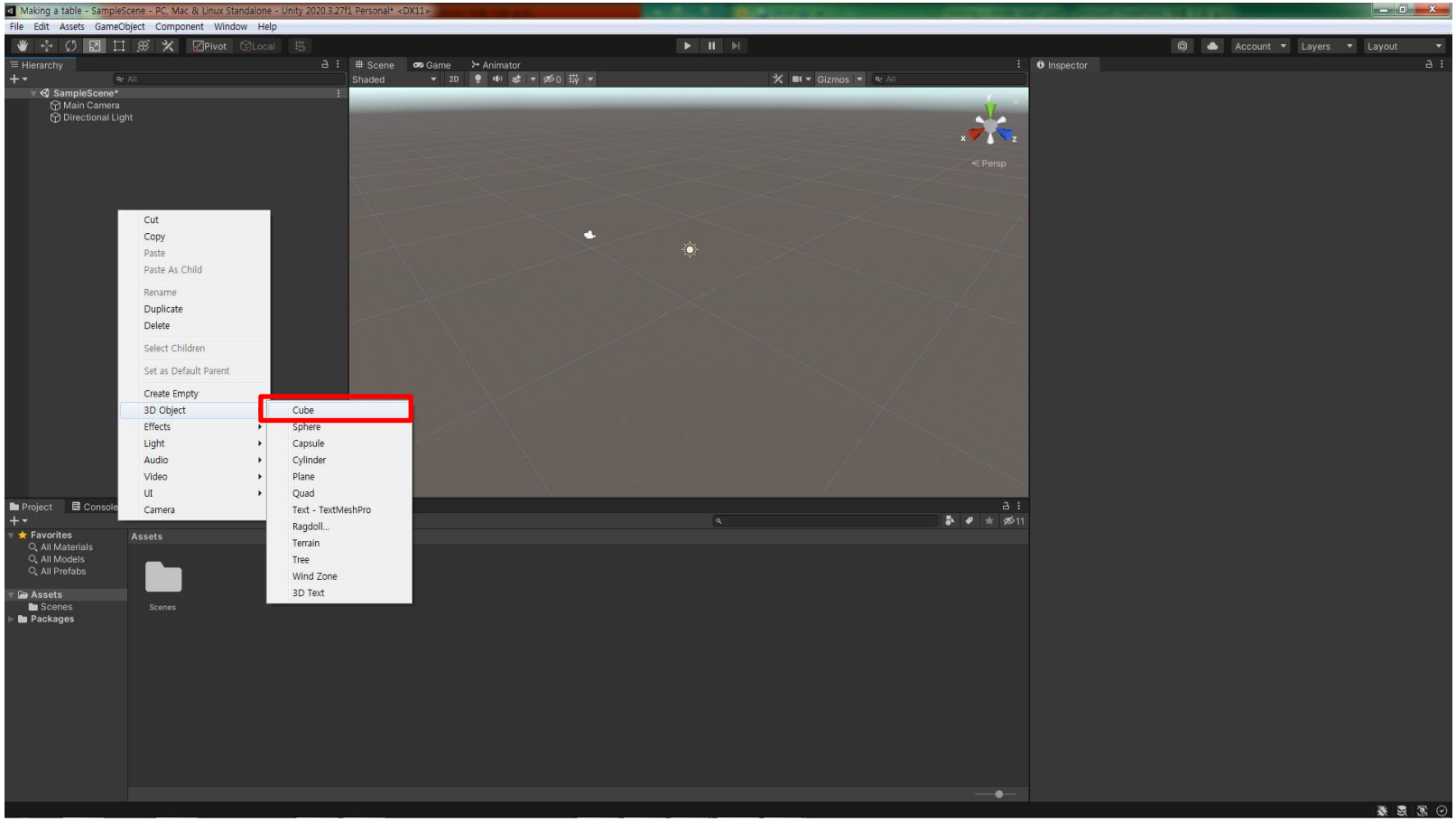
# [Unity] Draw 3D Objects

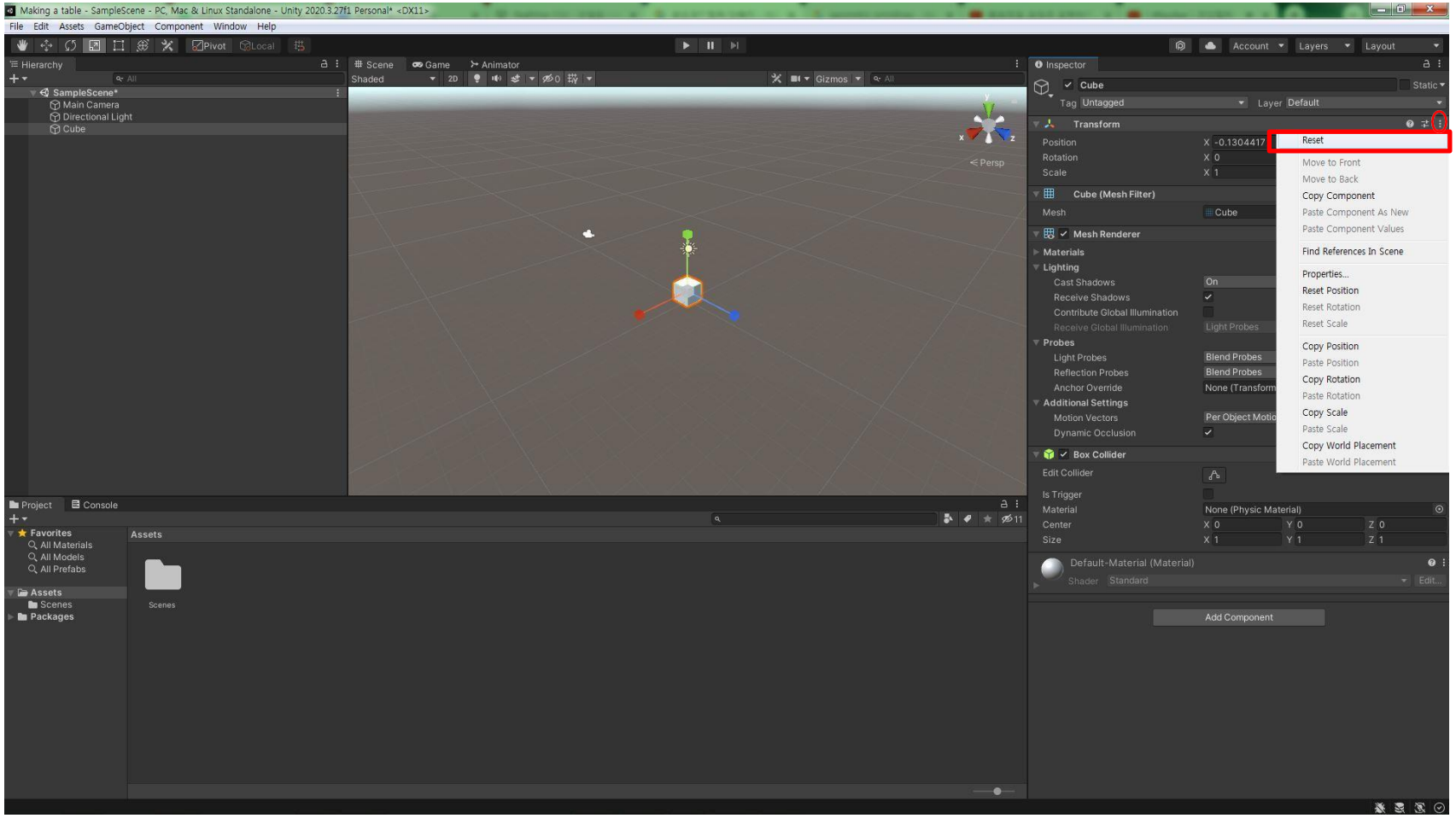
Sung Soo Hwang

# Making a simple object with 3D objects

- You can make a simple object by using geometric primitives in Unity.
- First, make a cube and reset it.
  * Reset makes the object's properties to the default values.



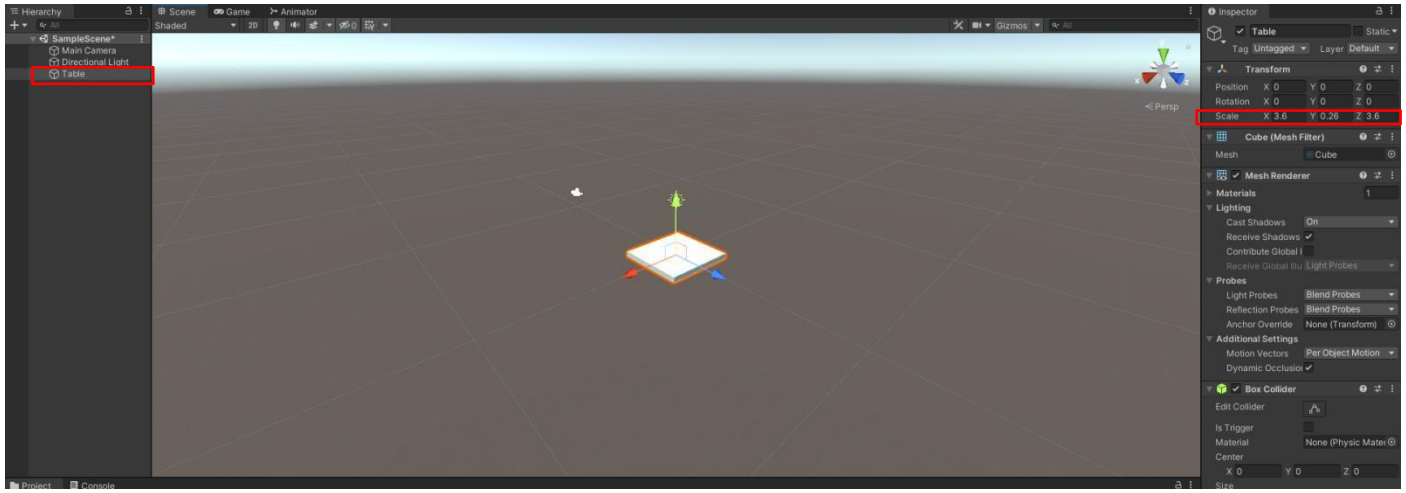
# Making a simple object with 3D objects



# Making a simple object with 3D objects

- Transform the cube into a top side of a table and change the name of Cube to “Table”(click Cube and press F2).

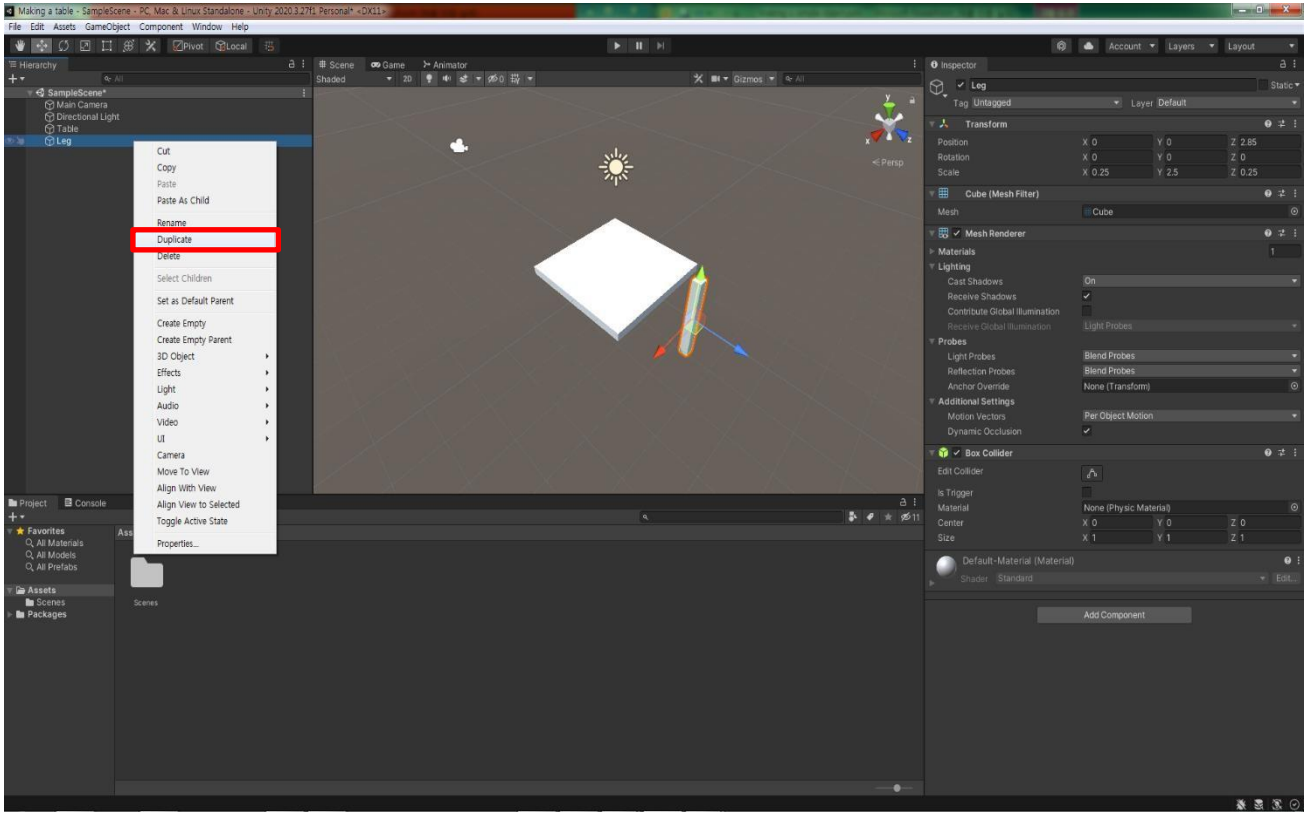
- You can change the scale of an object by these 2 methods
  1) Press “R” and adjust to vertex x, y, and z.
  2) Change the values of positions in the inspector of the object



# Making a simple object with 3D objects

- When the top side of a table is done, create another cube to make the legs of a table and transform it into a leg and change the name of the new Cube to “Leg”.

