# Battleship

Architectural Design

1. **Introduction and Context**

*The project that we want to build is a multiplayer form of the board game battle ship consisting of two players. Essentially, players will use a lobby to join a game then each player in a game will take turns trying to shoot down other players boats on a specified sized board by choosing different coordinates to shoot at.*

1. **Users and their Goals**

*Users will be players of the game, and their goal will be to find all of their opponents ships locations.*

1. **Major Components and Their Relationship**

The following outlines how three different processes operate and the purpose of their threads .

**Game Manager:**

The Game manager will wait for the Lobby to send it two players. It will also communicate with players to change the game data.

The game manager will have three threads: The main thread, a player one thread, and a player two thread. The main thread will handle incoming messages and put them in corresponding queues, it will respond to heartbeads from the lobby. Each player thread will be used to communicate to the players during a game over TCP.

**User Client:**

The User Client will allow players to connect with the lobby and receive game states from the game manager.

The User Client will have two threads: The main thread, and a receiver thread. The main thread will take message off a queue and handle them, send messages to Lobby or Game Manager, and takes input from users. The receiver thread will be open to receive messages and place them on a queue for the main thread to handle.

**Lobby:**

The Lobby will connect with the User Clients and Game Managers then the Lobby will connect two players ready to play a game with a designated game manager.

The Lobby will have two threads: the main thread, and a receiver thread. The main thread will connect players to a game, send messages to User Clients and Game managers, and send necessary heart beats. The receiver thread will receive messages from User Clients and Game managers.