Complex Game Systems: Networking

Game Brief:

This Application will be a twin stick style, multiplayer, 2d shooter/bullet hell game where multiple players will be able to join and move their characters around independently. The players will travel by following their mouse around the screen using seek and arrival behaviors. Aiming the gun will be handled by aiming at the mouse cursor. Holding the right mouse button will freeze the last mouse move position so that you can aim at other directions while still moving straight.

The game will be designed as a server authoritative program so all clients end up with the same view of the game world. Movement of the player will be handled by the server whereas movement of the bullets will be handled by both server and client, but only the server will test for hits.

When the player clicks the left or right mouse button, or the mouse position changes its sends a message to the server containing the mouse position and button states.

The players’ positions will be send every few milliseconds to all clients, who will receive them and draw them to the screen. When a player fires the server will send a position, direction and speed for the bullet so both server and client will move in sync through the use of delta time without the need to send bullet positons every few seconds.

Basic dead reckoning will be implemented so that the player will continue to travel towards their previous velocity if some delay was to happen, this should minimize lag jumps.

This game will be able to work on multiple resolutions through the use of unit vectors so that the clients will draw scaled to the server’s view. This will make it possible to have many different resolutions while still keeping the game full screen without any weird stretching.

As a stretch goal I will add lua scripting to my bullets to add some customization to spice up the gameplay and make it feel more dynamic. This lua script will be send to all clients and the server so that the bullets will still update at the same speed and keep the same look on all sides. This will have issues with balancing as I will have little time to add testing for overpowered bullets.