- Then duplicate (Ctrl + D) it 3 times.



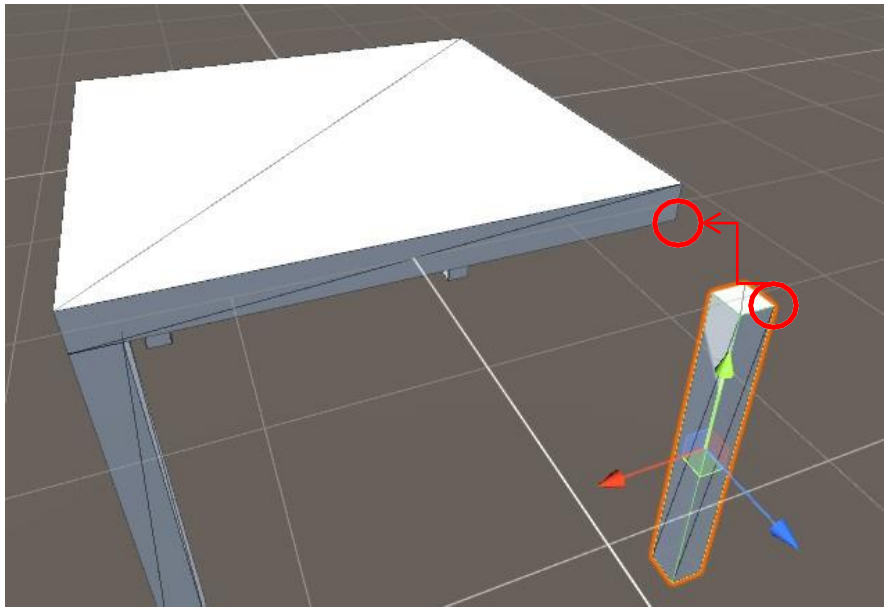
# Making a simple object with 3D objects

- To make a table with created objects, you will use “vertex snapping”.

- Vertex snapping: Snap any vertex from a given Mesh to the position of another Mesh’s vertex or surface. You can snap vertex to vertex, vertex to the surface, and pivot to vertex.

# Making a simple object with 3D objects

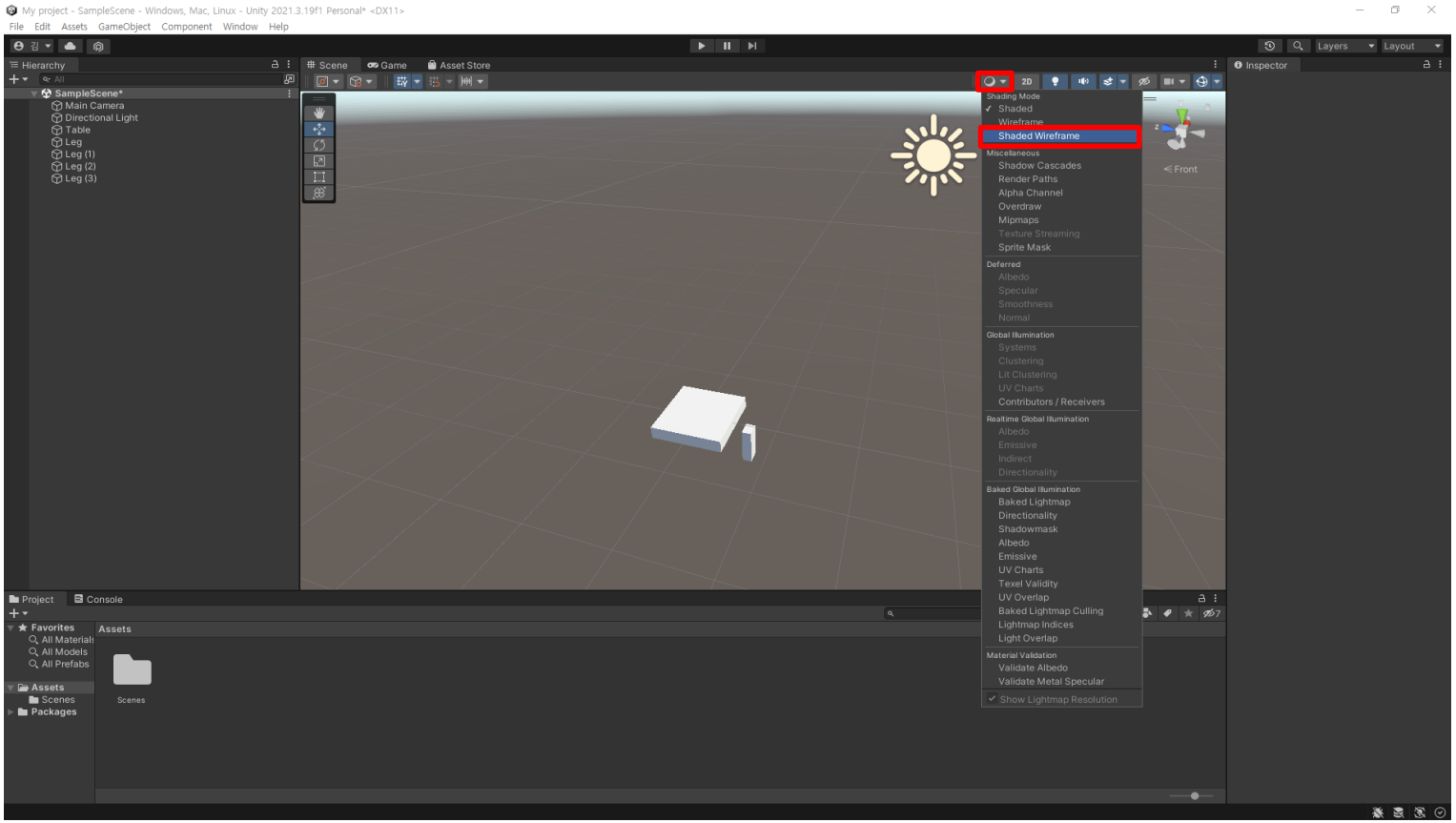
- Follow the steps below to use vertex snapping:
  - Select the Mesh and Press V key to activate the vertex snapping mode.
  - To snap a vertex to a vertex: While holding V, move your cursor to a vertex, and drag it to another vertex
  - To snap a vertex to a surface:
    Add and hold Shift+Ctrl (Windows) / Shift+Command (macOS)
  - To snap the pivot to a vertex:
    Add and hold the Ctrl (Windows) / Command (macOS)



Snapping between vertices

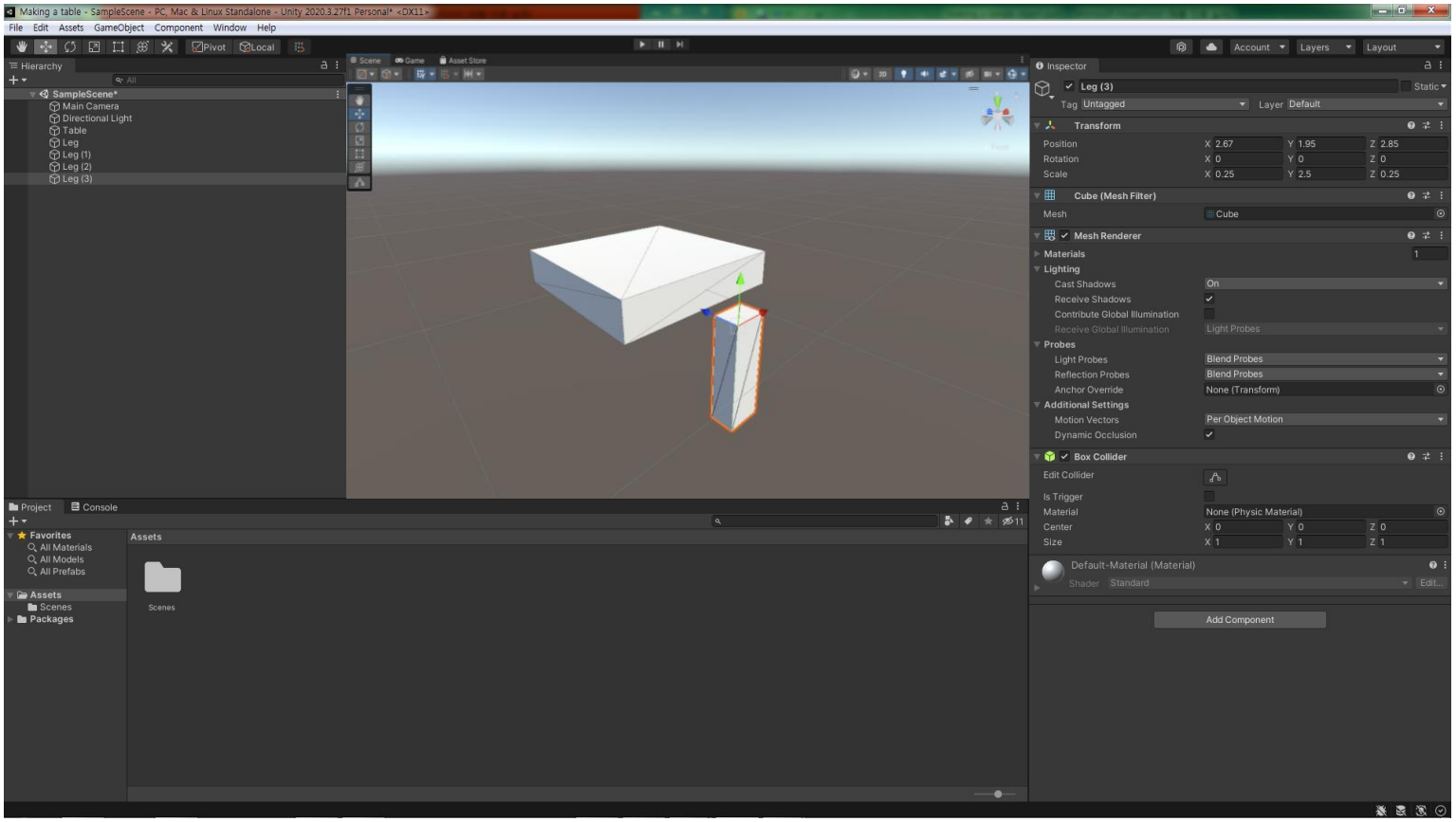
# Making a simple object with 3D objects

- To do the vertex snapping easily, let's change the shading mode to "Shaded Wireframe".
- Then you can see the vertex of the objects more obviously in the scene.



