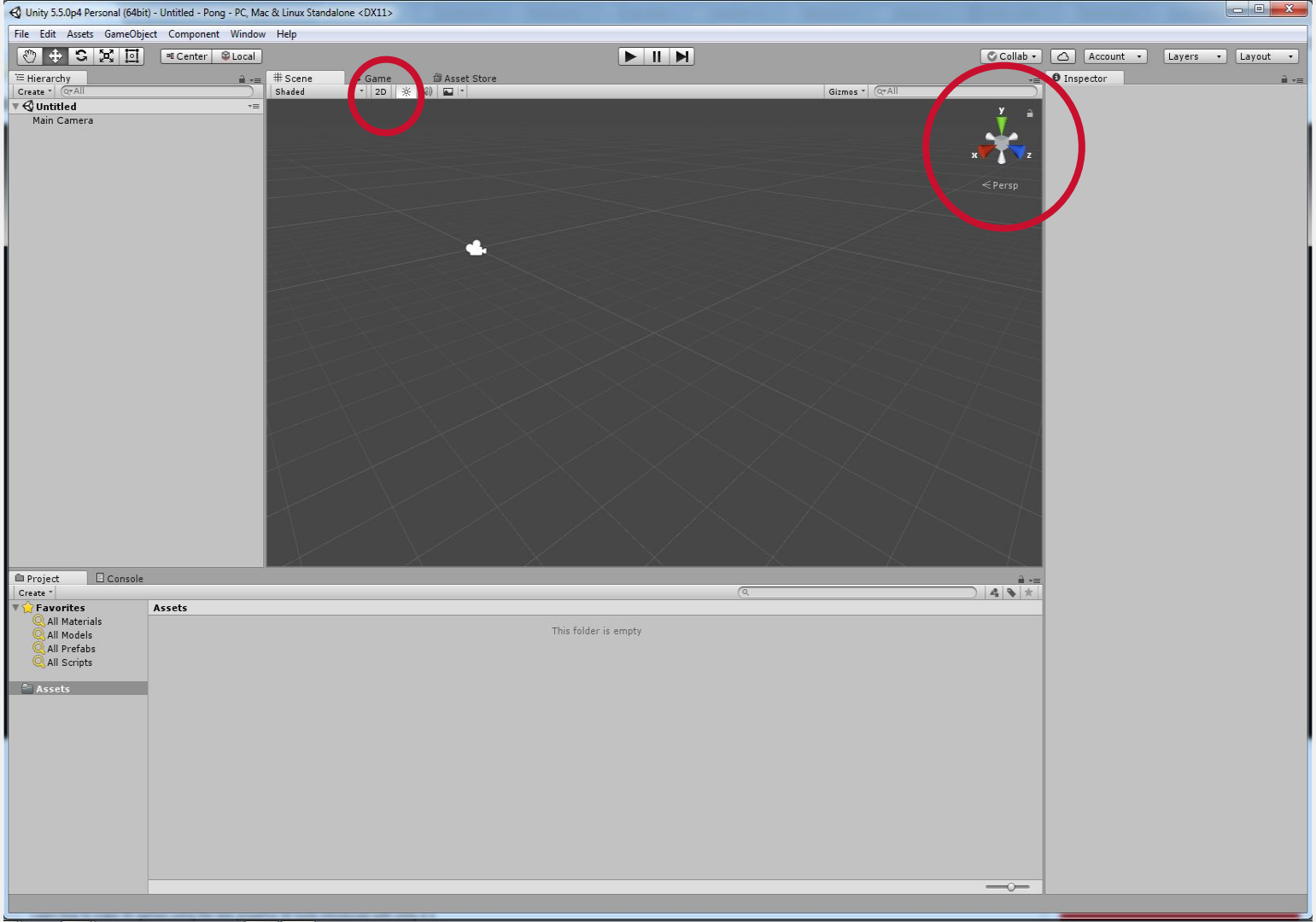
Unity's interface



(A) The Toolbar (B) The Hierarchy window (C) The Game view (D) The Scene view (E) The Inspector Window (F) The Project window

https://docs.unity3d.com/Manual/UsingTheEditor.html

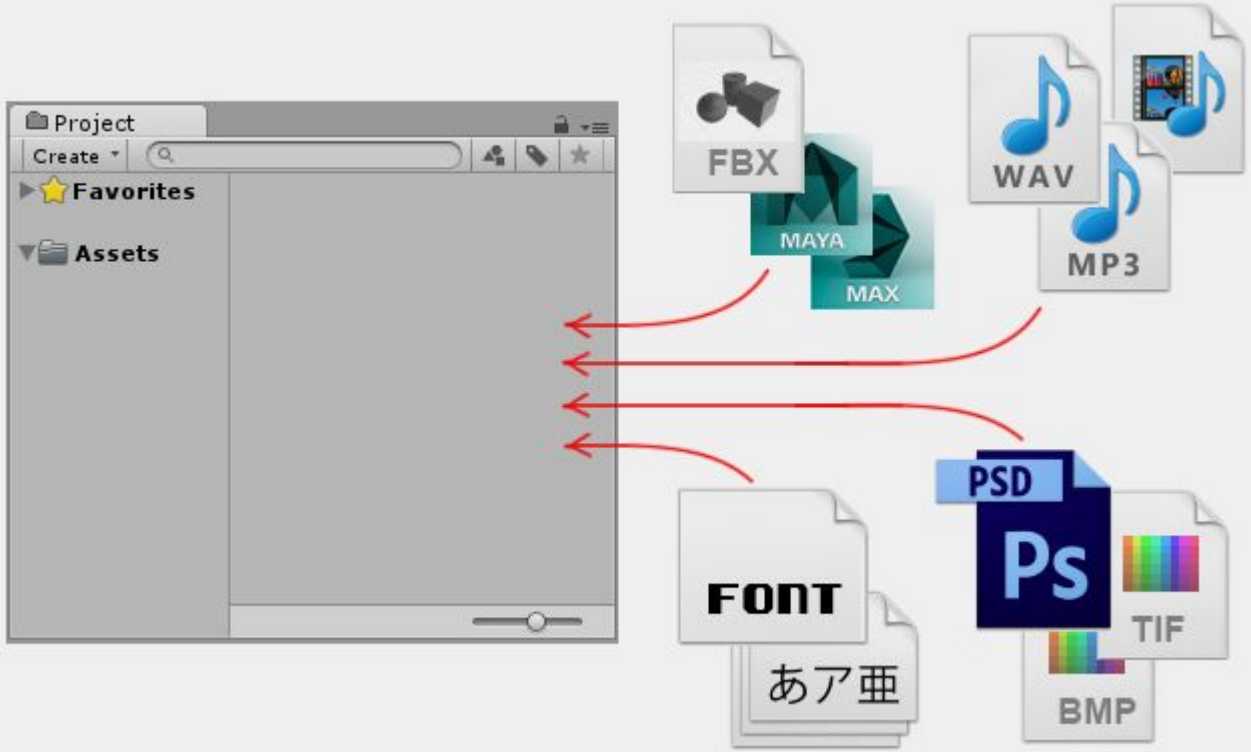
Unity's interface: 2D vs 3D



Organizing logical resources

- Animations
- Animators
- Audio
- Materials
- Models (3D)
- Prefabs
- Resources
- Scenes
- Scripts
- Shaders
- Sprites
- Textures

