Game Development with Unity3D

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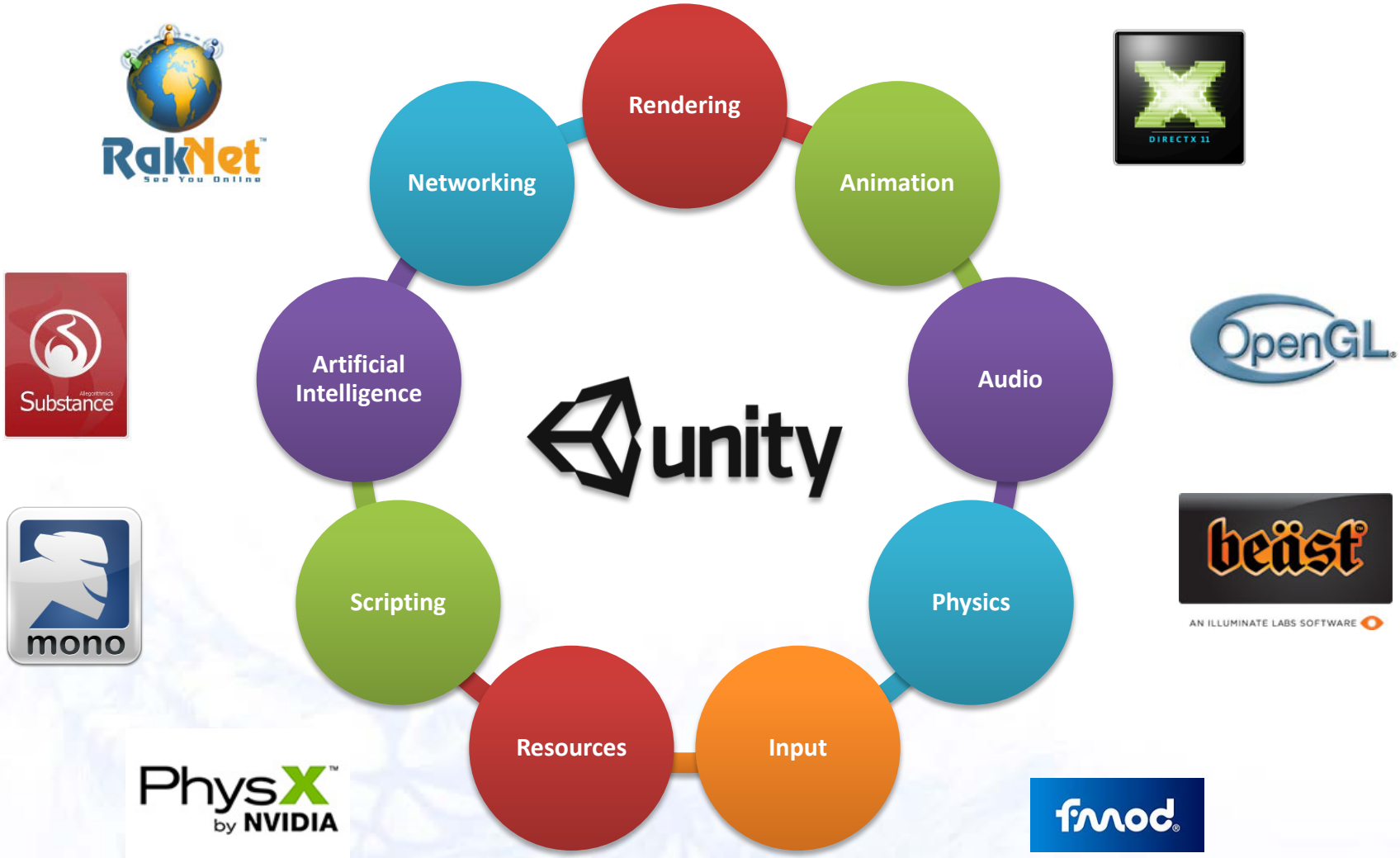
Part 1

