Cup Pong

By Ryan Leitenberger, Ryan Ruffing, and Dominic Dupilka

About the Project

Our program is a virtual spinoff of the game cup pong, where 2 clients will connect to a server and be able to compete against one another. The menu screen will allow them to start a match or join a match. Once both players are connected to the server, both players will shoot until one of them misses, to determine who will shoot first. When a user successfully lands the ball into a cup, it will be removed from both players’ screens immediately. The first player to remove all of their cups will win, and they will be redirected back to the menu screen after the game is finished.

Functions of the Server

The server will be responsible for handling users creating and joining matches. When a user sends either of these requests, the server will respond by either creating or joining them into a match, and then relaying a success or error message to the client. When a user sends a chat message to the server, the server will be responsible for broadcasting that message to the entire room so all users can see it (i.e. If it is the lobby, all connected users will see it. If it is in a private match, only the opponent will see it). When a player shoots, the server will be responsible for sending that information to the opponent, such as the starting position of the shot, the initial speed and angle they shot at, and whether they made the shot or not. Finally, the server will also need to relay information to the opponent if the user sends a pause request. The pause will only be active if both players agree.

Client Options and Behavior

Once connected to a match, the client will be able to see whether it is their turn or their opponent’s turn to shoot, and they will be able to shoot by clicking down on the screen and dragging their mouse to the desired power level. Once their mouse click has been released, the ball will launch from the starting click position and use physics to determine the next position of the ball each frame. The clients will also have the option to pause the game for a certain period of time, if their opponent accepts.

Client and Server Interaction

The client will contact the server when creating and joining a match, and the server will tell the clients to update when there are 2 players in a current match lobby. When this happens, the client will update the scene to the game scene. The client will contact the server after shooting, and the server will relay that information to the opponent’s client. The client will then update appropriately based on the server’s message (i.e. if the user made it, the cup they made will need to be removed on the opponent’s side). When sending a pause request to the client, if both players agree, the client will need to update to the pause state for a specified amount of time. If it is not accepted by both players, the player who initiated the pause request will be shown a message stating that their request was denied. Between each player’s turns, the server will contact the next player to inform them that it is their turn to shoot. The client will allow the player to shoot. The client will send a chat message to the server, and the server will broadcast the chat message to the lobby.

Data Structures and Content

The first data structure that will be implemented is an ArrayList. This will be used twice, to hold each of the ‘Cup’ objects for both players. When a player makes a cup, it will be removed from the array list and the client will check to see how many are remaining in the list for the user.

The second data structure that will be implemented is a LinkedList. This will store all of the data regarding turns in the game, which will be displayed on the side. The purpose of this is so that during the game, the both of the users will be able to see how they performed on their past turns.