Screen Sketches

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Actors

1. Users: Have the privilege to:
   a. Register/Login as a player
   b. Create / Join a game
   c. View leaderboard
   d. Send / accept friend requests
   e. Block other users
   f. Chat with friends
2. Hosts: Are users who have created a game and so have the privileges of Users as well as being able to:
   a. Invite friends
   b. Kick users
   c. Edit settings
   d. Start game
   e. Make another user host
   f. Close game
3. Administrators: Allowed additional privileges to Users such as:
   a. Joining any game without restrictions
   b. Forcibly making themself the host of a game
   c. Banning users

Non-Functional Requirements:

- The game should be responsible to respond to inputs quickly without lagging

- Support a maximum of 4 users

- Users should be able to play the game whenever they want with minimal issues

- The game should have easy instructions that might not confuse the users

- Users should be able to play against AI in the event they can't find enough players to start a game

- The game should be programmed in a way that makes it easy to implement more types of gameplay in the future

- The game should be programmed in a way that minimizes the amount of data stored in its database

Tables and Fields:

- Player: Tracks information related to a user's account
    - Username - Primary Key
    - Password
    - Friends - Key to other Players in Player table
    - Friend requests - Key to other Players in Player table
    - Players Sent Friend Request by Player - Key to other Players in Player table
    - Blocked Players - Key to other Players in Player table
    - Players who have Blocked Player - Key to other Players in Player table
    - Player's Stats - Key to PlayerStats table
- PlayerStats: Holds the game stats of a specific player
    - Username - Primary Key
    - Win count
    - Loss Count
    - Total Games Played
    - Previous Opponents' Usernames
    - Previous Games' History - Key to instances in GameHistory Table
- GameHistory: Saves the actions and results in a game
    - Game Id - Primary Key
    - Player Actions
    - List of Players' usernames
    - The winner of the game
- PlayerSession: Stores users' sessions to easily validate actions
    - Session Id - Primary Key
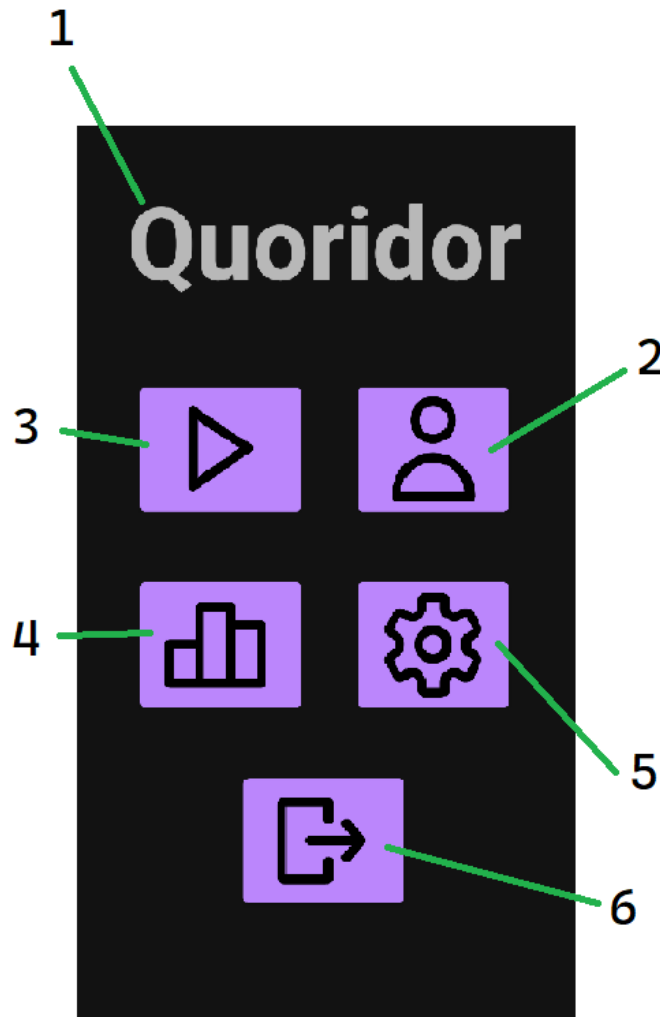   - Player - Key to linked Player in Player table