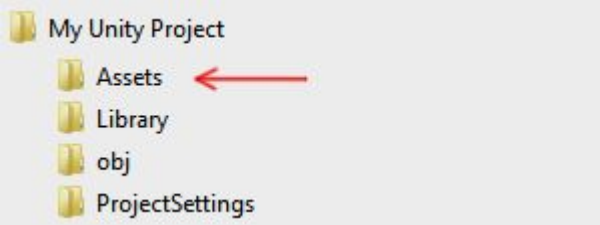
Adding resources to our project

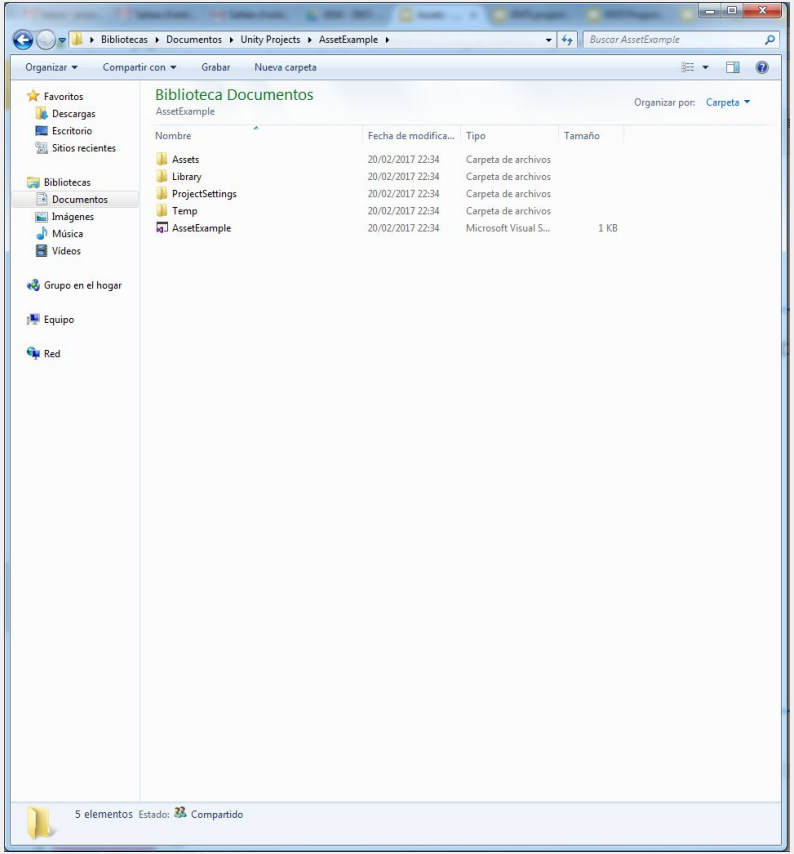


Adding resources to our project

You can also save them in the folders structure of the Unity project:

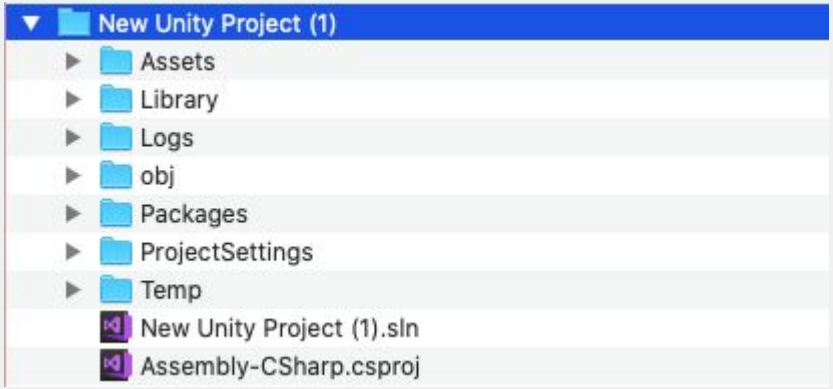
- **Assets**
- Library
- Project Settings





