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CECS 528
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CECS 528 Homework Project 4

In this project you are assigned to design and implement a First-Person Shooter (FPS) game based on the FPS Unity game project as discussed in class. In your project report, document your design and highlight your unique contributions to level design, gameplays, and enemy AI.

Introduction: A first-person shooter (FPS) game was designed using the Unity game engine and the C# programming language. The game centers around a player having to search a labyrinthine level for golden orbs. They player can pick up several power-ups to aid them in their efforts of winning the game, including a fully automatic rifle which can shoot faster than their original pistol, a band aid powerup that heals them, bullet packs that increase the amount of ammo that the player has, and, of course, the magical golden orbs that the player must collect in order to win the game. There are also Zombie Spawners orbs that periodically spawn random zombie enemies that attempt to prevent the player from collecting the orbs by killing the player. The player can lose the game if the zombies successfully kill the player before the player collects the orbs.

Game Manual: The player must collect five golden orbs by traversing the level and walking over them. The player can collect the powerups listed below to aid them in their shoot-em-up FPS adventure. The controls for the game are as follows:

Player movement: The player can move about the scene with WASD and/or the arrow keys to move around.

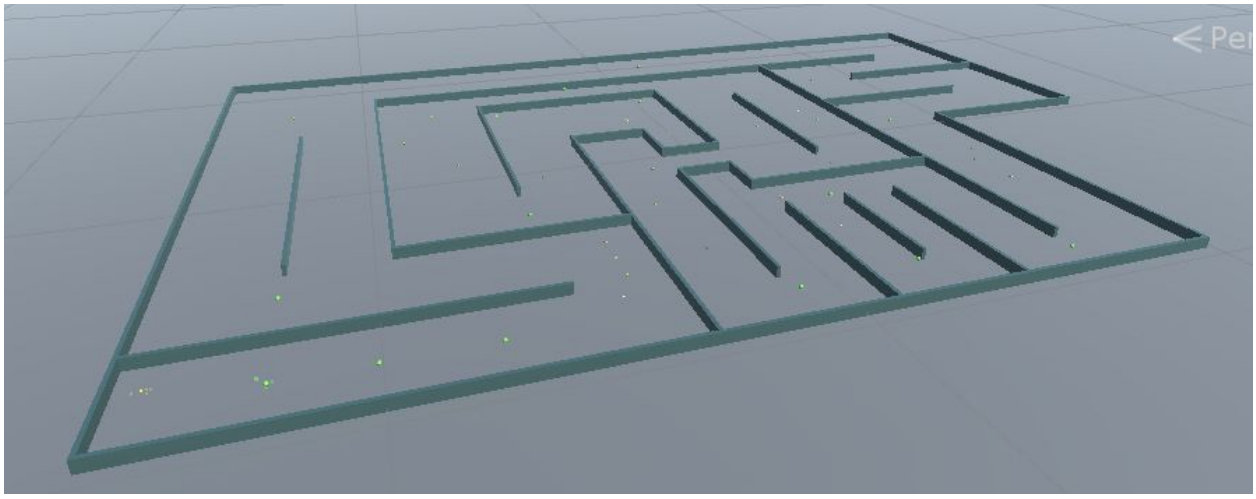
Jumping: The player can jump with the space bar.

Aiming: The player can aim by moving the mouse cursor around.

Shooting: The player can shoot their pistols/rifles by clicking the left mouse button.

The power-ups, collectibles, enemies, zombie spawners, and other game objects are listed below.

Level Scene Design: The game includes a large labyrinthine map that the player must navigate through in order to collect all the magical golden orbs to win the game. The powerups mentioned in the following section are dispersed throughout the maze, and the walls that are seen in the image below are too high for the player to jump over such that the player must walk around the walls in order to continue the path. The following image shows the general layout of the scene:



The scene layout of the level

The player must strategically collect ammo, health, and guns as they proceed throughout the level in order to successfully obtain all the magical golden orbs to win the game.
First-Person Controller (FPC): The player plays from the first-person perspective that looks like below:

