SFAFX Game Jam

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Game Title: 1 Bullet

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1. General Description of the Game project, Aim and Objectives

This is a 1v1 fps multiplayer game with a twist on the normal shooting mechanic. The goal was to create a fully functional network connectivity over the internet to be able to fight against other players in a 1v1 first person shooter scenario. The aim was to create a unique feeling, implementing a new idea of what could become a competitive game.

2. Research and Analysis, Subject Review

The biggest challenge has been to create the networking since this has been the first attempt in creating this type of game.

The ability of the networking when creating a dedicated device server is greatly dependent on that device/server. This can be a good thing if you want to personally control the behaviour of it. The downside is that you always need to maintain a live server.

The second type is replacing the need for a dedicated device with another player's device. In this case the player starts a game and it becomes a host, other players connecting to it. This means you don't always have to maintain it live, but it can be hacked much easier because it runs on the player's device. Other downside is that you need to set the host migration in order to keep up the game in case the host decides to leave randomly. This can also mean that a low connection or an old device as host will provide a random range of networking fluctuations.

To create the multiplayer functionality, I chose Photon Unity Network. In order to do that I installed the Photon PUN 2 plugin; I have created an account a registered the app as a free one on the Photon's website. Because of that the game can support only up to 20 concurrent players so it is limited to creating 10 rooms of 2 players each.

Once the connection has been established between the host and the clients, there are some components and scripts in Unity that help with faster connectivity, such as network identity or network transform. Photon plugin uses a component called photon view to synchronise game objects and variables. The game is getting synchronised using remote procedure calls, functions which will send a message to all the other clients which will then run the same function.

3. Game Overview: Game Idea and Game Play

The idea of the game was to create a small arena which would be easy to learn and fun to play in. It features a short 1v1 match in which the player controls a character with the keyboard from a first person perspective and is able to move through the environment with the aim of finding the enemy player and shooting it using the mouse, while avoiding to get shot back.

4. Themes and Game Flow

In terms of design the map has its inspiration from Tron, bringing the dark environment and neon, emissive lights together to create a mysterious feeling with the focus of having a dynamic space for the players to move in.

(imdb.com)

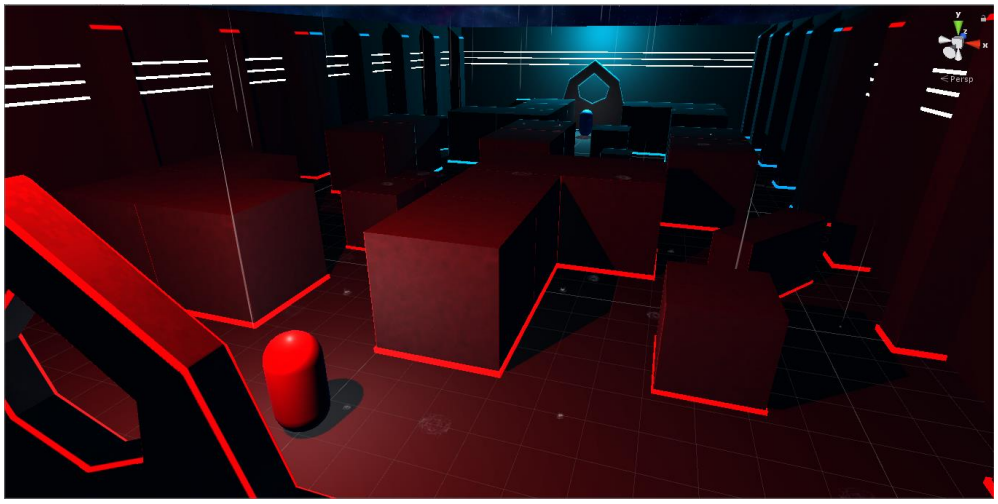
The idea of such a small map came from Counter Strike 1.6, fy_snow map.