Project folders - version control

Important for distributed teams

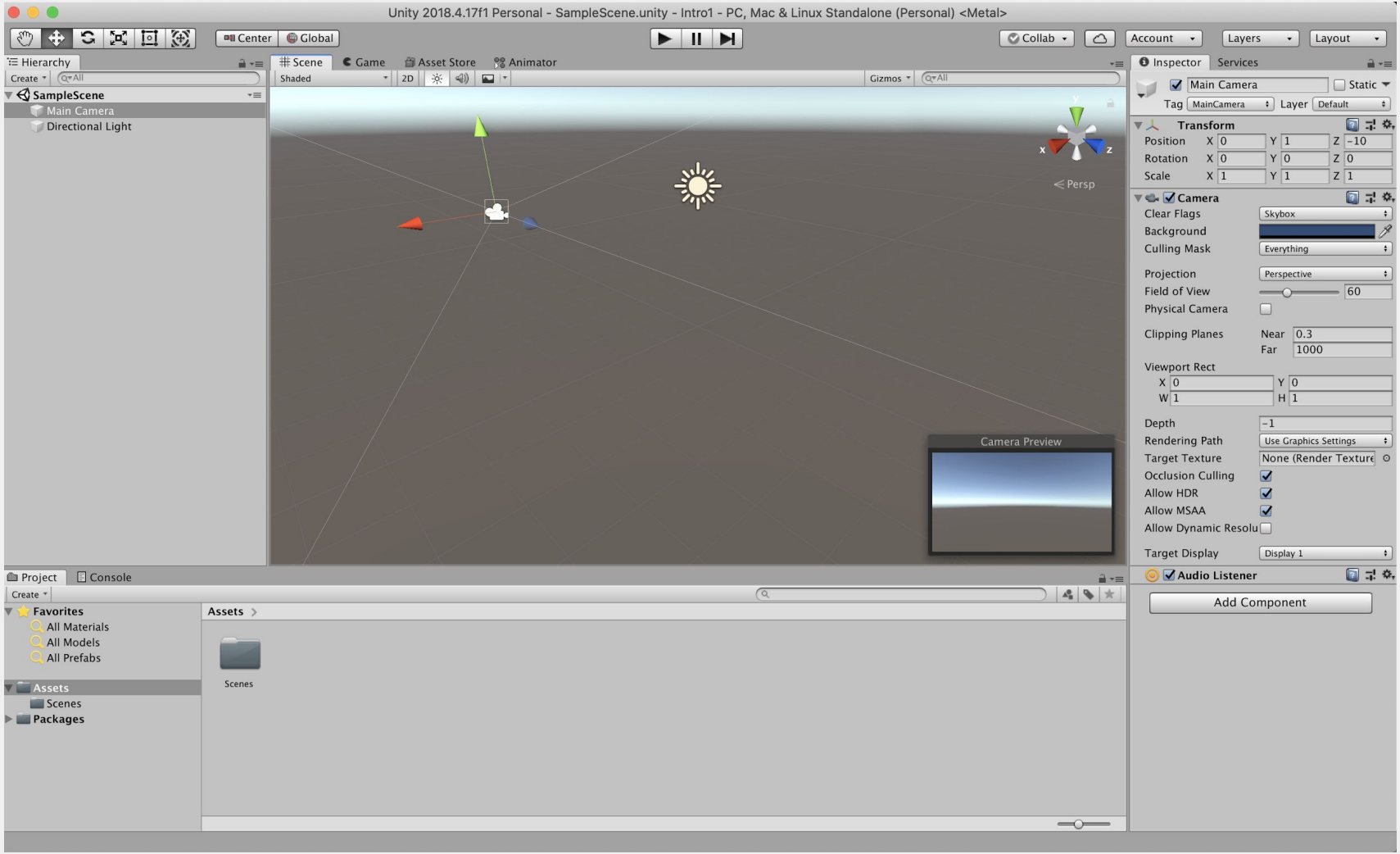


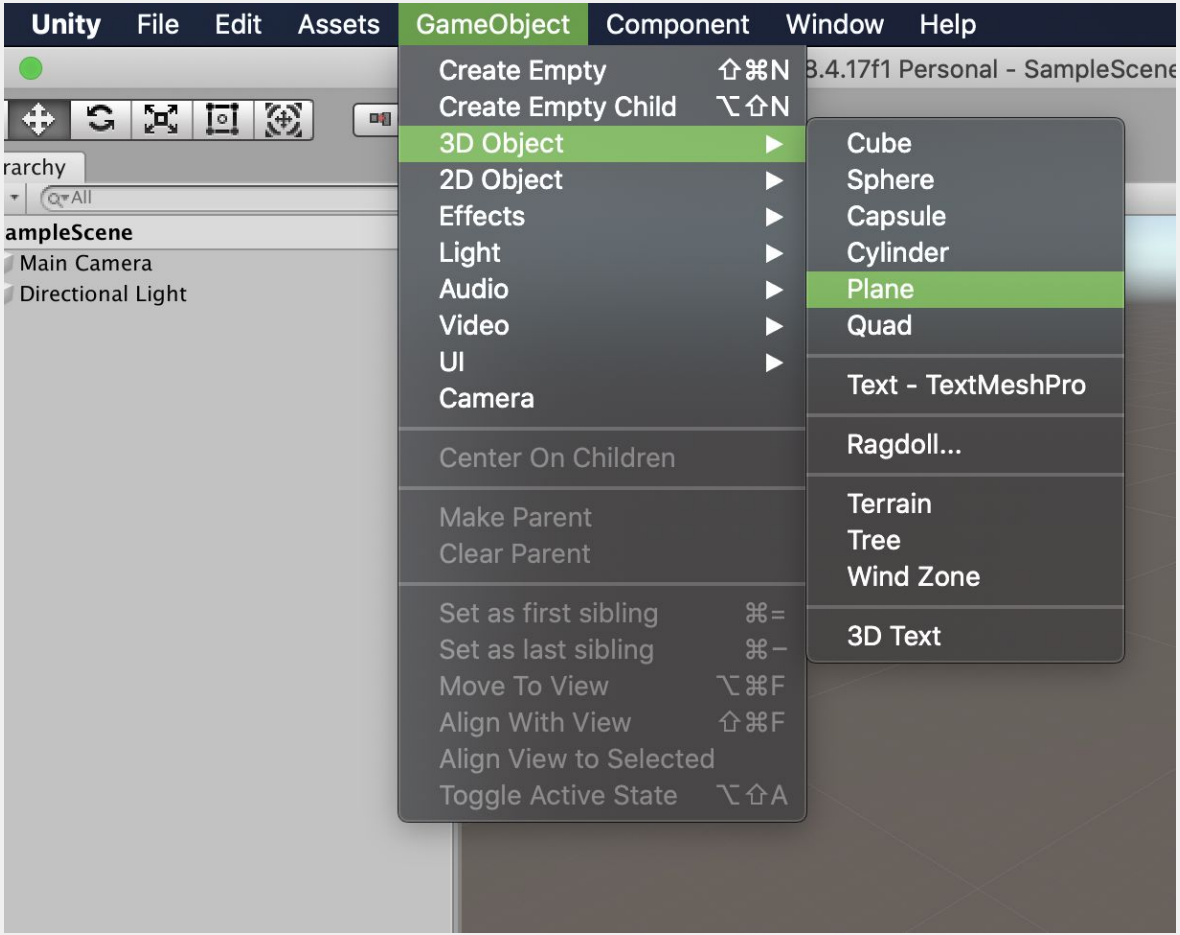
See
https://unity.github.com/
How to Git with Unity

