CPG 5 Coding and Programming

Introduction to Game Programming

Contents

1 Week 11

Object oriented programming This week's subject areas are:

- objects
- high cohesion and low coupling
- message passing
- object oriented Unity tutorial

1.1 Objects

Following on from last week, we're going to continue to explore techniques that help us to write and manage large game programs. Last week we looked at loops and functions. Both of these techniques allow us to write many times as much functionality while only needing to provide a small amount of additional code.

What was the technique I described for finding program code that could be turned into loops or functions?

As your games evolve, functions tend to need more and more data passed to them to remain pure. Often similar clumps of data need to be passed to groups of functions. When you experience this, it's a good indication that you should start splitting your game up into objects.

Objects combine structures and functions into small combined units. Think of objects as small individual cells which when arranged together perform the functions of your game.

1.2 High cohesion and low coupling

These are two desirable properties we look for in game program design.

High cohesion means that each function, or object that we design, deals only with a small set of closely related things.

Low coupling means that the object or function's connections to the rest of the game are as minimal as they can be.

Keeping these two properties in check is the key to coping with changes in the game's design even at later stages of development.

1.3 Message passing

To help keep our objects as cohesive and lightly coupled as possible, we talk about communications between objects as message passing.

The principle to remember here is that objects tell other objects what to do, they don't interrogate other objects about their data.

This is enables us the change the internal representation of an object without causing problems for the all other objects that need to interact with it.

1.4 Object oriented Unity tutorial

For the remainder of this class I will take you through the building of a small game in Unity using the object oriented methods and design principles above.

1.5 Exercise

Your exercise for this week is to break your game code up into objects and decide what messages you want to pass between them.

Submit your work in UnityScript .js files. You can check your work before submitting by attaching the scripts to Game Objects in Unity first. But only submit the .js files to source control. You will need to submit at least two UnityScript .js files in order to demonstrate message passing (at least one sender object, and one receiver.) Don't forget to keep track of your time and also submit your log files as well. The deadline for this submission is Sunday.