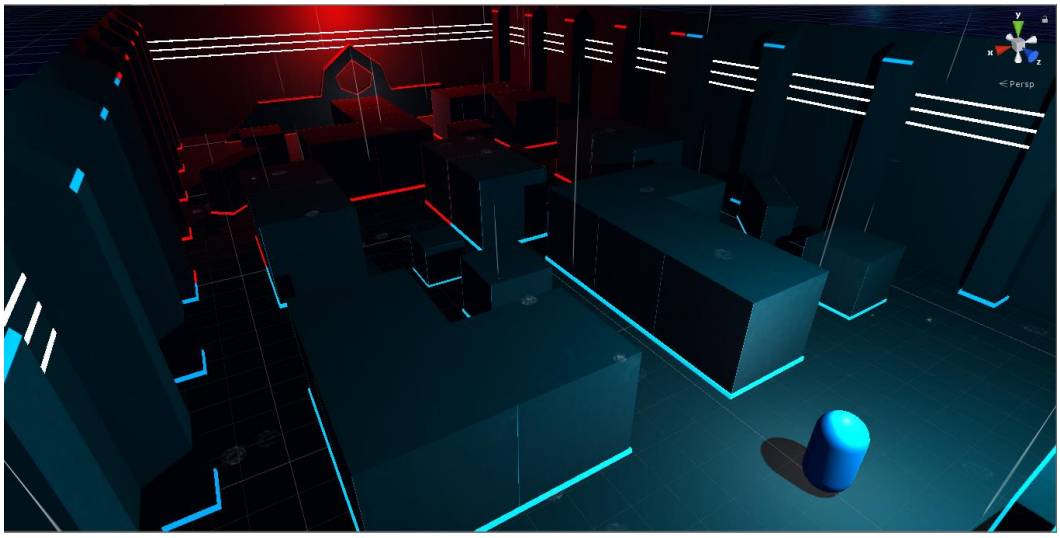

(Counter Strike 1.6)

The inspiration for the small boxes came from another map from Counter Strike 1.6, cs_deagle5.

 (Counter Strike 1.6)

5. Game World and Game Layout





6. Game Interfaces

Upon starting the game, the player will see the main menu which is automatically connecting the player to the server. When the start button is pressed, the player is taken to the waiting room which if there isn't any available the game will create one. If there is a room available, the player will then join the other one who created the room and so the countdown of 5 seconds will begin to start the match. Once the countdown has reached zero, both players are beginning to connect to the match room.

7. Game Characters and Game Weapons

The game features 2 teams, blue and red. The player will get a colour according to the order in which it entered the room.

Each player has only one bullet that it can shoot at a time. Each bullet shot is bouncing off walls and it is living for 5 seconds, time in which the player can not shoot again. At the end of those 5 seconds, if the bullet didn't hit any players, it will get destroyed, giving the player that originally shot the bullet a reload. If the bullet hits any of the players, the enemy player will be rewarded with a point.

The game ends when a player reaches 3 points.

8. Project Evaluation, Game Testing, Individual Appraisal

The map has been modelled in Maya and textured in Substance Painter. I've created one box, one pillar and one spawning base, textured everything in 2 colours and multiplicated everything inside Unity. The white strips are cubes extruded with an emissive material on. 2 lights are located at each side of the map, representing the side of the team, blue and red. The rain is a free particle from Unity's asset store.

For the network connectivity I started looking on the Photon's documentation and created a delay type of matchmaking instead of a normal, simple click to connect to an open world.

The Photon Lobby script is responsible for setting up connection between the player and the server and will allow the players to create a room if none are available.

During the testing I found a few bugs that unfortunately are present in the submission.

Some known bugs are:

Sometimes the players get spawned at the same side of the map. The issue is with allocating the teams to the players as they connect.

Sometimes when connecting to a lobby, if the player keeps pressing on connect, disconnect, when finally connecting and starting the match, one of the players will not get spawned. This is the same issue as above.

When in game, when the player is shooting the other player, if hit, both players should get sent to their spawning location. This is happening only if you shoot yourself, but not when shooting the enemy. This issue is because of not properly sending a message from the client to the master regarding the reading of the collision.

When a player has a score of 3, only the winner gets disconnected instead of both players. The loser must shoot himself in order to get out to the lobby.

During the development of this project I have learned the basics of networking and pushed myself in to trying to come up with unique ideas. I am happy with the outcome even though it is not polished, and it still has a few bugs. I think the game has potential and because of that I will continue to develop it and maybe some day it could be the new mainstream in terms of competitive shooters.

9. User Instructions

W, A, S, D to move. Space to jump – check the thrust fuel on the bottom left corner. When you have fuel, you can fly. When you don't have, don't worry, it will replenish in short time.

Left mouse click to shoot – check the number at the bottom of the screen, in the middle, it will show you when you have your bullet available in case it goes out of your vision.