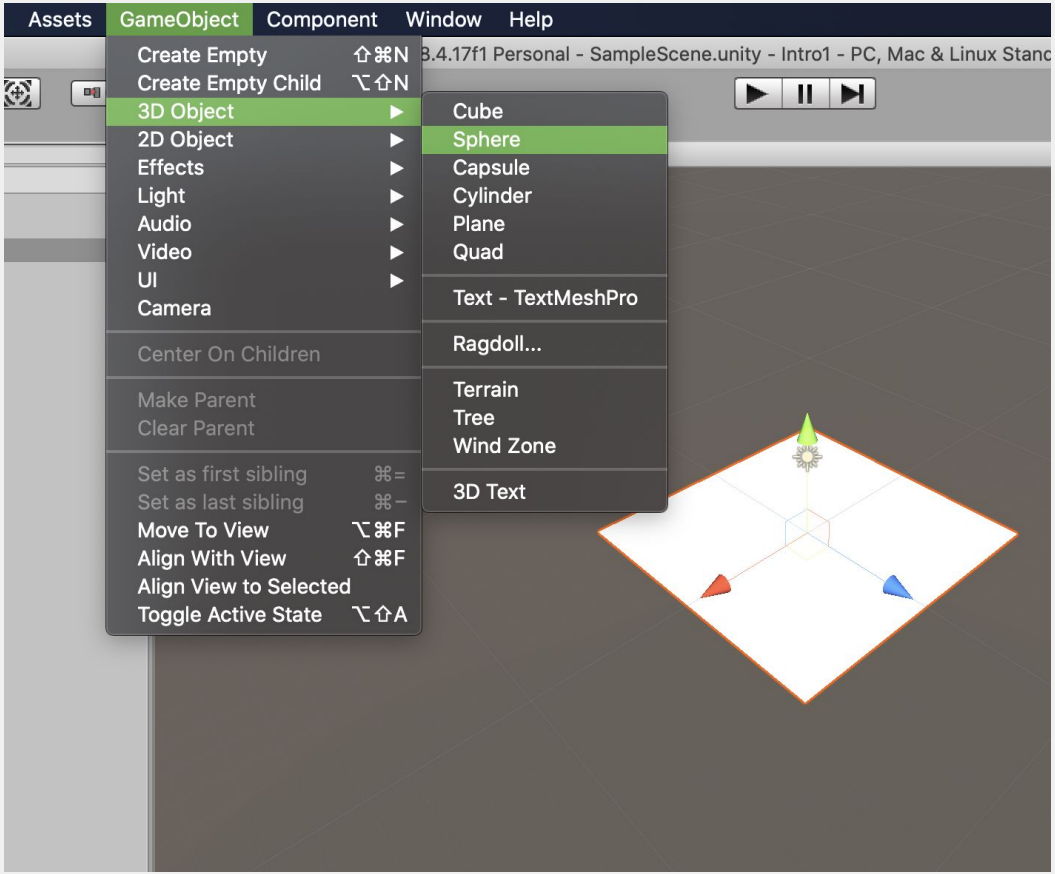
Excercise 1: Create project

[Exercise: perform basic actions]

- Open the software
- Create a New project
- Create an object (a cube and a plane)
- Press play (nothing happens)
- Add physics
- Press play (cube falls)
- Change texture


Unity 2018.4.17f1 Personal - SampleScene.unity - Intro1 - PC, Mac & Linux Standalone (Personal) <Metal>
Center
Global
Collab
Account
Layers
Layout
Hierarchy
Create
SampleScene
Main Camera
Directional Light
Scene
Game
Asset Store
Animator
Shaded
2D
Gizmos
Persp
Camera Preview
Inspector
Services
Main Camera
Static
Tag
MainCamera
Layer
Default
Transform
Position
Rotation
Scale
Camera
Clear Flags
Skybox
Background
Culling Mask
Everything
Projection
Perspective
Field of View
60
Physical Camera
Clipping Planes
Near
0.3
Far
1000
Viewport Rect
Depth
-1
Rendering Path
Use Graphics Settings
Target Texture
None (Render Texture
Occlusion Culling
Allow HDR
Allow MSAA
Allow Dynamic Resolu
Target Display
Display 1
Audio Listener
Add Component
Project
Console
Create
Favorites
All Materials
All Models
All Prefabs
Assets
Scenes
Packages
Assets
Scenes


