Department of Computer Science

Multiplayer Networked First Person Shooter game using Unreal Engine 4

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Introduction

First Person Shooter Games are among the most popular Video Game Genre of all time[1], ranking second globally with Counter Strike: Global Offensive being ranked the Top FPS Game of All Time[2]. Players that play FPS games enjoy the immersive action that the game provides giving them a sense of power, making the game fun to play.

The popularity of Video Game engines introduces aspiring game developers the freedom and flexibility of game design, allowing them to get creative with the games they wish to produce. The tools offered within the game engines are powerful to create any genre of game that you can imagine.

Objectives and Motivation

The main objective for this project was to create a First Person Multiplayer Game that was fun, engaging and had some variety to the game that would lead to different possibilities and outcomes whilst playing the game. As this was my first time properly utilising the Unreal Game Engine, it motivated me to learn the inner workings of the program such as the Blueprint Visual Scripting System and Map Creation using the tools provided with the program.
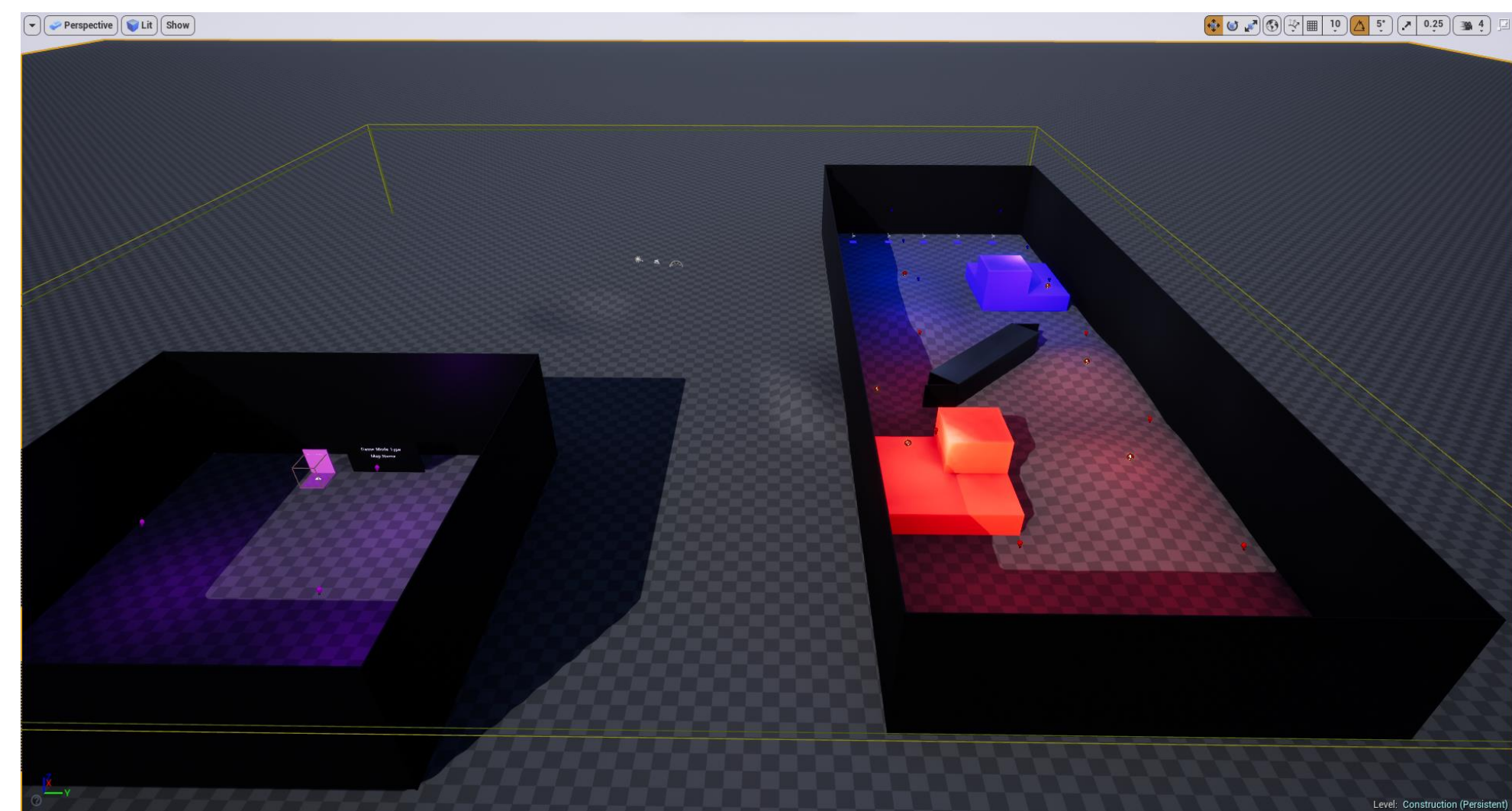
As with all FPS games, maps are a key part as this is the player's battlefield. It's where players fight each other to achieve a higher score than the other team. Building maps with no experience was challenging, especially getting used to the software and laying out a sizable plane for the players to run around, yet I was able to achieve creating a decent sized map with some obstacles.

