

## **Connect 4 Testing Document**

### **SQL Database and User Information Testing**

- ❖ Test Case: Registered user creation
  - Case: A user attempts to create a registered account.
  - Check: If the user submits one or more null fields, display an error message asking them to re-fill the form.
  - Check: If any of the fields are longer than their maximum length in the database, display an error message saying so and asking them to resubmit within the character limit.
  - Check: If the user enters a unique username, and non-null fields, display a success message stating their account has been created. Check SQL database for new user information.
  - Check: If the user enters a non-unique username, display an error message stating the username is already taken.
  
- ❖ Test case: User login
  - Case: A user attempts to login to a registered account.
  - Check: If the user enters valid user information, log into their account and redirect to registered user home page.
  - Check: If the user enters invalid user information, display an error message stating username or password is incorrect.

### **Server and User Interaction Testing**

- ❖ Test case: Request user connection
  - Case: A registered user attempts to invite another registered user to play a Connect4 game.
  - Check: If the other user accepts, connect the two users and begin the Connect4 game.
  - Check: If the other user does not accept, do not connect the two users and display a message that the game invite was declined.
  - Check: If the other user is in a game, do not connect the two users and display a message that the other user is busy.
  - Check: If a third user attempts to invite the same user, the invite will be blocked until the first invite is addressed. Only then will the second invite appear.
  
- ❖ Test case: Random user connection
  - Case: A registered or unregistered user attempts to play someone random.
  - Check: If there is another user online searching for a random opponent, connect the two players.

- Check: If there are no other users online (time-out limit set to 30 seconds) searching for a random opponent, display a message stating there are no other players online searching for random games.
- ❖ Test case: User query
  - Case: A registered user searches another registered user by username.
  - Check: If there is another user with a matching username, display the user.
  - Check: If there is no user with a matching username, display an error message stating no such user with that username exists.
- ❖ Test case: User leaves game
  - Case: A user attempts to forfeit the game before it is finished.
  - Check: Forfeiting sends a message to the opponent indicating a win, and the current user is brought back to the main lobby.
- ❖ Test case: Opponent leaves game
  - Case: A user's opponent leaves the game before it is finished.
  - Check: Disconnect the users, display a message that the opponent has left the game, and return the user to the home page.
- ❖ Test case: Game finishes
  - Case: Game is finished.
  - Check: Display a win/loss message and return both players to the main lobby.

## **Game Board Testing**

- ❖ Test case: User adds token
  - Case: A user adds a token to the board.
  - Check: If the user chooses a column that is not full and their token does not complete four-in-a-row vertically horizontally or diagonally, add their token to the lowest possible slot in the column. Switch the turn to the other user.
  - Check: If the user chooses a column that is not full and their token completes four-in-a-row vertically horizontally or diagonally, add their token to the lowest possible slot in the column. Block both users playing from placing any more tokens, and display appropriate finished game messages.
  - Check: If the user chooses a column that is full, display a message stating that the column chosen is full, and prompt them to choose another column.
- ❖ Test case: User attempts to add token out of bounds
  - Check: No response from board
- ❖ Test case: User attempts to add token during other player's turn

- Check: Any interaction with the board during the other player's turn is invalid. No response

## **System Testing**

- ❖ Test case: Different Operating Systems
  - Case: A user attempts to play Connect4 by Salstudios on Windows with another user on Mac.
  - Check: The user should be able to play on any platform, granted it is able to run eclipse and has the appropriate .JAR files.