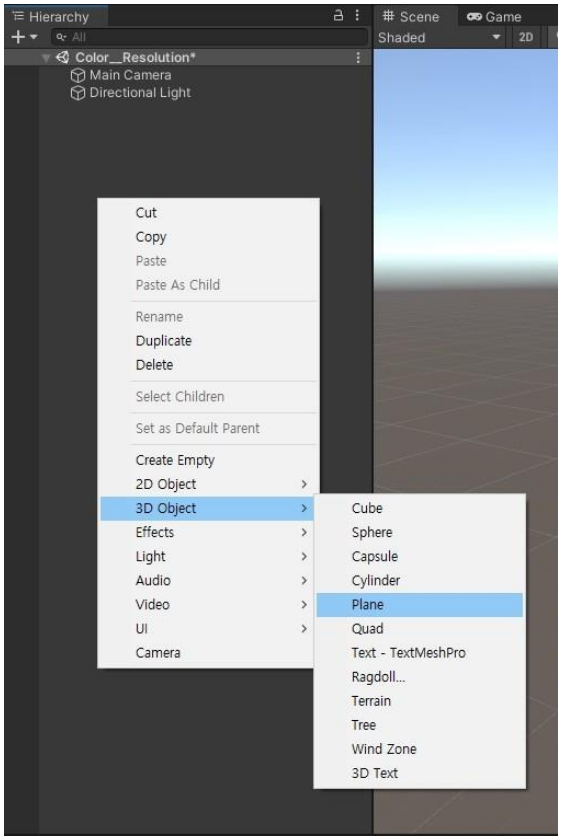
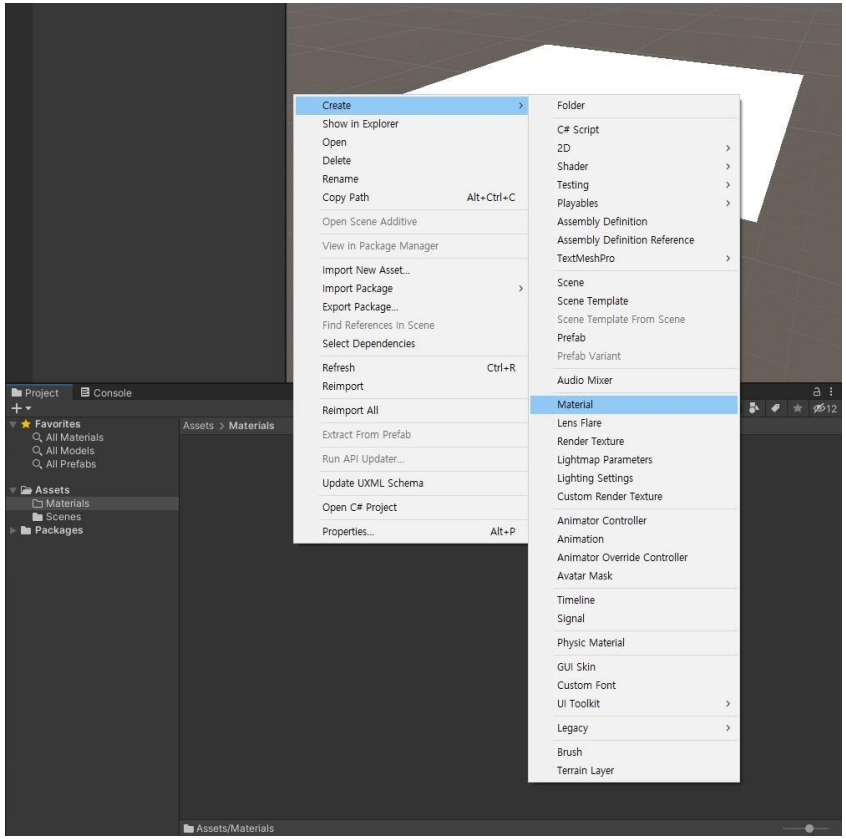
Computer Graphics
- [Unity] Color & Camera

Sung Soo Hwang

Color change in the 3D world

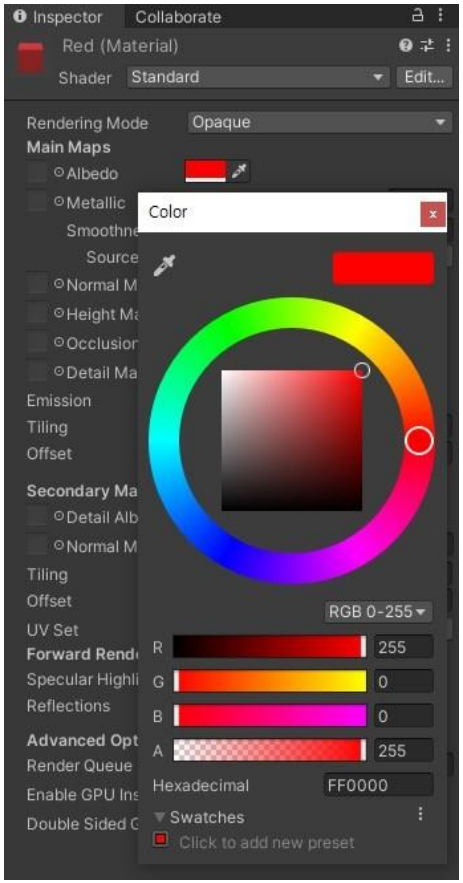
- Create a plane
- Create a material in “Material” folder

