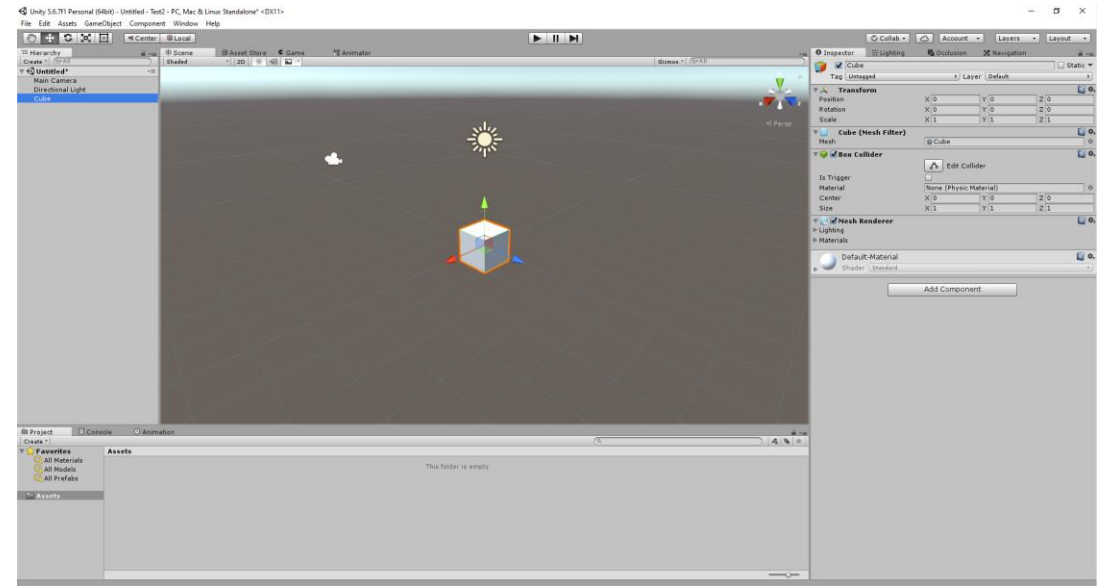# Unity 3D

Introduction

Unity3D

- ▶ Game development platform
- ▶ Cross-platform game engine
- ▶ 3D, 2D, VR & AR games

Basics

- Layout
  - Hierarchy
  - Project
  - Console
 - Scene
  - Game
  - Inspector
  - Tools

- Create a 3D GameObject(cube, sphere, capsule) and press play.
- Move around the scene.
  - Hold mouse right click and use WASDQE to move
  - Hold mouse right click and move mouse to rotate
  - Middle mouse button pans the view
  - Double click on anything in the hierarchy panel to focus the camera on it
- Try moving the cube around
  - Use the move tool
  - Directly set its transform -> Position
- Try changing setting the cube's rotation and scale.
- Set its position to 20,0,0 and press play.
- Move the camera so that the cube is visible again.
  - The camera has a position and a rotation. How do these two values translate to the Miro camera params?
  - Try changing projection mode
  - What is the effect of the field of view
  - Change the near and far clip planes until you see a change. What do they do ?
- You can name all your game objects (the stuff in the hierarchy panel). Try it.
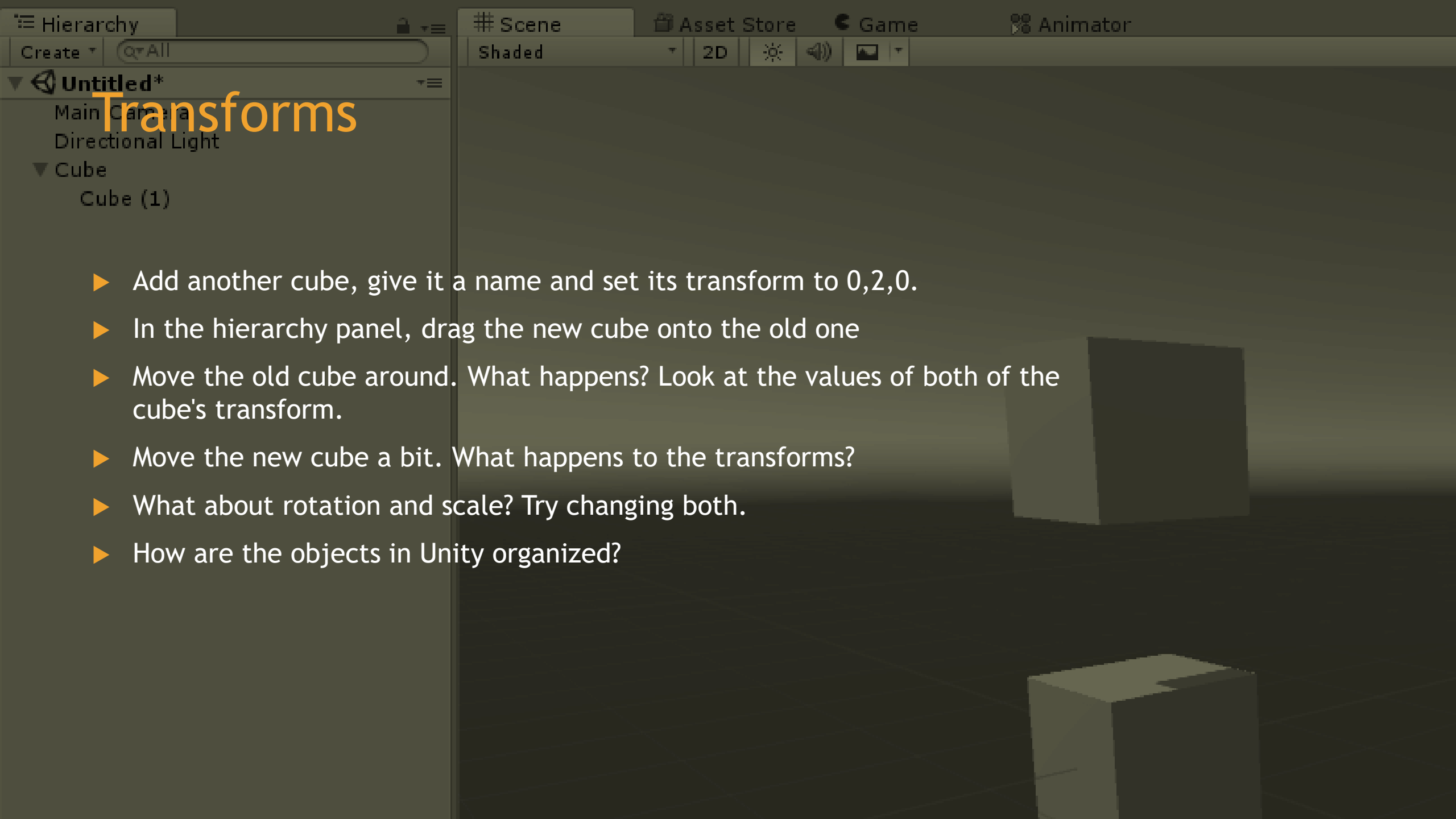
Transforms

