Physics World – Part I

An experimental 2-dimensional, physics-heavy, sandbox-game-thing.

Submission Guidelines:

In GitHub, create a branch for your project named "PartI_Completed".

Make no further changes to this branch. Make no further branches from this branch. This branch is frozen – a monument to the first step on this project. I will clone that branch, and create a new repo, at the time the assignment is due.

Due at 5PM on Friday 1/30.

Base Requirements (83)

- Setup a repository for the Physics World project in GitHub
  - Create a new repo named *Sp21-EGAM102-PhysicsWorld-yourname*
  - Make sure you use the appropriate .gitignore file
  - Add me to your repo as a collaborator. Username: TimHandleyAC

- Place an annotated version of this rubric in the root directory of your Unity project. Save it in Word .docx format. When I download your Part1_Completed branch, I should find the rubric.

- Pick a theme for your project. Is it side-scrolling? Top-down? In space? A platformer? Underwater? In one sentence, outline the premise for your world.
  - Premise: This 2D platformer game is set in the underwater world where a marine biologist travels in his high tech suit through the deep waves, avoiding the fish enemies and collect gems.
- Write an AvatarController script that implements physics-based movement. Then, write a few words to explain the controls. What keys do what?
  - Explanation:

    A - player move left

    D - player move right

    Space bar - player jump

- In the Physics 2D Toolset, there are nine different joint-type components. Use <u>five</u> of them in an interesting manner. Outline the usage below: What joint-component did you use, and what did you build with it?
  1. Distance Joint 2D - I created a fish enemy that will knock player down and used Distanced Joint 2D and linked it so it could look like it is swimming in a pattern.
  2. Fixed Joint 2D - I created a bouncy wave plane with the fixed joint figure, putting the anchor on one end of the plane.
  3. Slider Joint 2D - I made a small wave where the player character can step on and ride the wave to get from one platform to another platform.

4. Hinge Joint 2D - I created a fish enemy where player need to dodge through as he travels on the wave, when colliding with the player, the fish rotates really fast and mess up the player's balance.
5. Spring Joint 2D - I created a dead fish body hanging on a plane on top of the player is landing on in order to create suspense.

- In the Physics 2D Toolset, there are five different effector-type components. Use three of them in an interesting manner. Outline the usage below: What effector-component did you use, and what did you build with it?
    1. Platform Effector2D - I created a dead fish body where falls down from the ocean and hits the player.
    2. Point Effector2D - I created an area that launches dead fish bones in a certain direction.
    3. BuoyancyEffector2D - I made several gems that floats in the water with this effector (i will add an inventory system and the player will be able to collect them)

Stretch Goals:

- (+2 to +3 pts ea) Interesting usage of different joint-type components. Outline the usage below: What joint-component did you use, and what did you build with it?
    1.
    2.
    3.

- (+2 to +3 pts ea) Interesting usage of different effector-type components. Outline the usage below: What effector-component did you use, and what did you build with it?
    1.
    2.
    3.

- (+2 to +3 pts ea) A more elaborate AvatarController. Your script does more than just physics-based movement. It does unexpected and interesting stuff. What does it do?
    - Feature 1: double jump with groundcheck, if the player is standing on the ground, he can perform double jump
    - Feature 2: shooting, the player can launch projectiles in a direction to shoot enemy fish. (it is not completed in unity but I have coded the script, just need to set things up in unity)
    - etc.

- (+2 to +3 pts ea) A trigger collider with an interesting effect. When the collider is triggered, something happens. How do you trigger the trigger, and what happens?
    - Trigger 1: enemy trigger death, when the player hits an enemy's collider, player dies.
    - Trigger 2: enemy death, when the enemy is being hit by the bullets for certain hitbox, the enemy die
    - etc.

- (+1 to +10) Other. Something nifty related to physics or the Unity physics engine. Explain: What is your nifty thing? What is the physics connection?
    - Nifty thing: OnCollisionEnter, I tagged the player, enemy, ground, and other game objects, so I can call on them with code in order to perform collider actions.
        - for example, my enemy health code has the enemy's tag, so i can make the health bar decrease when the collider on the tag "enemy" is being hit.