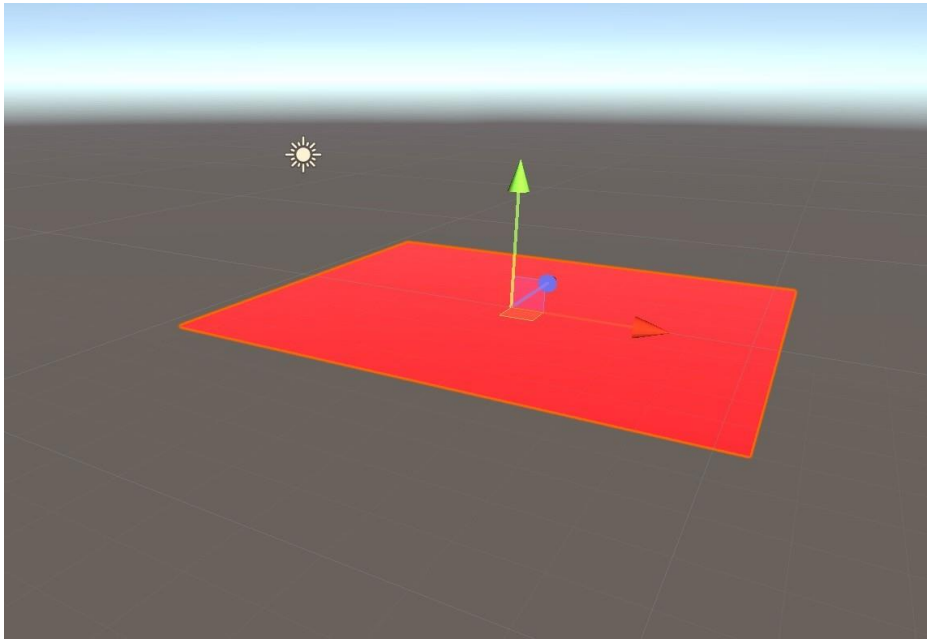




Color change in the 3D world

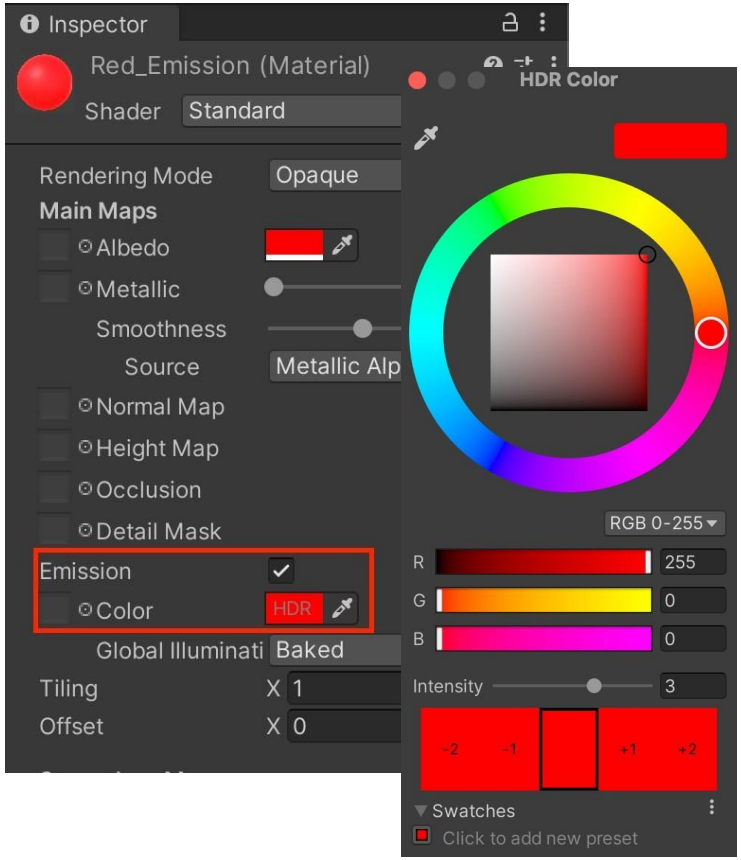
- Change the color of the material inspector
- Drag and drop material on the plane in the Hierarchy or the Scene





