

Intro to Unity

Week 1 - Day 2

+



-

Some Logistics

Ed Discussion

Homework!

HW 0 Installation Check-in

What is a Unity?





For all the creators

Break the barriers of reality – bring new ideas to life with Unity.

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Games

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Hierarchy

- Level_1+
 - Directional Light
 - Gameplay
 - Cinemachine
 - Gameplay Level 1 Dolly RO
 - DollyTrack1
 - CM gameplay
 - CM gameplay jump
 - Render Camera
 - PlayerNinja
 - Soundtrack
 - WaypointSystem
 - IntroSequence
 - Waypoint
 - Waypoint (1)
 - Waypoint (2)
 - Waypoint (3)
 - Waypoint (4)
 - Waypoint (5)
 - Waypoint (6)
 - Waypoint (7)
 - Waypoint (8)
 - Waypoint (9)
 - Waypoint (10)
 - EventSystem
 - DebugLauncher

Scene

Display 1 | 16:9 | Scale 1x | Maximize On Play | Mute Audio | Stats | Gizmos

Game

CM Render Camera: CM gameplay

Inspector

DollyTrack1

- Tag Untagged
- Layer Default

Transform

- Position X -0.55 Y 0 Z -0.96
- Rotation X 0 Y 0 Z 0
- Scale X 1 Y 1 Z 1

Cinemachine Path (Script)

Appearance

Looped

Selected Waypoint:

- Position X 13.88 Y -3.93 Z 1.235
- Tangent X 3.433 Y 0.233 Z 0.870
- Roll 0

Prefer Tangent Drag

Path Details

Add Component

Project

- _GameAssets
 - Ads
 - AudioMixers
 - Materials
 - PostProcessing
 - CharacterSelectProfile
 - DefaultProfile
 - Trailer_alchemist
 - Trailer_alchemist hold
 - Trailer_warrior
 - Trailer_warrior 2
 - Trailer_warrior hold
- Resources
- Scenes
 - Inventory
 - Levels
 - Level_1
 - Level_2
 - Level_3
 - Level_4
 - Level_5
 - Level_6
 - Level_7
 - Level_1
 - Level_2
 - Level_3
 - Level_4
 - Level_5
 - Level_6
 - Level_7

Console

Timeline

Preview | 0:00 | 5:00 | 10:00 | 15:00 | 20:00 | 25:00 | 30:00 | 35:00 | 40:00

Level1IntroSequenceTimeline (IntroSequence)

Cameras

- Render Camera
- Render Camera

Characters

- None (Audio Source)

UI

VOC_over...

UnitManager:UnitReachedDestination() PlayerNinja

Let's play a game. . .

Twitch Plays Pokemon

6d 0h 49m 56s

Anarchy [██████████] Democracy



Think_b democracy
Amanda democracy
Uncleskar anarchy
Nebaxi7 democracy
Alzzir up
Tderaneki17 start
Toesmonke anarchy
Rdbahm right
Shinoguy up
Hhsneotnoruk b
Sama2ii anarchy
Helixsama up
Dori phor left
Mechknigh anarchy
Doctorehn down
Not_john_lent left

Rules of “CS 11 Plays Unity”



INVESTIGATE



SHARE



REFLECT

Sign in

Hierarchy

Scene Game

Main Camera
Directional Light
Cube

Persp

Transform

Position X 0 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

Cube (Mesh Filter)

Mesh Cube

Mesh Renderer

Materials 1

Lighting

Cast Shadows On
Static Shadow Cast
Contribute Global I
Receive Global Illum Light Probes

Probes

Light Probes Blend Probes
Anchor Override None (Transform)

Additional Settings

Dynamic Occlusion
Rendering Layer M 0: Light Layer default

Box Collider

Edit Collider

Is Trigger

Material None (Physic Material)

Center X 0 Y 0 Z 0

Size

Assets

Favorites

All Materials
End
Demo (Delete After Use)
All Models
All Prefabs

Assets

Scenes
Settings
TutorialInfo
XR
XRI
Readme
UniversalR...

Rebuilding Library because the asset database could not be found!

Sign in

Hierarchy

Scene Game

Main Camera
Directional Light
Cube

Scene View

Transform

Position X -2.62 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 1 Z 1

Cube (Mesh Filter)

Mesh Cube

Mesh Renderer

Materials 1

Lighting

Cast Shadows On
Static Shadow Cast
Contribute Global I
Receive Global Illum Light Probes

Probes

Light Probes Blend Probes
Anchor Override None (Transform)

Additional Settings

Dynamic Occlusion
Rendering Layer M 0: Light Layer default

Box Collider

Edit Collider

Is Trigger

Material None (Physic Material)

Center X 0 Y 0 Z 0

Size

Assets

Favorites

- All Materials
- End
- Demo (Delete After Use)
- All Models
- All Prefabs

Assets

Scenes Settings TutorialInfo XR XRI Readme UniversalR...

Rebuilding Library because the asset database could not be found!



Share and try an alternate way

Sign in



Hierarchy

+ All

Untitled*

- Main Camera
- Directional Light
- Cube

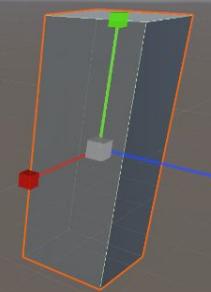
Scene

Game



Layers

Layout



Inspector

Cube

Static

Tag Untagged

Layer Default

Transform

Position X -2.62 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 1 Y 2.6711 Z 1

Cube (Mesh Filter)

Mesh Cube

Mesh Renderer

Materials 1

Lighting

Cast Shadows On
Static Shadow Cast
Contribute Global I
Receive Global Illumination Probes

Probes

Light Probes Blend Probes
Anchor Override None (Transform)

Additional Settings

Dynamic Occlusion On
Rendering Layer M 0: Light Layer default

Box Collider

Edit Collider
Is Trigger
Material None (Physic Material)
Center X 0 Y 0 Z 0
Size X 0 Y 0 Z 0

Project

Console



Favorites

- All Materials
- End
- Demo (Delete After Use)
- All Models
- All Prefabs

Assets

- Scenes
- Settings

Assets



Scenes



Settings



TutorialInfo



XR



XRI



Readme



UniversalI...

