



Object Pooling

What is it?

In our Zombie game, we are creating and destroying GameObjects, a lot of them very quickly.
When we press the mouse or fire button to shoot a bullet, a GameObject is created.
When a Zombie spawns a GameObject is created.
When the Zombie dies an Explosion GameObject is also created.

These are all destroyed quite soon after being created.

Creating and destroying GameObjects is quite demanding on slower computer processors (like mobile & tablet) as they have to *allocate and deallocate memory when creating and destroying GameObjects

[*http://en.wikipedia.org/wiki/Memory_management](http://en.wikipedia.org/wiki/Memory_management)

To get an idea of how many creating and destroying works, play your game in the Unity Editor and keep an eye on the Hierarchy. You can see lots of activity, with Zombies, Bullets and Explosions popping in and out very quickly.

If you paused your game after 30 seconds or so, and counted how many things were there, you may find hundreds!

It saves a lot of processing power if you just create all the GameObjects you need for your scene at the start.
Then you can **reuse** them by enabling them and disabling them as and when you needs them.

Object Pooling is a system all about this reuse!

How does it work?

You give your Object Pool a Prefab
Tell it how many of them (Prefab Instances) you want

In Start() The Object Pool will create them using Instantiate, then disable them
The Object Pool keeps a list of all GameObjects it creates
These are referred to as Pooled Objects
They will be visible in the Hierarchy, the GameObject disabled using SetActive()

How do I access these Pooled Objects?

If you were shooting a Bullet, you would:
Ask the Pool Manager for a Bullet GameObject
The Pool Manager will look in its list for a Bullet GameObject that is currently disabled
If it has one, it will enable it using SetActive()
If the Pool Manager has no disabled Bullets, it will return nothing.

You work with shooting the bullet the same way, but to get a new one you will use the code:
PoolManager.GetPooledObject(bullet)
instead of
Instantiate(Bullet)

How do I set up my Prefabs to work with the Pool Manager?

Unity's MonoBehaviour has some methods to deal with enabled and disabled GameObjects. These are called

OnEnable()
OnDisable()

OnEnable()

This method will fire every time the GameObject is enabled:

- Once when the GameObject is created with Instantiate()
- every time its enabled using SetActive()

OnDisable()

This method fires every time the GameObject is disabled using SetActive()