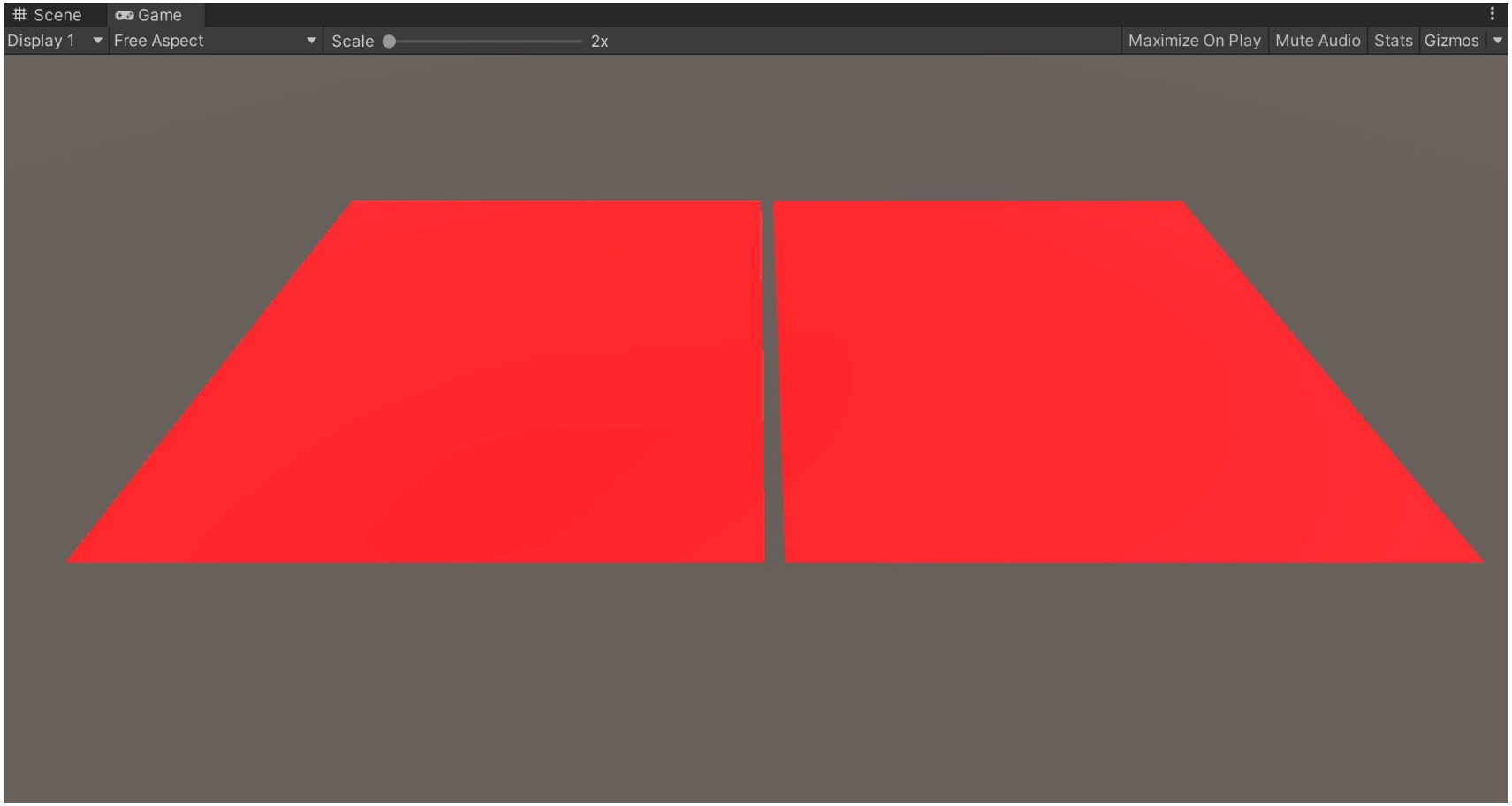
Color change in the 3D world

- Change the Albedo to the Emission
  - Check the Emission box
  - Change the Color of the Emission
  - Set the intensity of the Emission to 3