The perspective of the player with a pistol

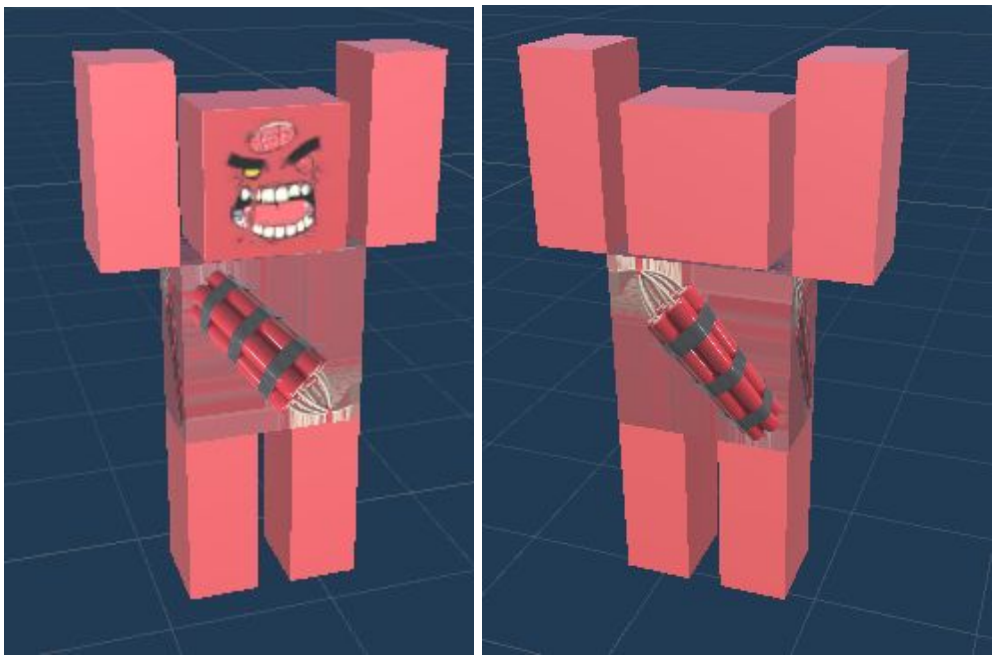
The player can move around with either the WASD or arrow keys. The player can look around with the mouse, which is always locked in the center of the screen. The player can shoot by clicking the left mouse button. The player can jump by pressing the space key.

The FPC functionality is controlled by the Movement.cs script, which uses a Character Controller, a LayerMask, and takes into account gravity (set to 9.8 in the script), the height at which the player can jump, and the player's current velocity in order to ensure that the movement of the player feels natural and normal to the user.

Aiming and Firing Gameplay: The player can move around and aim at enemies by moving the mouse cursor over the zombies. Since the mous is always locked to the center of the screen, the player moves the whole body to shoot.

Enemies: Below are some of the enemies included in the game:

Explosive Zombie:

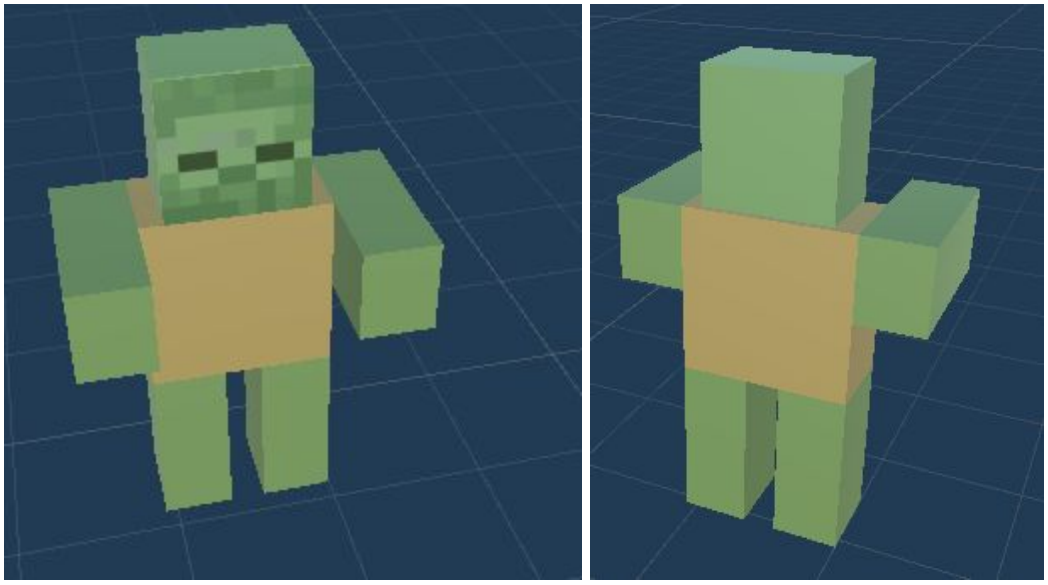


Explosive Zombie prefab

Above is the Explosive Zombie. This zombie has average speed and below average health. When it gets close enough to the player, this zombie will explode violently and do a lot of damage to the player. The player should make sure to shoot and kill the explosive zombie before it gets too close. The explosion looks like below:

