Unleash Your Inner Game Dev
ITE529 Free Online Course

Week 3

Prefabs, Profiling & Optimising

Prefabs - How to build with reusable parts

Profiling - How to tell when you've overdone it

Optimising - How to fix it when you've overdone it

Prefabs

Prefabs are..
- Reusable & editable parts of a game

Prefabs can be..
- Different to each other
- Instantiated at run time
- Edited independently of the scene

Prefabs - Examples

Examples of Prefabs
- Characters / players (can be used across scenes, multiple at a time, etc)
- Enemies
- Scenery
- Weapons
- User Interface
- Basically anything (FX, Gameplay, etc)
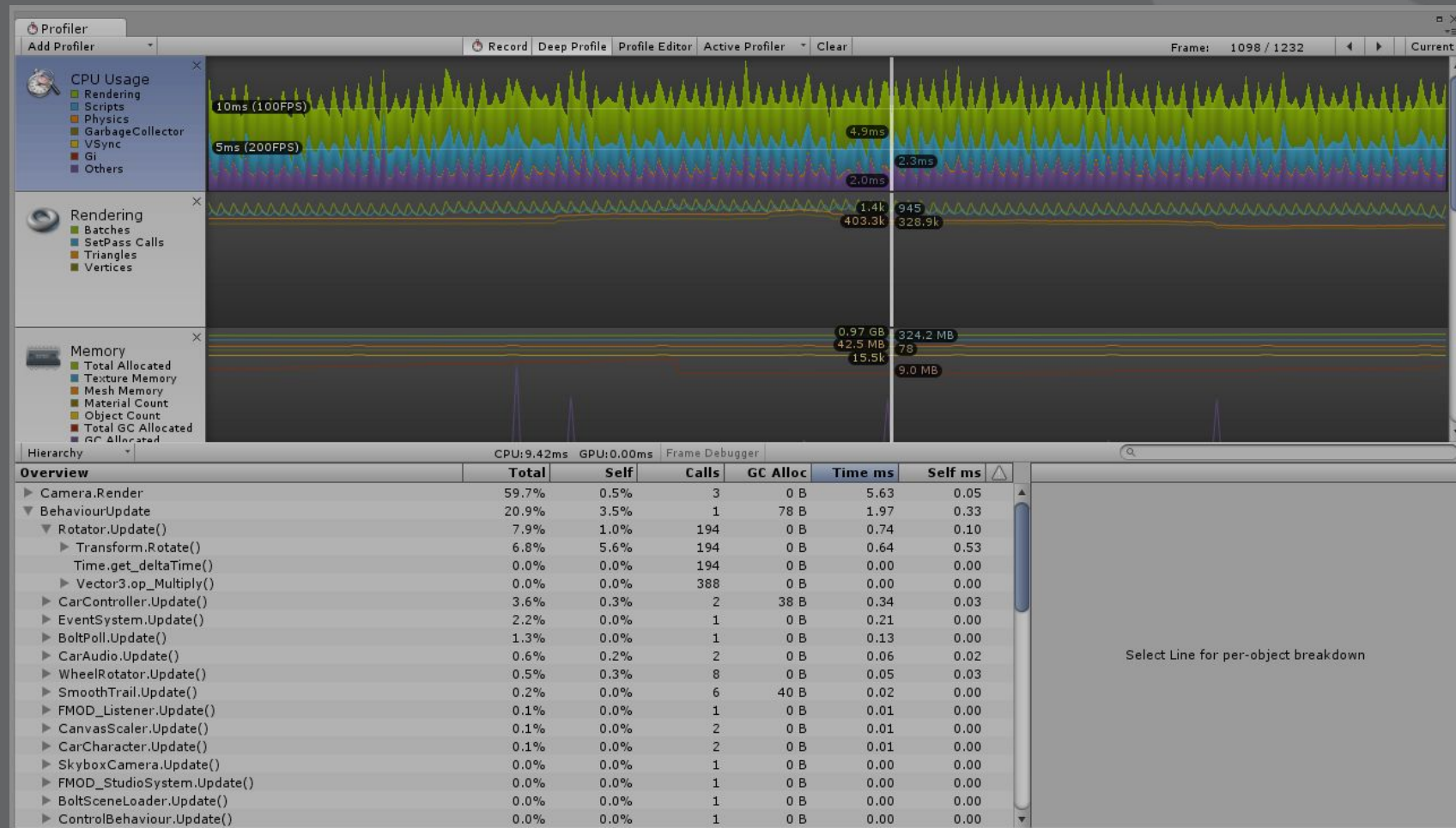
Prefabs - How To

Let's make a prefab!

A quick overview..

Profiling

Profiling let's you
- Find code that's running inefficiently
- Identify where your resources (CPU, Ram, GPU) are being used

The Profiler

Basic Optimisation

- Object pooling is a very efficient form of optimisations
- Avoids dynamic memory allocations during playtime
- Initialisation can be done once on level load for all pooled objects

Basic Code Optimisations

- Pre allocate as much as possible
- Destroy when you're *sure* you're finished with something
- Run less Update() loops, consider a single control object
- Use the power of co-routines to simplify Update loops
- Cache components
- Don't use SendMessage/Broadcast Message. Ever.
- Avoid loading things off disk during gameplay
- Do less.

Basic Art Optimisations

- Compress your textures to their smallest possible size
- Use the simplest shaders you can find
- Lights are expensive, make them count
- Avoid overdraw
- Use occlusion culling
- Always benchmark an approximation of your final poly/texture budget, do your best to stick to it
- Don't give into peer pressure from your artists

Homework

Using the example project, dynamically load 50 enemies in Start(). Optimise them.

Share your optimisations with the class on the forums with before & after profiling screenshots. Figure out your improvement as a percentage to make things easier on the forums!

I will also be taking part and sharing my own optimisation before next class.

Further Reading

Optimising Graphics Performance (Unity Manual)

Practical Guide to Optimising for Mobile (Unity Manual)