Sign in

Hierarchy

Scene Game

Main Camera
Directional Light
Cube

Transform

Position X -2.62 Y 0 Z 0
Rotation X 0 Y 0 Z -36.60
Scale X 1 Y 2.6711 Z 1

Cube (Mesh Filter)

Mesh Cube

Mesh Renderer

Materials 1

Lighting

Cast Shadows On
Static Shadow Cast
Contribute Global I
Receive Global Illumination Light Probes

Probes

Light Probes Blend Probes
Anchor Override None (Transform)

Additional Settings

Dynamic Occlusion On
Rendering Layer M 0: Light Layer default

Box Collider

Edit Collider

Is Trigger

Material None (Physic Material)

Center X 0 Y 0 Z 0

Size

Persp

Assets

Favorites

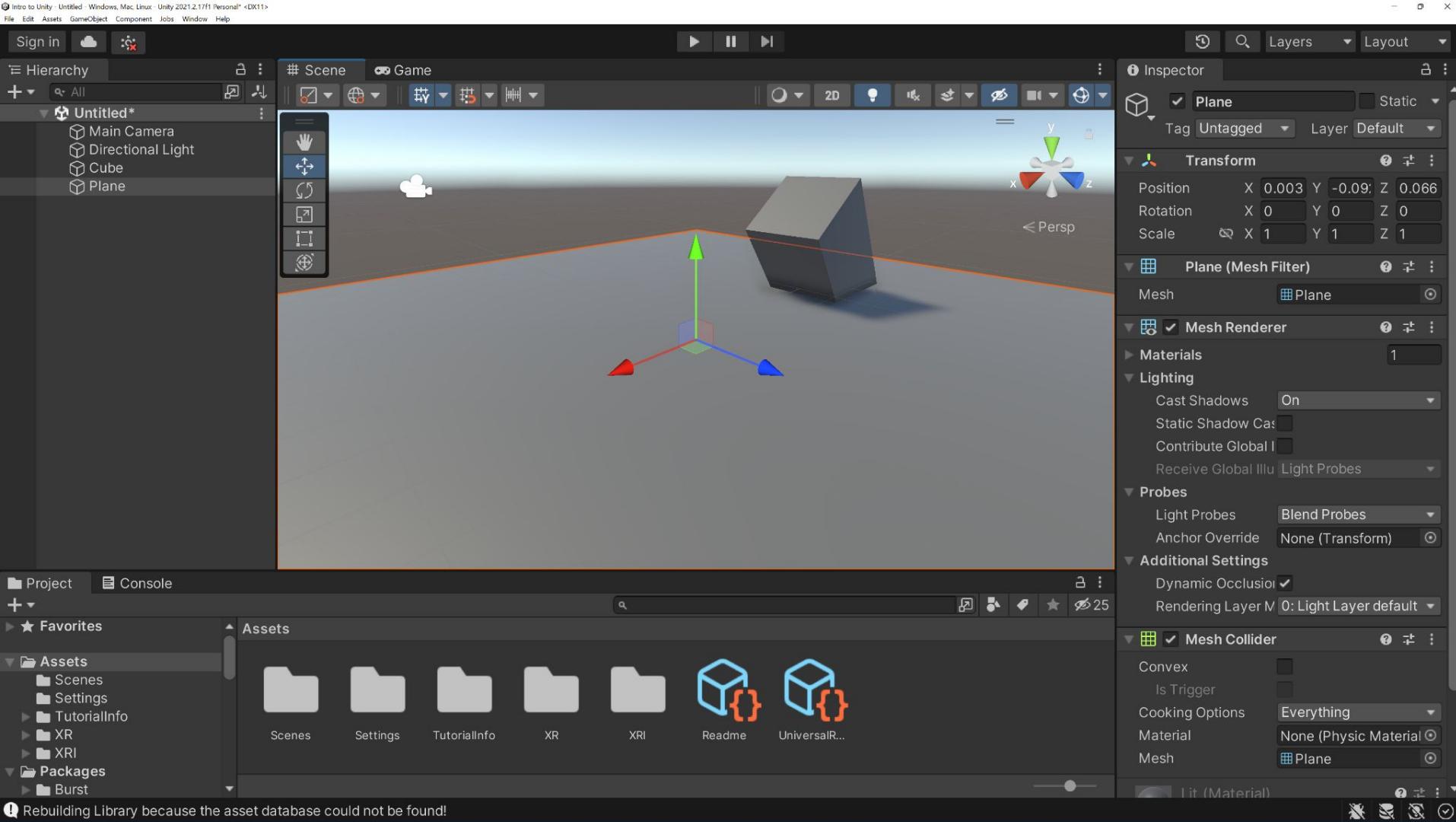
All Materials
End
Demo (Delete After Use)
All Models
All Prefabs

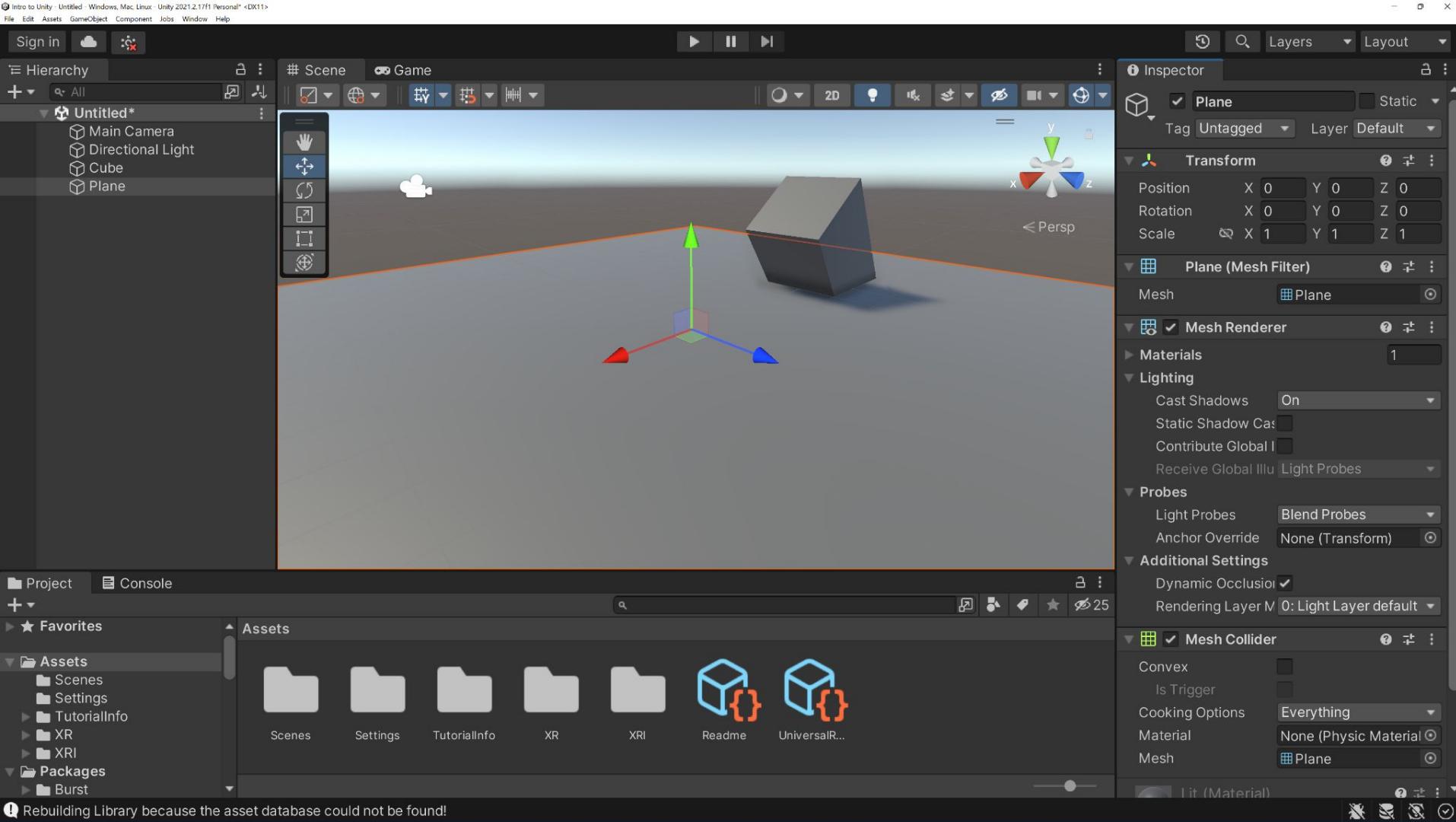
Scenes Settings TutorialInfo XR XRI Readme UniversalR...