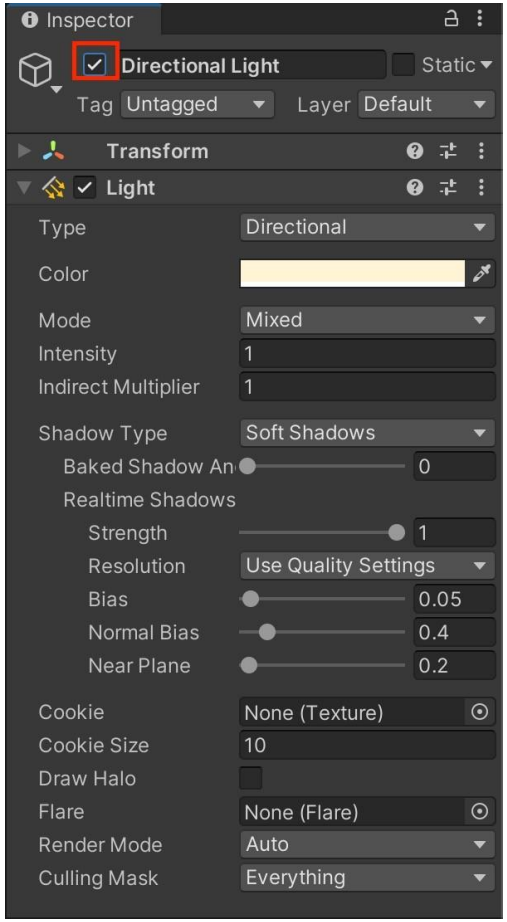
Color change in the 3D world

- Left: using the Emission
  Right: using the Albedo



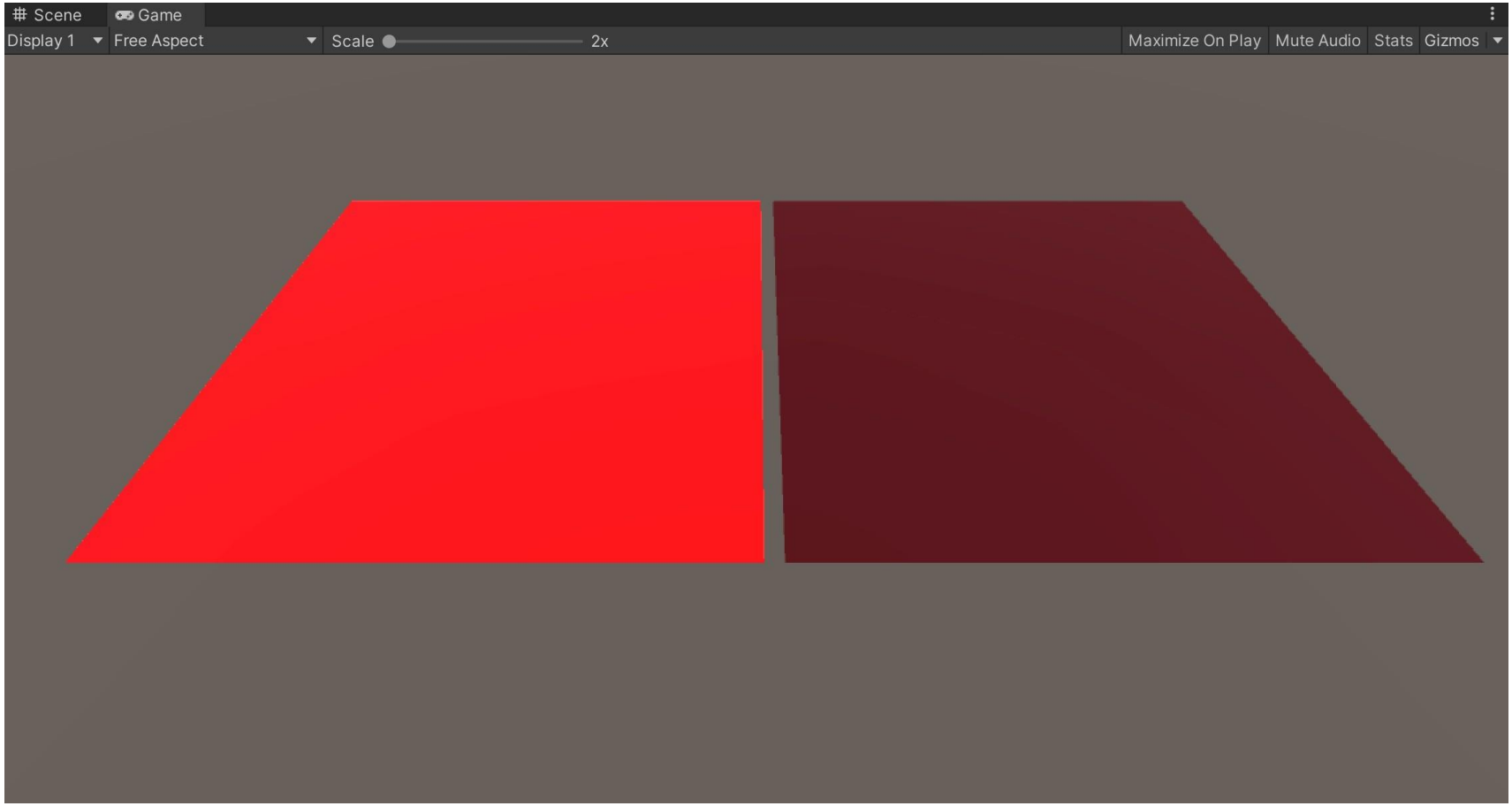
Color change in the 3D world

- Disable directional light.
  - Go to the Inspector panel of the directional light.
  - Uncheck the activation of the directional light.



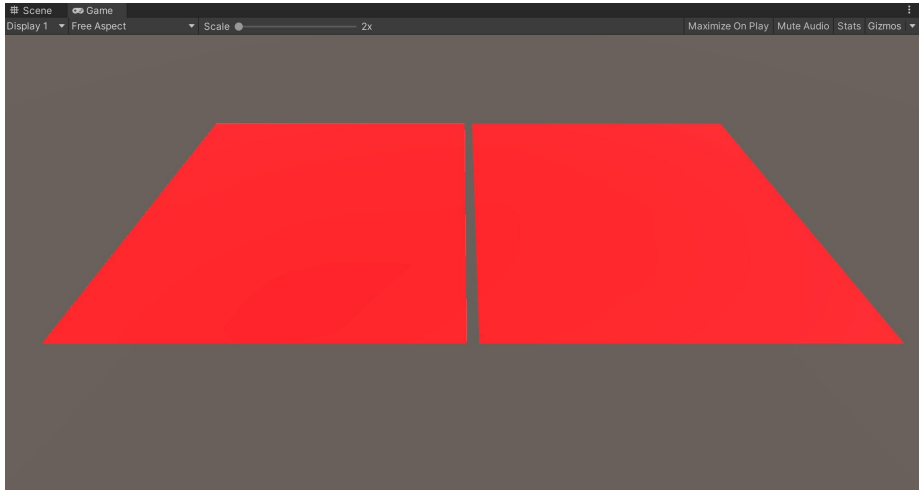
Color change in the 3D world

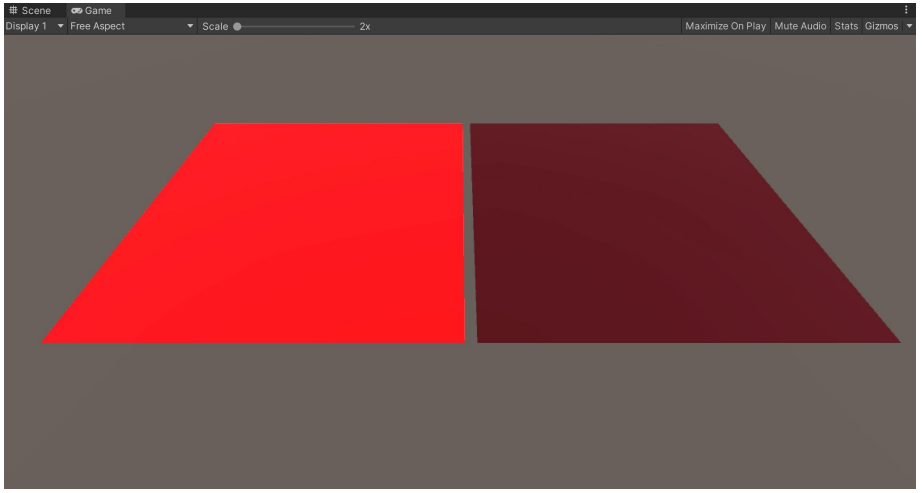
- Render the scene again



Color change in the 3D world

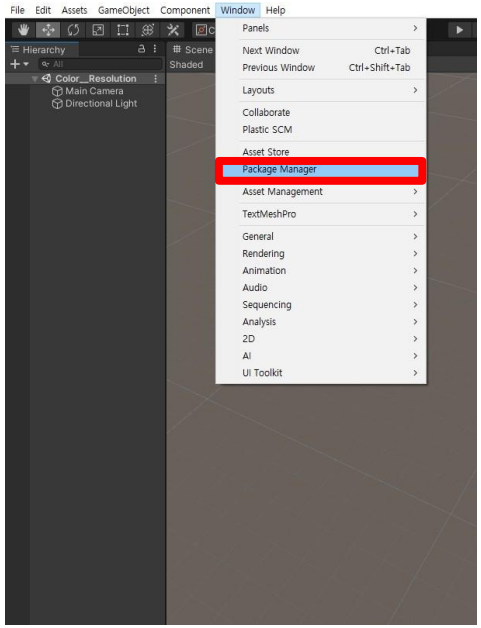
- Emission
  - The object is not affected by external light and appears "self-illuminated".

