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IGME 202, Section 5

***Assignment:***

Project 2: Asteroids

***Description:***

The project assignment was to make a 2D game in Unity that mimics the gameplay of the 1979 Atari arcade game, *Asteroids*. This project demonstrates various methods to implement collision detection methods, as well as implementing velocity and acceleration to objects as vectors to create movement in a game.

***User Interaction:***

First, the main menu is shown and prompts the player to click play.

Once the game starts, the player has 3 lives to try and advance as many levels as they can and get the highest score they can. This is done by shooting asteroids with bullets by pushing the spacebar. The ship moves forwards and backwards using the up and down arrow keys, and rotates left and right by using those respective arrow keys.

(Note: As mentioned, an extra key that I added that was not previously required is the back arrow to move backwards.)

The player advances through levels by shooting enough asteroids until the key drops, and it progressively gets harder to reach the point where the key drops for each level. Once the key is dropped, the player should move over it, and it will be picked up, and then they can enter the door on the map which will open when the key is picked up.

***“Above and Beyond”:***

The “Above and Beyond” feature for this project was a large number of things. Firstly, a level generation system was made, which implements a randomly generated map (except for the first two levels.) Walls are also implemented, and the player can collide with them using a circle-to-rectangle collision detection method. This was the largest part of the project. The size of the map progressively gets larger as levels go on, and the objects on screen scale with it.

Also, another little thing that was added were chaser asteroids. Starting at level 3, when some large asteroids are destroyed, their smaller child asteroids will start following the player. These asteroids significantly improve drop chances for the key.

A basic implementation of the Canvas system was also utilized.

***Known Issues:***

Sometimes, when the project is run, a random thing will just stop working for no reason. Some times there is no visual player acceleration or deceleration; other times, bullets and asteroids spawn and don’t move at all. The pattern to this issue occurs without rhyme or reason – closing and restarting the project can both cause and fix it. Additionally, upon building the executable, an error that occurred forced me to rename one of my asteroid textures, but this resulted in one of the large asteroids to have a box collider instead of a circle. The functionality of the game still works, however.

***Notes:***

I am using my grace period to submit this project.

**LINKS TO BORROWED/USED ASSETS/INFORMATION:**

Pseudocode for circle-to-rectangle collisions: <http://stackoverflow.com/questions/401847/circle-rectangle-collision-detection-intersection>

Asteroid Textures: <http://opengameart.org/content/asteroids>

Ship Texture: <http://opengameart.org/content/simple-spaceship-0>

*All other textures and images were made by myself.*