

Report

Intro:

This entire project was a fun but stressful experience. From learning a new programming language to it being my very first attempt at making a game. The entire experience was challenging and time-consuming.

Although this may have been my first time making a game and the game itself may not be that visually appealing. The small features like camera movement and player movement are something I am very proud of.

The idea behind this game was from an android game I played as a child where you control a small ship that shoots. And once you hit a wall you teleport to the other side of the map. And all you do is shoot down asteroids with it. In my game, there is no teleporting, but there is a ship and an NPC enemy that is hostile to the player. It will simply B-line towards you and touching it will kill you in an instant. But you as the player can kite the enemy and shoot at it from afar. Killing this NPC will end the game and you will be victorious.

Control:

The movement is the usual default in any game nowadays with W being move up, A being move left, S being move down, and D being move right. You will notice that when you move your mouse around the player ship in the middle of your screen will turn to face it, this will allow you the player to aim the ship. By pressing the left mouse button you will be able to shoot pellets from the gun. Although it looks like a static shot, the pellets themselves are in motion. Just happened to line up perfectly one after the other. If you pay close attention you will notice that the player ship doesn't halt immediately when the movement keys are let go. It will gradually stop like it has inertia in space. This creates a form of fluidity in the movement rather than a harsh abrupt stop

Enemy NPC:

The NPC's movement is extremely basic. It will head toward the player on spawn. It is restricted by walls so if there is a wall between the player and the enemy the NPC will hit the wall and get stuck there until the player moves around it. The NPC will take damage from the player's pellets, it doesn't have invincibility frames. Just high health. Sadly there is no visual indicator on whether the pellets have damaged the NPC but it can still die.

```
public override void _PhysicsProcess(double delta)
{
    Vector2 velocity = Velocity;

    velocity = Vector2.Zero;
    if (Input.IsActionPressed("move_left"))
    {
        velocity.X -= 1;
    }
    if (Input.IsActionPressed("move_right"))
    {
        velocity.X += 1;
    }
    if (Input.IsActionPressed("move_up"))
    {
        velocity.Y -= 1;
    }
    if (Input.IsActionPressed("move_down"))
    {
        velocity.Y += 1;
    }

    velocity = velocity.Normalized();
    if (velocity == Vector2.Zero)
    {
        Velocity = Velocity.Lerp(Vector2.Zero, friction);
    }
    else
    {
        // Apply acceleration when movement keys are pressed
        Velocity = Velocity.Lerp(velocity * Speed, friction);
    }

    MoveAndSlide();
    RotateToMouse();
    if (Input.IsActionPressed("shoot"))
    {
        ShootLaser();
    }
}
```

User Interface:

The user interface is simple there is a:

- The Main Menu screen asks the player if they want to quit the application or play the game. This task is done by a control node and 2 buttons.
- The Victory and Game Over Screen was made by Open AI's Dall-E so if you notice that the words don't make any sense that's cause the AI tried to make English letters. Dall-E also created the background of the main level.

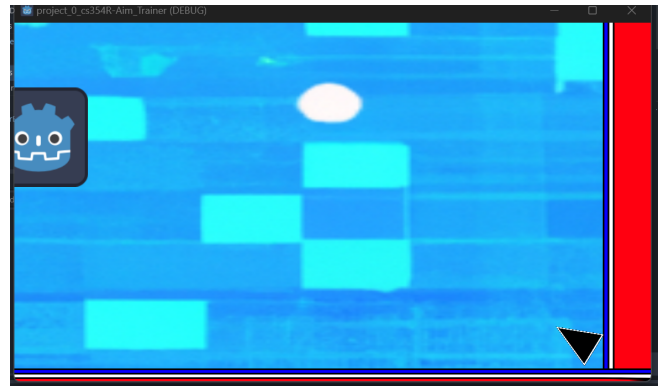
Camera:

This was one of the first issues I came across when making the game. I needed the camera to follow the playership. Finding that out wasn't difficult, the documentation was there and people had the same questions online. But the biggest issue was restricting the camera. If you move around the map you'll notice that on the edges of the map, the camera will stop moving with the player and the ship is unbound to the player node. I did this because I decided the user didn't need to see anything beyond the map borders. So restricting them within it gave the camera movements a nice appeal.



Running the Game:

Inside of the Assignments0 directory, there should be a .exe file. Simply running that should open the game up into the main menu. Clicking play takes you to the game, quit closes the game window.



Understanding how to read my code:

The way I like writing code is similar to the majority of other programmers. The idea is:

- Initialize variables
- Main Methods
 - Code
 - Supplementary methods call
- Supplementary Methods
 - Code

Gripes:

This game is so unfinished. Although I am proud that I was able to get this far with 0 experience with any game engines. I feel bad turning in a half-done project. I desired for the enemy NPC to spawn randomly around the player and once the player has reached a certain amount of kills then the game ends and you are the victor but that wasn't done. I wanted

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animations and audio as well. I had a whole plan on where to source my audio so that when you hit the enemy the ping would be ultimately satisfactory but that wasn't done. And don't get me started on code documentation. Because we were in the transition between Godot 3 -> 4 almost all of the code examples were outdated cause I used version 4 and everyone else was referencing version 3. This meant that the methods they used tended to not exist was a completely different name. My 7 years of experience in coding did not help me much in this project other than brute-forcing the method names until it worked. Then there is gitlab god it sucked. Collision was another issue, figuring it out then breaking then finally figuring it out was the most frustrating thing. I think it took up half the time I worked on this project. Figuring out how shooting pallets works was a coding and a time-consuming mess.

Conclusion:

Although it was a rough ride with an unsatisfactory finish. I learned a lot from this project and overall am proud. There are quite of few things I want to fix but I think I should be more than able to fix them on my own time. I am quite proud of my character movement and the camera work. As well as my ability to problem-solve. And the biggest thing of all I know that I need to start way earlier cause this was a time crunch.