Unity
File
Edit
Assets
GameObject
Component
Window
Help
Create Empty ⇧⌘N
Create Empty Child ⌥⇧N
3D Object
2D Object
Effects
Light
Audio
Video
UI
Camera
Center On Children
Make Parent
Clear Parent
Set as first sibling ⌘=
Set as last sibling ⌘−
Move To View ⌥⌘F
Align With View ⇧⌘F
Align View to Selected
Toggle Active State ⌥⇧A
Cube
Sphere
Capsule
Cylinder
Plane
Quad
Text - TextMeshPro
Ragdoll...
Terrain
Tree
Wind Zone
3D Text
Main Camera
Directional Light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Clear Parent
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Move To View ⌥⌘F
Align With View ⇧⌘F
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Toggle Active State ⌥⇧A
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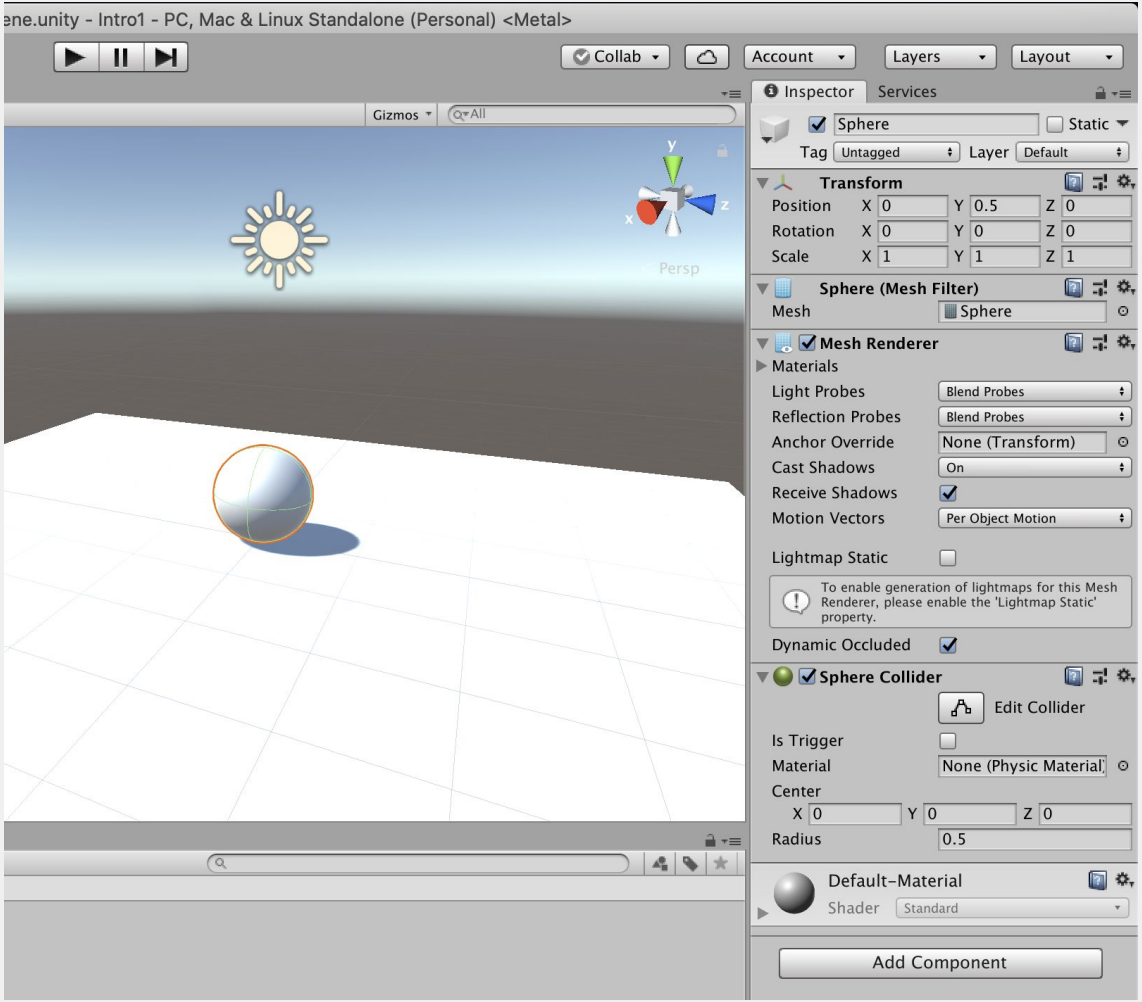
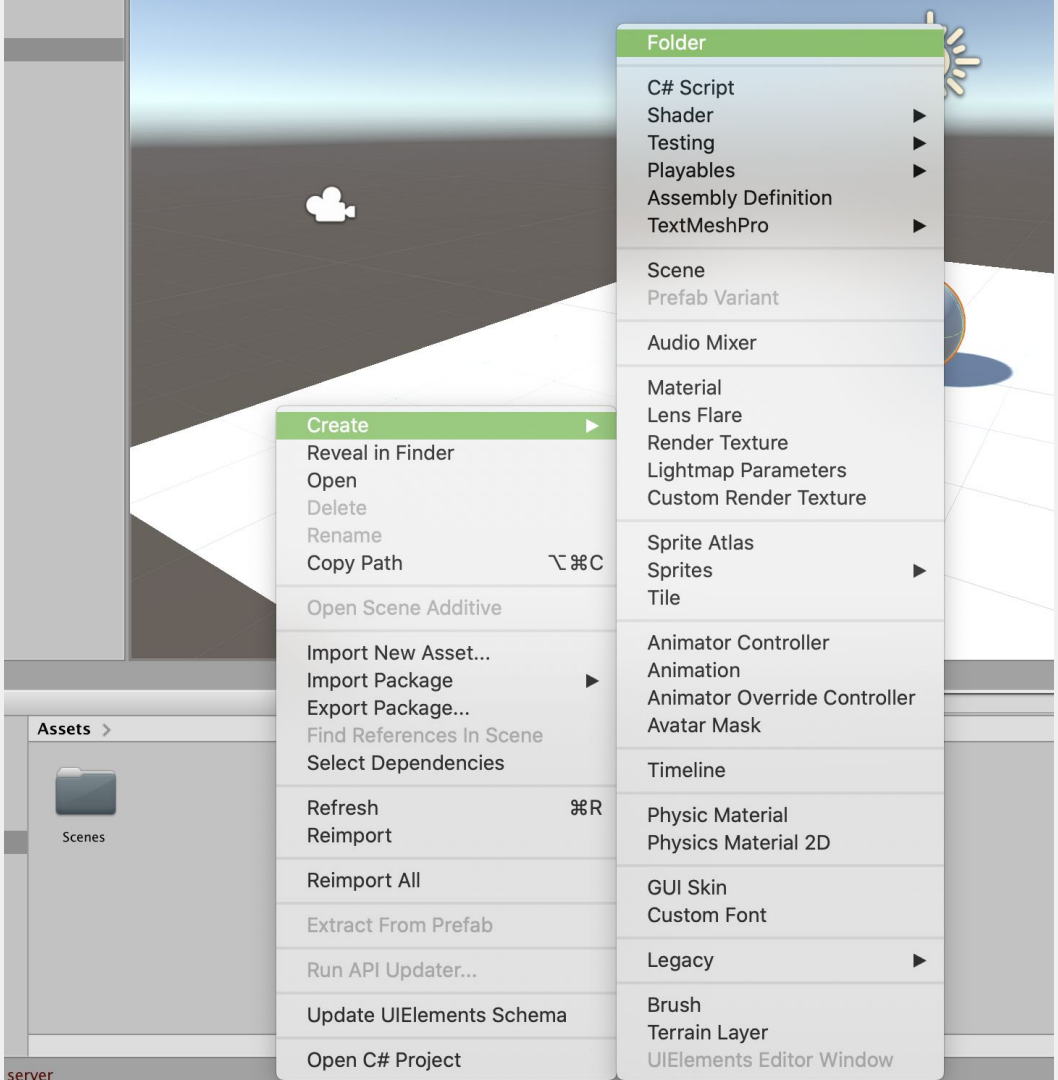
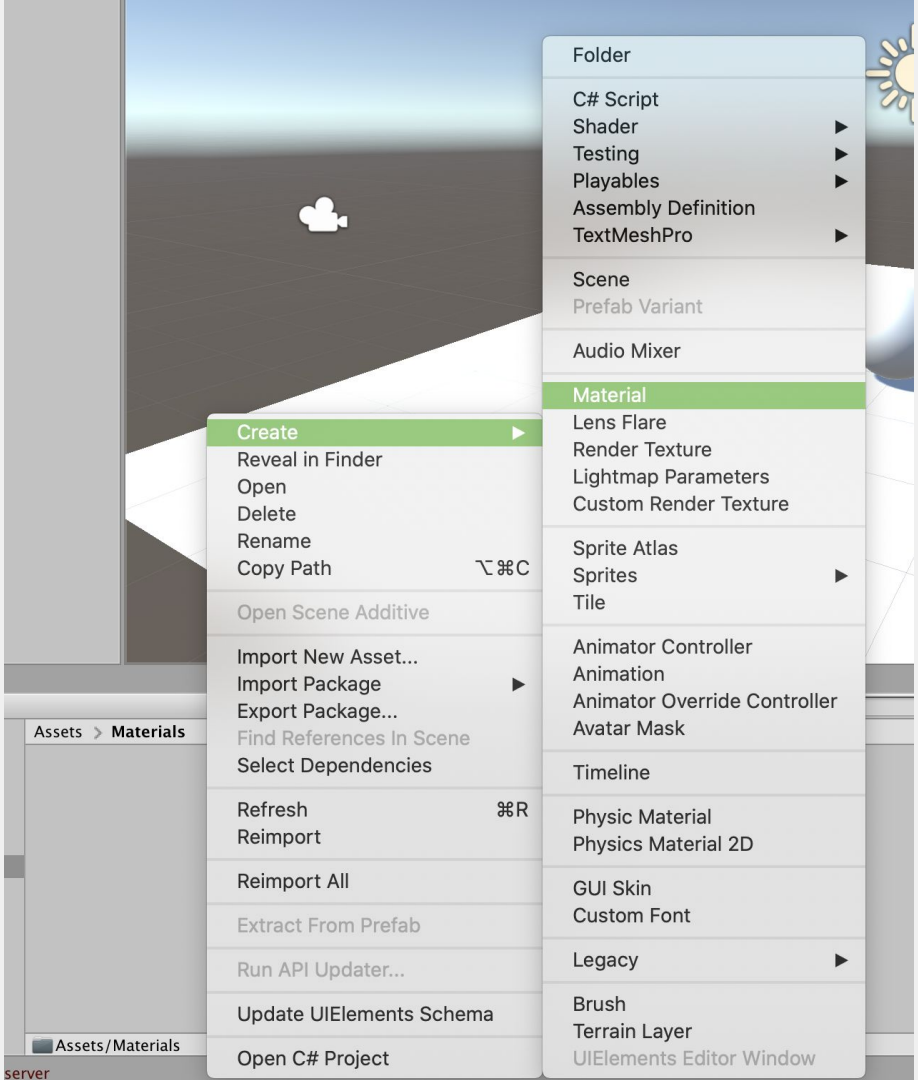

ene.unity - Intro1 - PC, Mac & Linux Standalone (Personal) <Metal>
Collab
Account
Layers
Layout
Gizmos
All
Persp
Inspector
Services
Sphere
Static
Tag
Untagged
Layer
Default
Transform
Position
Rotation
Scale
Sphere (Mesh Filter)
Mesh
Sphere
Mesh Renderer
Materials
Light Probes
Blend Probes
Reflection Probes
Blend Probes
Anchor Override
None (Transform)
Cast Shadows
On
Receive Shadows
Motion Vectors
Per Object Motion
Lightmap Static
To enable generation of lightmaps for this Mesh Renderer, please enable the 'Lightmap Static' property.
Dynamic Occluded
Sphere Collider
Edit Collider
Is Trigger
Material
None (Physic Material)
Center
Radius
0.5
Default-Material
Shader
Standard
Add Component