INTRODUCTION TO UNITY

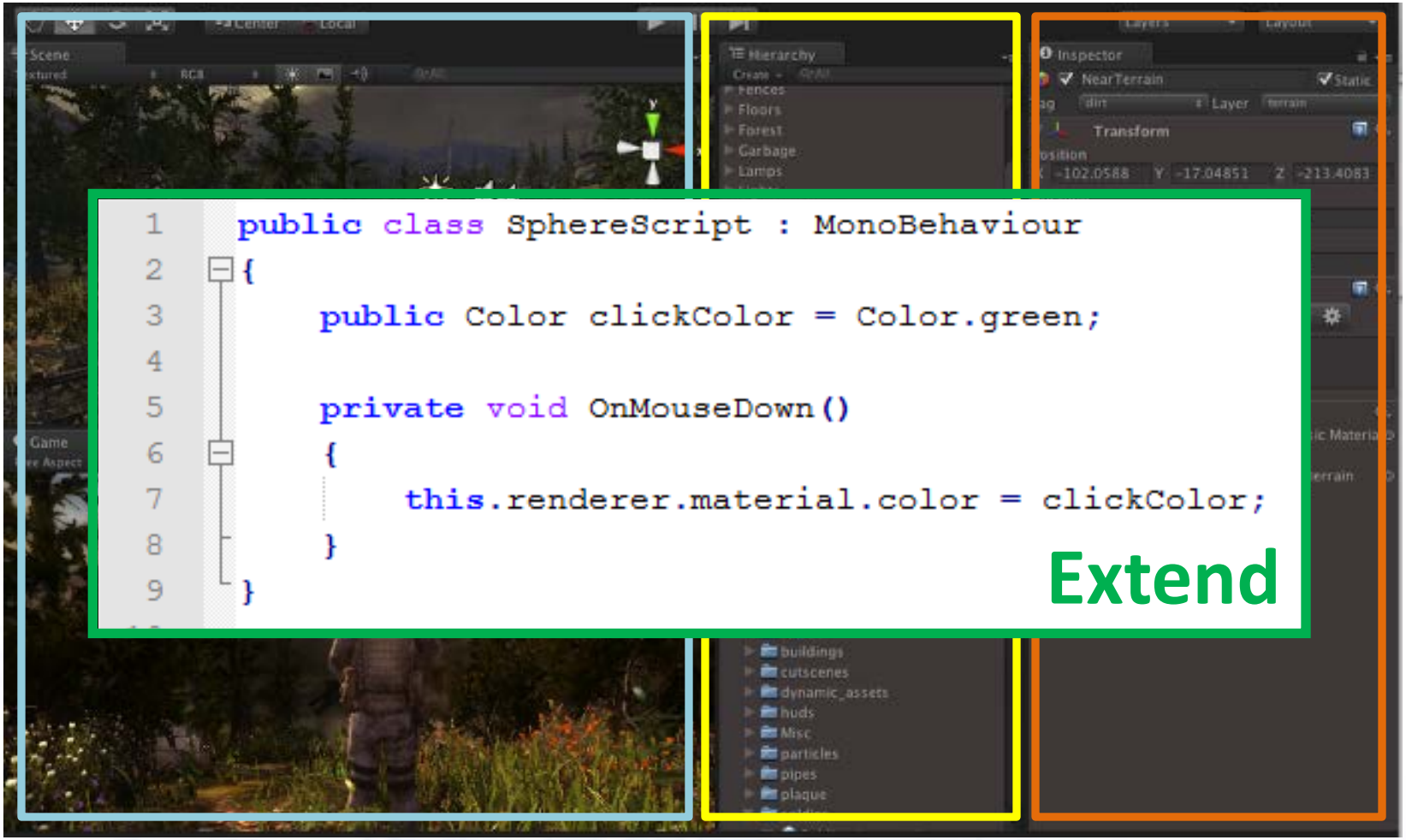
What is Unity?

- **Game engine** – system designed to help create video games
  - Easier & Faster
- **Visual editor** – see changes in real-time
  - Interactive & Rapid prototyping
- **Component-based** – functionality built out of smaller pieces
  - Modular & Extensible

What can Unity do for you?



What does Unity look like?




```
public class SphereScript : MonoBehaviour
{
    public Color clickColor = Color.green;

    private void OnMouseDown()
    {
        this.renderer.material.color = clickColor;
    }
}
```

Extend

Unity games run everywhere

Unity understands you

Multiple programming languages

JavaScript

```
var explosion : Transform;

function OnCollisionEnter() {
    Destroy(gameObject);
    Instantiate(explosion, transform.position, transform.rotation);
}
```

C#

```
using UnityEngine;
using System.Collections;

public class Example : MonoBehaviour {
    public Transform explosion;

    void OnCollisionEnter() {
        Destroy(gameObject);
        Instantiate(explosion, transform.position, transform.rotation);
    }
}
```

Boo

```
import UnityEngine
import System.Collections

class Example(MonoBehaviour):

    public explosion as Transform

    def OnCollisionEnter():
        Destroy(gameObject)
        Instantiate(explosion, transform.position, transform.rotation)
```

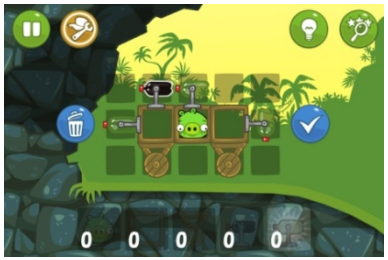
What about 2D games?