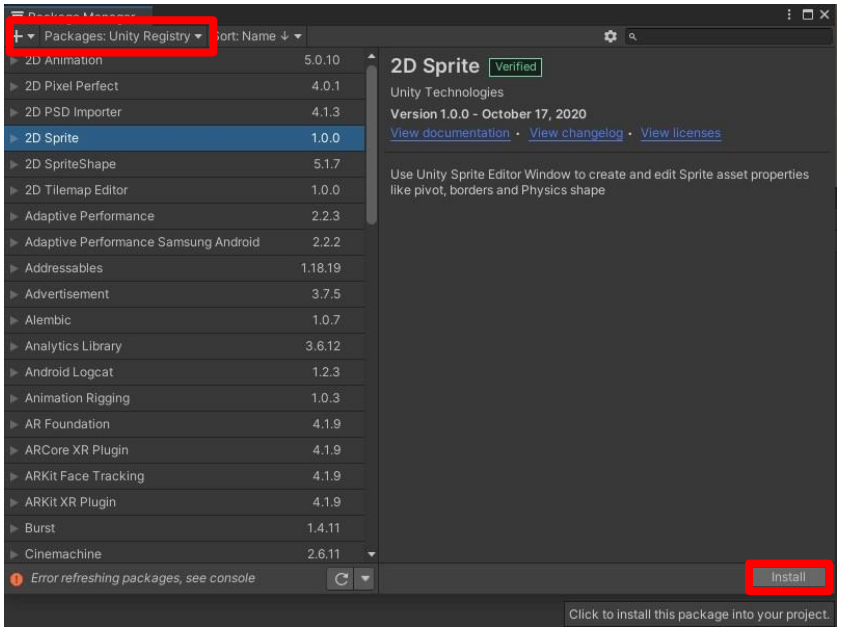


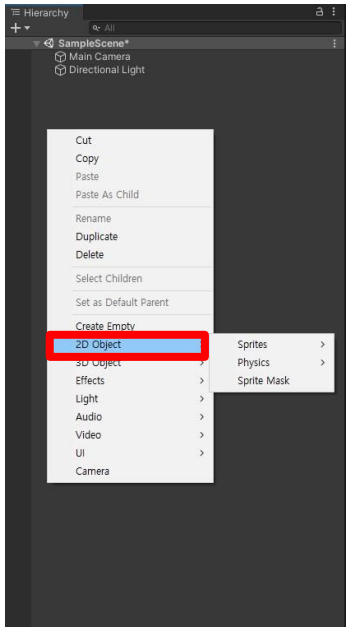


Color change in the 2D world

- Install the 2D Sprite package manager
  - Window – Package Manager – Package: Unity Registry – 2D Sprite
- Check 2D Object

