**Network Programming Report Assignment**

-Pelle Brun

Overview of game design.

The game is a very simplified version of a mobile game called Head Soccer which is a 2d football game where you use your character by jumping, dashing or kicking the ball to make sure it goes over the opponent and into their goal and my game is a recreation of those basic functions. On top of that I’ve made an emote system where you send emoticons by pressing buttons Z to C.

Implementation details of the network features.  
  
This project was made with Unity’s NetworkObject package. It allows me to add a manager to the scene as well as add components to certain objects that will mark them as network objects which means they will be able to synchronize across all connected players. This is necessary for making both players see the same view at the same time while connected.

The chat was made through both players being able to click 3 buttons that will send a specific emoticon to both players screen, and the score for the goals were very similar where they each had their own copy of a script that kept track of the scores earned from each respective goal and then changed the number above it.

Challenges faced and solutions implemented.

The first challenge I came across was related to the synchronization of the players movements where they would only appear on the hosts view which was promptly fixed through making sure that I actually sent the players intended movement across all connected players.

The biggest challenge I faced was with the chat system, where whenever I sent a message from the host it would appear for the host and the client, however the clients message would not appear for the host and the host would be getting a missing object reference from the clients text window. This mainly appeared because of how I checked for which player to send a message but eventually I went for an easier solution where I can only display 1 emote at a time from both players by making both of them write to the exact same text box.

A reflection on the learning experience.  
  
This assignment gave me some experience in working with the process of creating multiplayer network games which was something I had not tried before, it was way less daunting than I thought it would be but I still cannot grasp how something like this of a bigger size would look like. I do feel like if I were to recreate this project right now it would be a tad bit different and specifically more consistent all throughout as I now have my own general workflow for this type of project.

This is still however an area I am not super enticed about working on in the future as there are so many more things that can go wrong than when working on a single player game or a game with local co-op. Because not only does every base feature have to work in its intended way but they have to be made in a certain way where they will be correctly shared across the network and avoid all sorts of problems that can arise from that. But that is only right now, I may learn some tricks in the future that might even make it easier to create functions across networks than solo but that isn’t right now.