Screen Flow Diagram
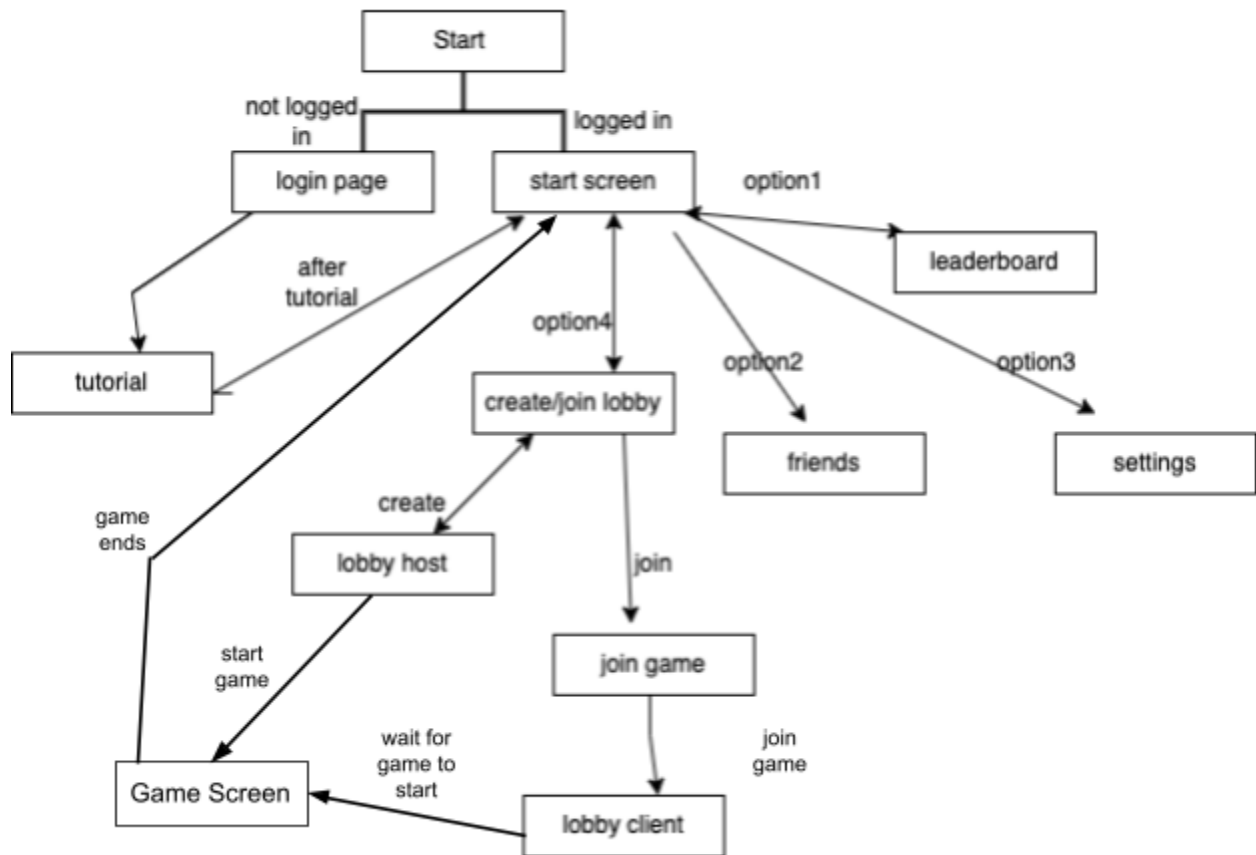
Figure #1: Start Screen

This screen allows for the user to navigate to the main functions of the app. Element 1 is the logo of the game, and elements 2-6 are buttons that redirect to different screens. Button 2 is an account button, where the user can modify their user account and or login/logout. Button 3 leads to the game lobby screen where the user can then join a game. Button 4 leads to the leaderboard screen, where the user can see their match history and compare their history to others. Button 5 leads to the settings screen where the user can change appearance settings for the app among other things. Finally, button 6 exits the app.

