# **Socket Tic Tac Toe Protocol**

**1 Introduction**

The purpose of this protocol is to allow for a simple and fun game of TicTacToe over a network. This protocol allows a one or multiple clients to engage in a game of TicTacToe with an AI server. The server can service multiple clients using threading.

**2 TicTacToe Model**

The client and server interact as follows:

User 🡪 Client 🡨🡪 Server

**3 Commands**

**3.1 NEW**

This command is used to reset the board stored in the server, so a new game can be played. This command can sent before, during, or after a game has been initiated. This command should be sent as a single string in all uppercase: “NEW”. If this command isn’t sent in this format, it won’t be recognized by the server.

**3.2 HUMAN**

This command is expected to be sent right after the connection is established. This command notifies the server that the client wants to make the first move. This command can also be sent after the game has ended to allow the first move to be made by the client in the next game. This command should be sent as a single string in all uppercase: “HUMAN”. If this command isn’t sent in this format, it won’t be recognized by the server.

**3.3 AI**

This command is expected to be sent right after the connection is established. This command notifies the server that the client wants the AI to make the first move. This command can also be sent after the game has ended to allow the first move to be made by the AI in the next game. This command should be sent as a single string in all uppercase: “AI”. If this command isn’t sent in this format, it won’t be recognized by the server.

**3.4 PUT**

This command is used to place a piece on the board by the client. This command should be following by a space and two valid values for a row and column on the board. This command should be sent as a single string in all uppercase: “PUT XX”, where both Xs would be either 0, 1, or 2.

3.4.1 PUT 00

This command would place the player’s piece on the board at row 0, column 0

3.4.2 PUT 01

This command would place the player’s piece on the board at row 0, column 1

3.4.1 PUT 02

This command would place the player’s piece on the board at row 0, column 2

3.4.1 PUT 10

This command would place the player’s piece on the board at row 1, column 0

3.4.1 PUT 11

This command would place the player’s piece on the board at row 1, column 1

3.4.1 PUT 12

This command would place the player’s piece on the board at row 1, column 2

3.4.1 PUT 20

This command would place the player’s piece on the board at row 2, column 0

3.4.1 PUT 21

This command would place the player’s piece on the board at row 2, column 1

3.4.1 PUT 22

This command would place the player’s piece on the board at row 2, column 2

**3.5 QUIT**

This command is used to quit the game and close the connection between the client and server. Once the server receives this command, the server will exit the TicTacToe game and close the connection. This command can sent before, during, or after a game has been initiated. This command should be sent as a single string in all uppercase: “QUIT”. If this command isn’t sent in this format, it won’t be recognized by the server.

**4 Responses**

**4.1 OK**

This response is sent whenever is action is successfully executed, such as the PUT and NEW commands.

**4.2 GAME OVER**

This response is sent when the Game has ended. This response will be continuously sent, until the client sends the NEW command to start a new game.