Exercises – Introduction to Unity

Exercise 1 - GameObjects:

Unity's GameObjects are the basis of all classes and entities used in Unity's scenes.

Everything in Unity is a GameObject and they are used as a container that hold Components.
**Example: A 'Light' is a Component that is attached to a GameObject.*

We will look at Components in the next section. The following are brief descriptions of some of the different default GameObjects that Unity provides for you.

Basic Geometry:

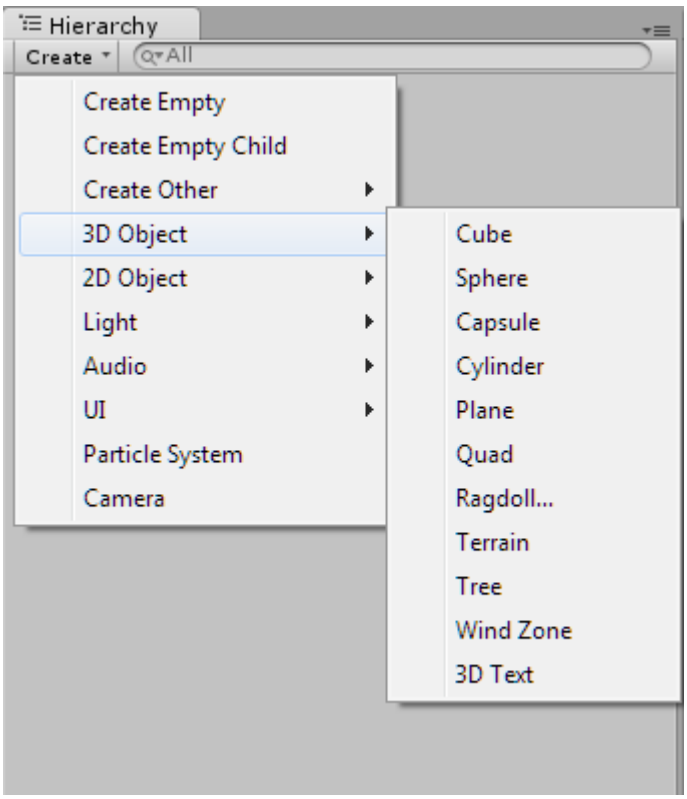
Unity comes with a small selection of default geometric meshes such as a Cube, Sphere, Capsule, etc. These basic shapes are simple meshes built into unity that are accessible through all projects.
**You can add more complex meshes into unity if you have the appropriate files.*

Planes:

This is another default mesh, however it is a bit special as it is entirely 2 dimensional and doesn't render on one side of it. Planes are generally used as the ground surface.

Lights:

Lights are pretty self-explanatory. They allow us to see what is in the scene. The most commonly used light is a directional light.



Cameras:

This is what the viewer sees when they launch the program. You can see what the camera sees through the 'Game View' window or by pressing the play button.

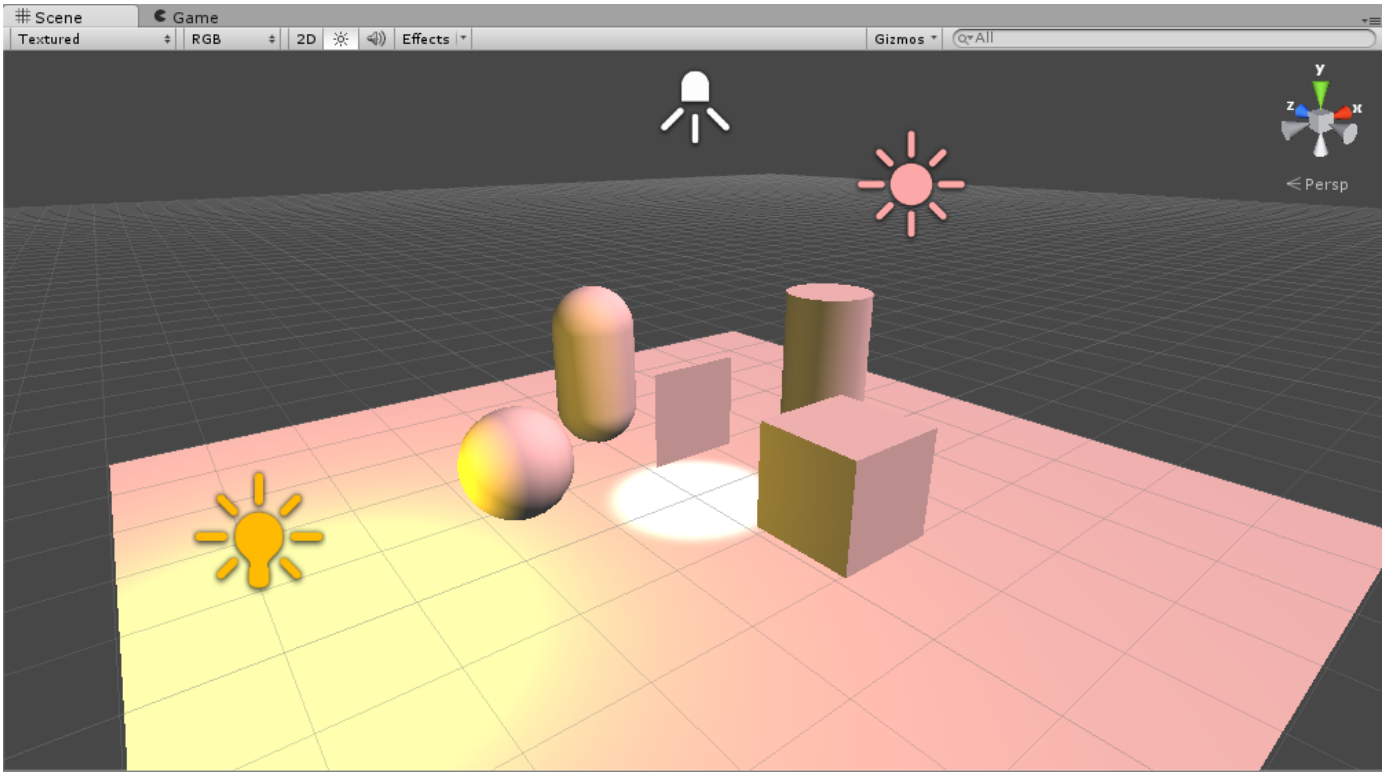
Cameras can be 2-Dimensional (Orthographic) or 3-Dimensional (Perspective).
** You can also have more than one camera if you know how to set it up.*