Explosive Zombie explosion

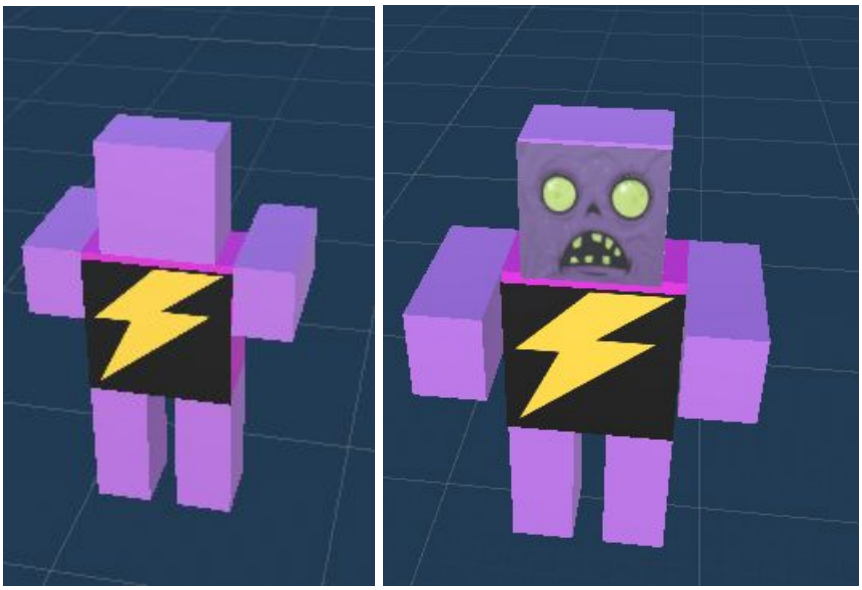
Regular Zombie:



Regular Zombie prefab

The regular zombie has average speed, average health, and does average damage. It can trap the player if the player is too slow.

Zoomie Zombie:



Zoomie Zombie prefab

The zoomie zombie has low health, high speed, and can do little damage. It can attack the player quicker than the other zombies, however.

All the enemies have a path following AI that first searches a specified radius of when to start chasing the player. When the zombies get close enough to the player by a different specified radius, then the zombies do damage to the player. Each zombie has different radii specifying when to start chasing the player and when they can attack and do damage to the player.

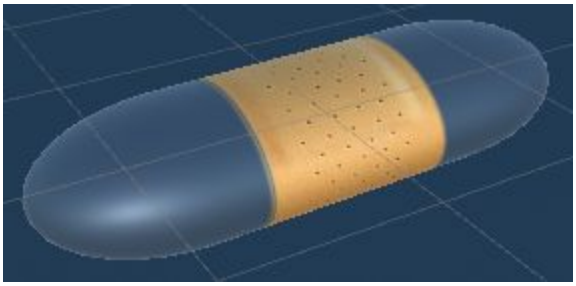
Power-ups: The player can collect different power-ups assisting the player in their winning of the game.

Rifle: The rifle power-up gives the player more firing power. It allows the player to shoot a powerful automatic rifle that can shoot faster and do more damage over time than the pistol that the player starts out with.

Rifle prefab

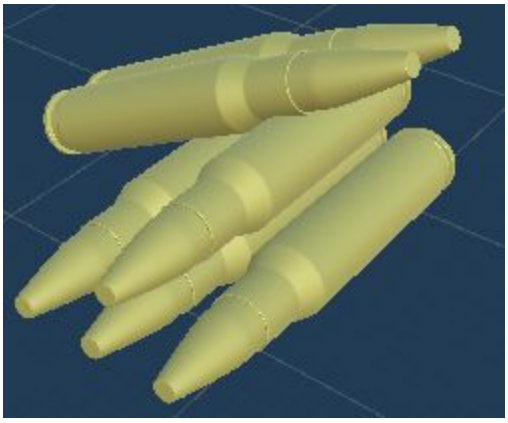
Rifle Appearance in FPC

Band-aid: This power-up gives the player extra health after they have been damaged. They are vital to the player not running out of health.