# Making a simple object with 3D objects

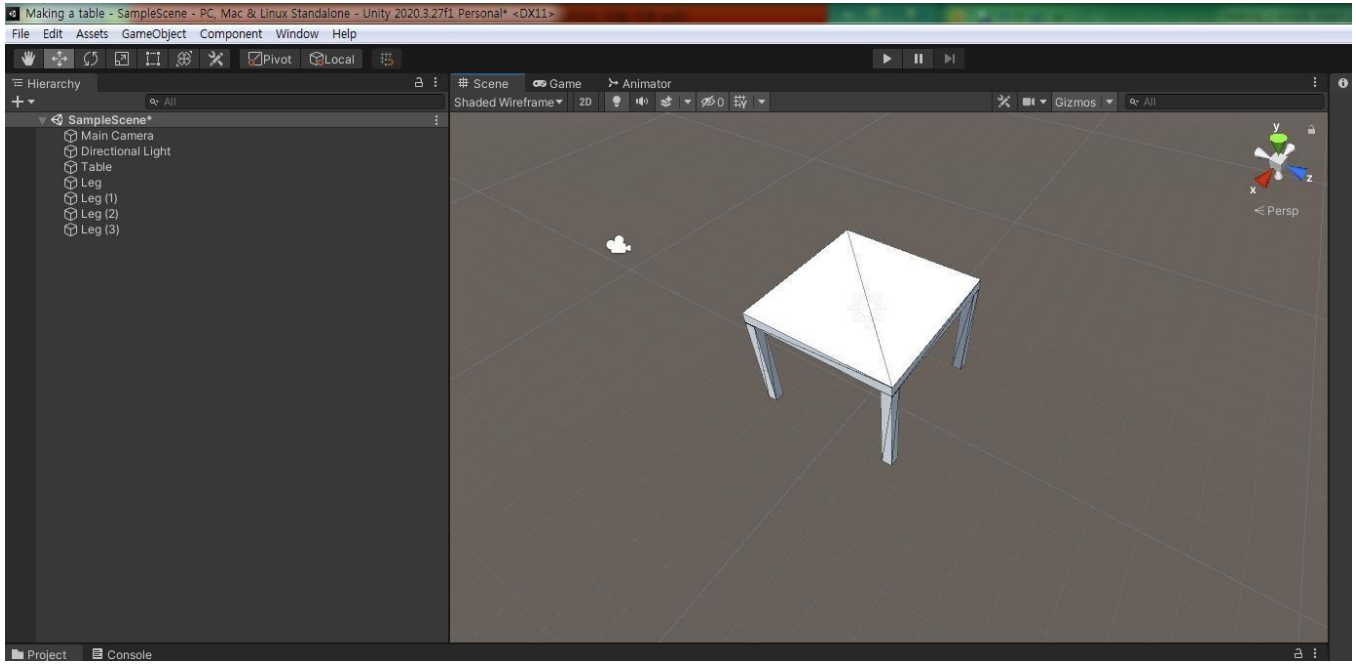
- Select each leg and put the cursor on the vertex that you want to connect to the bottom vertex of the table.
- Drag it to the vertex of the table while pressing “V”.



# Making a simple object with 3D objects

- Now, you have a table on your scene. But, it is not an object yet because if you move one of the legs, it will be apart from the table.

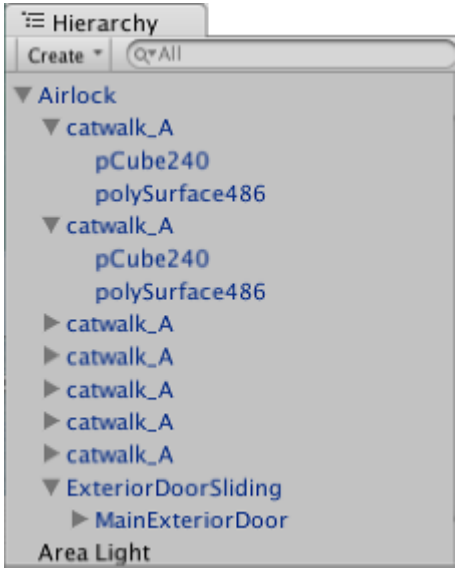
- So, to make these objects into an object, you need to make a relationship called “Parenting”.



# Making a simple object with 3D objects

- Parenting is one of the most important concepts to understand when using Unity. When a GameObject is a Parent of another GameObject, the Child GameObject will move, rotate, and scale exactly as its Parent does.

- Parent : Children
  = Body : Hands
  = Hands : Fingers




Example of a Parent-Child hierarchy.

# Making a simple object with 3D objects

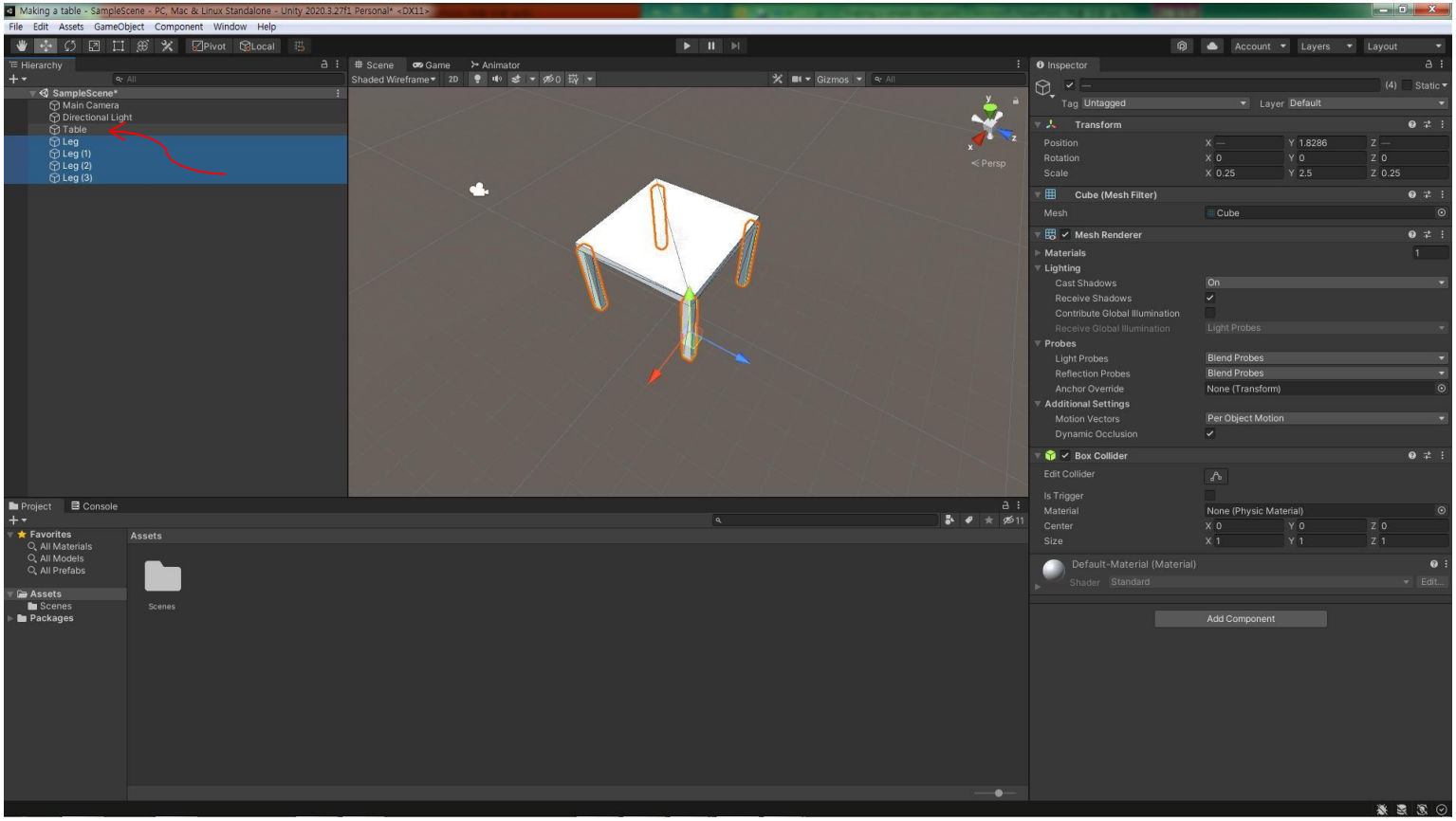
- Any object can have multiple children, but only one parent. These multiple levels of parent-child relationships form a Transform hierarchy. The object at the very top of a hierarchy is known as the root.

- You can create a Parent by dragging any GameObject in the Hierarchy View onto another. This will create a Parent-Child relationship between the two GameObjects.

# Making a simple object with 3D objects

- Drag Legs to Table so that legs be the children of Table.

  => If you transform(move/rotate/scale) the Table, legs will follow with that transformation.



# Making a simple object with 3D objects

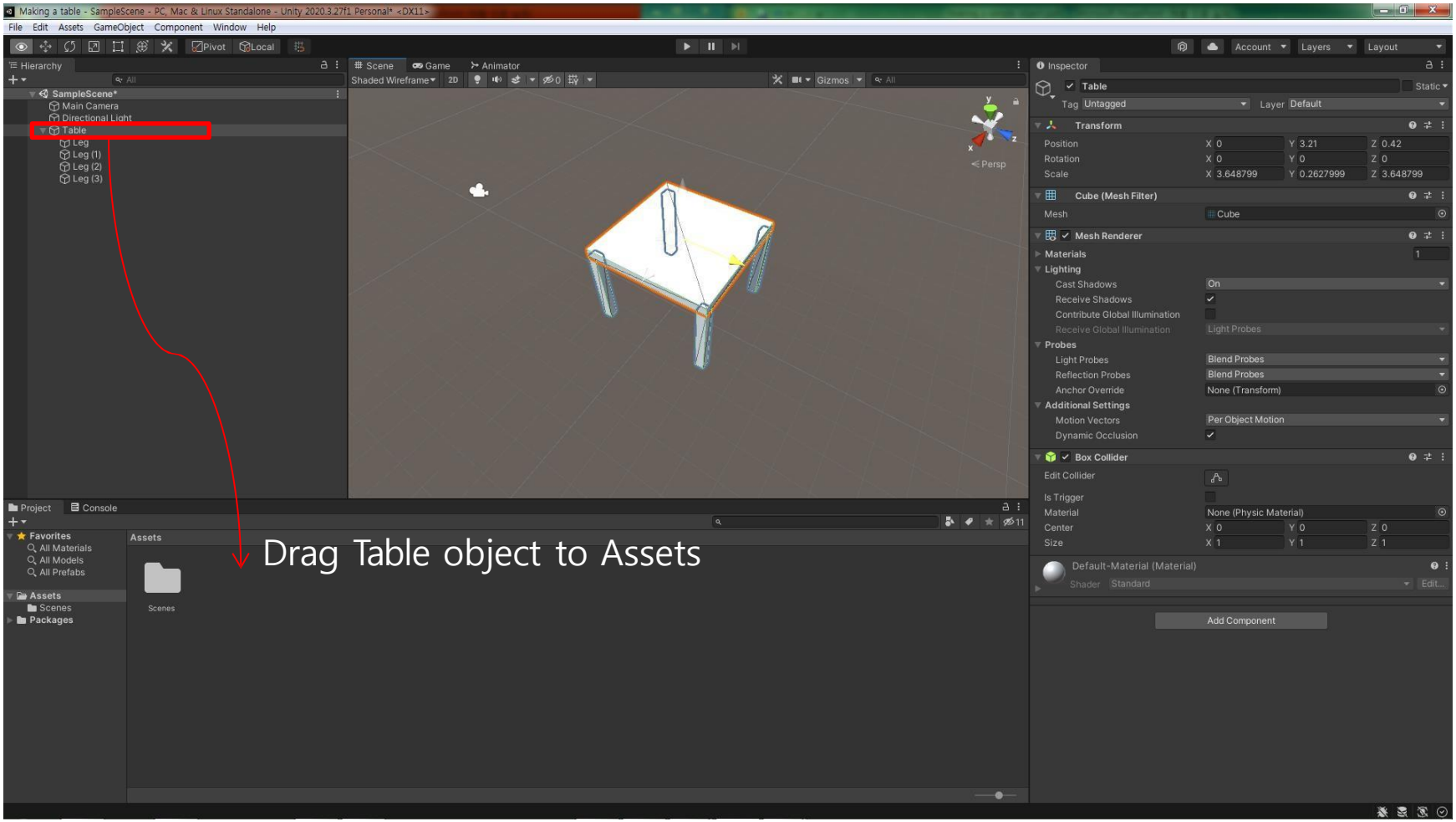
- So, the Table is completely created with 5 different game objects.
- When you want to use this Table in the other scene, you can make it as a “Prefab”.
- Unity has a Prefab asset type that allows you to store a GameObject complete with components and properties.