Rebuilding Library because the asset database could not be found!



What is a GameObject's
“Transform”?





File Edit Assets GameObject Component Jobs Window Help

Sign in

Hierarchy

Scene Game

2D

Plane

Untitled*

Main Camera
Directional Light
Cube
Plane

Persp

Transform

Position X 0 Y 0 Z 0
Rotation X 0 Y 0 Z 0
Scale X 5 Y 5 Z 5

Plane (Mesh Filter)

Mesh Plane

Mesh Renderer

Materials 1

Lighting

Cast Shadows On
Static Shadow Cast
Contribute Global I
Receive Global Illum Light Probes

Probes

Light Probes Blend Probes
Anchor Override None (Transform)

Additional Settings

Dynamic Occlusion
Rendering Layer M 0: Light Layer default

Mesh Collider

Convex
Is Trigger
Cooking Options Everything
Material None (Physic Material)
Mesh Plane

Lit (Material)

Assets

Favorites

Assets

Scenes Settings TutorialInfo XR XRI Readme UniversalR...

Scenes Settings TutorialInfo XR XRI Readme UniversalR...

Rebuilding Library because the asset database could not be found!

Sign in

Hierarchy

Scene Game

Main Camera
Directional Light
Cube
Plane
Cube (1)

Transform

Position X -2.62 Y 0.54 Z -1.7
Rotation X 0 Y 0 Z -36.66
Scale X 1 Y 2.6711 Z 1

Cube (Mesh Filter)

Mesh Cube

Mesh Renderer

Materials 1

Lighting

Cast Shadows On
Static Shadow Cast
Contribute Global I
Receive Global Illum Light Probes

Probes

Light Probes Blend Probes
Anchor Override None (Transform)

Additional Settings

Dynamic Occlusion
Rendering Layer M 0: Light Layer default

Box Collider

Edit Collider

Is Trigger

Material None (Physic Material)

Center X 0 Y 0 Z 0

Size

Persp

Assets

Scenes Settings TutorialInfo XR XRI Readme UniversalR...

Rebuilding Library because the asset database could not be found!

Intro to Unity - Untitled - Windows, Mac, Linux: Unity 2021.2.1f1 Personal <DX11>

File Edit Assets GameObject Component Jobs Window Help

Sign in

Hierarchy

Scene Game

Main Camera
Directional Light
Cube
Plane
Cube (1)

Transform

Position X -2.62 Y 0.54 Z -1.7
Rotation X 0 Y 0 Z -36.66
Scale X 1 Y 2.6711 Z 1

Cube (Mesh Filter)

Mesh Cube

Mesh Renderer

Materials 1

Lighting

Cast Shadows On
Static Shadow Cast
Contribute Global I
Receive Global Illumination Light Probes

Probes

Light Probes Blend Probes
Anchor Override None (Transform)

Additional Settings

Dynamic Occlusion
Rendering Layer M 0: Light Layer default

Box Collider

Edit Collider

Is Trigger

Material None (Physic Material)

Center X 0 Y 0 Z 0

Size

Persp

Assets

Scenes Settings TutorialInfo XR XRI Readme UniversalR...

Rebuilding Library because the asset database could not be found!

Sign in

Hierarchy

Scene Game

Main Camera
Directional Light
Cube
Plane
Cube (1)

Persp

Transform

Position X -2.62 Y 0.54 Z -1.7
Rotation X 0 Y 0 Z -36.66
Scale X 1 Y 2.6711 Z 1

Cube (Mesh Filter)

Mesh Cube

Mesh Renderer

Materials 1

Lighting

Cast Shadows On
Static Shadow Cast
Contribute Global I
Receive Global Illum Light Probes

Probes

Light Probes Blend Probes
Anchor Override None (Transform)

Additional Settings

Dynamic Occlusion
Rendering Layer M 0: Light Layer default

Box Collider

Edit Collider

Is Trigger

Material None (Physic Material)