Having the ability to shoot, run around and jump around the map may be the general purpose of the game, however making it multiplayer makes the game a more enjoyable experience. With the use of the Steam API, connecting to a game session in play is as simple as finding a hosted game and connecting to it.
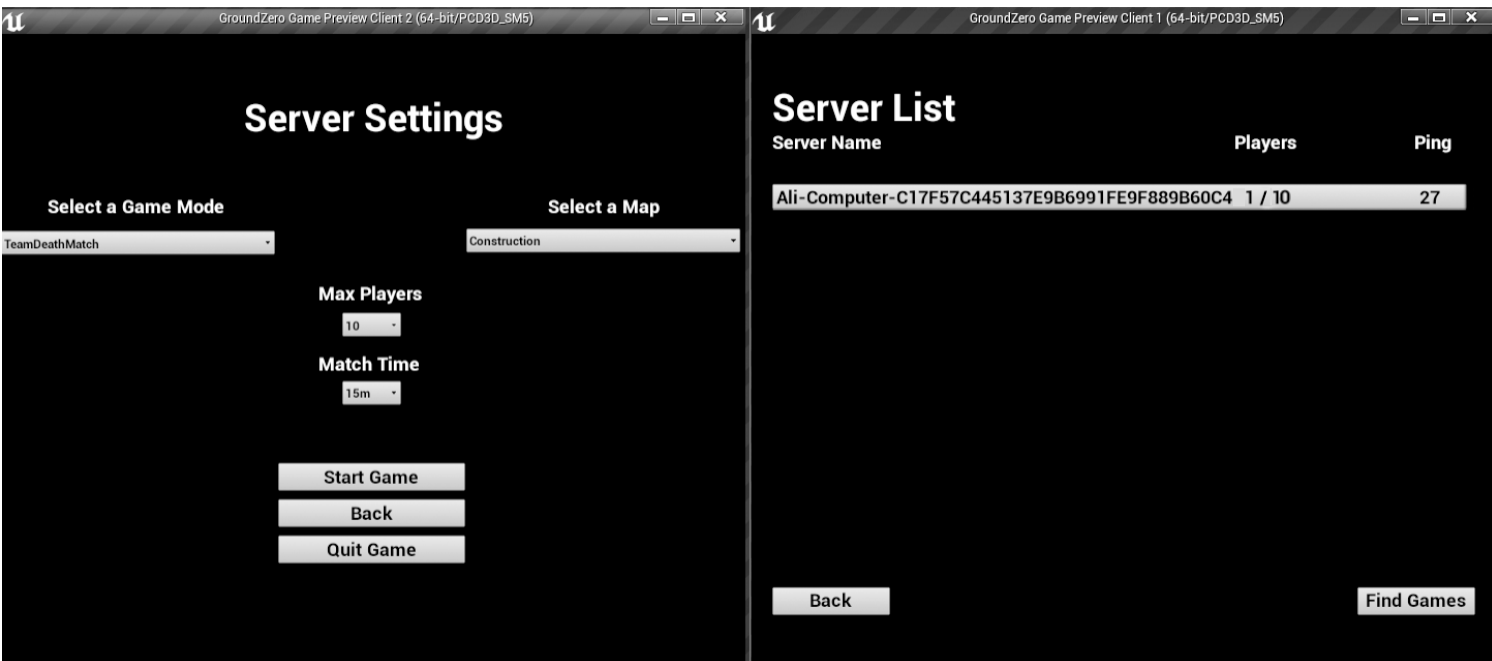
Whilst creating the game, the objectives and functional requirements that needed to be considered included:

- The Players being able to host and connect to game sessions easily.

- To have relatively familiar yet simple gameplay within an FPS game.

- A wide variety of Weapons such as Explosive and Long range weapons for each player to experiment and use whilst battling.

Final Outcome and Conclusion

I am pleased with the final outcome of the game, offering fun gameplay, a variety of maps to play on as well as the small competitive feeling when facing off opponents. The final game offers 5 playable classes with 5 unique weapons, 3 playable maps and 2 game modes. Features such as the kill feed and the kill medal when successfully defeating an opponent were inspired by many popular FPS games like Call of Duty.

In conclusion, this was a very enjoyable project to work on, especially learning the capabilities that Unreal Engine has to offer and I'm proud to have been given the opportunity to create such a project.

References
1. Josh Howarth, '24 Amazing Video Game Industry Statistics (2022)', 10 January 2022
2. GLHF - Phil Iwaniuk, 'The best FPS games – the top 15 shooters of all time', 4 December 2021

Degree programme

BSc Computer Science