REALM

http://www.therealmgame.com/

Games created with Unity

Beat Sneak Bandit



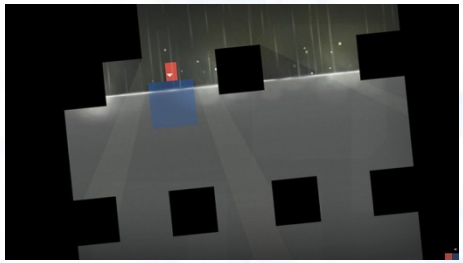
Bad Piggies

The Room

Temple Run 2

Scrolls

Rochard



Thomas was Alone

CSR Racing

Dead Trigger 2

How to get Unity?

Unity Basic

- Has every essential features such as graphics, audio, physics, animation, networking, input, and scripting
- Free (with splashscreen)

Unity Pro

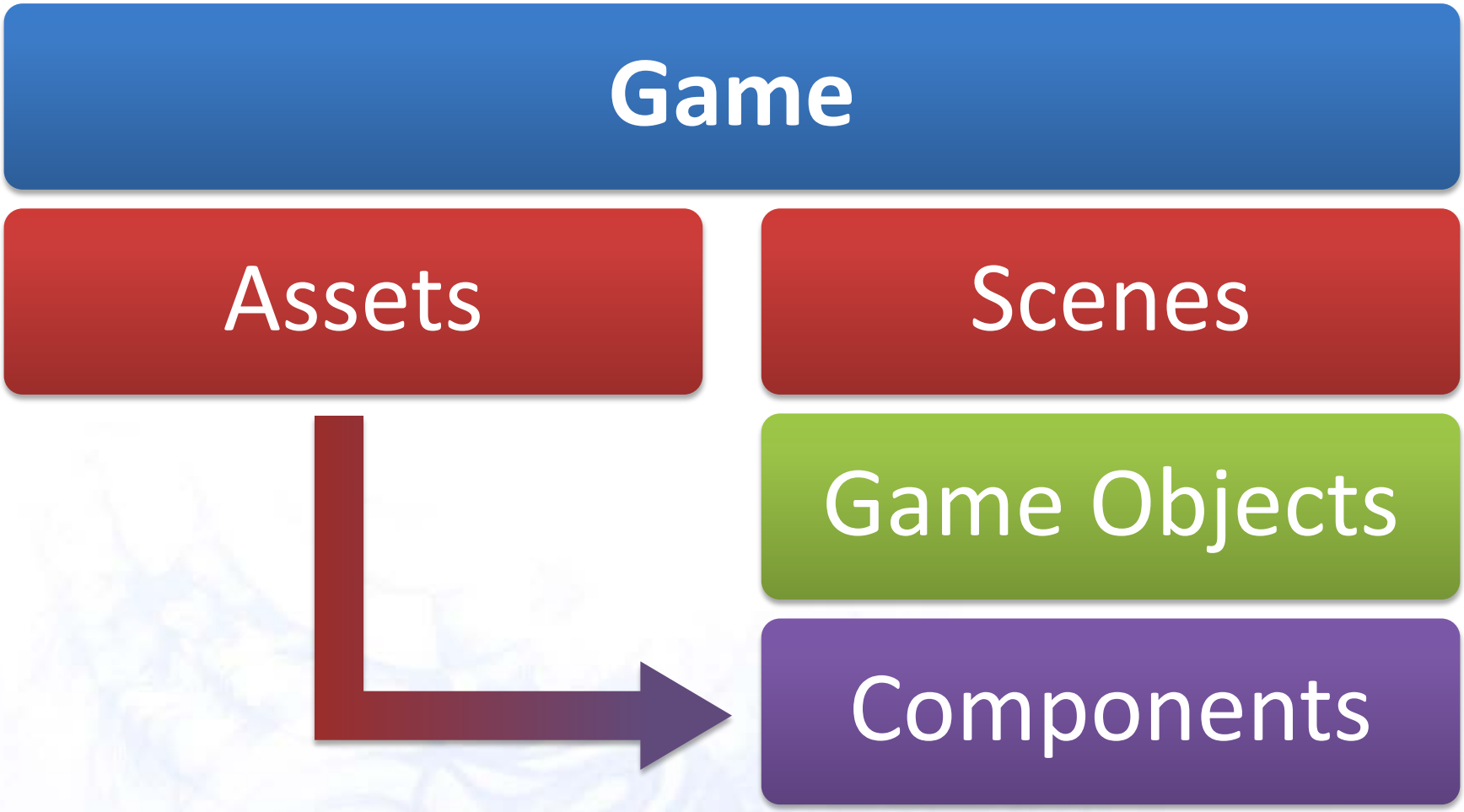
- Advanced graphics, audio, animation, and artificial Intelligence
- $1.500+