Figure #2: Login Screen

This screen allows the user to login, and is shown at first app launch or if the person is not logged in. It's very simple in design. Field 1 is a text input field for the username, and field 2 is for password. Both fields 1 and 2 verify that the entered credentials are allowed to be sent and notify the user of problems. Then the user can press either button 3 or 4 to sign into their preexisting account, or register a new account using the register button. Upon pressing either button the credentials are verified with the server and are taken to the account screen when completed.
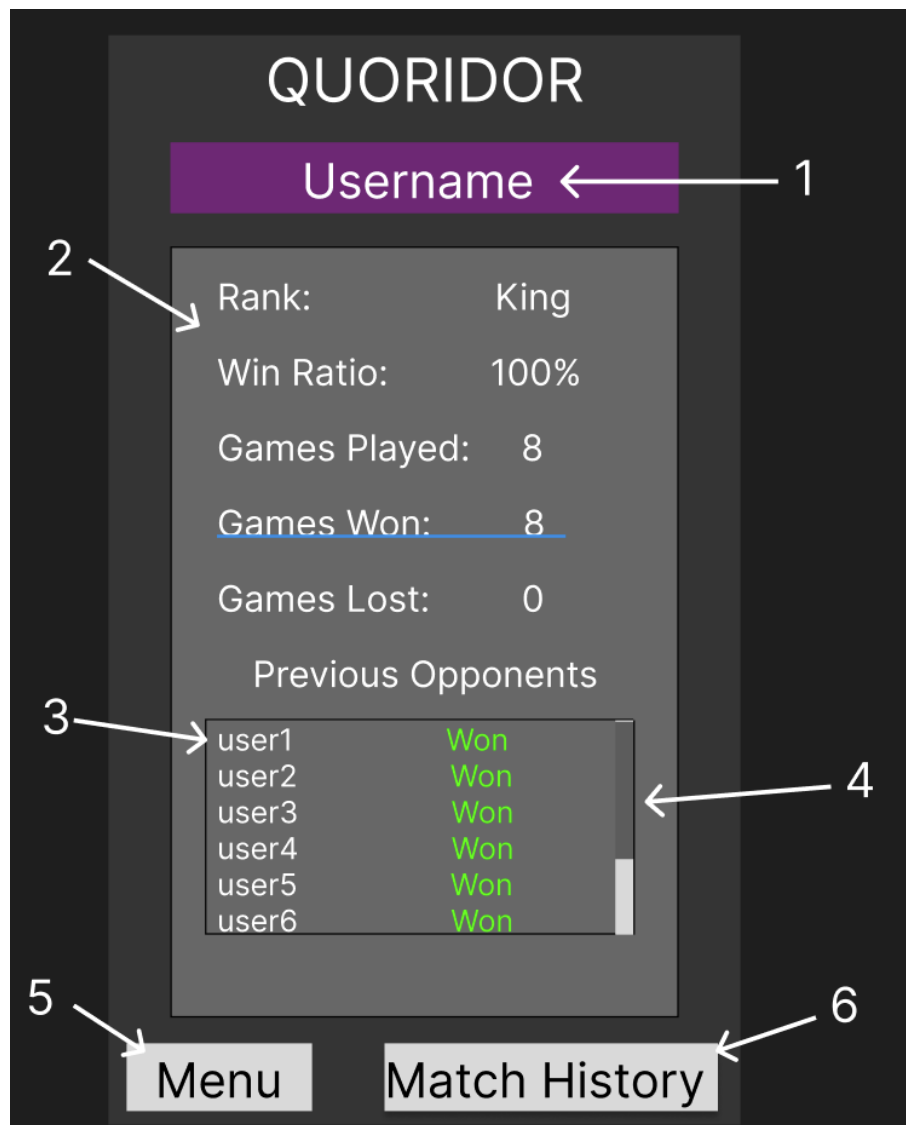
Figure #3: Viewing user's stats

This screen allows the user to see their stats from the games played. For example, they can see their rank, win ratio, games won, lost, and previous opponents. The user does not have the option to change these variables on this screen. (1) This is the player's username whose stats are displayed. (2) This is the block where the viewer can see the player's stats. (3) There is a link to every previous opponent, and when it's clicked, it will display another screen that shows their stats too. (4) This is a scroll bar to scroll through the previous opponents if it reaches the maximum number of names displayed. (5) This button is the menu button, and it moves the user back to the menu screen. (6) The match history button moves the user to the match history screen to display the previous games played and the moves.
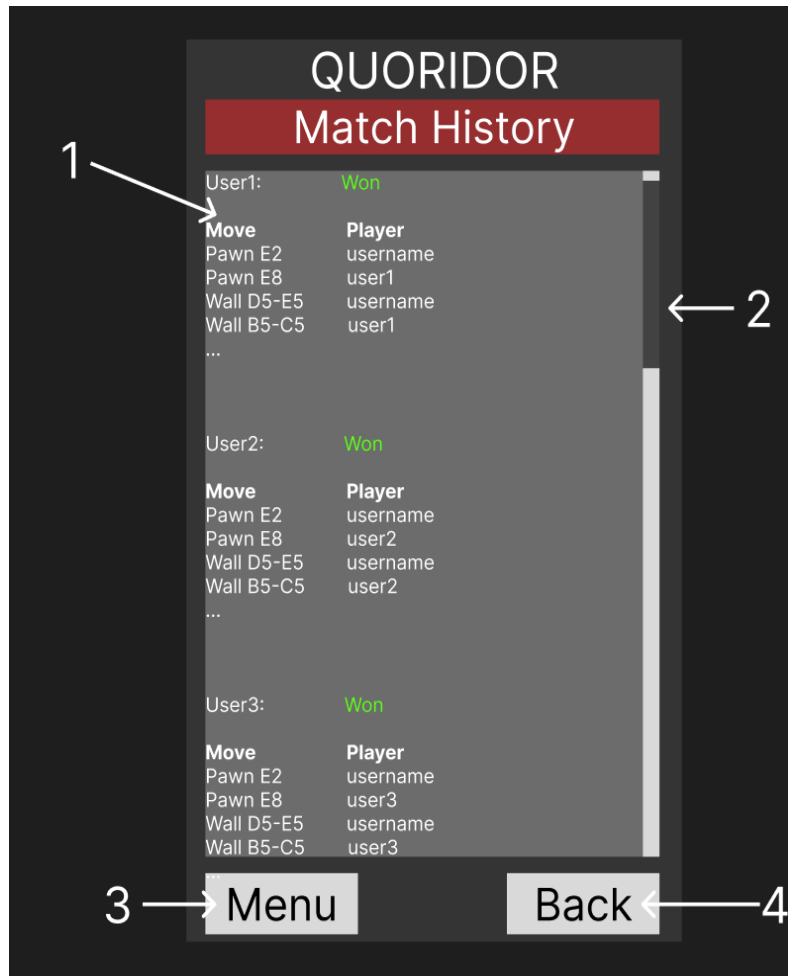
Figure #4: Viewing user's match history