Sprites:

Similar to a plane, this is a 2-Dimensional mesh. However, it won't render anything unless a texture is assigned to it. Sprites are generally used with 2-Dimensional games.

Have a go adding each of these to the scene to see what they look like.

This is what your scene should look like now. The colour of the lights has been changed so that you could see them better.



Try to make the scene above, or come up with something original

Exercise 2 - Components:

Components:

Components add different behaviours to our GameObjects and every GameObject in Unity has at least one of them. The majority of these Components can work in conjunction with each other and some Components are required for others to function correctly.

> "Components are the nuts & bolts of objects and behaviours in a game. They are the functional pieces of every GameObject."
> Unity Documentation

You can see the Components attached to a GameObject by clicking on an object in the Hierarchy and looking at the Inspector. If you click on the cube, you'll notice that it has quite a few, 'Box Collider' and 'Transform' being two of them.

Empty GameObject:

We have shown you some of the pre-built GameObjects. You can also create a completely empty GameObject and attach to it whatever Components you like.

Do this by clicking on **GameObject** > **Create Empty** or by using the hotkey **Ctrl-Shift-N**.

This will create an empty GameObject with the default Transform Component.

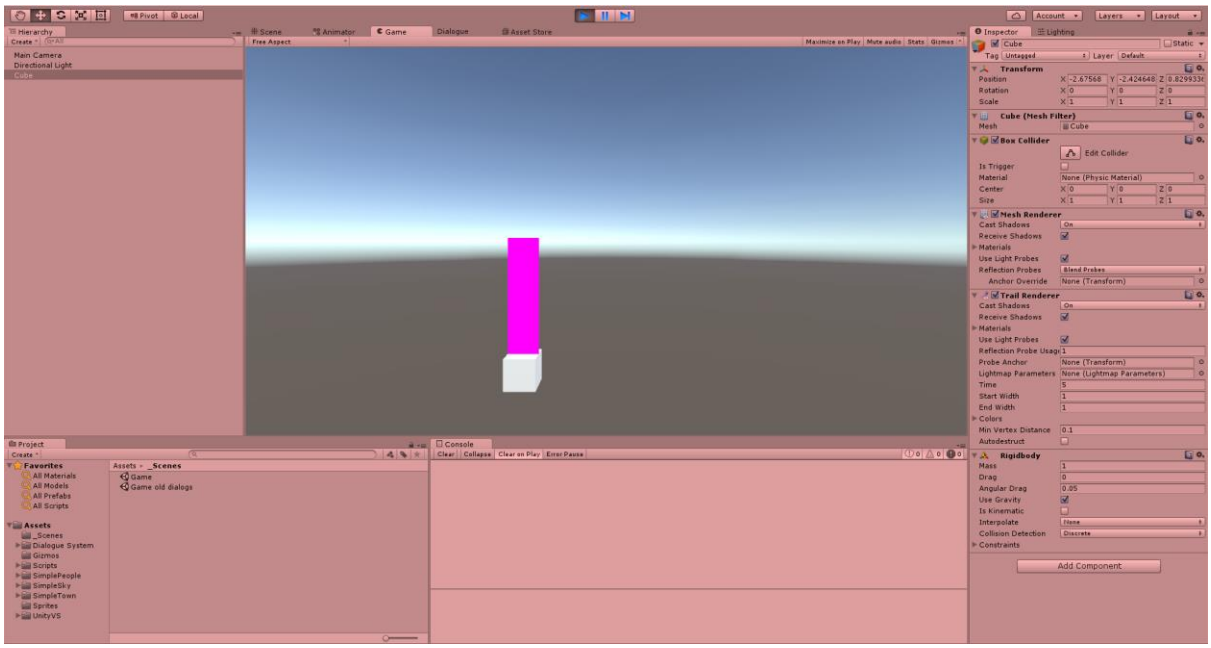
Adding Components:

Adding a Component to a GameObject is quite simple. Select the GameObject in the Hierarchy, and at the bottom of the Inspector window (you may need to scroll) click the **Add Component** button.

Removing Components:

You can remove Components by right-clicking the component or alternatively you can click the small cog icon next to the Component. After that, simply select **Remove Component**.

Have a go at adding and removing Components. Some good ones to try adding include: Rigidbody (for physics), Trail-Renderer and Particle System.
**Some of these will only display their behaviour during Play Mode.*



In this scene I attached a RigidBody component to a cube, so it will be affected by gravity. I also added a TrailRenderer component.

A neat trick is setting the play mode colour (via **Edit** > **Preferences** > **Colors**). This will change the colour of the editor during play mode, so you always know when you are editing the game and when you are playing it.