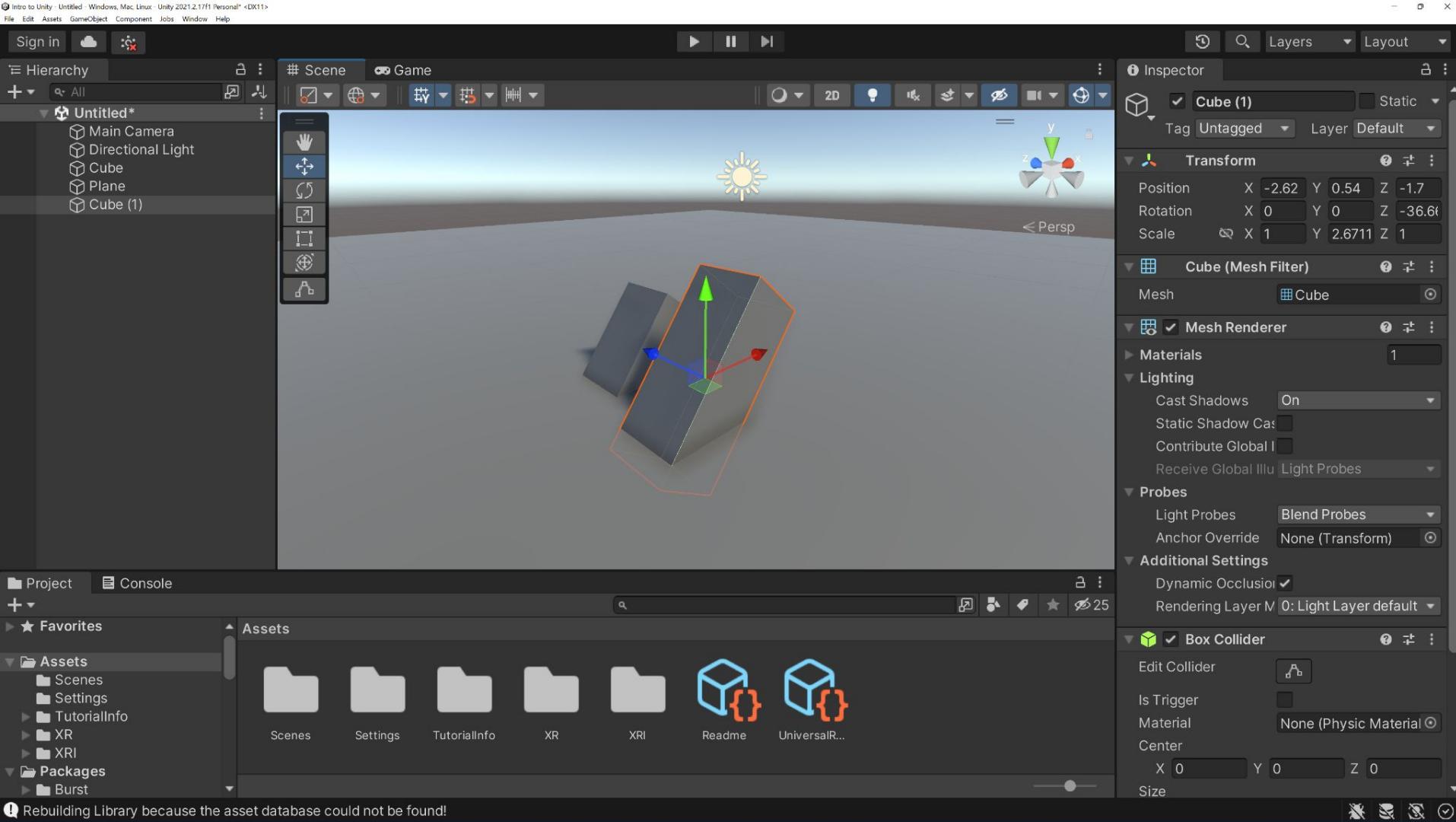
Center X 0 Y 0 Z 0

Size

Assets

Scenes Settings TutorialInfo XR XRI Readme UniversalR...

Rebuilding Library because the asset database could not be found!





What's the difference between
right-click and **alt/opt+click**?

File Edit Assets GameObject Jobs Window Help

Sign in

Hierarchy Game

Scene Game

2D

3D Viewport

Inspector

Layers Layout

Untitled*

- Main Camera
- Directional Light
- Cube
- Plane
- Cube (1)

Persp

Project Console

Favorites

Assets

Materials Scenes Settings TutorialInfo XR XRI Readme UniversalR...

Rebuilding Library because the asset database could not be found!

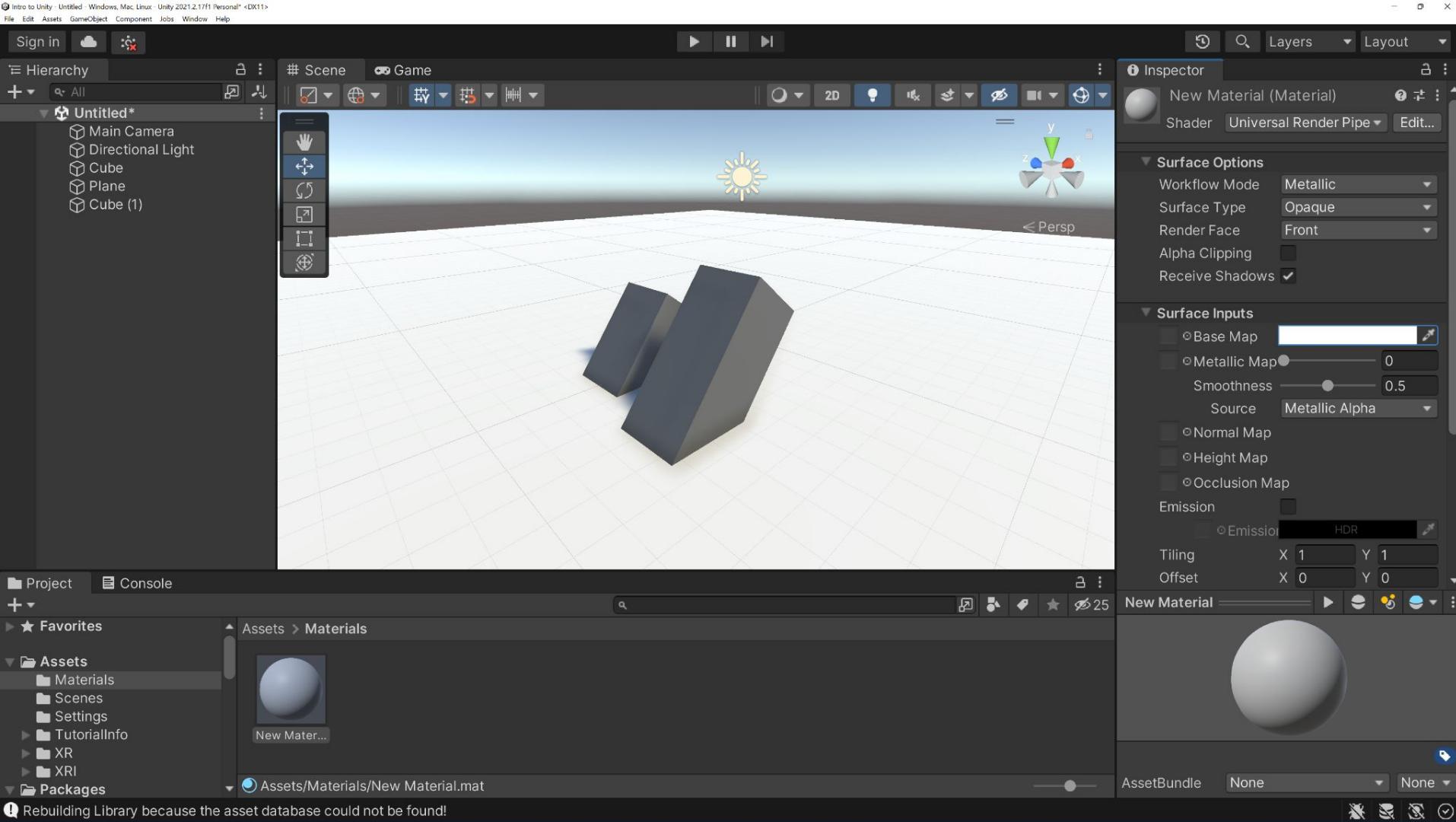
The Unity Editor interface is shown, featuring the following components:

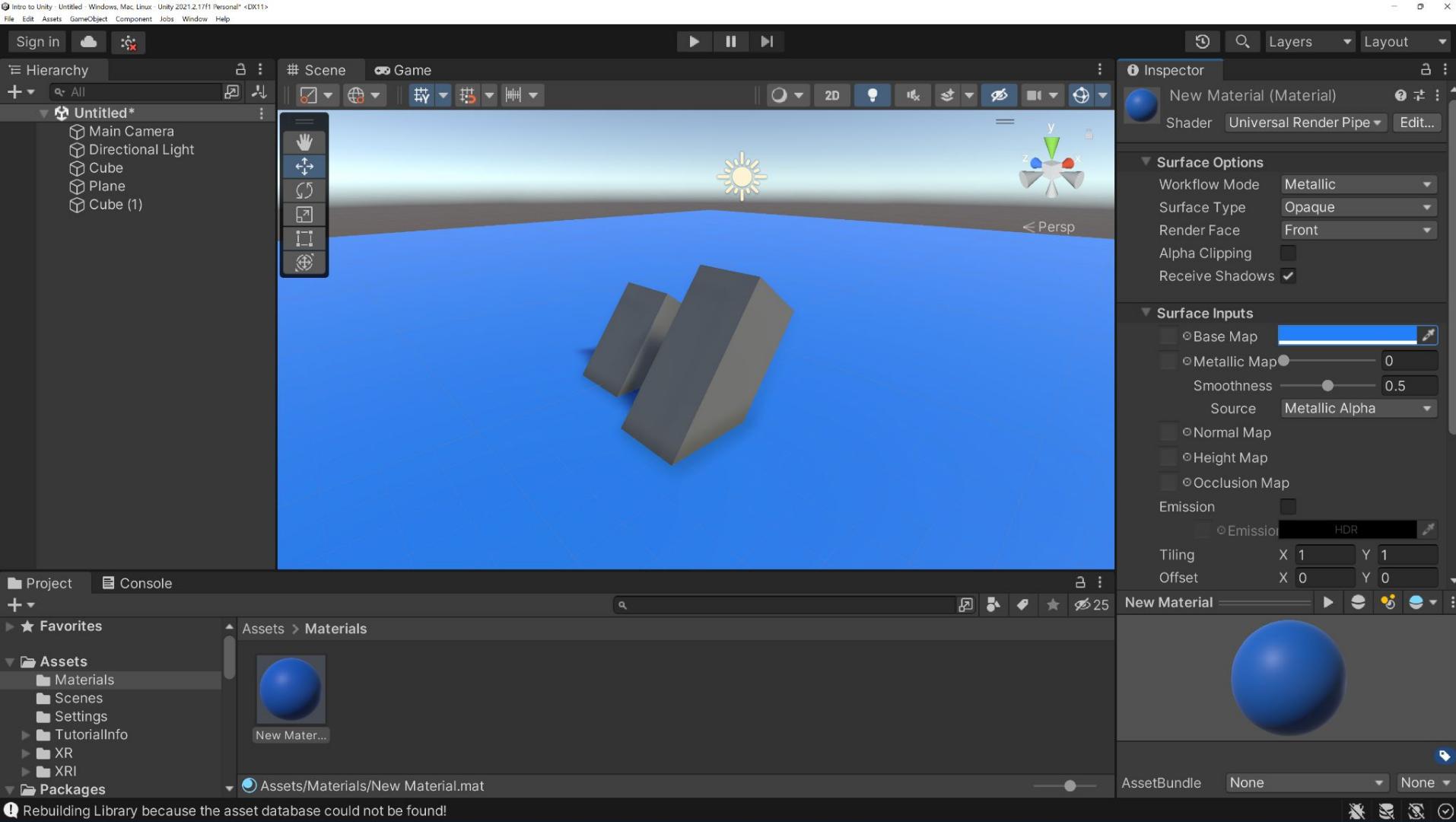
- Hierarchy Panel:** Shows the scene structure with objects: Main Camera, Directional Light, Cube, Plane, and Cube (1). A context menu icon is highlighted.
- Scene View:** Displays a 3D perspective view of the scene. It includes a sun icon, a camera icon, and a coordinate system (x, y, z). The camera is set to Perspective mode.
- Inspector Panel:** Shows the properties for the selected "New Material (Material)".
 - Surface Options:** Workflow Mode: Metallic, Surface Type: Opaque, Render Face: Front, Alpha Clipping: unchecked, Receive Shadows: checked.
 - Surface Inputs:** Base Map: selected, Metallic Map: checked (value 0), Smoothness: 0.5, Source: Metallic Alpha.
 - Emission:** Emission: unchecked, Tiling: X 1 Y 1, Offset: X 0 Y 0.
- Project Panel:** Shows the project structure with Assets, Favorites, and Packages. The Materials folder is selected. The Assets/Materials/New Material.mat file is currently selected.

The Project panel displays the following information:

- Assets:** Materials, Scenes, Settings, TutorialInfo, XR, XRI.
- Materials:** A folder containing the "New Mater..." asset.
- Selected Asset:** Assets/Materials/New Material.mat
- Asset Bundles:** Set to None.