On this page, you get to see the player's game history and move history on the screen. (1) This block displays the users data by displaying the opponent they versus if they won, they lost, and the moves they played based on the player and location of the pawn or wall. (2) This is a scroll bar for the viewer to scroll through all the games they played, and it is only used if the games played are beyond the text block. (3) This is a button to get back to the main menu screen of the Quoridor game. (4) This is the button to get back to the main stats screen of the player before.
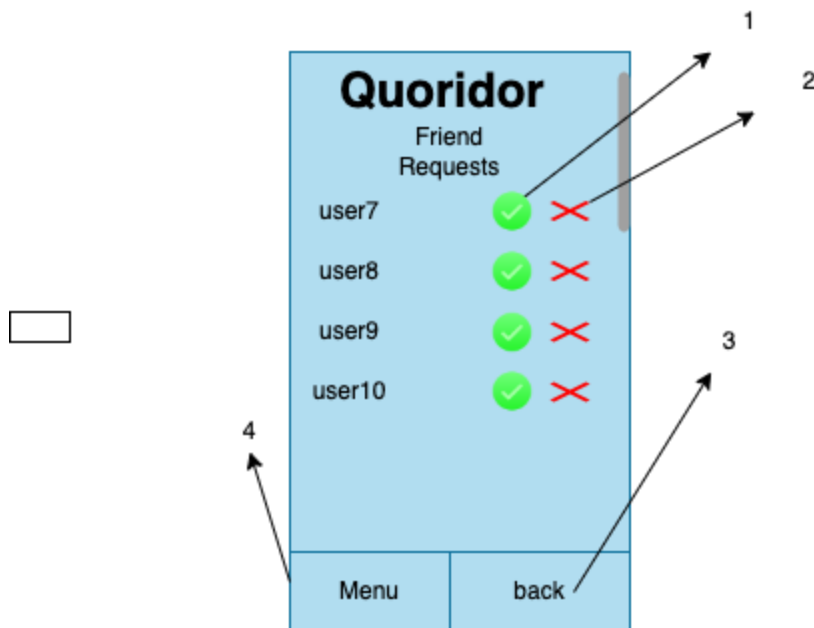
9

Figure #5: Viewing Friend Requests

On this page, you will see the friend requests sent to you, and (1) is the accept button. If you accept user7 as a friend, then user7 will be shown in your friends list in which you can compare leaderboards, wins. And if (2) you decline the friend request then the user will not be added to your friend list, and the user will still be able to add you again.(3) this is a button to get back to the main menu screen of the Quoridor game. (4) This is the button to get back to the main menu of the game.
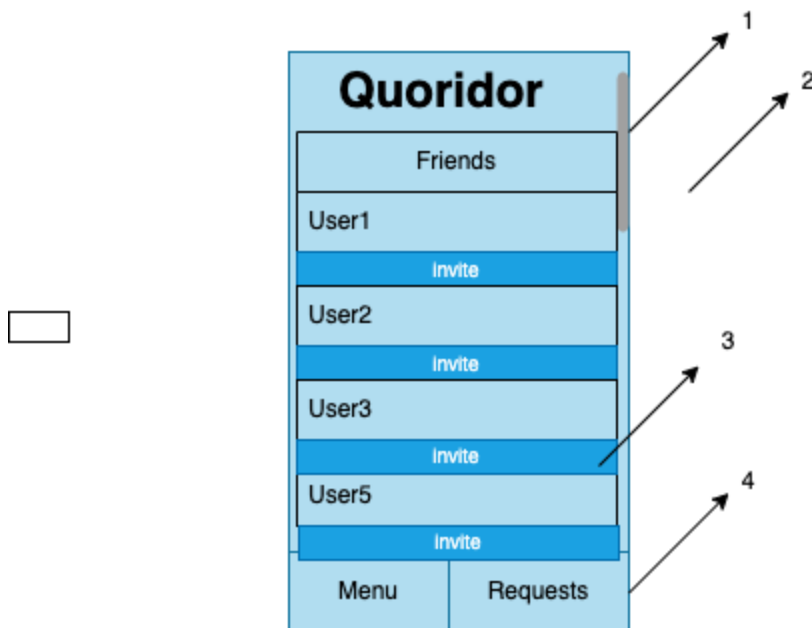
Figure #6: Viewing user's friend list