# Making a simple object with 3D objects

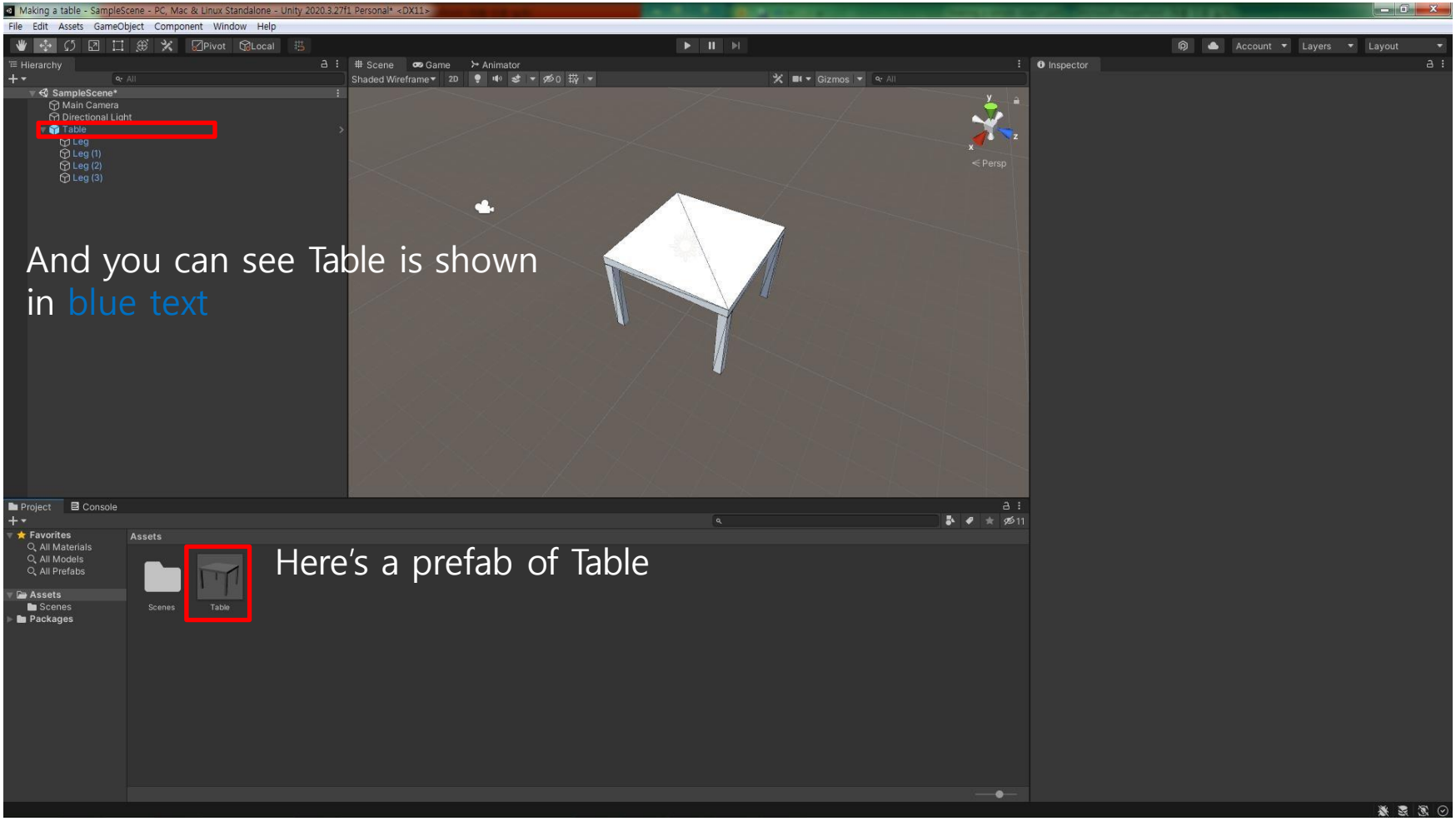
- You can create a prefab by 2 methods.
  1. Selecting Asset > Create Prefab and then dragging an object from the scene onto the “empty” prefab asset that appears.
  2. Just drag an object to Assets

- Objects created as prefab instances will be shown in the hierarchy view in blue text. (Normal objects are shown in black text.)

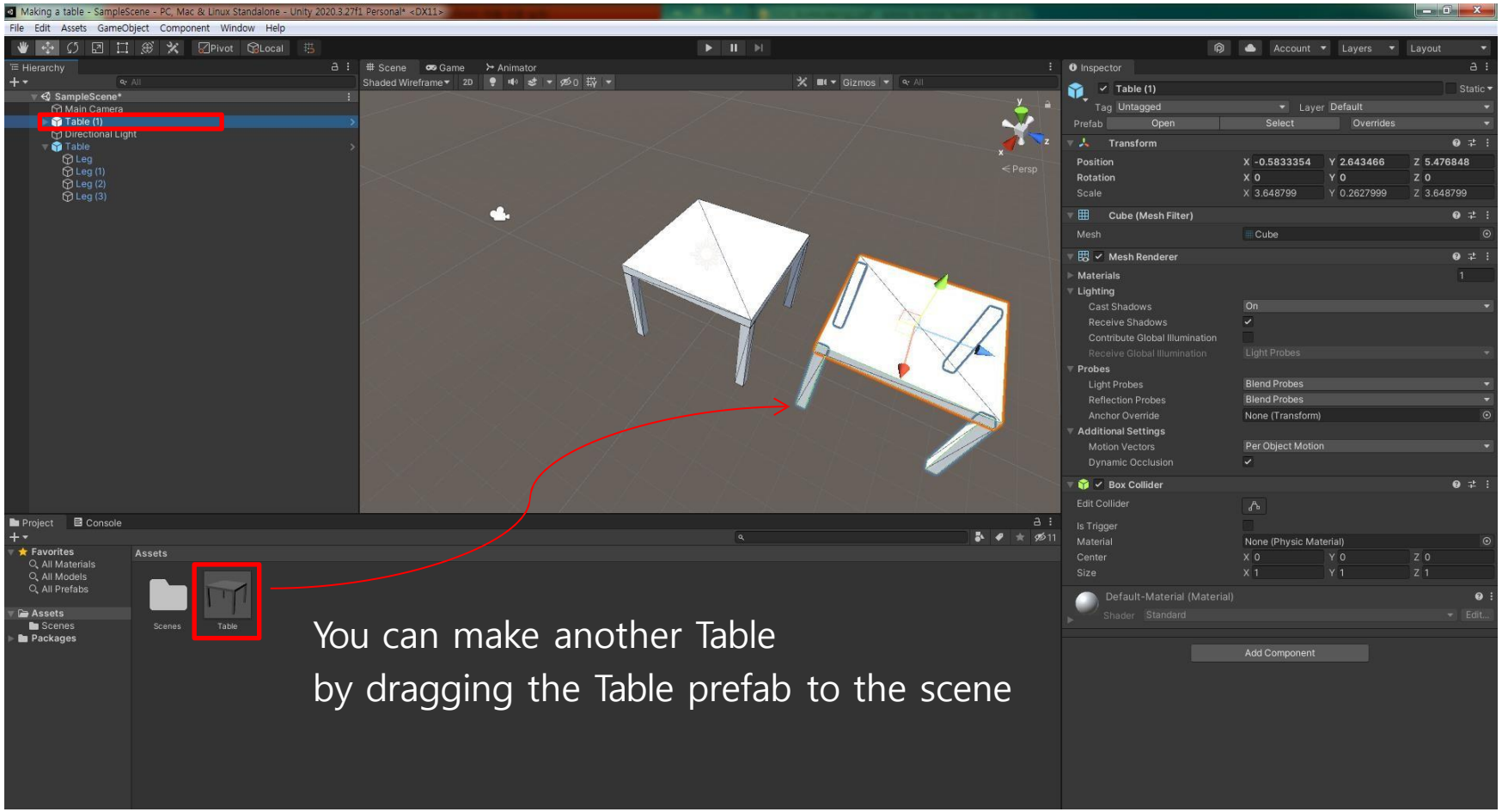
# Making a simple object with 3D objects



# Making a simple object with 3D objects



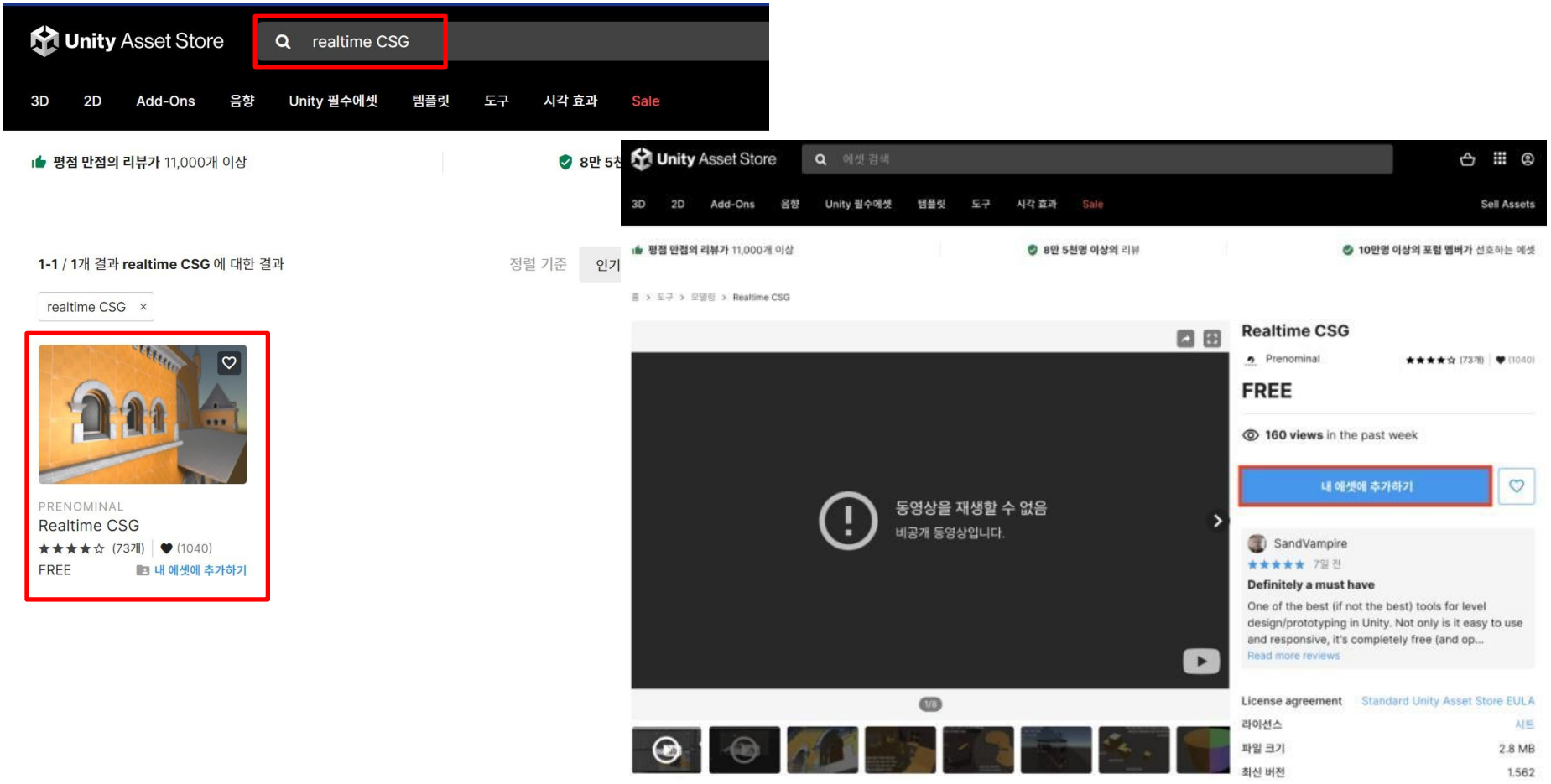
# Making a simple object with 3D objects



