COMP 305 - Game Programming 1

# Assignment 2 - Flocking

Worth 10% of your mark

**DUE: Week 12**

## Instructions

* You are a player and must collect **experience points (XP)** by completing any of the tasks listed below. Completing tasks will earn you XP based on difficulty.
* All homework questions are to be completed **in pairs or individually**.
* You are allowed **unlimited submissions.** But there are **NO PART XP GIVEN** this is an **ALL or NOTHING system.**
* Use online resources and each other to accomplish these tasks.

## Mark Calculation

* Your accumulated XP out of 50 will be directly converted into a grade out of 10%.

## Submission

* **ALL SUBMISSION IS DONE IN PERSON** unless otherwise indicated.
* When you are ready to submit homework, simply let me know before class, during a break or after class and I will assess your submission on the spot.
* All coding must be original work.

**SUBMISSION OF TUTORIALS OR DEMO PROJECTS THAT IS NOT YOUR OWN WORK WILL BE REJECTED.**

## Part 1 - 5xp

Write a max 1 page summary of the flocking algorithm. List each of the 3 properties that make up flocking and provide an example of flocking found in video games.

## Part 2 - 35xp

Implement the flocking algorithm in a Unity project. Your flock must consist of a minimum **30 boids** and must follow the mouse cursor found on the screen. Ensure that your flock does not collide or overlap with each other.

## Part 3 - 10xp (PICK ONE)

### Option 1

Implement **networked boids**. Your application should have a single server and allow for clients to connect to your server. Each client will spawn their own set of 30 boids and follow that clients mouse cursor. Each connected device should be able to see each of the other boids move in real time.

### Option 2

Implement **obstacle avoidance**. Strategy games will utilize flocking when moving large groups of units together. To ensure these items do not get stuck or do not move unrealistically, they will implement obstacle avoidance. Extend your flocking example (part 2) to include a set of static objects in which your flock must realistically avoid.

**Hint: Use raycasts as “feelers” pointing out of your boids**.

# Submission

* Upload the project to eCentennial or via github link
* Host your project online through GitHub Pages, Itch.io, etc.