On this page, you will get to see your friends list. (1) is a scroll bar to go through the list if there are more than 5 users. The screen will display the friends list, and you will be able to (3) invite your friends using the unique lobby ID given for each lobby, with that the friend will be able to join. (4) will take you to the friend request page where you will be able to see who added you as a friend. And there is also a button that will take you to the main menu.
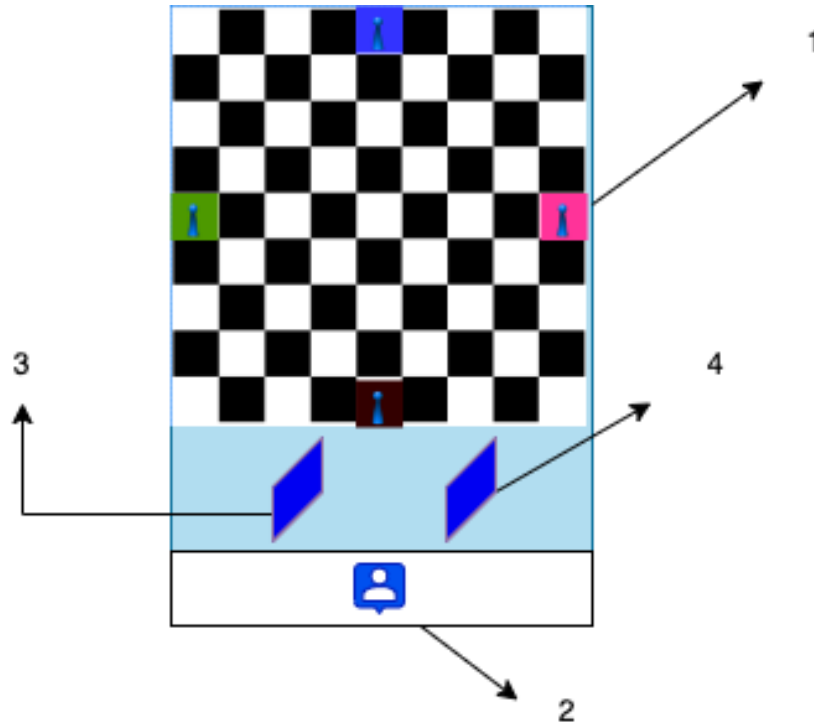
Figure #7: Game screen with walls

On this page, you get to see the game board, (1) are the pawn pieces that will be able to move around the board. (2) will take you to the game chat, in which you will be able to chat with other players in the game. (3)(4) are the walls in which other players can block each other using. Which will not allow the other players to pass through.
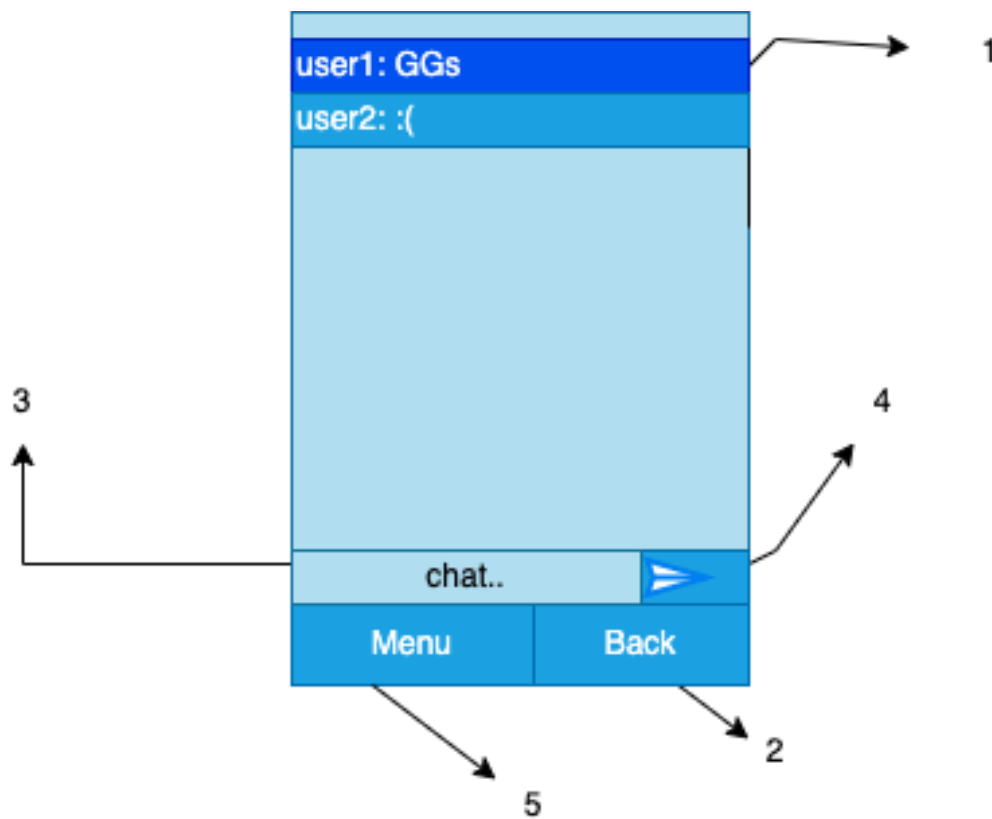
Figure #8: Game Chat