# [Unity] Make Objects using Realtime CSG

Sung Soo Hwang

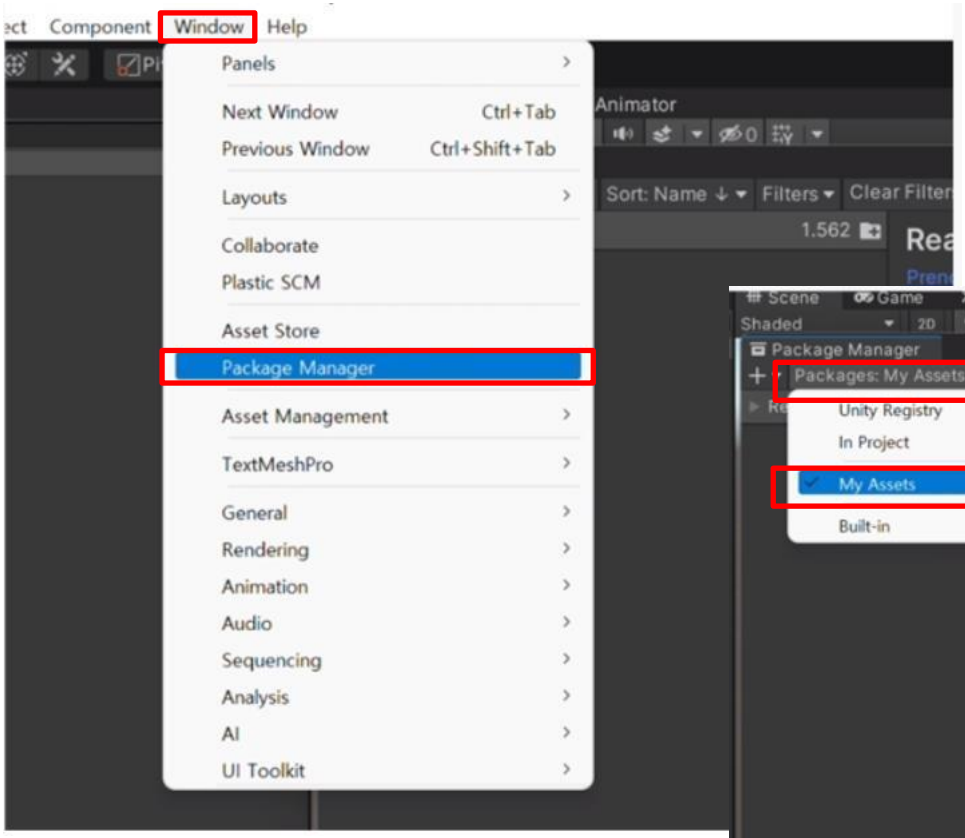
# Import Realtime CSG



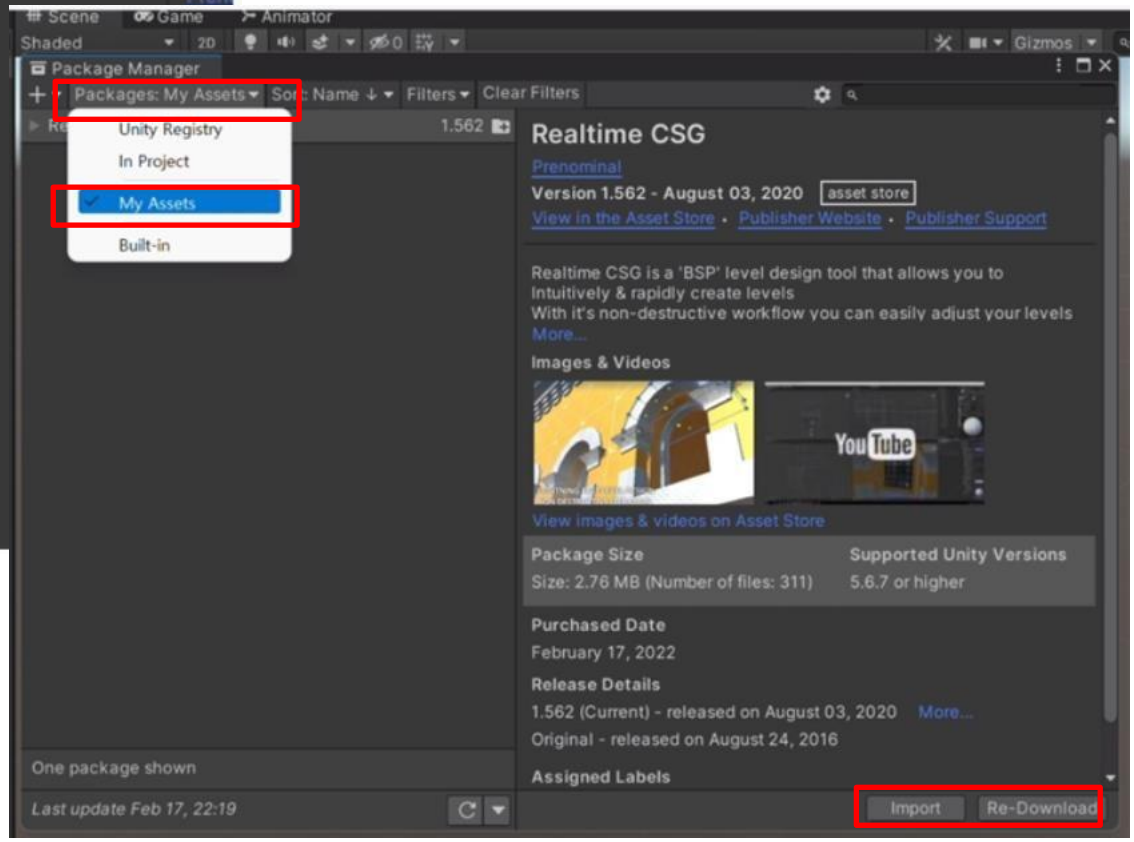

Go to Unity Asset Store → Search "Realtime CSG" → import it to your project

Unity Asset Store URL : https://assetstore.unity.com/?locale=ko-KR

# Import Realtime CSG

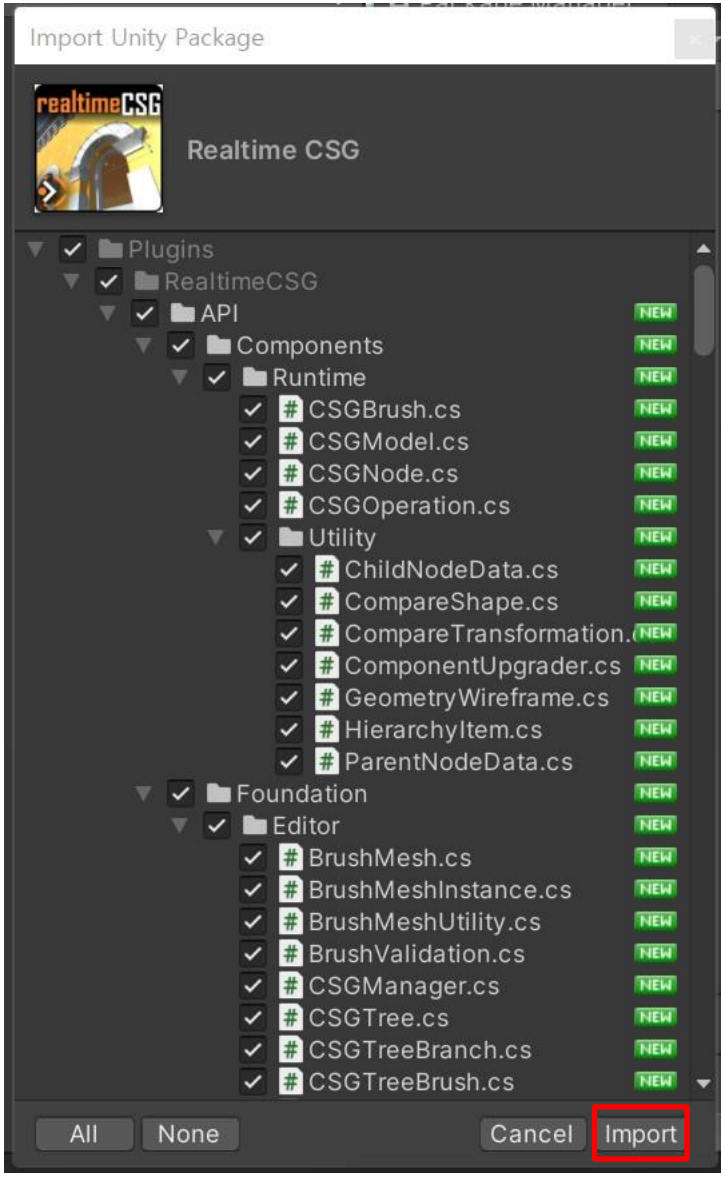



Click "windows – Package Manager"



