

Project 1 – Cannon Game (Zombie Outpost Defense)

Player Controls



Adhering to the design specifications, the player can fully control the aiming of a stationary turret.

- Moving the mouse moves the player's camera so that they can aim in their desired direction.
- The player can then hold down the mouse button to charge their turret and release to shoot.

Game Mechanics

The game is a hot-seat 2-player cannon shooting game. The two players take turns shooting their own turret trying to damage obstacles on the map. There are 4 main gameplay mechanics, whereby the players:

- can shoot directly at each other to decrease the other's health and gain points.
- can shoot objects on the map to damage them and get more points.
- can shoot powerups on the map and receive different advantages.
- Finally, can also shoot at zombies on the map which respawn every round, meaning that players can gain more points the more zombies they kill at the risk of being attacked.

NPCs & Obstacles

Zombies

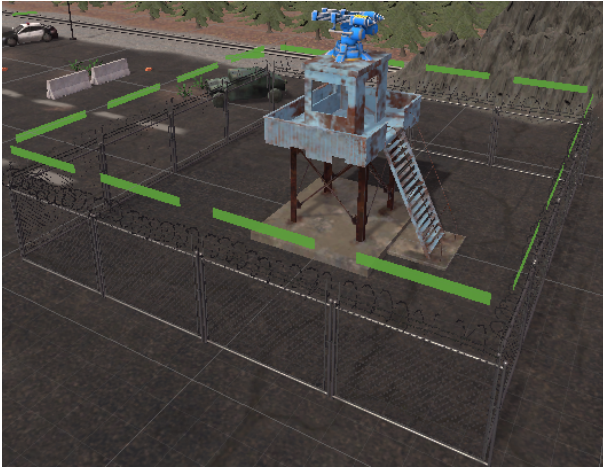


Zombies are NPCs that spawn at a rate of 5 per round, and there can be a maximum of 20 zombies on the map for performance reasons.

Zombies will stand idle until a player damages them. Once a zombie is damaged by a player, it will try to move towards and attack the player, destroy their defenses and eventually start damaging them.

Fences

Players are surrounded by 16 fences, which aim to protect them both from zombies and the other player.



Power-Ups

The game features 3 power-ups that have a 30% chance of spawning each round. There can only be a maximum of 2 power-ups available on the map at the same time, and power-ups are automatically destroyed if not collected after 15s from spawning.

- Heal – restores 25% health
- Shield – heals and restores player's defenses
- Ammo – Equip the player with 3 double damage bullets (adds a particle effect to the bullet)



Obstacles

The game features a variety of obstacles that all have different health options and can all be destroyed by the players for extra points.



Game Logic

- A player is randomly picked at the start to go first.
- Each player takes a turn shooting their cannon while their countdown timer starts counting down.
- Once the first player shoots their bullet, their timer stops.
- Once a bullet collides with any object on the map (player, obstacle...), the bullet will inflict y amount of damage based on the bullet explosion distance and receive y score points.
- The GameManager then switches the turn to the second player once the first player's bullet is destroyed.
- This keeps repeating until a game end/win condition is met.

Win Conditions

Player Health

If any of the players' health reaches 0, the game stops and the other player automatically wins by default.

Player Timer

If any of the players' timer reaches 0, the player with the highest score wins.

If both players are tied in score, the player with more health wins.

UI Elements

Gameplay Elements

While playing the game, the UI will show:

- both players' health bar, score and remaining time.
- power bar that reflects the power of the bullet of the active player.
- the active player's number of double damage bullets left (if any).
- health bar for objects with 200 or more starting health (fences, cars...).

Win Screen

Once a game over condition is met, a panel will show that announces the winning player.