On this page, you get to see the player's game chat where all game players will be able to interact with each other. (1) is the chat sent by user1. (2) is a button that will take you back to the game, and (5) will take you back to the main menu of the game. (3) is where you will be able to send messages to the lobby you are in. Finally (4) is the send button where you can send everything you wrote in the chat box.
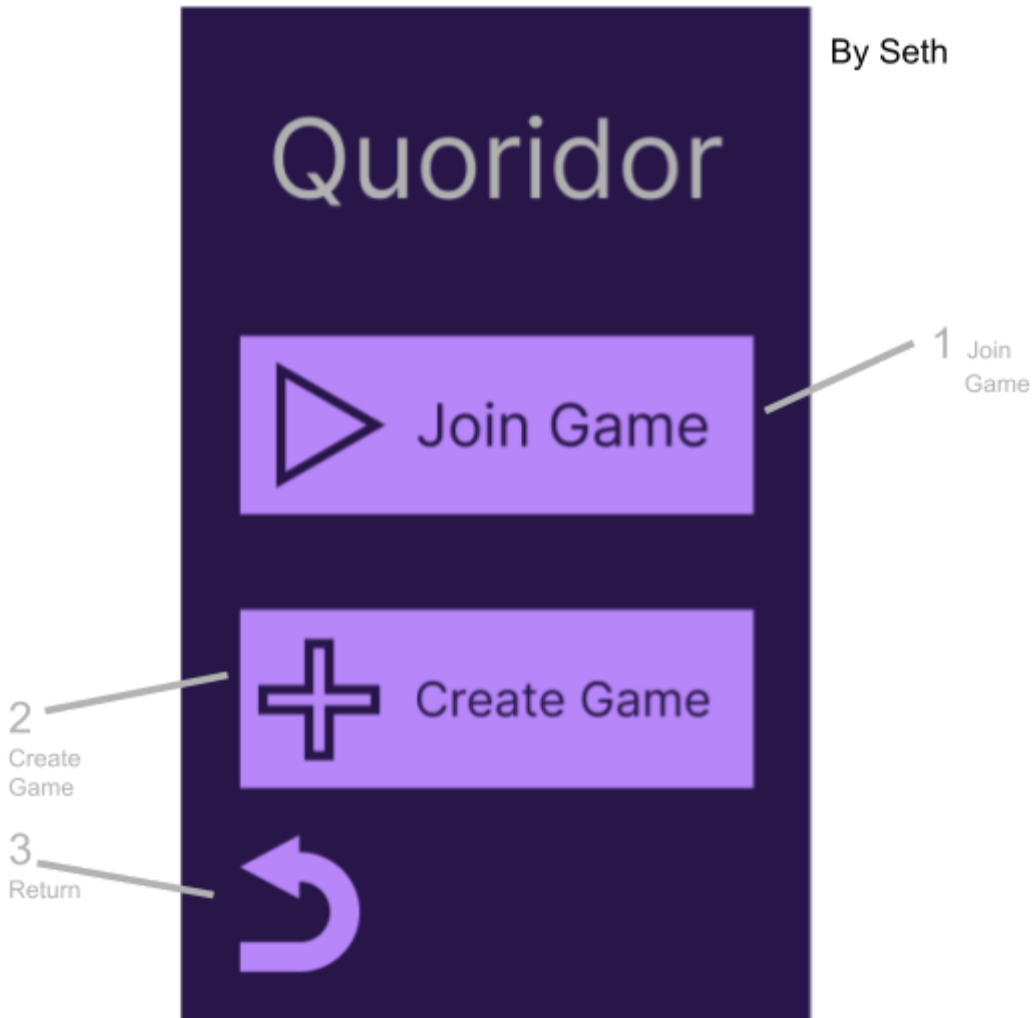
Figure #9: Join / Create Game Screen