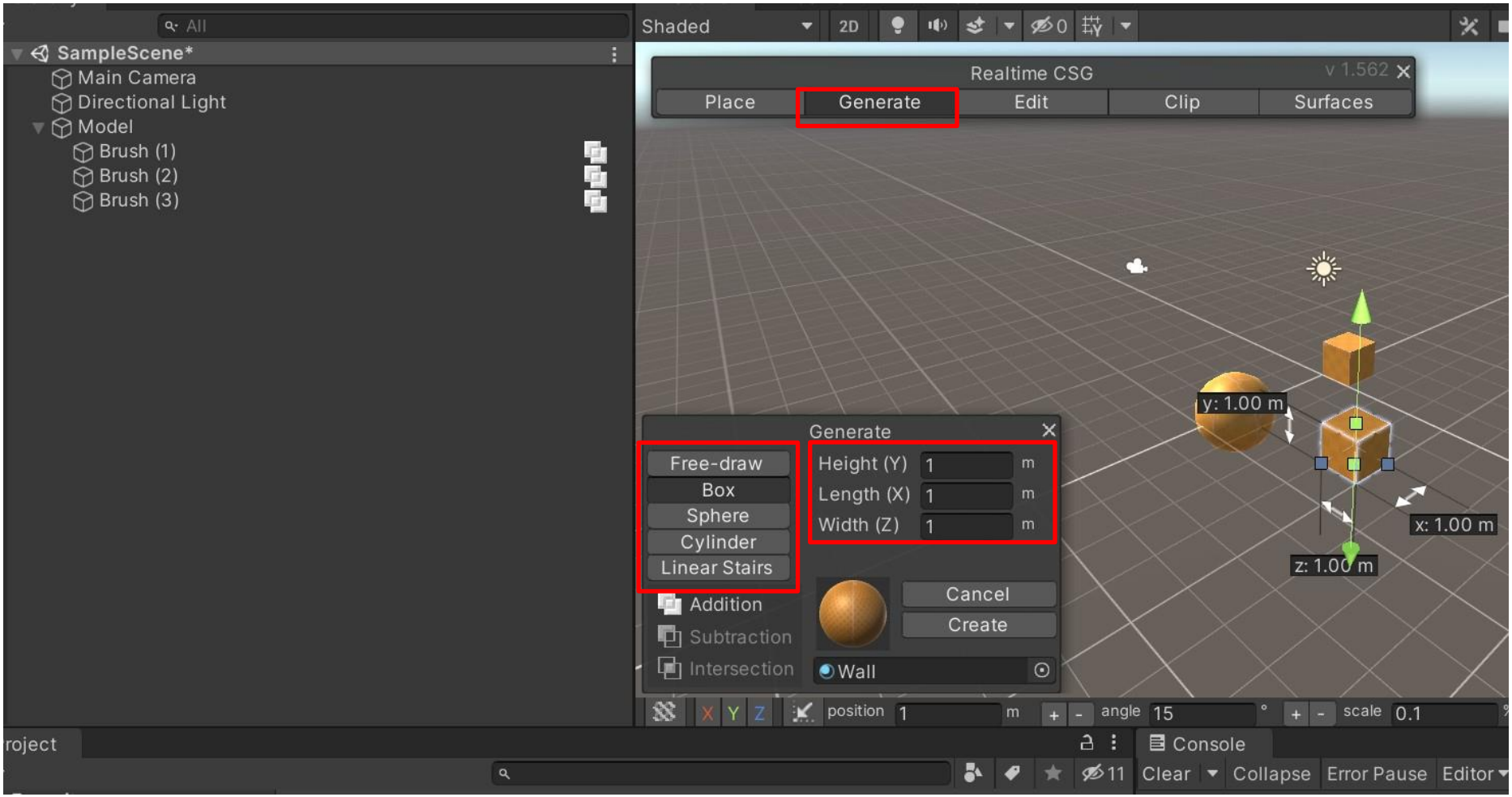

Select My Assets. Click download and import

# Import Realtime CSG




Click Import

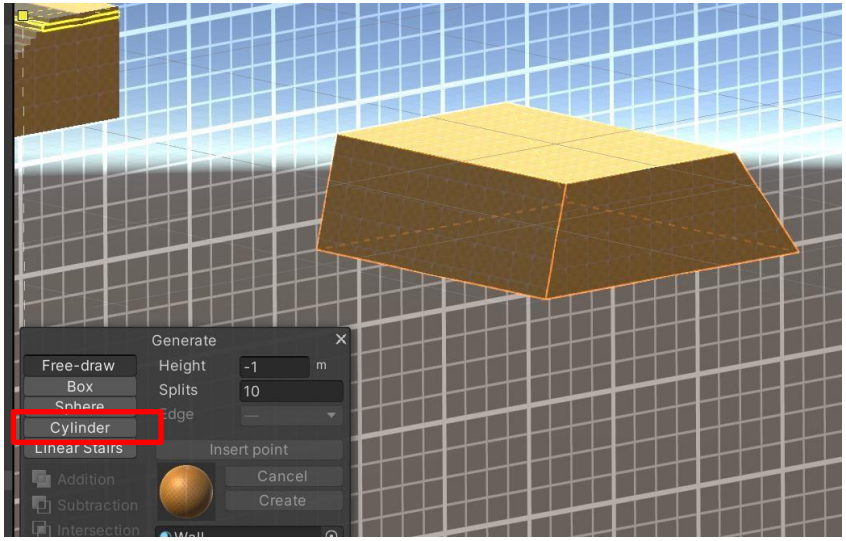
# Create Primitives



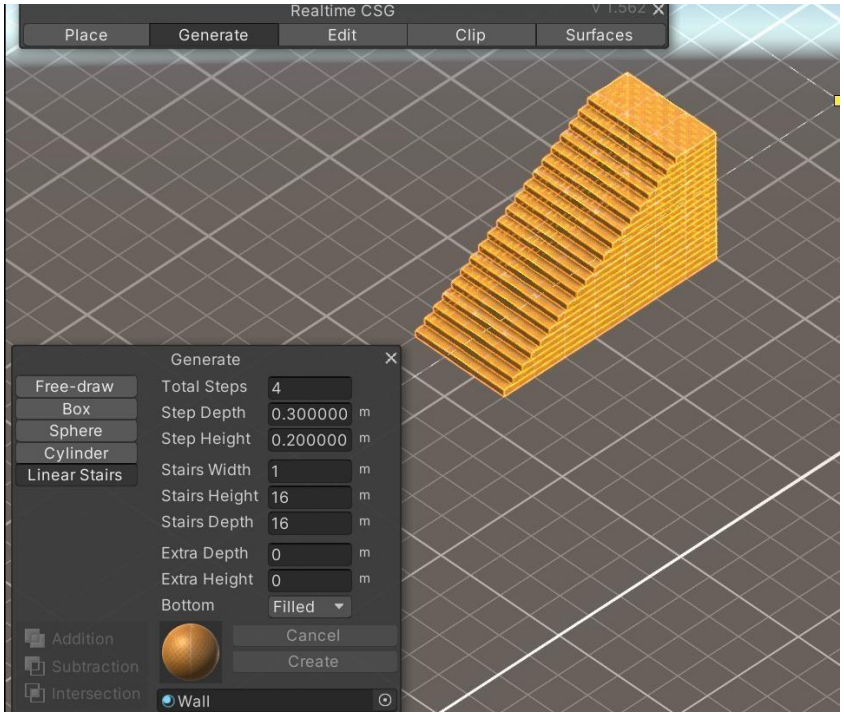

Click “Generate”.

You can create Box (Cube), Sphere, Cylinder, …

# Create Primitives

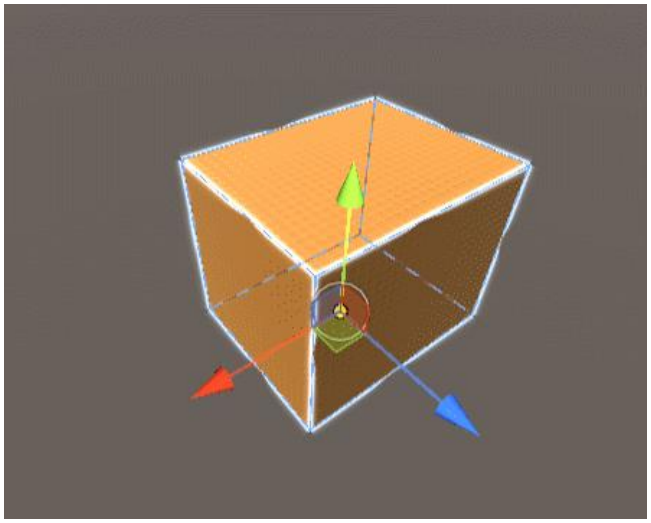



Free-draw allows you to create any object you want.



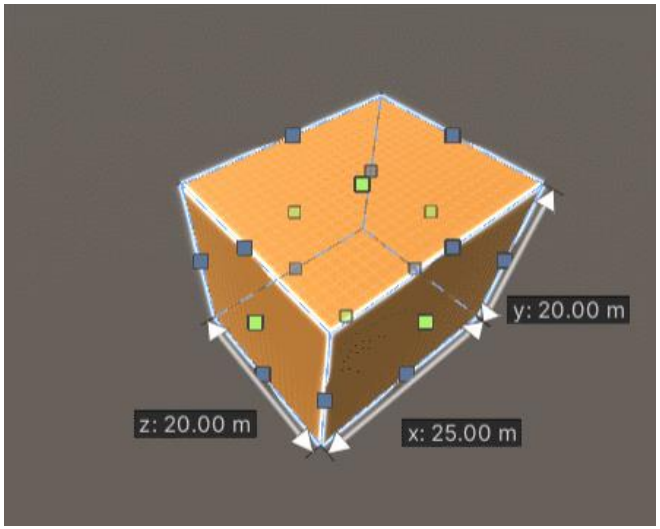

'Linear-Stairs' allows you to create the stairs

# Transformation



- Rotation

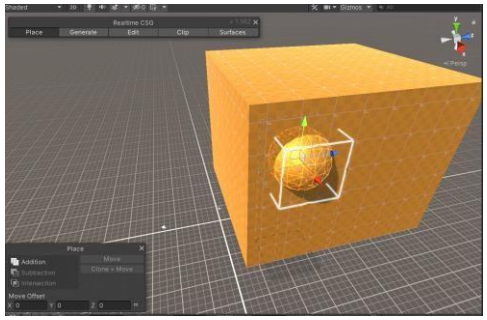
In both object-mode and mesh-mode, when you use to select the unity rotate tool  , you can rotate your brush by dragging the edge of the brush into a circle.

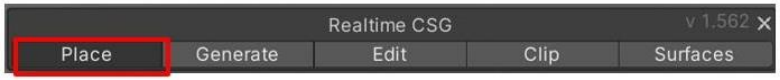



- Scaling

In object-mode, you can also scale your brushes by moving the sides of the bounding box around your brushes.
Scale into a negative size allows you to mirror your selection.

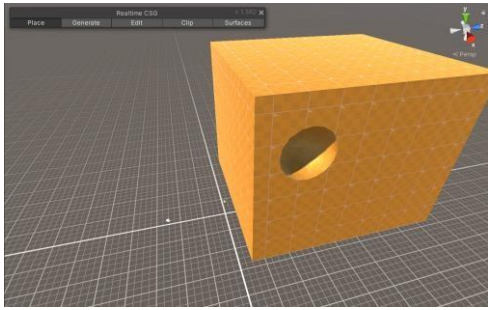
# Practice: Boolean Modeling with Realtime CSG



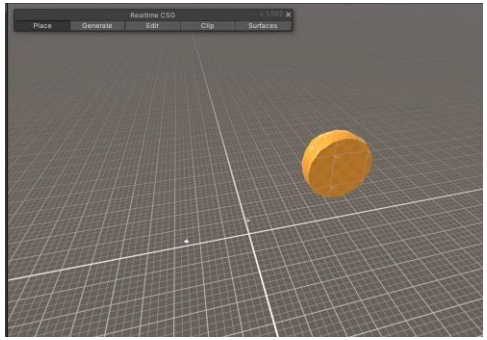


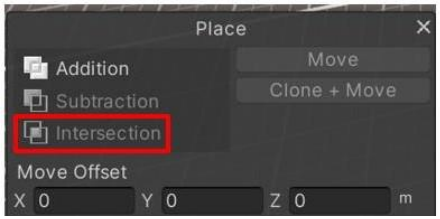


Place → Addition




Place → Subtraction






Place → Intersection

# [Unity] Make Objects using ProBuilder

Sung Soo Hwang

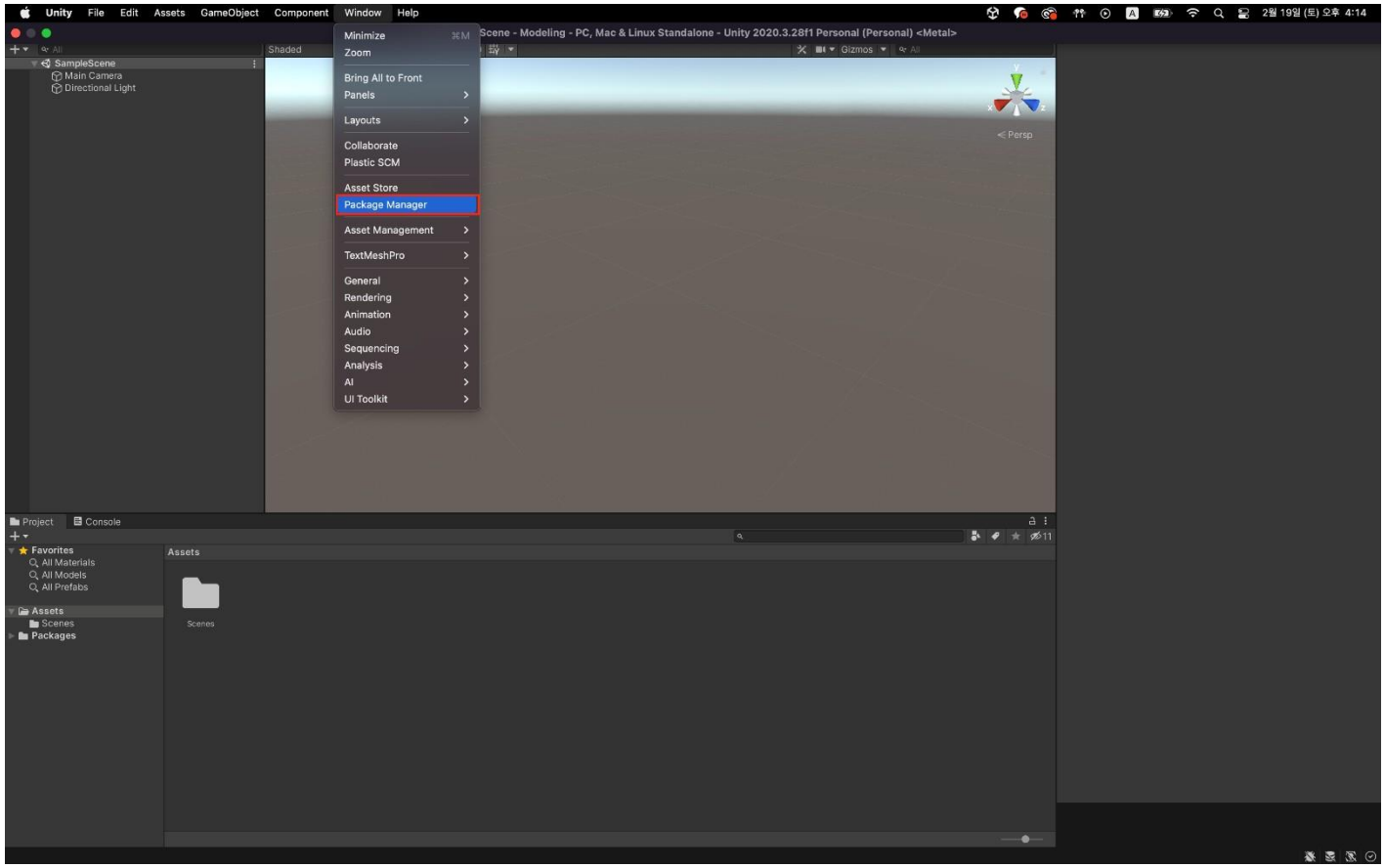
# ProBuilder

- ProBuilder
  - You can use ProBuilder for in-scene level design, prototyping, and collision meshes, all with on-the-fly play-testing.