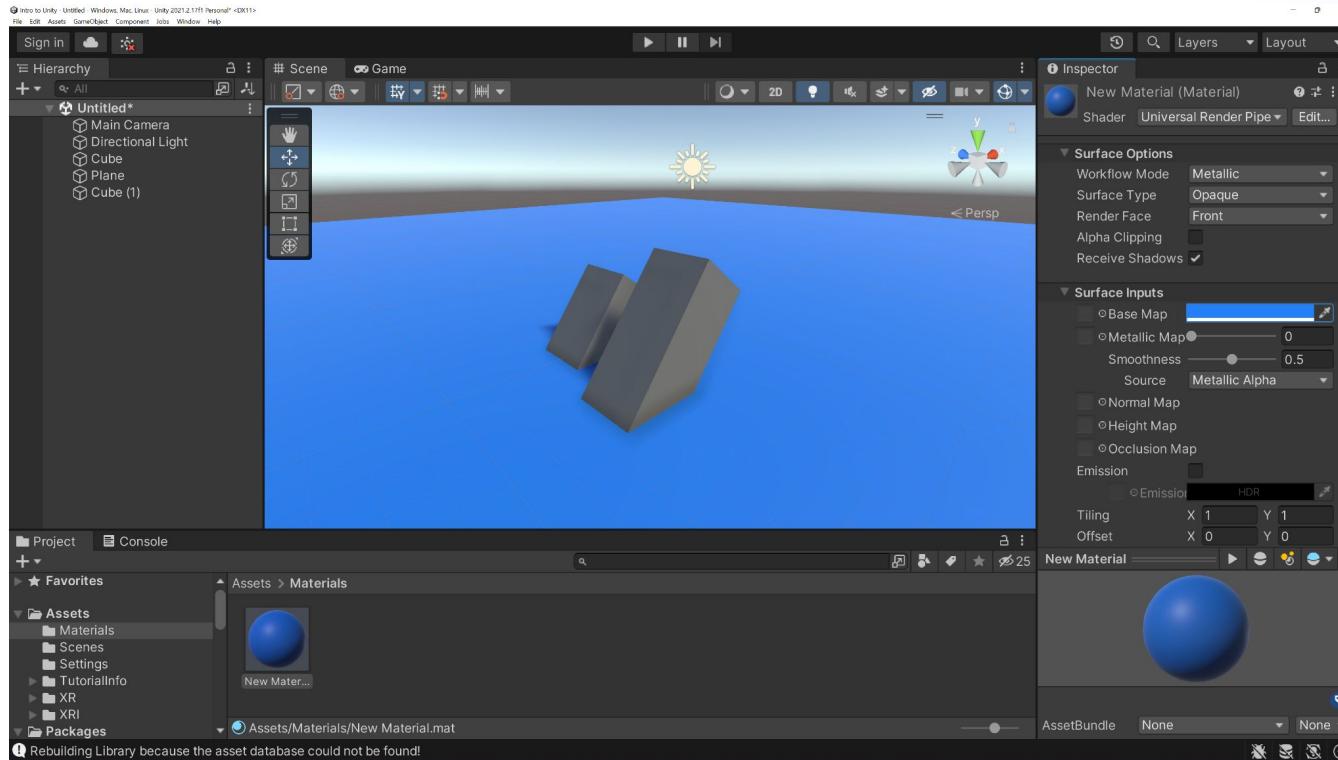
A status message at the bottom left indicates: "Rebuilding Library because the asset database could not be found!"



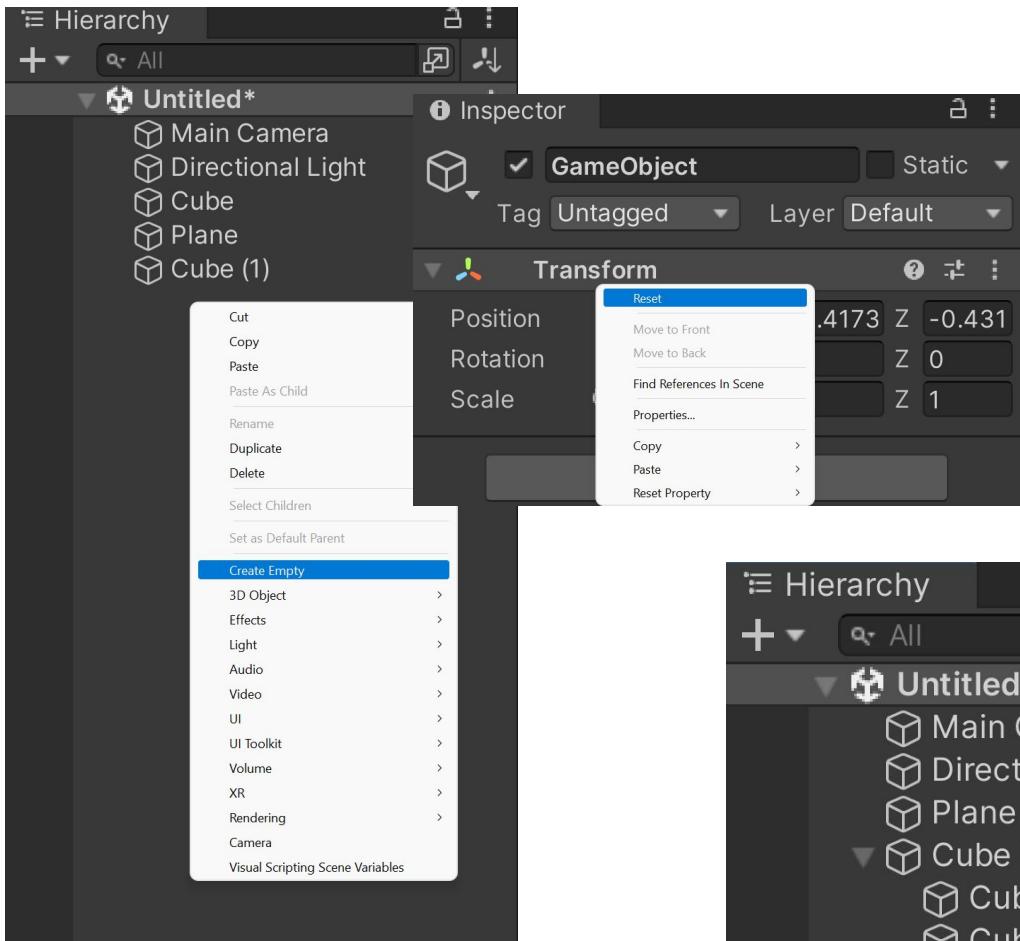




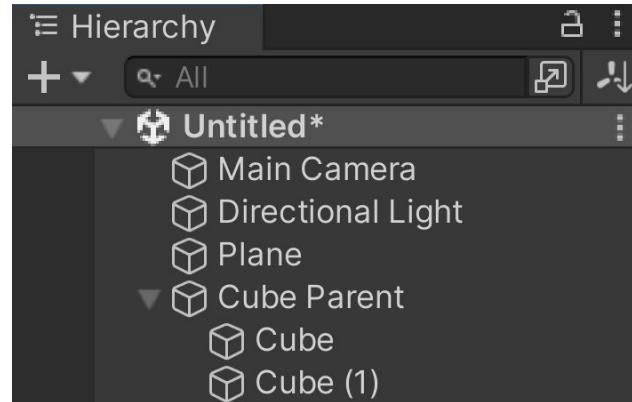
Based on what you've seen so far, what do each of these panels do?



Let's pick up the pace?



Let's create an empty GameObject, reset its transform, name it "Cube Parent," and put the cubes inside (parent and children).





Move the **Cube Parent** object around. Do the transform locations of **Cube** and **Cube (1)** change? Why or why not?



Pivot Global

Hierarchy

Create * (Or All)
main*
Directional Light
Plane
Camera
Cube Circle
Cube (1)
Cube
Cube (2)
Cube (3)
Cube (4)

Scene Asset Store

Shaded 2D (*) (Or All)

Gizmos

(Or All)

Scene Game

Free Aspect

Scale 1x

Left Eye

Maximize On Play

Mute Audio

Stats

Giz

Collab



Account

Layers

Layout

Inspector

Cube (4)

Static

Tag Untagged Layer Default

Transform

Position X 1.41 Y 1.377 Z 0.8

Rotation X 0 Y 0 Z 35.576

Scale X 0.2 Y 0.2 Z 0.2

Cube (Mesh Filter)

Mesh

Cube

Mesh Renderer

Lighting

Light Probes

Reflection 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.