Download from http://unity3d.com

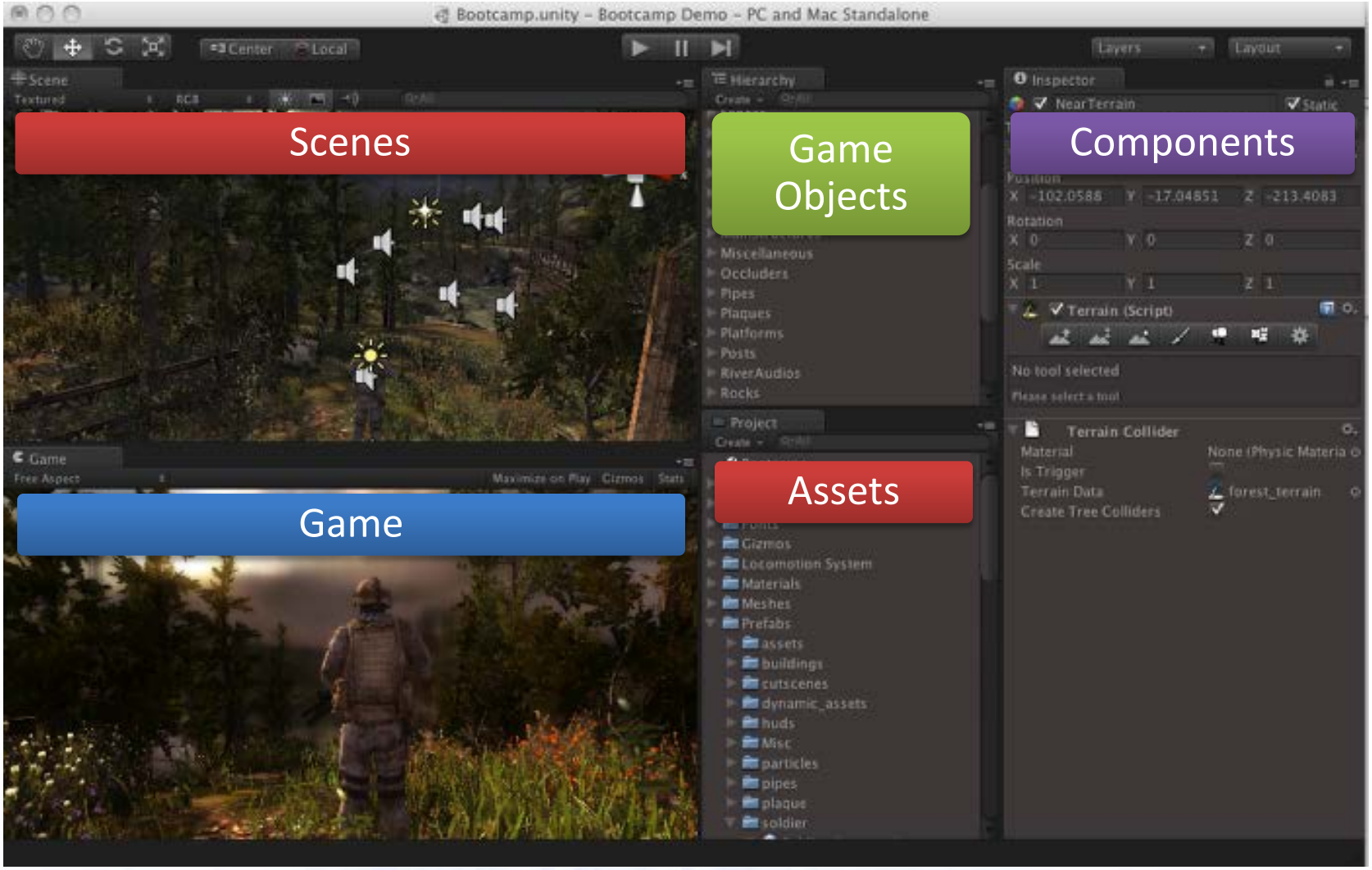
Part 2

CONCEPTS AND WORKFLOW

Architecture



Editor Interface



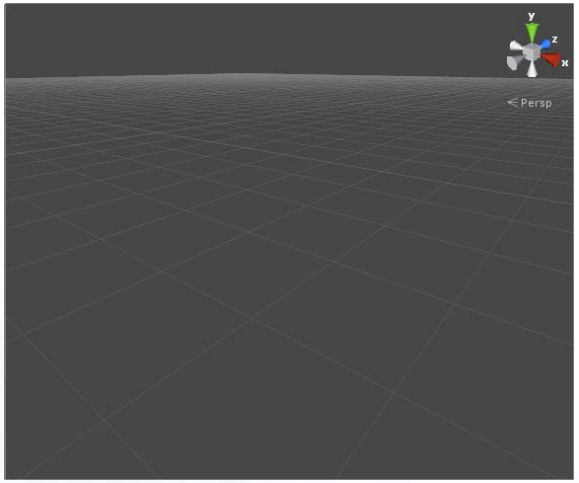
Assets

```
public class SphereScript : MonoBehaviour
{
    public Color clickColor = Color.green;

    private void OnMouseDown()
    {
        this.renderer.material.color = clickColor;
    }
}
```