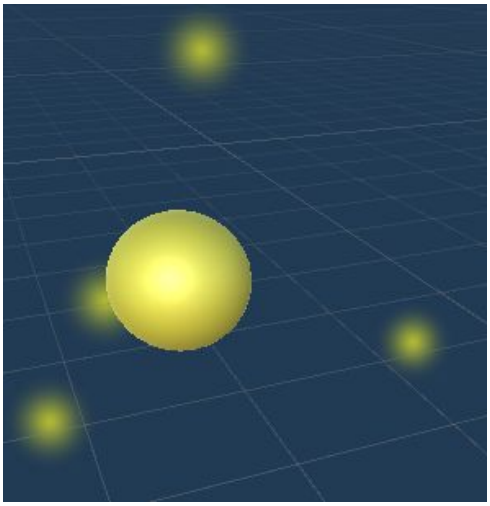
Band-aid prefab

Bullets/Ammo: The player must collect more bullets/ammo so that they can shoot the Zombies and the Zombie Spawners.



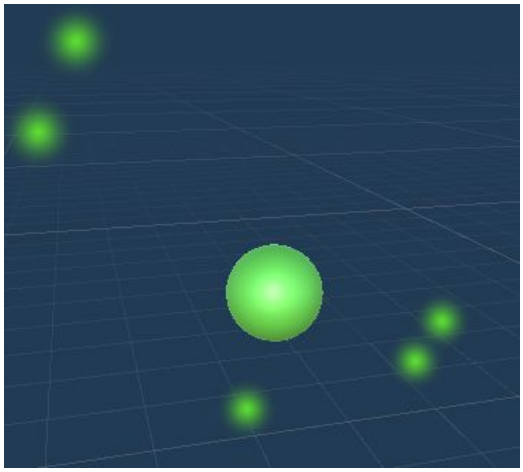
Bullets prefab

Golden Orbs: The player must collect magical spinning and floating five golden orbs to win the game.



Golden Orb prefab

Other Items:
Zombie Spawner: The zombie spawner periodically and intermittently spawns zombies. The zombie spawner can be destroyed if the player shoots it enough times.



Zombie Spawner prefab

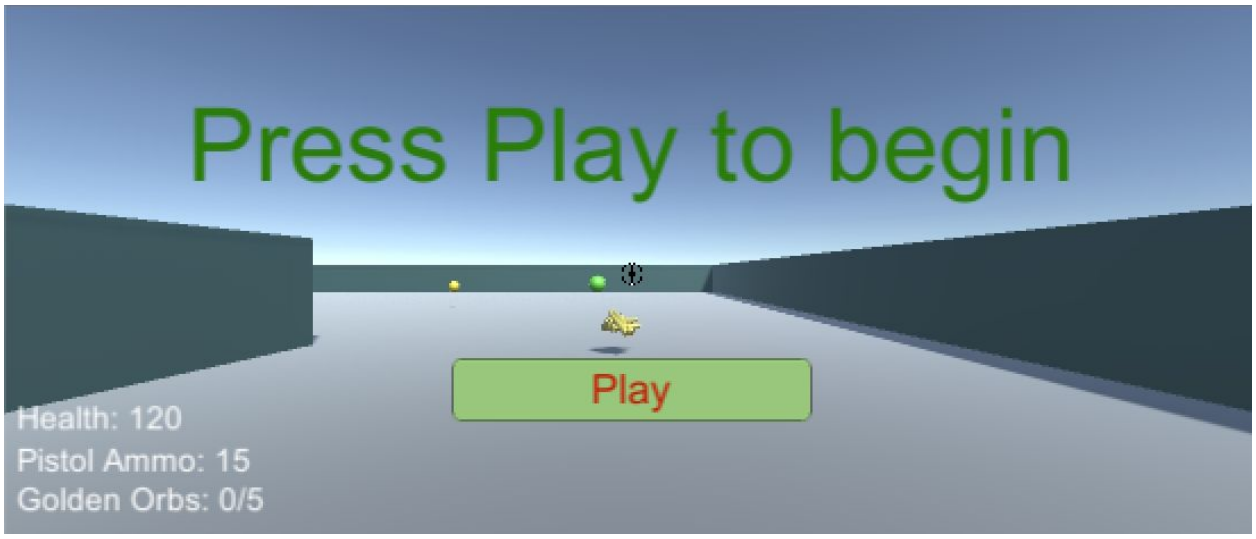
Losing the game: The player loses once their health comes down to zero. The losing screen UI looks like:

The losing UI

Winning the game: The player wins once they've collected five golden orbs. The winning UI looks like:

Winning UI

Starting Game UI: The starting game UI looks like:



Starting game UI

References

Source of Assets for Low Poly Guns:
https://assetstore.unity.com/packages/3d/props/guns/low-poly-weapons-vol-1-151980