Materials

Dynamic Occluded

✓

Box Collider

Edit Collider

Is Trigger

Material

None (Physic Material)

Center

X 0 Y 0 Z 0

Size

X 1 Y 1 Z 1

Rotate (Script)

Script

Rotate

Spin Speed

2

Default-Material

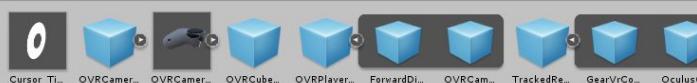
Shader Standard

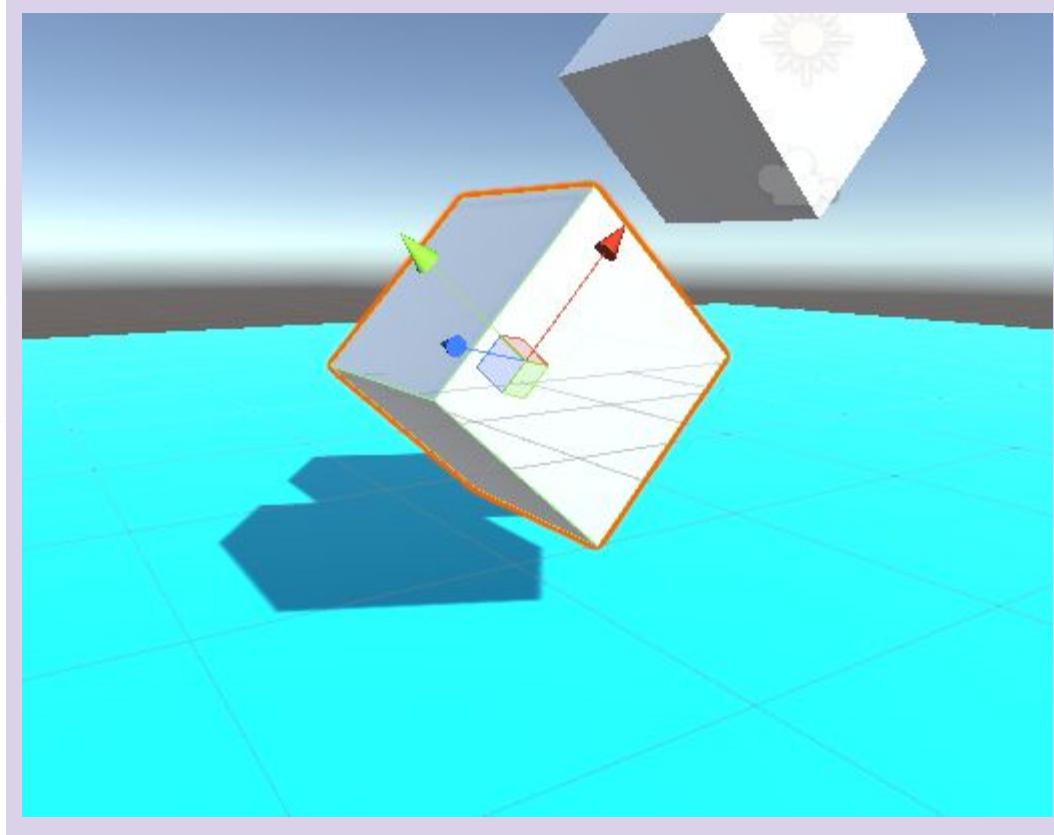
Add Component

Project Console

Create *

AUDIO Assets > Oculus > VR > Prefabs

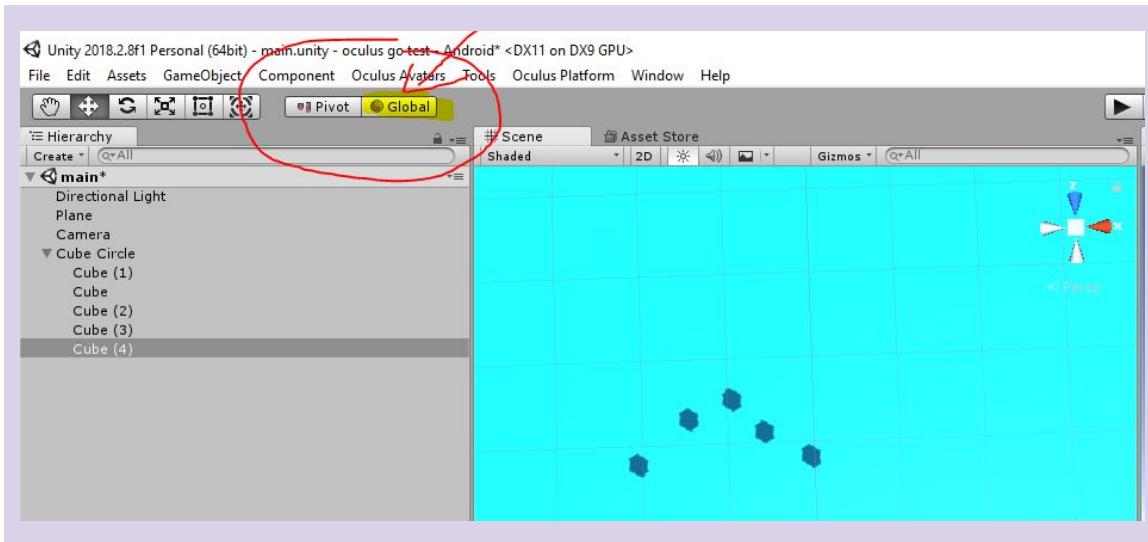






Why would this be difficult to manipulate?

Changing the gizmo coordinate system to **Global** lets you manipulate on the world axes



Time for a challenge!

