To: Prof. Felleisen
From: Derek Feng, Micheal Reveliotis
Subject: Software components of Fish game system
Date: 9/27/20

The Fish game system will be composed of multiple software components, including the server and connection management system, the referee that manages players and runs the game, the visual system that handles displaying the state of the game, and the game state component that contains all necessary data. Additionally, players must program their own AI player components which submit game interactions and information when prompted by the servers. A payment system will also be required to receive entry fees and dispense the reward to game winners.

The game server and connection management system will handle all player connections, and is capable of determining whether to accept or reject a given player. Players will attempt to connect by sending requests using a published protocol to the server; requests must contain all information necessary for running the game to be accepted to a server with open positions. The server will also handle payment to and from clients, receiving entry fees at connection time and paying winners at games' ends.

The referee essentially handles the game logic. It will be responsible for beginning the game. Additionally, it will be able to access the game state and process player actions based on the data found in the game state. This will allow the referee to detect illegal moves and signal to the connection management system to terminate the connection with those players attempting such moves. Access to the game state will also allow the referee to determine when the game should end and who has won the game.

The rendered aspect of the game will exist both on the server-side as well as optionally written by clients of the game. In order to create a view of the logic, a graphical representation of the game will be generated. Additionally, as current game state information is sent to the AI players, the information may be used to render the state of the game by clients on their own machines. This component is opt-in as the game has no graphical interface - the AI players should be able to decide moves off the game data.

The game state component holds all the data for the game. This includes the player data, the game board, and any other information that is needed for the game. This information will be sent between the server and client. As stated previously, the referee will be able to use the game state to run the logic of the game on the server. The client-side AI will use the game state to determine their next move and send it to the server, and the information sent to the client may also be used to render a visual representation of the game state.