https://www.pixstacks.com/pro-builder-for-unity

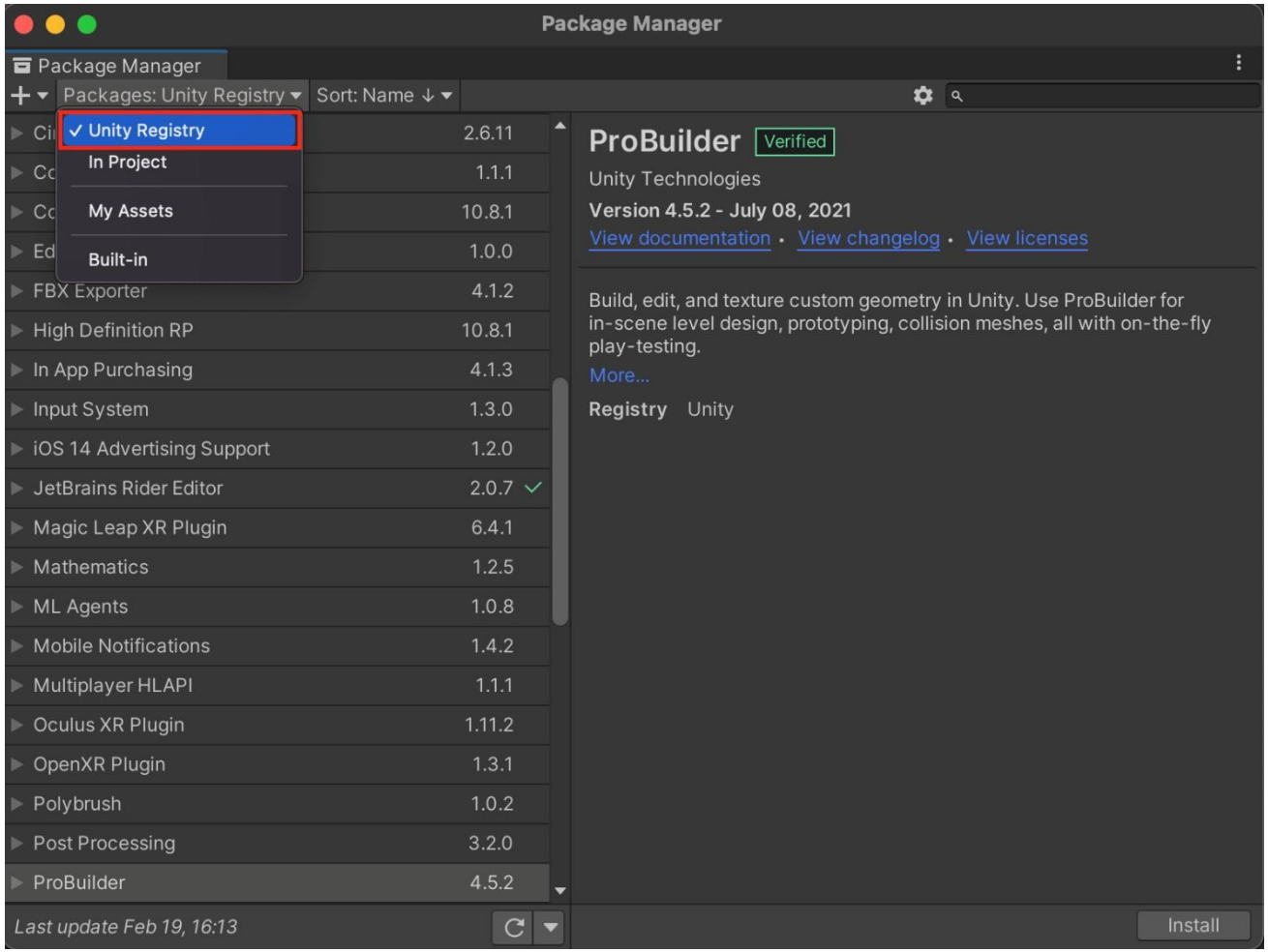
# ProBuilder

- Install ProBuilder
  1. Open your Unity Project
  2. Window -> Package Manager



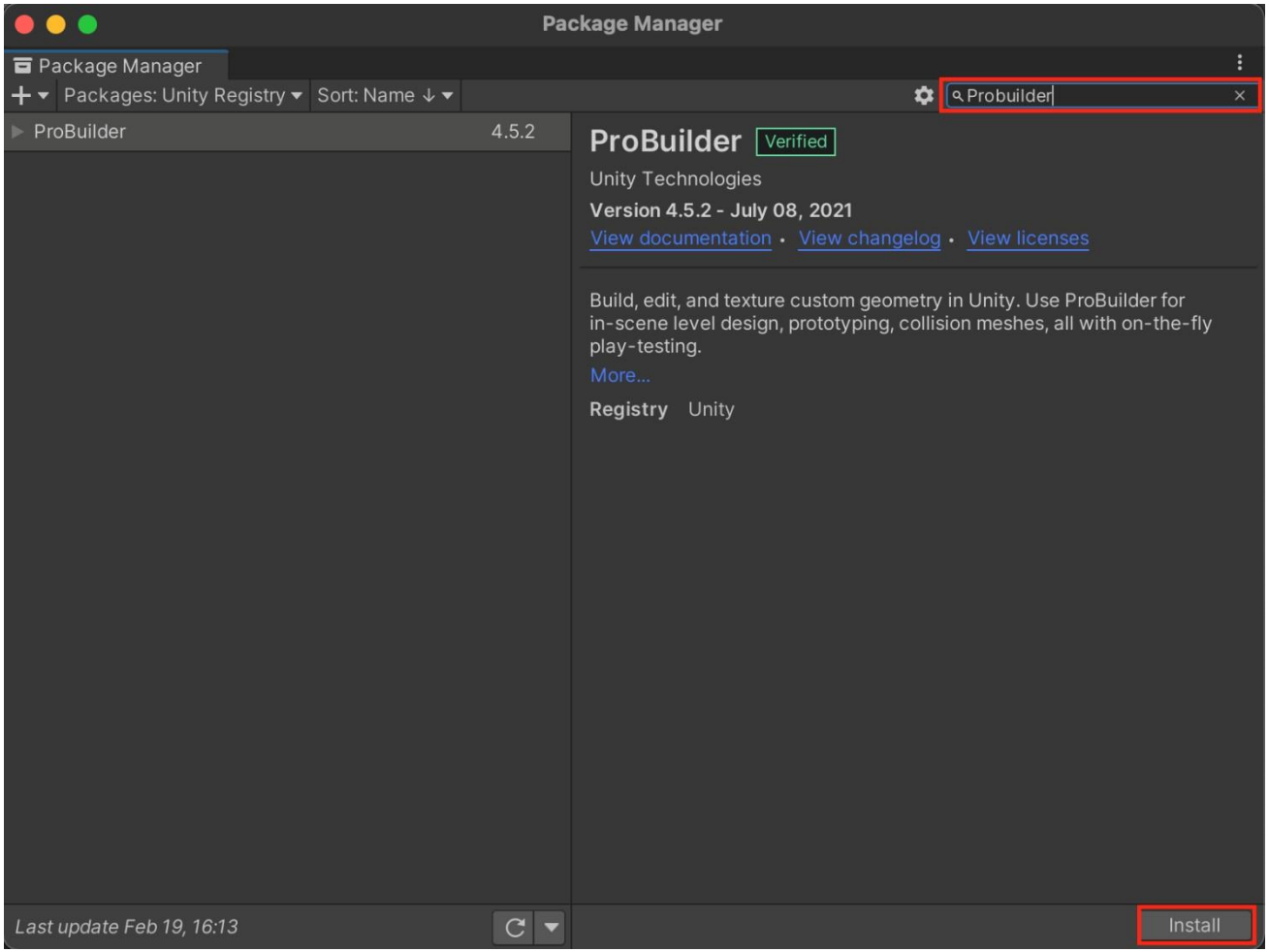
# ProBuilder

- Install ProBuilder
  3. Set the search range to “Unity Registry”.



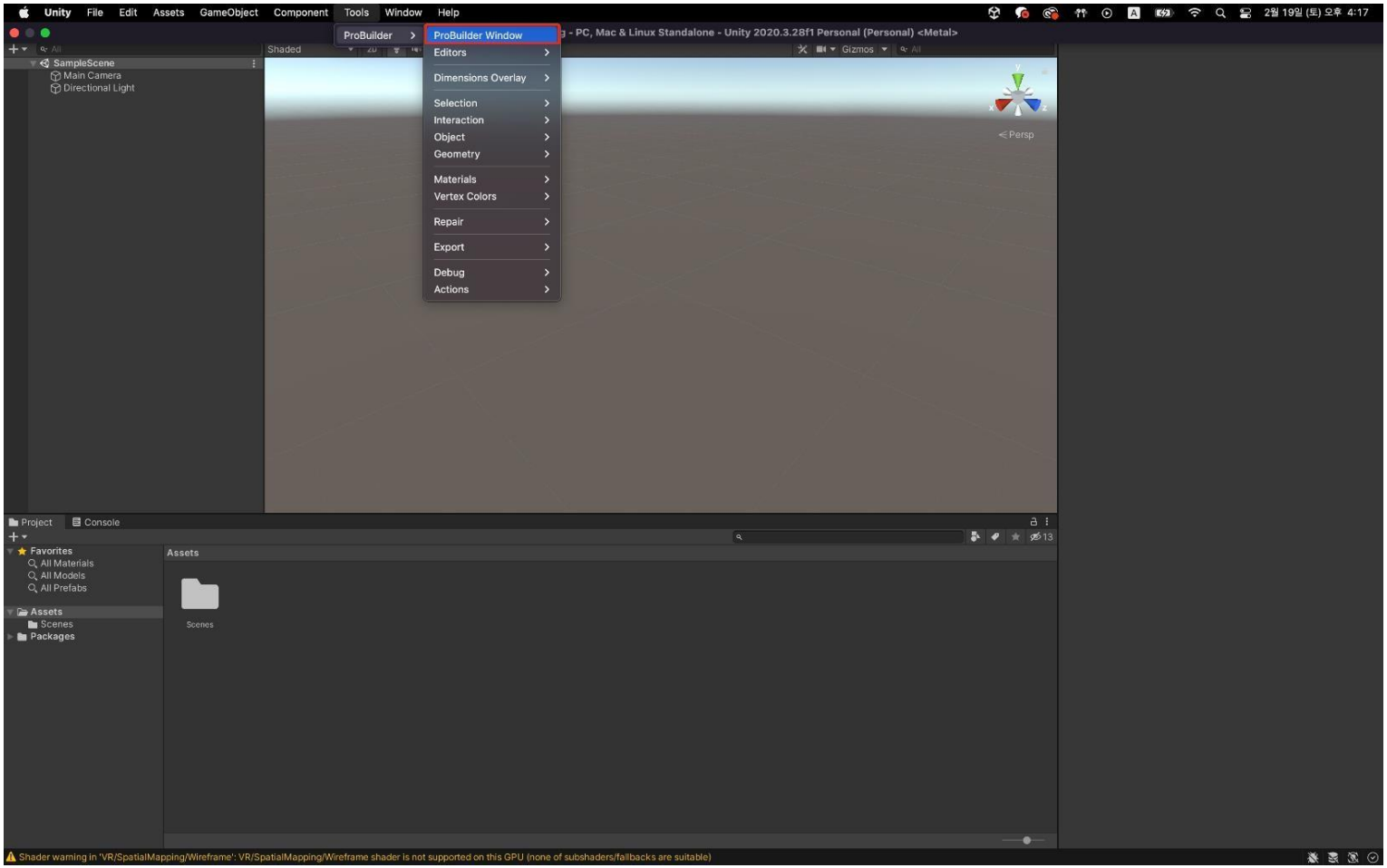
# ProBuilder

- Install ProBuilder
  4. Search "ProBuilder" and install it.



# ProBuilder

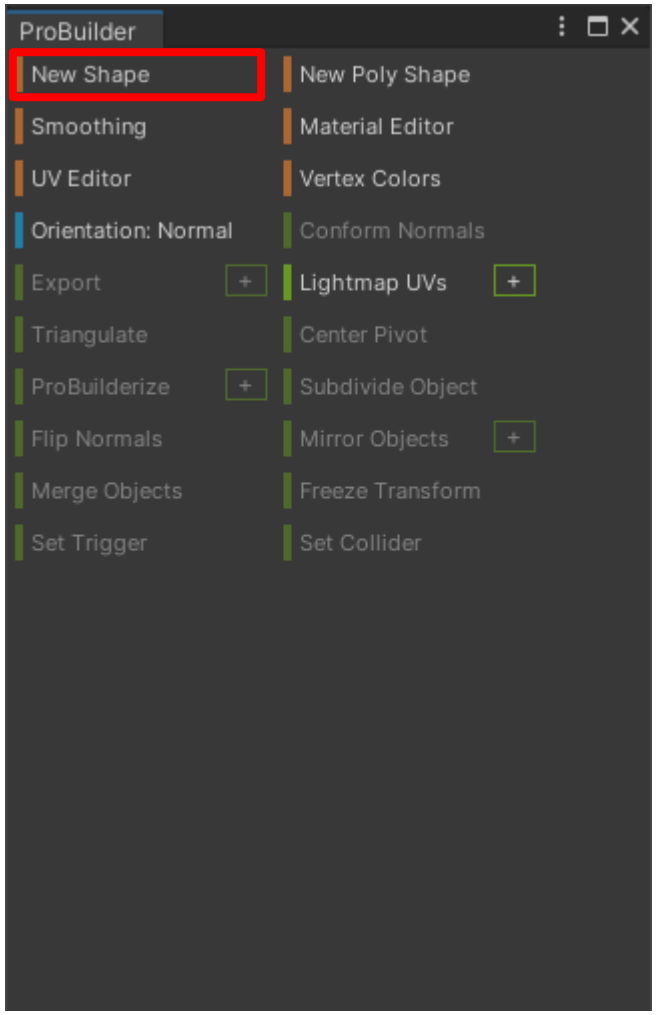
- Install ProBuilder
  5. When the installation is complete, open ProBuilder Window.