The Join / Create Game Screen will, simply put, allow the user to choose to either join or create a game. Elements 1 and 2 lead the user to the Join Game Screen and send the user to a lobby of a new game where they are the host respectively. Element 3 returns the user to the previous screen, the Start Screen.
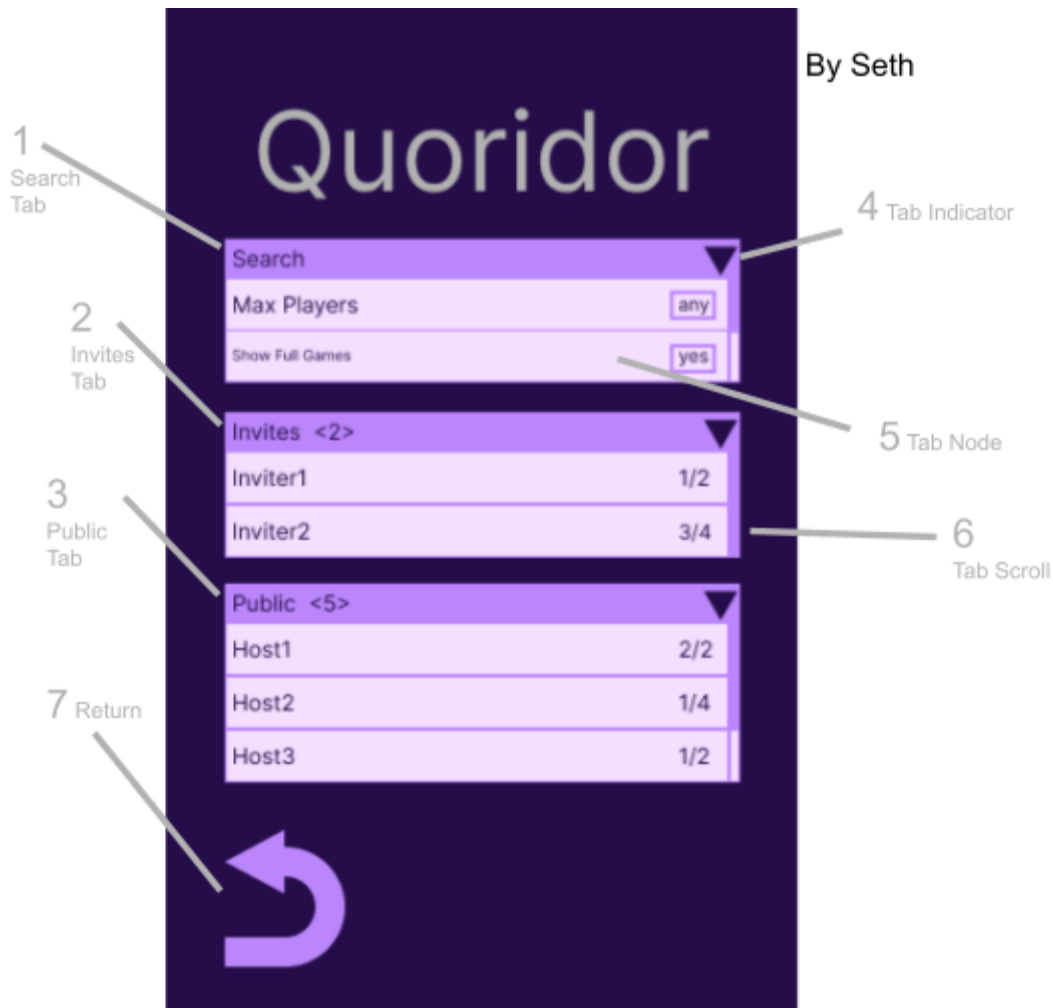
Figure #10: Join Game Screen

The user is sent to this screen after choosing the "Join Game" option in the Join / Create Game Screen. Here they will be able to set search options for available games as well as see and join invited and public games that match their search criteria.

Elements 1, 2, and 3 all show the tab headers for the Search Tab, Invites Tab, and Public Tab respectively. While they all show the names of the tabs, only the Invites Tab and Public Tab display a number, the amount of games that match the search criteria. Additionally, pressing on the tab headers will close their respective tab. Element 4 displays the state of its tab, pointing down if the tab is open and pointing to the right if the tab is closed.

Element 5 is one of the Search Tab's nodes. Each tab may have a node. The Search Tab's nodes represent the user's search options, with the left side being the option's name and the right side being the chosen option, chosen via a drop down menu. The Invites and Public Tabs' nodes represent the games available. For their nodes, the left side is the host's name and the right is the current and maximum number of players in the game. If there are no nodes available for a tab,

then the portion under the tab's header will be empty. If there are more than can be displayed, then the user will have to scroll to see the nodes that cannot be displayed. Tabs can be scrolled through by scrolling either the nodes or the scroll bar of the tab. Element 6 is the Invites Tab's scroll bar. All tabs have a scroll bar and display how many out of the possible nodes in the tab are displayed.