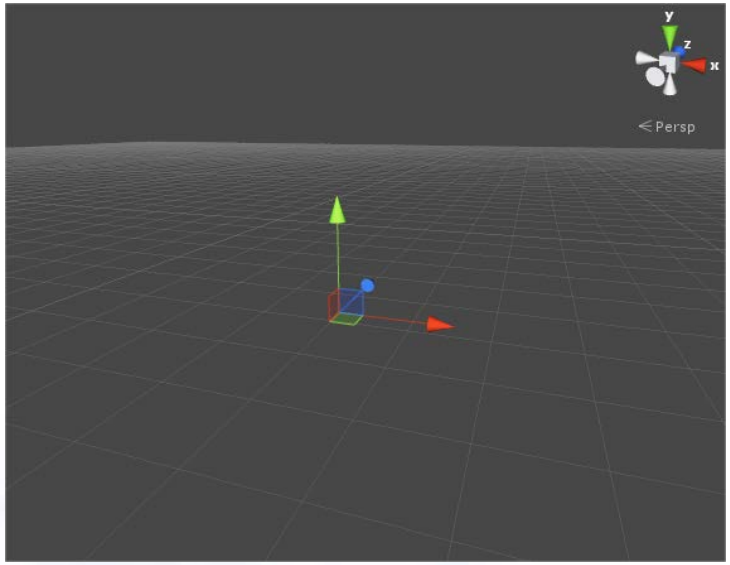
Scene

- Unity games are divided into **scenes**
- **Scenes** are empty spaces...
- ...that can be filled with **game objects**



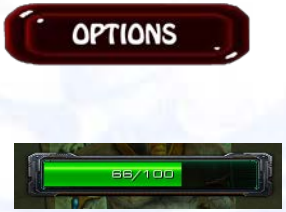
Game Object

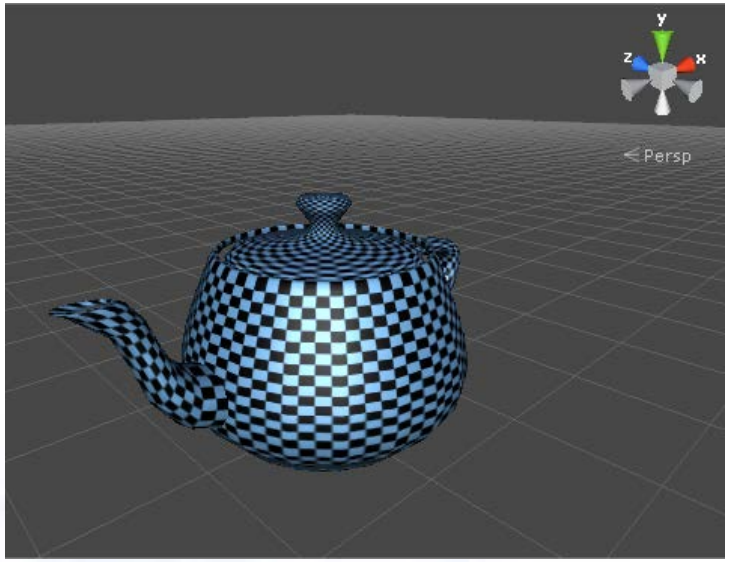
- Everything inside a **scene** is a **game object**
- **Game objects** also start out empty and do nothing...



