Unity3D tutorial 2

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GameObject

- fundamental objects in Unity that represent characters, props and scenery.
- act as containers for **Components** (implement the real functionality).
- a Transform component is always attached (to represent position and orientation) to it.
- its functionality can be added:
  - from the editor’s **Component** menu or from a script.
  - from pre-constructed objects (primitive shapes, Cameras, etc)

https://docs.unity3d.com/Manual/class-GameObject.html
Transform

• Position, rotation and scale of an object.
  • localPosition
    • Position of the transform relative to the parent transform.
  • position
    • The position of the transform in world space.
  
• Same as localRotation and localScale

• Parent : via Script and GUI

http://docs.unity3d.com/ScriptReference/Transform.html
Transform

• Moving object
  • Time.deltaTime:
    • The time in seconds it took to complete the last frame (Read Only).
    • Use this function to make your game frame rate independent.

```csharp
using UnityEngine;
using System.Collections;

public class ExampleClass : MonoBehaviour
{
    void Update()
    {
        float translation = Time.deltaTime * 10;
        transform.Translate(0, 0, translation);
    }
}
```
Renderer

- **Material**
  - The material of this object.
- **GUI/Script**

```csharp
using UnityEngine;
using System.Collections;

public class ExampleClass : MonoBehaviour {
    void Example() {
        renderer.enabled = false;
    }
}
```

**Variables**

- `bounds` - The bounding volume of the renderer (Read Only).
- `castShadows` - Does this object cast shadows?
- `enabled` - Makes the rendered 3D object visible if enabled.
- `isPartOfStaticBatch` - Has this renderer been statically batched with any other renderers?
- `isVisible` - Is this renderer visible in any camera? (Read Only)
- `lightmapIndex` - The index of the lightmap applied to this renderer.
- `lightmapTilingOffset` - The tiling & offset used for lightmap.
- `lightProbeAnchor` - If set, Renderer will use this Transform's position to find the interpolated light probe.
- `localToWorldMatrix` - Matrix that transforms a point from local space into world space (Read Only).
- `material` - The material of this object.
- `materials` - All the materials of this object.
- `receivesShadows` - Does this object receive shadows?
- `sharedMaterial` - The shared material of this object.
- `sharedMaterials` - All the shared materials of this object.
- `sortingLayerID` - ID of the Renderer's sorting layer.
- `sortingLayerName` - Name of the Renderer's sorting layer.
- `sortingOrder` - Renderer's order within a sorting layer.
Physic components

**Rigidbody**

enable your GameObjects to act under the control of physics.

Any GameObject must contain a Rigidbody to be influenced by gravity, act under added forces via scripting, or interact with other objects.

**Collider**

define the shape of an object for the purposes of physical collisions.

*Static collider (without Rigidbody)* -> Wall, Floor

*Dynamic collider (with Rigidbody)* -> object moving, respond to collisions
Monobehaviour

• **Description**
  • MonoBehaviour is the base class every script derives from.

• **Execution Order of Event Functions**
  • Editor: Reset
  • First Scene Load: Awake
  • Before the first frame update: Start
  • Update Order: Update

• ..etc

http://docs.unity3d.com/Manual/ExecutionOrder.html
Several Tips:

**Key event**
- Input.GetKey/Down/Up

**Debug**
- Debug.log (rich text)

**Tag**
- GameObject.FindWithTag()