▶ Add another cube, give it a name and set its transform to 0,2,0.

▶ In the hierarchy panel, drag the new cube onto the old one

▶ Move the old cube around. What happens? Look at the values of both of the cube's transform.

▶ Move the new cube a bit. What happens to the transforms?

▶ What about rotation and scale? Try changing both.

▶ How are the objects in Unity organized?

Prefabs

- Create a few gameobjects and arrange them so that they resemble an object of your choice (a table, car, stick figure etc).
  - Don't worry about it looking good
  - Use a hierarchical structure!
- Drag your creation from the Hierarchy panel to the project panel (in the assets folder). This creates a prefab.
- Drag your prefab into the scene. This instantiates it.
  - Do this multiple times
- Select any of your instances in the scene or hierarchy panel and change it's parameters (e.g. scale it)
- Select your prefab in the project panel and change some parameters. What happens?
- Select one of the instances in the scene and change a param. Afterwards press the apply button.
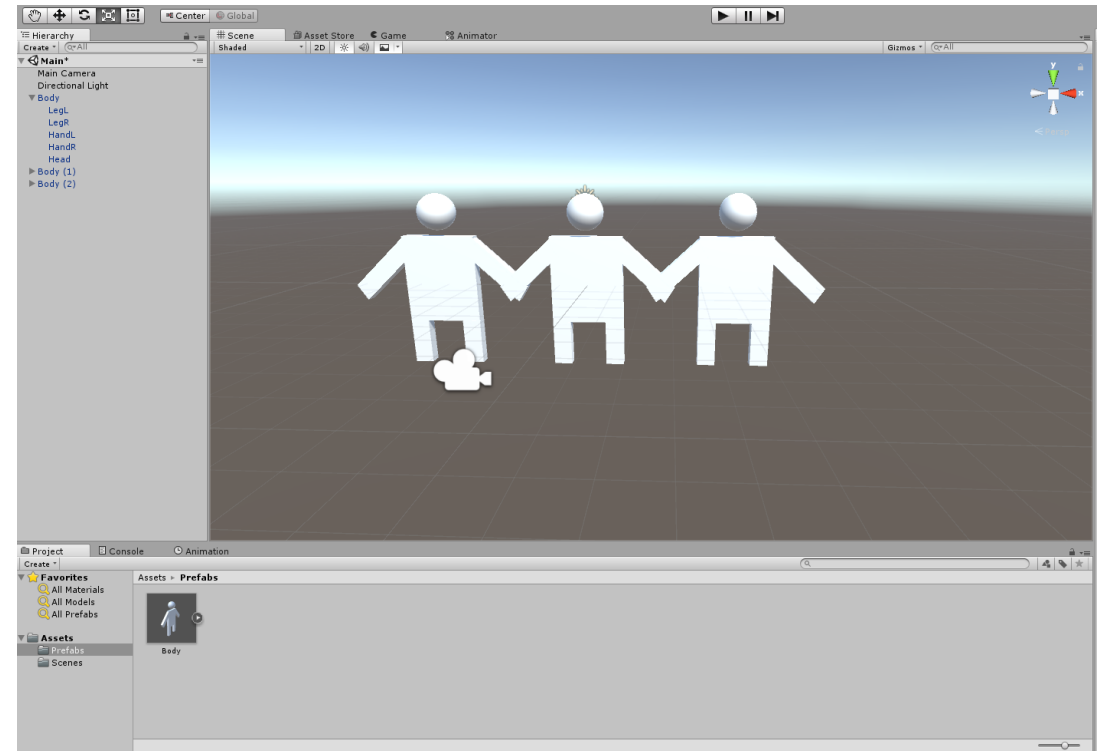
Lighting

▶ Add a point light source and try to figure out it's parameters.