

Multiplayer game: Project report

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The game

For this project, I decided to take a very simple concept and try to implement communication between two players through a server. In the beginning, I was not sure how to design the game, or how to use threads properly. That is why I started programming the client “send” and “receive” functions in a coroutine instead of in a thread.

I now realise that it is an error, because this way, the client is not able to wait for the server to send him a message. Coroutines are executed in the main thread of the program, which would make the game crash if I try to wait for the server in a coroutine - as the “receive” function is a “blocking call”. If I had implemented threads I would have been able to wait for the server to send some data, which would have been very useful, but once again, I was not sure how to do so in the beginning, and when I realised it, it was too late.

Anyway, the game works correctly the way it is. Both of the players send its position to the server every 10ms, and receive the other player’s position. In addition to that, the player 1 sends the ball position to the player 2. I did it in two separate steps (player position and ball position) to simplify the server logic and to save some time. The ball in player 1 side is different from player 2: only the player 1 ball has a rigidbody and collider and that is why we could say that the physics logic lays in the player 1 side. Doing it this way, player 2 will experience a little bit of lag, but it is the only way I could think about without using threads.

I made a login feature, with which the players can put a username and a password. I am not sure if it will work in another computer. I have exported the database, you will need to create it in your computer and place the .php in the “www” directory. If it is working, you should be able to log in as Player 1 or Player 2 using this credentials:

- Player 1
 - Username: player1
 - Password: 1111
- Player 2
 - Username: player2
 - Password: 2222

If that is not working, you can always use the buttons below the login form.

The game is only working in a single device, as it is configured with local IP.

How to test the game

In its current state, the game will not work properly in some cases, so I recommend following this steps:

1. Execute the server.
2. Execute the first instance of the game. Important: Resolution 800x600, Windowed (checked).
3. Execute the second instance of the game. With the same parameters
4. Select "Player1(host)" in the first instance.
5. Select "Player2" in the second instance.
6. The game is played click-and-dragging the "platform" to the left (with both players is the left side).
7. When the game finishes, close all three applications.