Game Engine – Final – FALL 2018

**Goal**

Demonstrate basic understanding of using Unreal Engine classes and components.

**Requirements**

Use the FPS template found at <https://github.com/tomlooman/SimpleFPSTemplate> as a starting point.

Modify the Projectile class to implement “flocking” behavior to the projectiles.

Upload your entire project to github and add leventalbayrak as a collaborator.

Record a gif animation of your running program (must demonstrate flocking behavior) and place it in the repository.

**Submission**

Github repository link and the collaboration invitation link.

Animated gif that demonstrates flocking behavior.

**Grading**

Projectiles exhibit flocking behavior – 80pts

The project can be downloaded from github and runs out of the box – 10pts

Animated gif – 10pts

**Flocking behavior**

You are allowed to implement the flocking code inside the Tick function of the Projectile class (this is not efficient, however, it is easy to implement).

You will have to iterate through all projectiles to find the average position and velocity of projectiles.

You may then apply impulse to the caller object of the Tick function based on:

Distance from every other projectile (projectile must push itself away from others if they are within a certain distance)

Average position of projectiles (projectile must move towards the center of mass of other projectiles within a certain radius)

Average velocity of projectiles (projectile must align its velocity with other projectiles within a certain radius)

You will have to do some vector math to calculate the direction, magnitude, normalization etc… All of this functionality is provided by Unreal Engine.

<https://www.red3d.com/cwr/boids/>

<https://gamedevelopment.tutsplus.com/tutorials/3-simple-rules-of-flocking-behaviors-alignment-cohesion-and-separation--gamedev-3444>

<https://www.mat.ucsb.edu/g.legrady/academic/courses/05f102/jg_flocking.html>