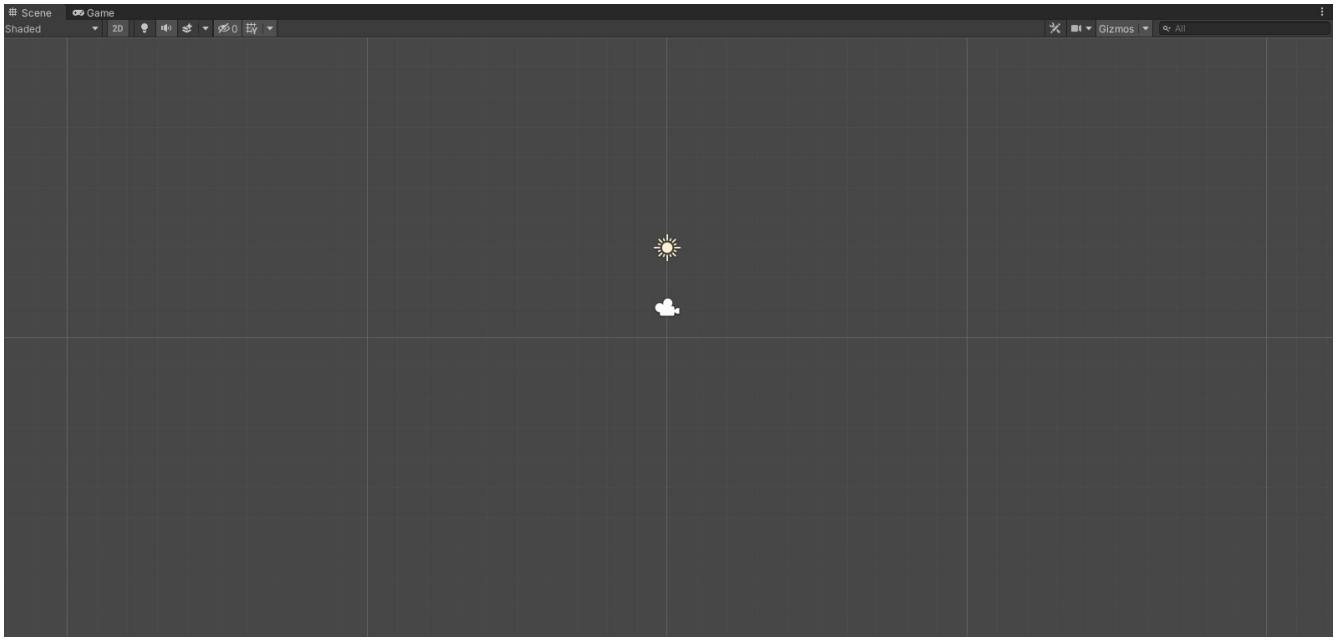






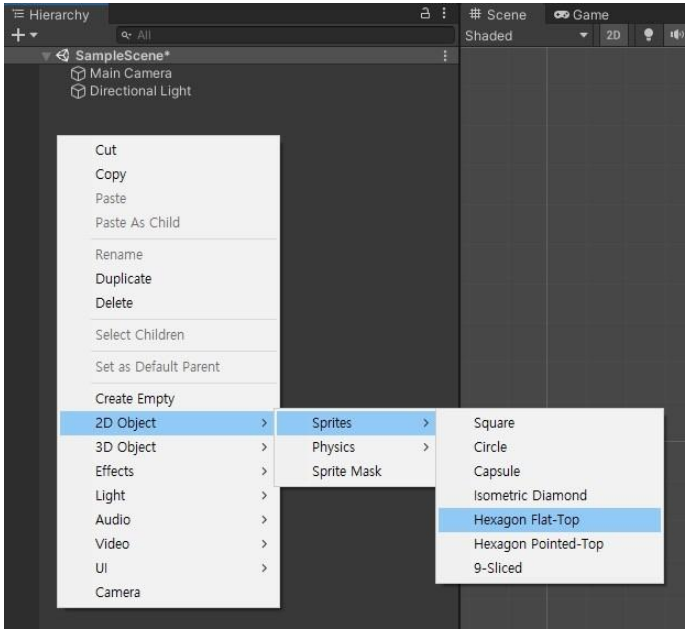
Color change in the 2D world

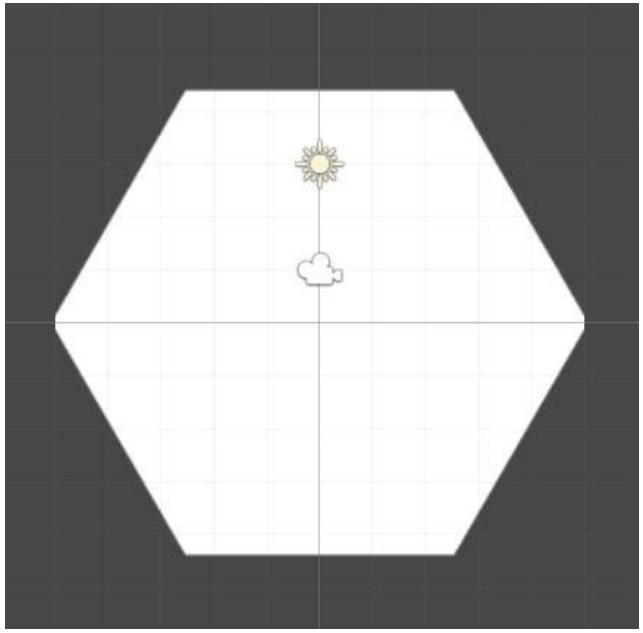
- Change the 3D world to the 2D world and turn off the light and skybox