Folder
C# Script
Shader
Testing
Playables
Assembly Definition
TextMeshPro
Scene
Prefab Variant
Audio Mixer
Material
Lens Flare
Render Texture
Lightmap Parameters
Custom Render Texture
Sprite Atlas
Sprites
Tile
Animator Controller
Animation
Animator Override Controller
Avatar Mask
Timeline
Physic Material
Physics Material 2D
GUI Skin
Custom Font
Legacy
Brush
Terrain Layer
UIElements Editor Window
Create
Reveal in Finder
Open
Delete
Rename
Copy Path ⌥⌘C
Open Scene Additive
Import New Asset...
Import Package
Export Package...
Find References In Scene
Select Dependencies
Refresh ⌘R
Reimport
Reimport All
Extract From Prefab
Run API Updater...
Update UIElements Schema
Open C# Project
Assets
Scenes
server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Lightmap Parameters
Custom Render Texture
Sprite Atlas
Sprites
Tile
Animator Controller
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UIElements Editor Window
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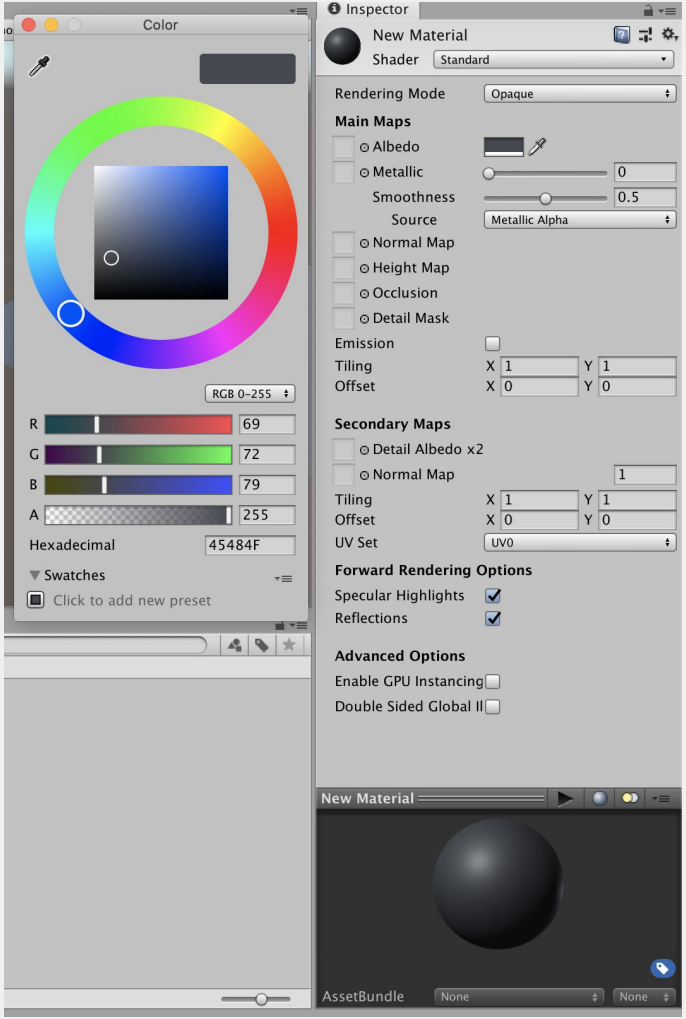
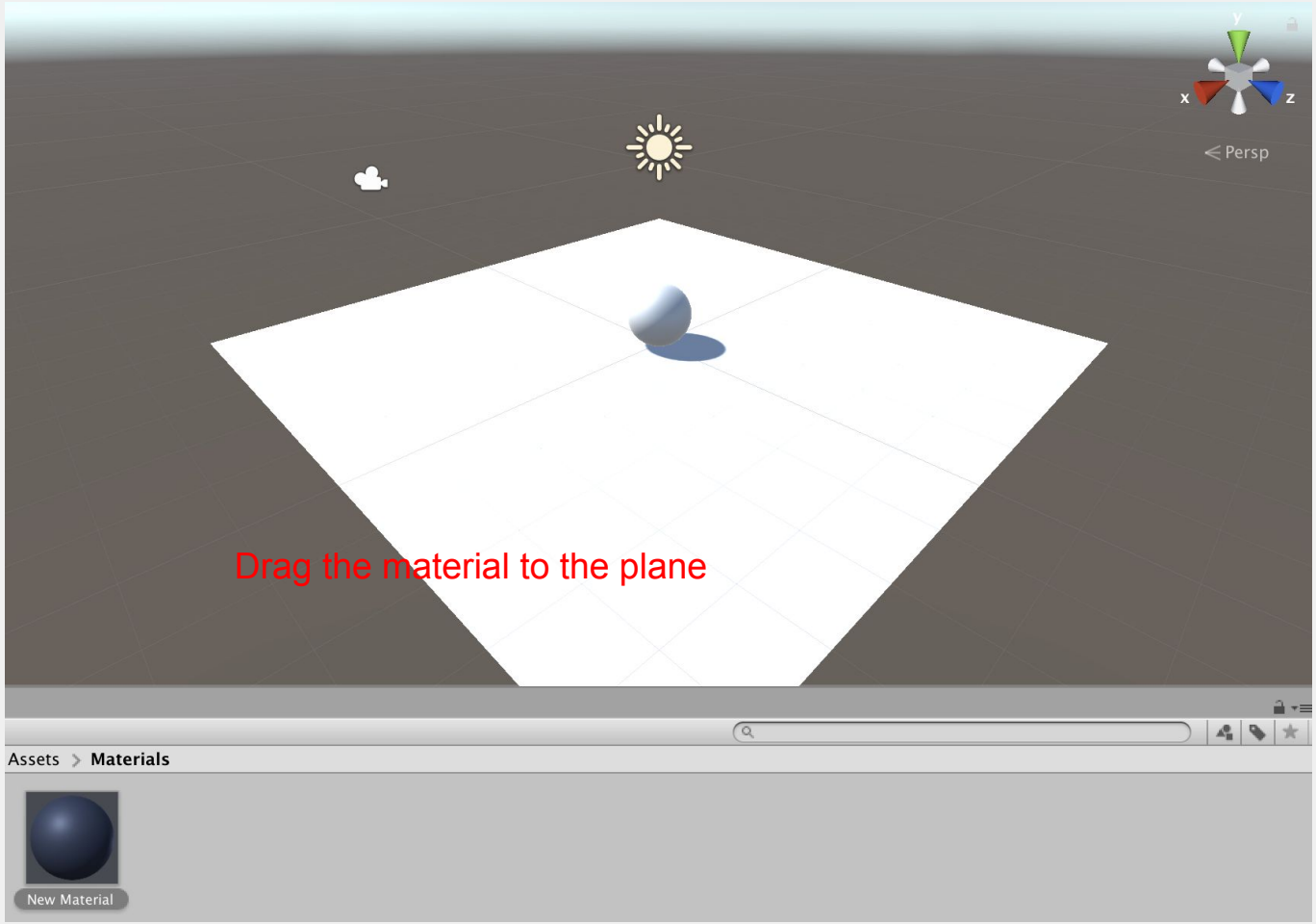
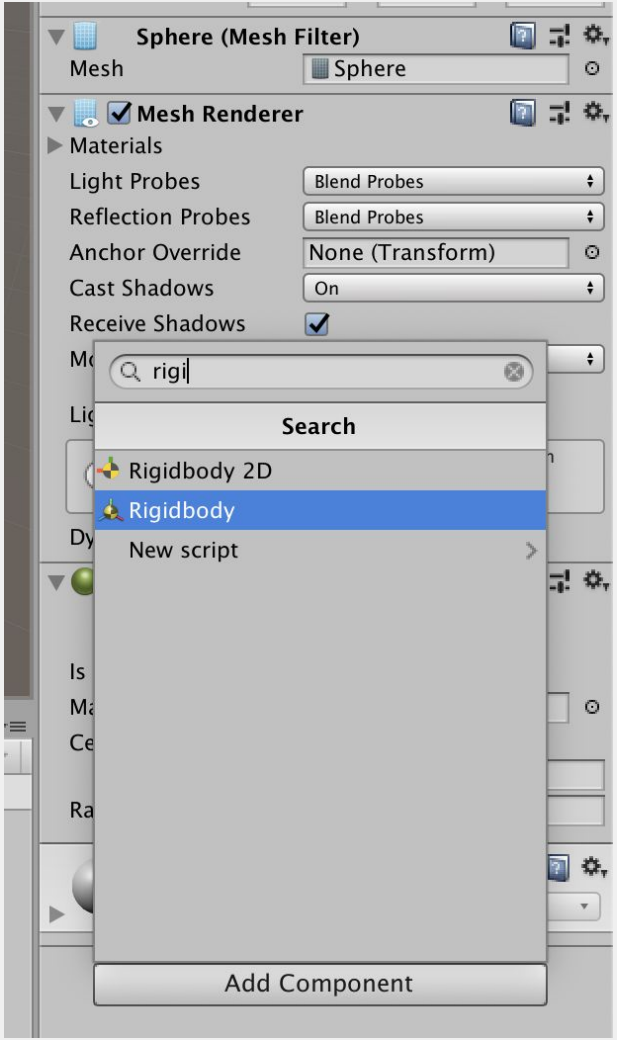
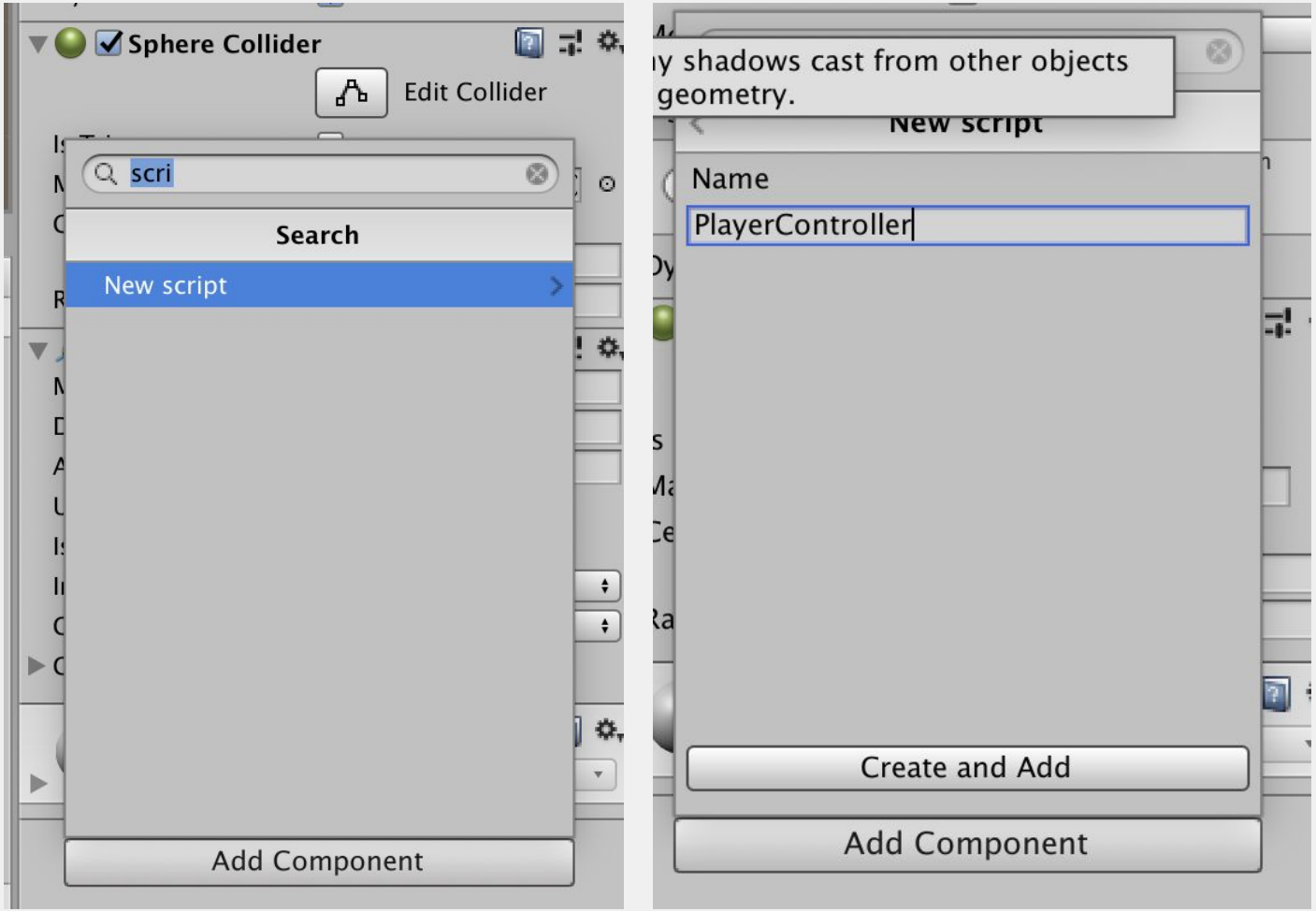
Open
Delete
Rename
Copy Path ⌥⌘C
Open Scene Additive
Import New Asset...
Import Package
Export Package...
Find References In Scene
Select Dependencies
Refresh ⌘R
Reimport
Reimport All
Extract From Prefab
Run API Updater...
Update UIElements Schema
Open C# Project
Assets > Materials
Assets/Materials