Game Object

- ...but by adding **components** to them they can become anything!





Component

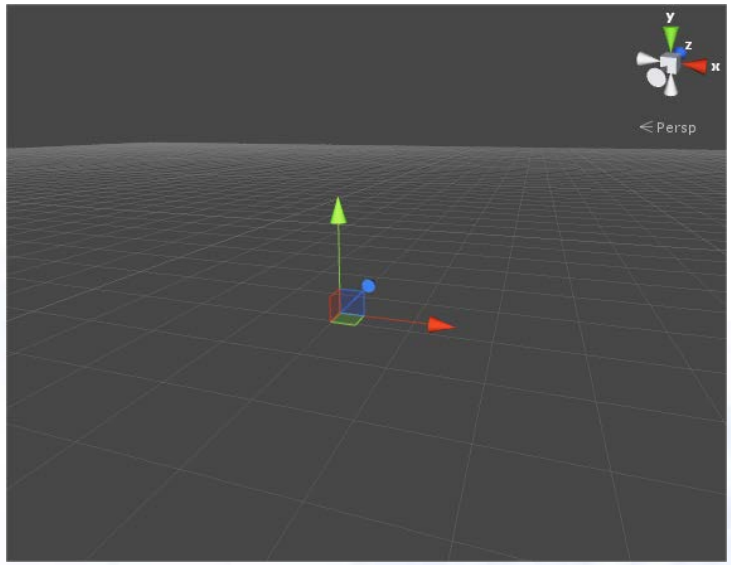
- Each **component** adds a piece of functionality to the **game object**

- The combination of all **components** defines what the **game object** is

Let's see some examples!

