SE3313a – Operating Systems Design Project

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# Introduction

The objective of this design project is to create a multi-user, online game server. The overall goal of the project was to successfully design and implement this multi-client server, with the students choosing any game they would like to implement. In this iteration, Justin and I designed a pong game for the project. The pong client would be implemented with Pygame, while the server, as requested by the requirements of this project, would be implemented with C++ on Ubuntu.

# Procedure

The way the Pong client and the game server works is described below:

After the server is initiated it will allow multiple clients to join the game. After the connection has been established with the individual clients the game will begin. If the one of the user arrives first it will block access to begin until both connections have been established. Once the game begins, both clients will be able to begin their session. One thread will be dynamically created, containing two sockets. A scoring system is implemented in both clients. If one client decides to quit unexpectedly, the other client will be directed to its “waiting” status, where it will wait for the next available client to connect.

# Results

After completion of the Pong client and game server code, the game server was able to fulfill its functionality of maintaing connections between different clients. The clients were able to connect and play Pong with each other, while the game server was able to handle multiple clients.

# Discussion

Overall, the experience of this project assignment was worthwhile. We learned many new things, such as how to implemement a multiclient game server. Learning how to do this allowed us to appreciate the real world application of threads, and thread synchronization. The lab allowed us to appreciate the difficulty of developing computer games (especially multiplayer games). The lab was of moderate difficulty, as the previous Lab 3 taught students the basics of creating a server with threads, thus reducing a bit of the workload. In our situation, the game client was a bit difficult as we had to learn Pygame for the first time.