Finally, element 6 is the return button, which returns the user to the previous screen, the Join / Create Game Screen.
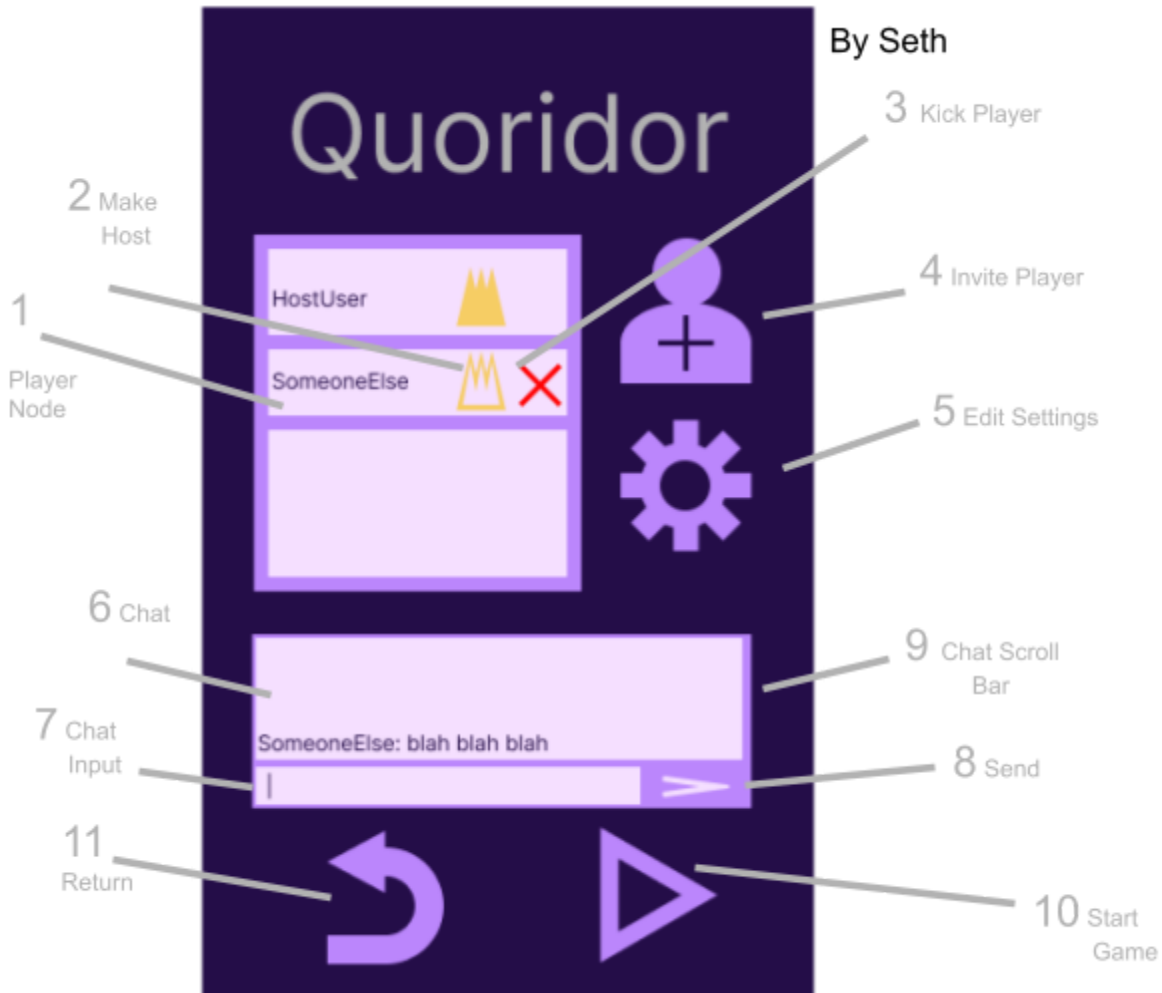
Figure #11: Host Lobby Screen

If the user selects "Create Game" in the Join / Create Game Screen instead of "Join Game" then they will be directed here. Here they will be able to manipulate the newly created game, whether that's by changing the settings, kicking or inviting players, or closing the game.

Element 1 is a player node, which is used to display who is in the game. The right of player nodes show the player's username and the right shows elements 2 and 3 which allows the host to make someone else the host and kick the player from the game respectively. In the host's node, element 2 is filled in to show that they are the host and element 3 is completely absent, since they aren't allowed to kick themself.

There are 2 more elements to the right of the player nodes, elements 4 and 5. Element 4 allows the host to send game invites to their friends, while element 5 allows the host to change the game's settings.

Elements 6, 7, 8, and 9 all pertain to the chat. Element 6 shows what has already been posted to the game's chat. Element 8 posts the input from element 7 in the chat. Finally, if the

entire chat cannot fit into element 6, element 9, a scroll bar, will allow the user to scroll through the chat.

Finally, element 10 allows the user to start the game and element 11 both closes the game and returns the user to the Join / Create Game Screen. If the user does not want to close the game, they must first make another user the host and then exit the game.