# ProBuilder

- Create Primitives

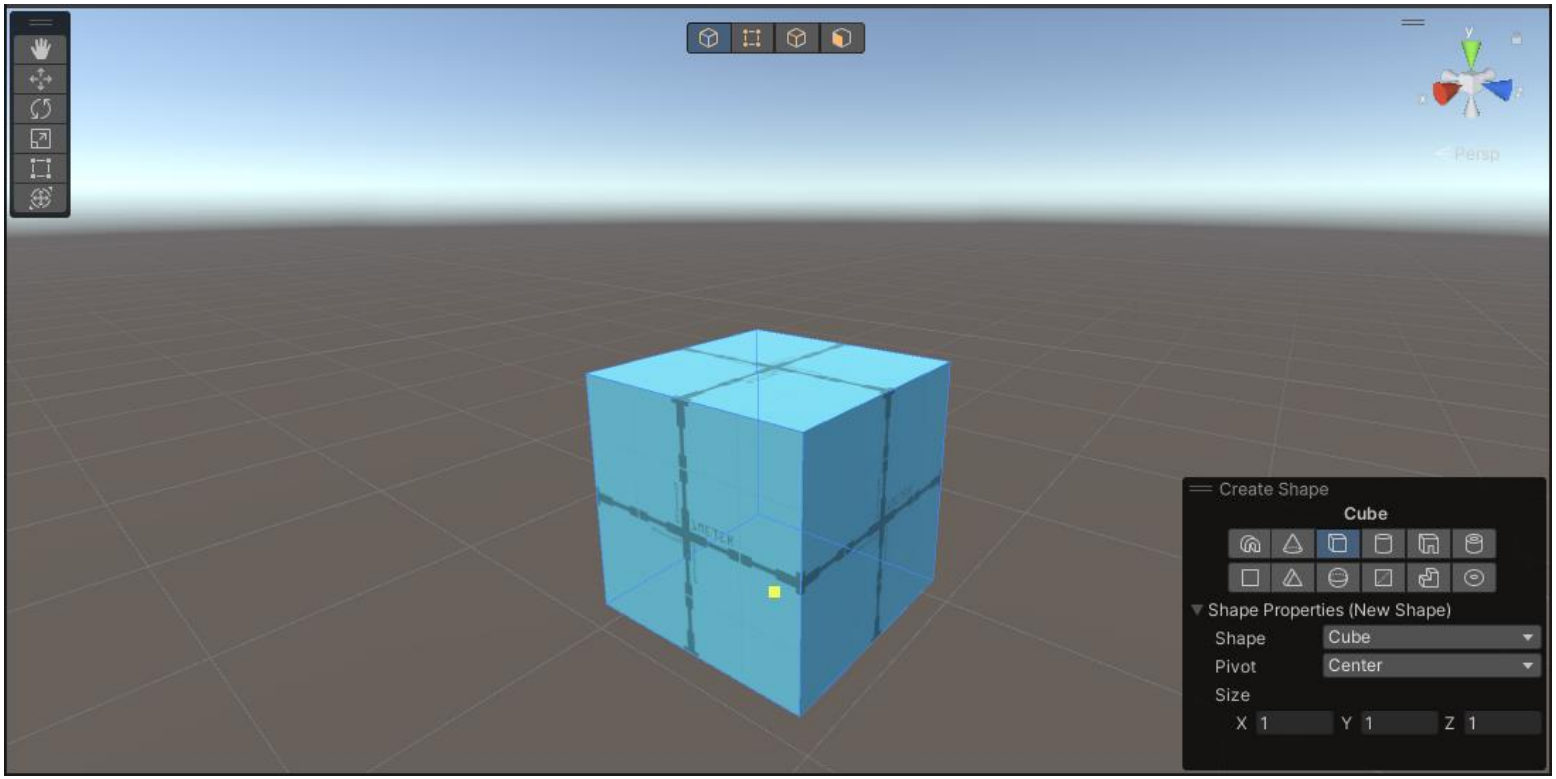
  Press the "New Shape".



# ProBuilder

- Create Primitives

  You can create the desired primitives using Shape Tool.



# ProBuilder

- Create Primitives

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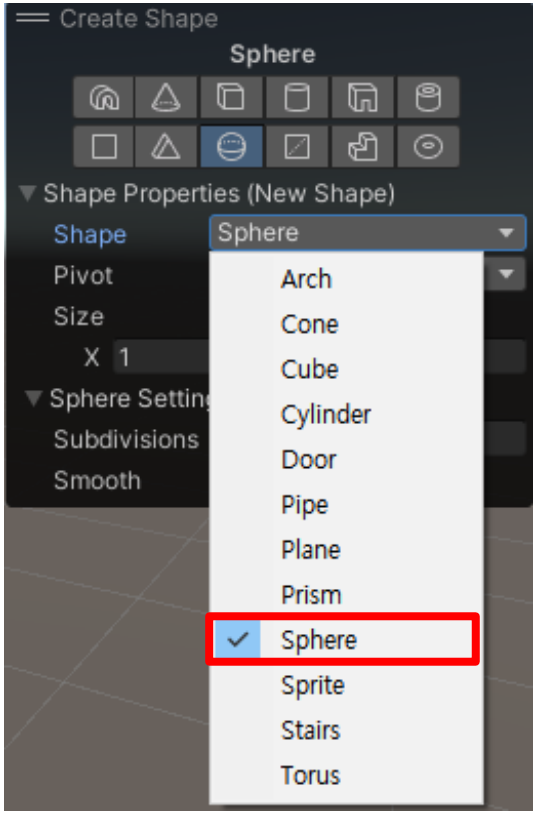


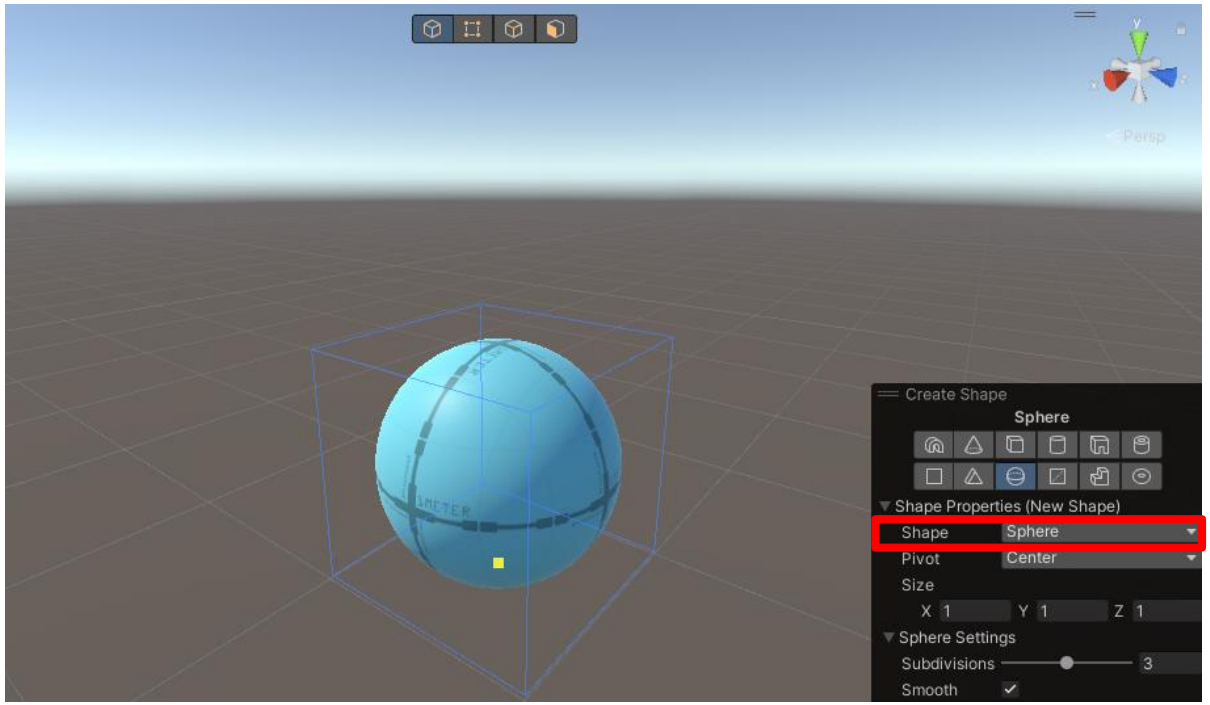

# ProBuilder

- Create Primitives

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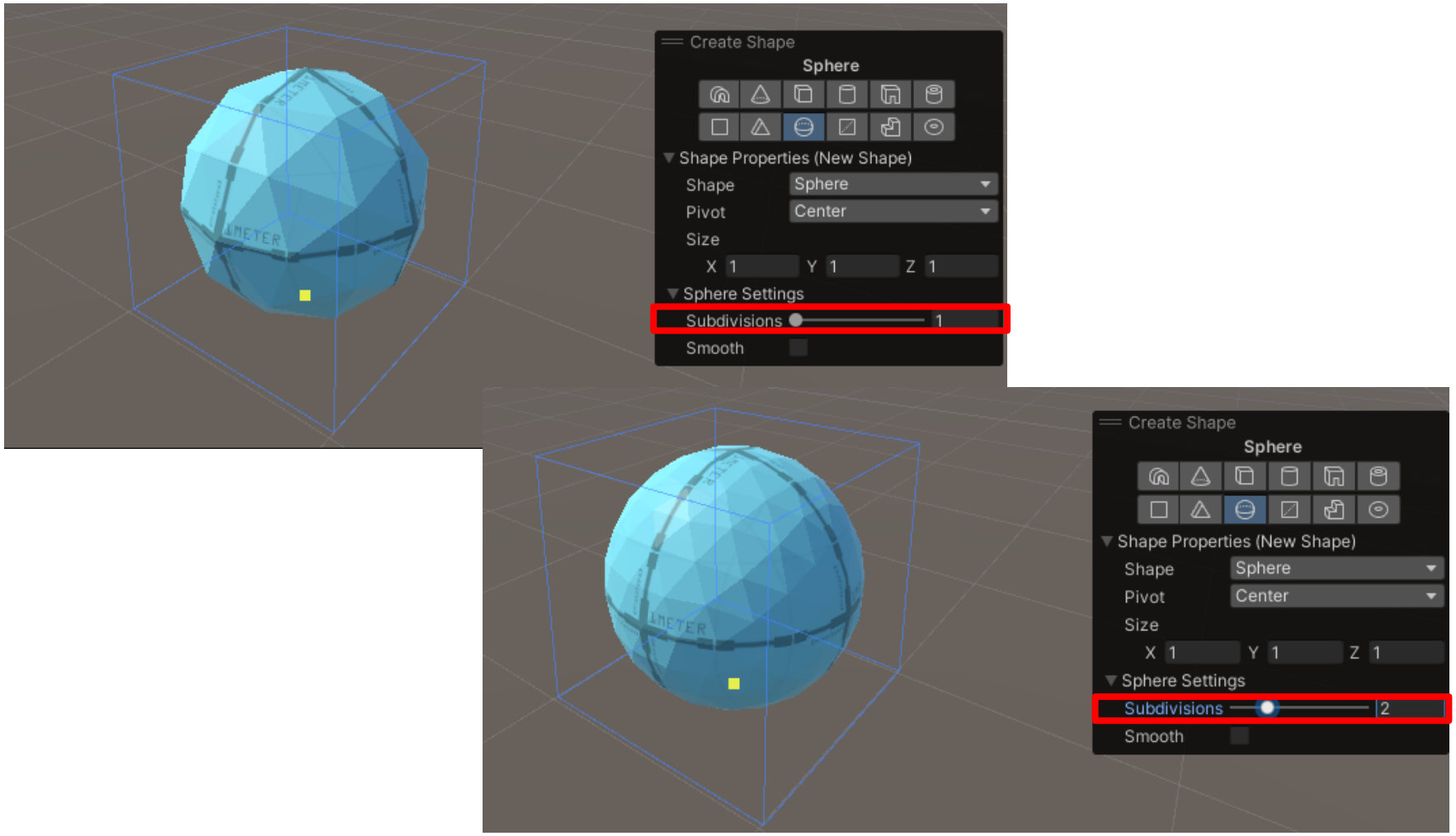

# Practice: Boolean Modeling with ProBuilder

You can also use the Boolean tool with ProBuilder.

Good tutorial video:
https://www.youtube.com/watch?v=SpQsbqxAK4I