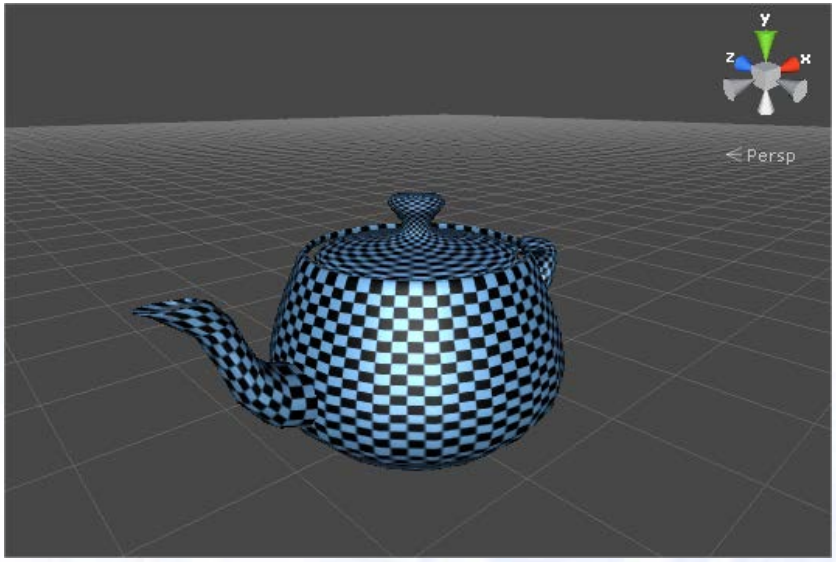
The Transform Component

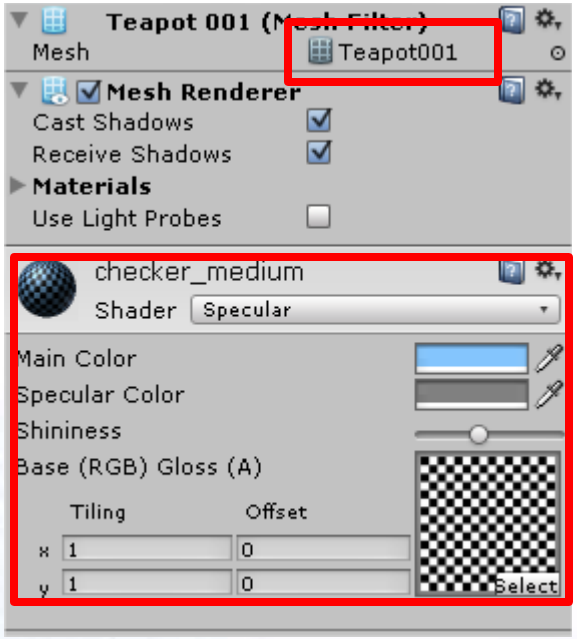
- Where?
- Which direction?
- How large?



Rendering Components

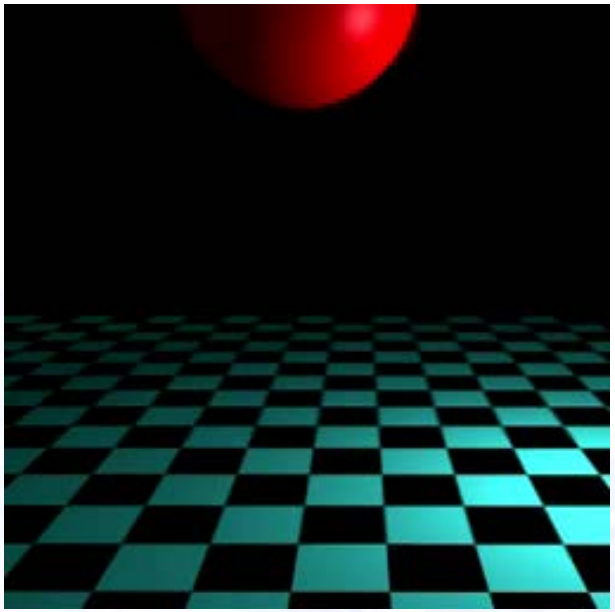
- What to draw? (mesh filter)
- How to draw? (mesh renderer)

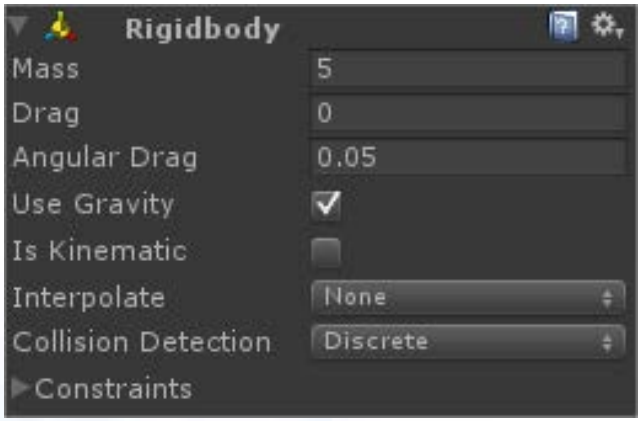




Physics Components

- Is solid? (collider)
- Moves? (rigid body)





The Script Component

- Adds custom behavior

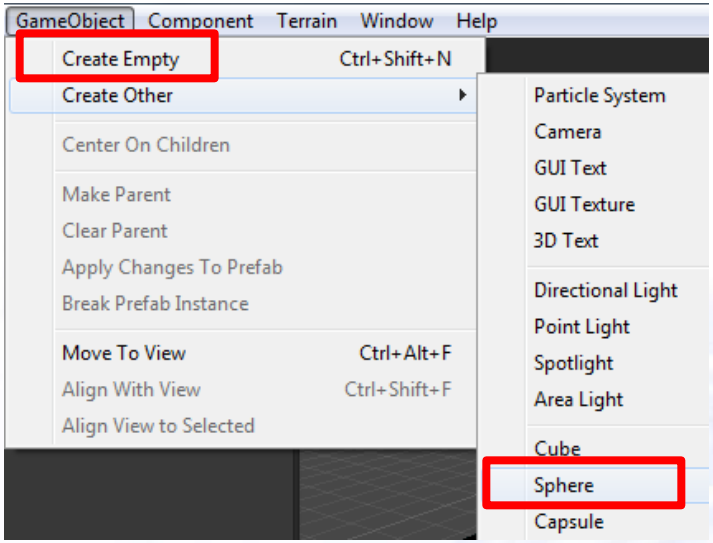
```
1  public class SphereScript : MonoBehaviour
2  {
3      public Color clickColor = Color.green;
4
5      private void OnMouseDown()
6      {
7          this.renderer.material.color = clickColor;
8      }
9  }
```