Color
RGB 0–255
R 69
G 72
B 79
A 255
Hexadecimal 45484F
Swatches
Click to add new preset
Inspector
New Material
Shader Standard
Rendering Mode Opaque
Main Maps
Albedo
Metallic 0
Smoothness 0.5
Source Metallic Alpha
Normal Map
Height Map
Occlusion
Detail Mask
Emission
Tiling X 1 Y 1
Offset X 0 Y 0
Secondary Maps
Detail Albedo x2
Normal Map 1
Tiling X 1 Y 1
Offset X 0 Y 0
UV Set UV0
Forward Rendering Options
Specular Highlights
Reflections
Advanced Options
Enable GPU Instancing
Double Sided Global Il
New Material
AssetBundle None None


y
x
z
Persp
Drag the material to the plane
Assets
Materials
New Material

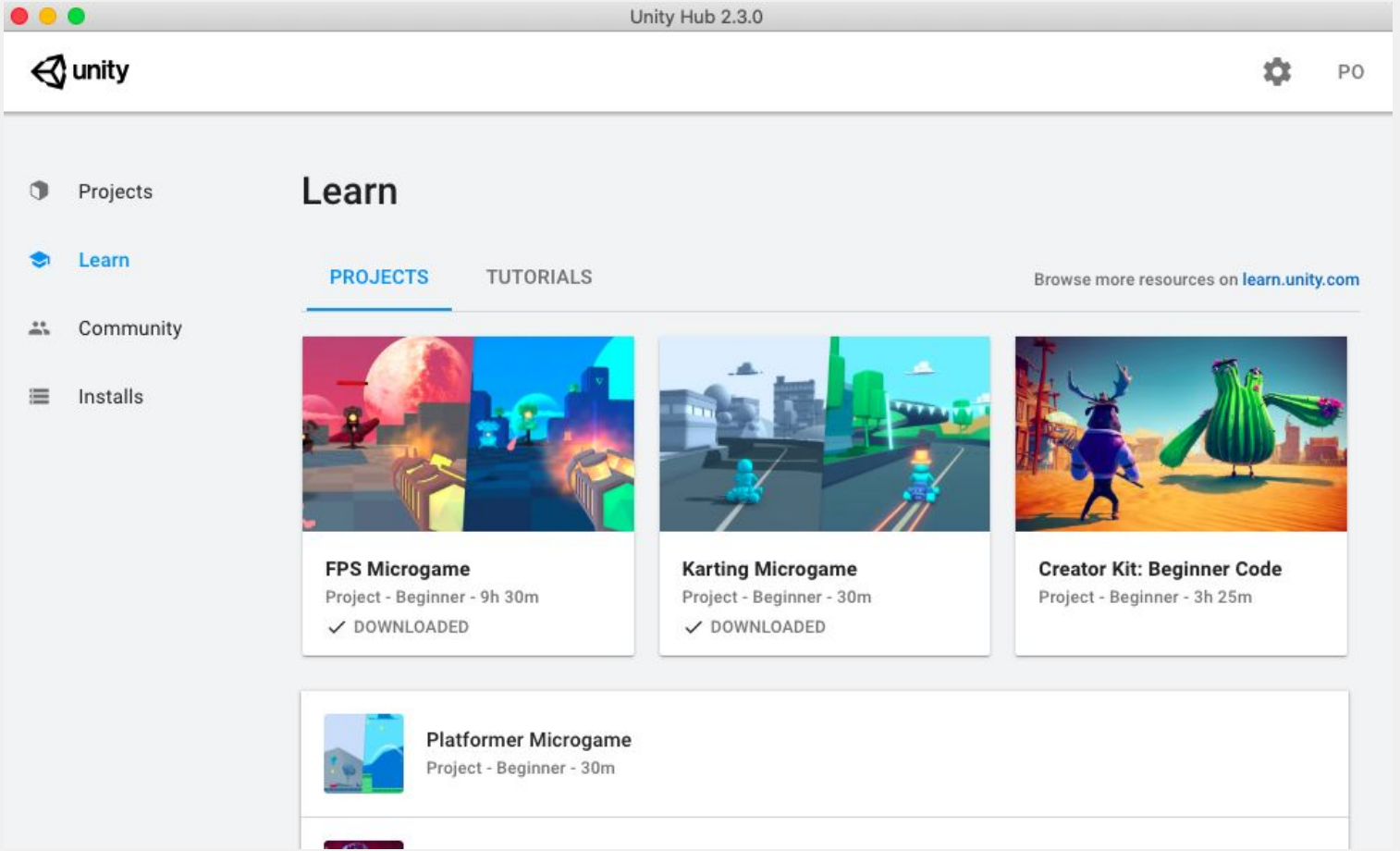

Sphere (Mesh Filter)
Mesh
Sphere
Mesh Renderer
Materials
Light Probes
Blend Probes
Reflection Probes
Blend Probes
Anchor Override
None (Transform)
Cast Shadows
On
Receive Shadows
rigi
Search
Rigidbody 2D
Rigidbody
New script
Add Component


Sphere Collider
Edit Collider
scri
Search
New script
Add Component
y shadows cast from other objects
geometry.
New script
Name
PlayerController
Create and Add
Add Component

```
using UnityEngine;
using System.Collections;

[RequireComponent(typeof(CharacterController))]
public class ExampleClass : MonoBehaviour
{
    public float speed = 3.0F;
    public float rotateSpeed = 3.0F;

    void Update()
    {
        CharacterController controller = GetComponent<CharacterController>();

        // Rotate around y - axis
        transform.Rotate(0, Input.GetAxis("Horizontal") * rotateSpeed, 0);

        // Move forward / backward
        Vector3 forward = transform.TransformDirection(Vector3.forward);
        float curSpeed = speed * Input.GetAxis("Vertical");
        controller.SimpleMove(forward * curSpeed);
    }
}
```

https://docs.unity3d.com/ScriptReference/CharacterController.SimpleMove.html

Excercise 2: Microgame



https://learn.unity.com/project/fps-template

Homework: Roll a ball tutorial

https://learn.unity.com/project/roll-a-ball-tutorial

- Follow the Roll-a-ball tutorial and make your own modifications.
  For example, change the 3D objects, add textures, sounds, obstacles….
- Add the project to a github repository
- Deliver for next class **16/04**

Resources

Unity learn
https://unity.com/products/learn-premium (free during next three months)

Learning the Interface Tutorial:
http://docs.unity3d.com/Manual/LearningtheInterface.html

Editor Basics:
http://unity3d.com/learn/tutorials/modules/beginner/live-training-archive/editor-basics

2D & 3D Resources

https://opengameart.org/