Color change in the 2D world

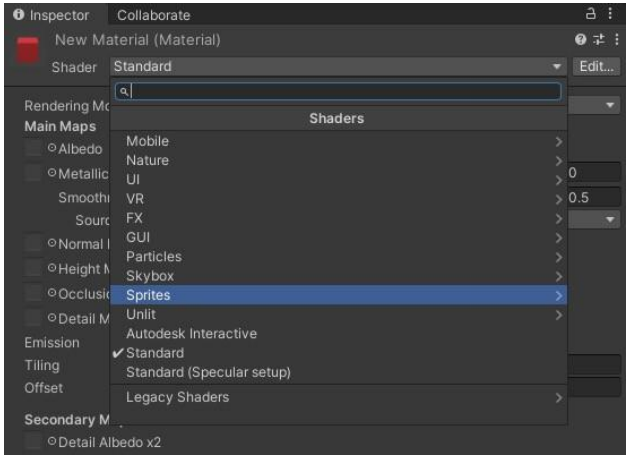
- Make an 2D Object

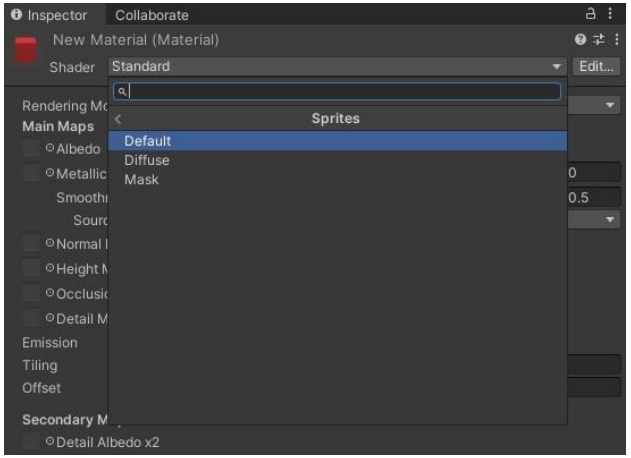


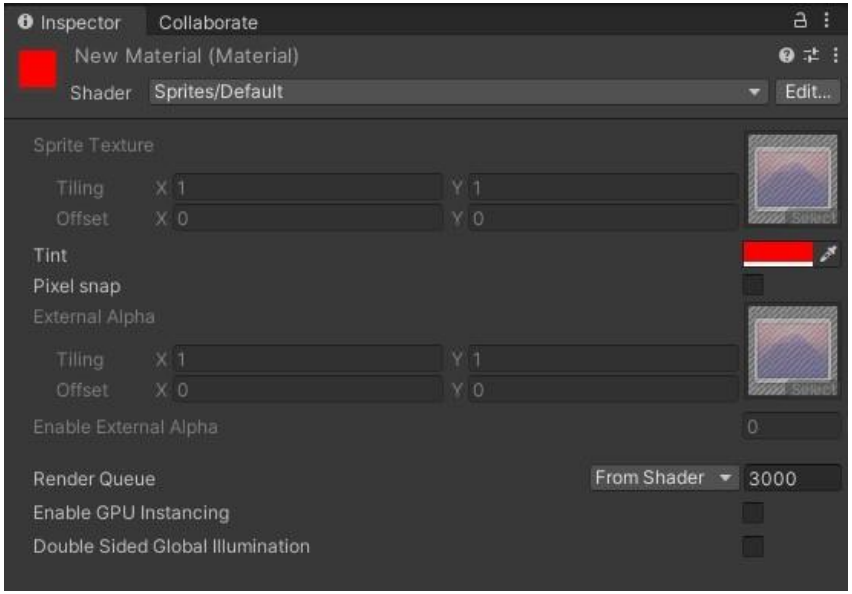


Color change in the 2D world

- Change the material's shader to Default in the Sprites shader
- Click Tint and Change it to the color you want

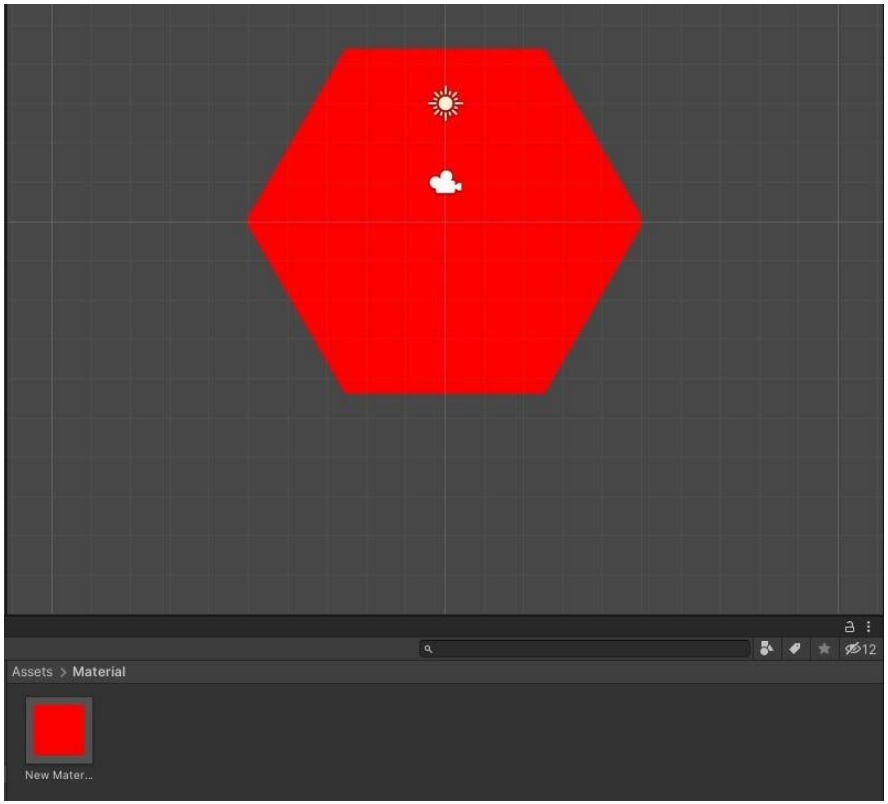






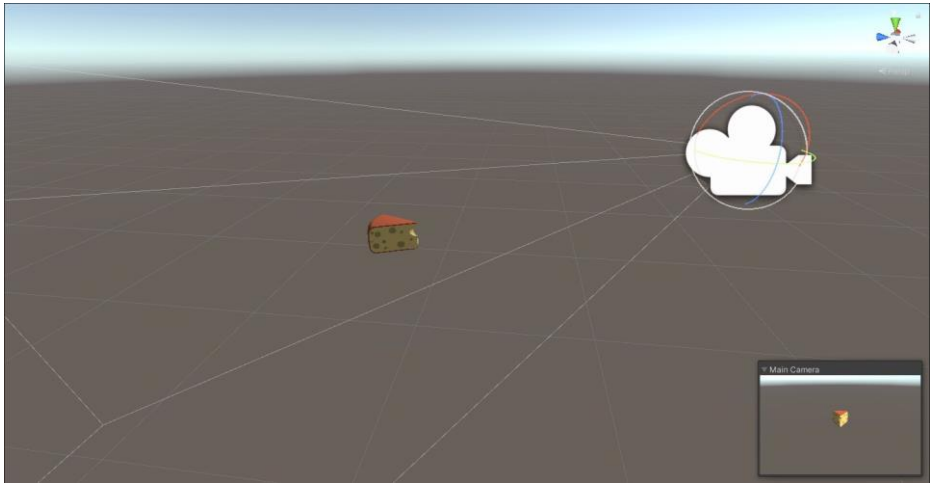
Color change in the 2D world

- Drag and drop the material on the object

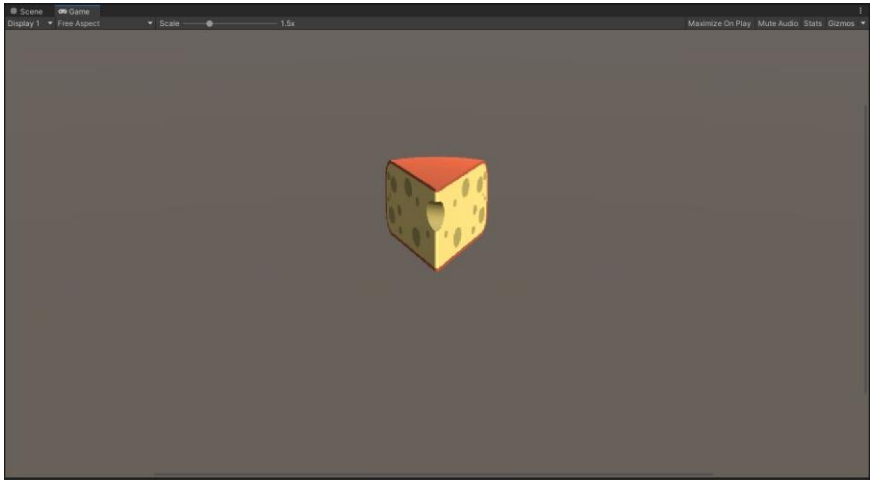


Camera

- Cameras are the components that capture and display the world to the player when it is rendered