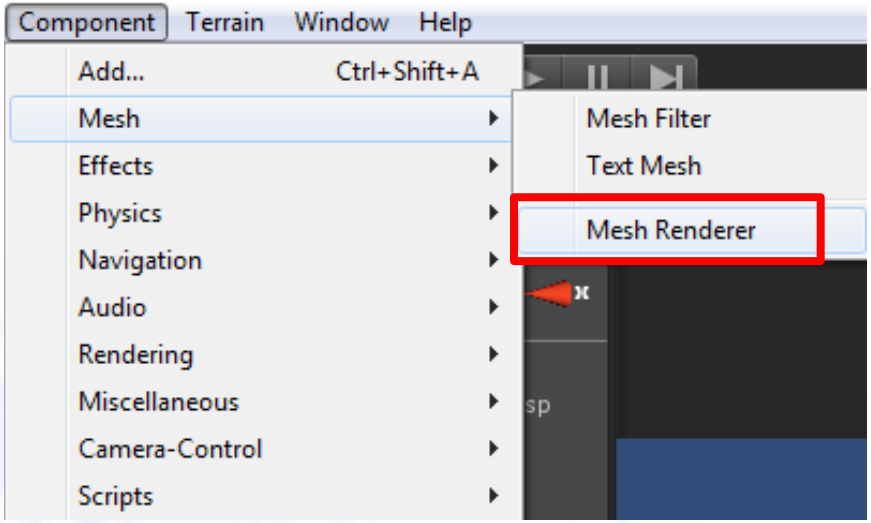
Other Components

- Light
- Camera
- Text mesh
- Audio listener & source
- Particle system
- Skybox
- ...and many more.

How to create Game Objects

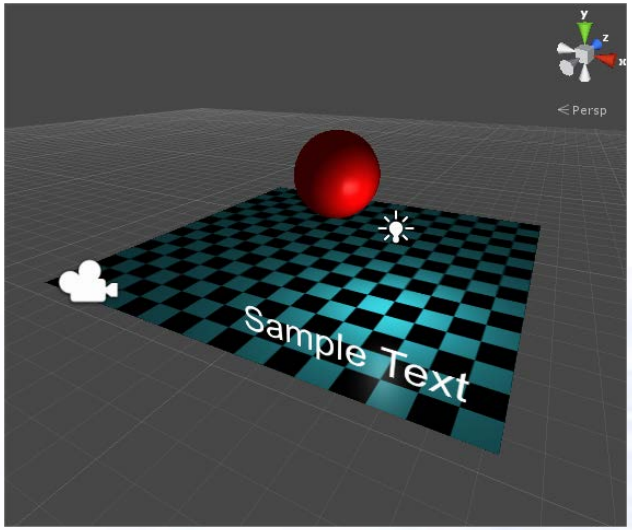
- Create an empty **game object** and manually add **components** to it
- Choose one of the default **game objects**

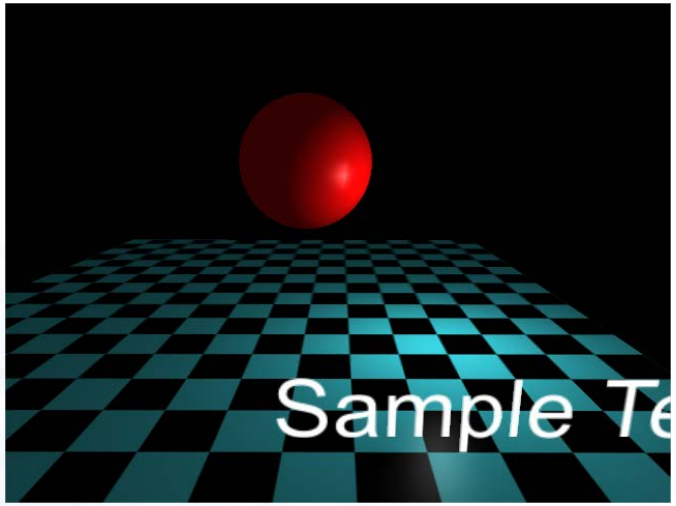




Game

Prepare the scene → Hit play → See the result





Part 3

LIVE DEMO