Sign in

Hierarchy

+ All

- ▼ Snowperson
 - >Main Camera
 - Directional Light
 - Plane
- ▼ Snowperson Parent
 - Sphere
 - Sphere (1)
 - Sphere (2)
 - Nose
 - Coal
 - Coal (1)
 - Coal (2)
 - Coal (3)
 - Coal (4)
- ▼ Arm Parent
 - Cylinder
 - Cylinder (1)
- ▼ Arm Parent (1)
 - Cylinder
 - Cylinder (1)
- ▼ Hat Parent
 - Cylinder
 - Cylinder (1)

Scene

Game

▶ || ▶



Layers

Layout

Inspector

⋮



Project

Console

+

Favorites

Assets

- 3D Objects Tutorial
- Materials
- Scenes
- Settings
- TutorialInfo



Carrot

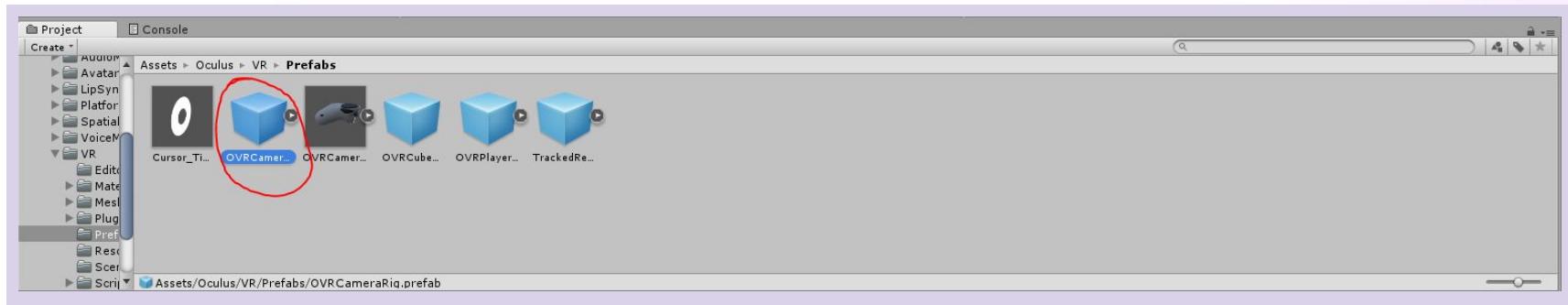
Coal

Snow

Top Hat

Wood

We're going to insert a **Prefab** from Oculus → VR → Prefabs by dragging it into the Scene or Hierarchy



Build Settings

Scenes In Build

<input type="checkbox"/> VRSSampleScenes/Scenes/Intro	0
<input checked="" type="checkbox"/> VRSSampleScenes/Scenes/MainMenu	1
<input checked="" type="checkbox"/> VRSSampleScenes/Scenes/Maze	2
<input type="checkbox"/> VRSSampleScenes/Scenes/Flyer	3
<input checked="" type="checkbox"/> VRSSampleScenes/Scenes/Shooter360	
<input checked="" type="checkbox"/> VRSSampleScenes/Scenes/Shooter180	
<input type="checkbox"/> Scenes/Main	

Add Open Scenes

Platform



Android

Texture Compression

Don't override

ETC2 fallback

32-bit

Build System

Gradle

Export Project

Run Device

Default device Refresh

Development Build

Autoconnect Profiler

Script Debugging

Scripts Only Build

Compression Method

Default

SDKs for App Stores



Xiaomi Mi Game Center

Add

[Learn about Unity Cloud Build](#)

Switch Platform

Player Settings...

Build

Build And Run

XR Settings

Virtual Reality Supported

Virtual Reality SDKs

= ► Oculus



Stereo Rendering Method*

ARCore Supported

(IF Time) XR Origin

Homework!

Additional Resources

Additional Resources

- [Unity - Manual: Unity User Manual](#)
- [Unity Learn](#)
- [Unity Roll-a-Ball Tutorial - YouTube](#)
- [Unity Tutorials for Beginners - YouTube](#)
- [Brackeys Unity Beginner Tutorials - YouTube](#)
- Search for “Unity tutorial” on the internet
- **The Stanford XR Community!**

Archived slides below



Pivot Local

Hierarchy

Create (or All)

Main Camera

Directional Light

Cube

Cube (1)

Plane

Scene

Asset Store

Shaded

2D

*

4D

Gizmos

(or All)

Game

Display 1

Free Aspect

Scale

1x

Maximize On Play

Mute Audio

Stats

Giz

Collab



Account

Layers

Layout

Inspector

Cube

Tag Untagged

Layer Default

Static

Transform

Position X -3.34 Y 0 Z 0

Rotation X 0 Y 0 Z 47.284

Scale X 2 Y 2 Z 2

Cube (Mesh Filter)

Mesh

Cube

Mesh Renderer

Lighting

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.

Materials

Dynamic Occluded ✓

Box Collider

Edit Collider

Is Trigger

Material None (Physic Material)

Center X 0 Y 0 Z 0

Size X 1 Y 1 Z 1

Default-Material

Shader Standard

Add Component

Rotate

Search

New script

Project

Console

Create

Favorites

Assets > xMaterials



New Materi...

Assets

Oculus

Scenes

xMaterials

Packages

```
1  using System.Collections;
2  using System.Collections.Generic;
3  using UnityEngine;
4
5  public class Rotate : MonoBehaviour {
6
7      // Use this for initialization
8      void Start () {
9
10     }
11
12      // Update is called once per frame
13      void Update () {
14          transform.Rotate(new Vector3(0f, 1f, 0f));
15      }
16  }
17
```



What will this code do?

```
1  using System.Collections;
2  using System.Collections.Generic;
3  using UnityEngine;
4
5  public class Rotate : MonoBehaviour {
6      [SerializeField]
7      private float spinSpeed;
8
9      // Use this for initialization
10     void Start () {
11
12     }
13
14     // Update is called once per frame
15     void Update () {
16         transform.Rotate(new Vector3(0f, spinSpeed, 0f));
17     }
18 }
```



What happens when you hit play and why?



Hierarchy

Create [Q] All
SampleScene*
Main Camera
Directional Light
Cube
Cube (1)
Plane

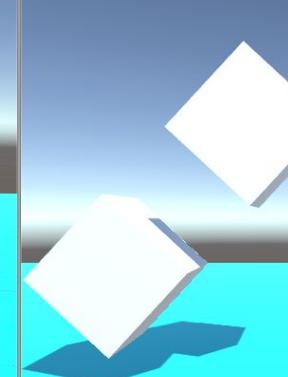
Scene Asset Store

Shaded | 2D | * | Q | Gizmos | Q All



Game

Display 1 | Free Aspect | Scale 1x | Maximize On Play | Mute Audio | Stats | Gizmos



Inspector

Cube
Tag: Untagged Layer: Default
Static

Transform

Position X: -3.34 Y: 0 Z: 0
Rotation X: 0 Y: 0 Z: 47.284
Scale X: 2 Y: 2 Z: 2

Cube (Mesh Filter)

Mesh: Cube

Mesh Renderer

Lighting
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.

Materials

Dynamic Occluded

Box Collider

Is Trigger
Material: None (Physic Material)
Center X: 0 Y: 0 Z: 0
Size X: 1 Y: 1 Z: 1

Rotate (Script)

Script: Rotate
Spin Speed: 200

Default-Material

Shader: Standard

Add Component

Project

Console

Favorites

All Materials
All Models
All Prefabs
All Conflicts



Rotate

Assets

Oculus
Scenes
xMaterials
xScripts

Packages