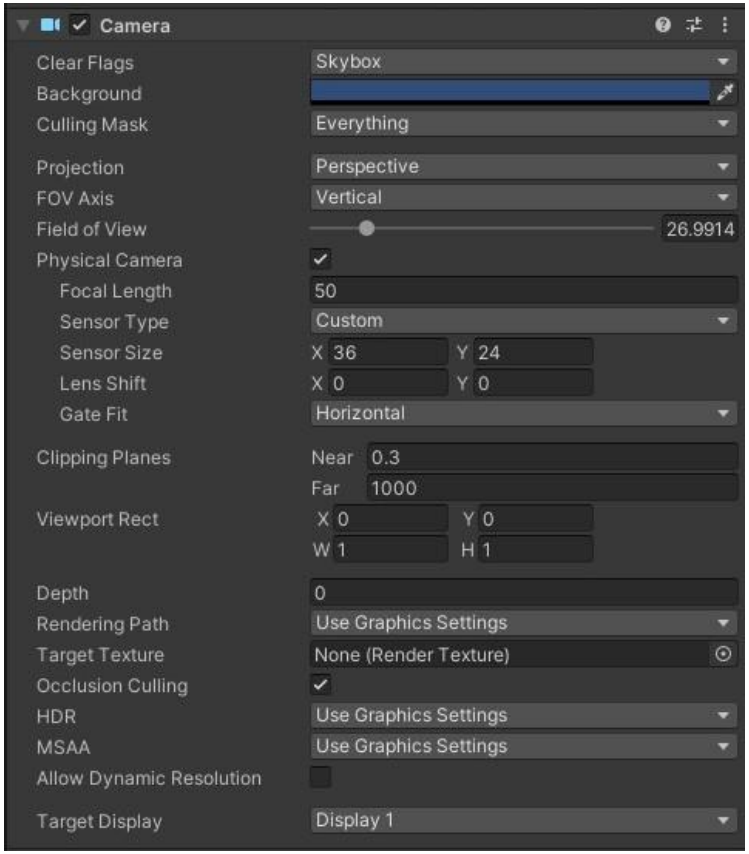
World



Rendering

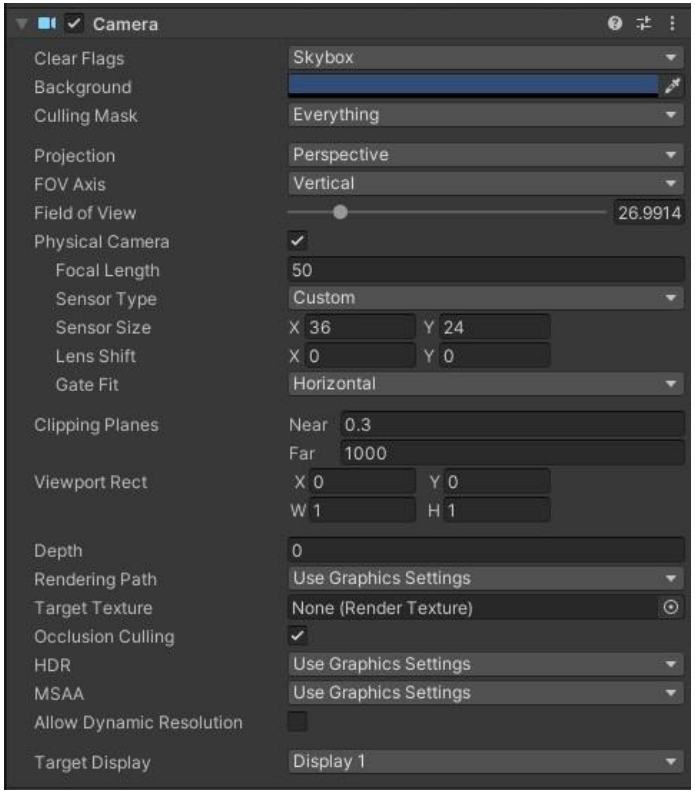
Camera inspector

- Clear Flags
  : Space excluding objects
- Projection
  : Rendered perspective control
  - Orthographic – Size
    : Size of the camera view
  - Perspective – FOV Axis
    : Field Of View axis
  - Perspective – Field of view
    : Camera's view angle
  - Perspective – Physical Camera
    – Focal Length
      : Set the distance, in millimeters, between the camera sensor and the camera lens
    – Sensor Size
      : Set the size, in millimeters, of the camera sensor



Camera inspector

- Clipping planes
  : Rendered range from the camera
- Viewport Rect
  : Values indicating the location of the camera view
  - X, Y
    : Starting points of the camera view
  - W, H
    : Width and height of the camera view
- More detail https://docs.unity3d.com/2022.1/Documentation/Manual/class-Camera.html



How to move the Camera

- Position
  - Press ‘w’ or 
  - Drag axes or small planes between axes
  - Or change values in the object’s inspector – Transform – Position
- Rotation
  - Press ‘E’ or 
  - Drag Curves
  - Or change values in the object’s inspector – Transform – Rotation
- Scale
  - Press ‘R’ or 
  - Drag axes or drag the small cube at the intersection point
  - Or change values in the object’s inspector – Transform – Scales