Multiplayer Connect 4 Project - User's Guide

Overview:

This is a 2-to-4 player Connect 4 game with adjustable board dimensions, win conditions, leaderboard functionality, and a chat room. There are many features including a lobby, the game itself, and a post game area. Once the game has been started players are prompted to take turns by clicking on the board for where they wish to drop their chip. The game continues to loop for players to place their chips on the board. Wins are found if a player has the win condition met with adjacent chips in a row, column, or diagonal on the board being the same color. The game continues after each win to determine second, third, and fourth places (as applicable to the amount of players). Finally, a leaderboard is displayed with how each player did with a chat room for players to communicate post-game.

How to Run the Game:

1. Open and run "Server.java" to start the server.
2. Open and run "ClientTest.java" for each player (this can be done on the same machine or different).

The first player to join becomes the **leader** with the role to set up various game options and initiate the start of the game (Game flow is outlined below)

Lobby and Game Setup:

1. Waiting for Players:
    a. All clients when connected go to a "Lobby" screen which shows "X/4 players connected"
    b. Once at least one other player has joined (2 minimum), then the leader gains controls, (all others cannot modify what the leader can modify)
2. Leader Controls:
    a. Grid Size dropdown box: Allows the Leader to select from a list of grid sizes ("6x7","8x8","9x10","11x11")
    b. Win Condition dropdown box: Allows leader to set how many in a row it takes to win the game ("2", "3", "4")
    c. Start Game button: Enabled only for the leader to start the game
3. Randomized Backgrounds:
    a. Every lobby displays a randomized image for the background

Aidan Doruska, Kyle Balk, Braden Miller

Playing the Game:

1. Game Start:
    a. Once the leader starts the game all clients connected transition to the connect 4 game screen, they are also prompted with a message saying with the grid size is and how many it takes to win in a row
2. Turn Prompts:
    a. At the top of the GUI a message shows for when it is each users turn,
        i. For example the message shows "Your turn!!!" if it is your turn
        ii. For other players turns it shows "Waiting on Player _"
3. Making a Move:
    a. Click anywhere in the grid to drop your colored chip into the game board
    b. While the chip is animating (being dropped), or when it isn't your turn, all clicks are ignored
4. Animated Chips:
    a. Chips "animate" falling into the correct row with a smooth animation for where the user clicked
5. Win Detection and Continuation:
    a. When a user reaches the chosen amount of chips in a row
        i. A message box pops up with "You Won!"
        ii. You automatically switch to "Spectator Mode"
        iii. All remaining players continue playing until one player is left
    b. Server automatically skips players who have already won

Spectator Mode and Post-Game Features:

1. Spectator Mode:
    a. If a user enters "Spectator Mode" the board remains visible
    b. The turn prompt is now hidden and instead a new label appears with "Game Complete. You are now spectating."
    c. In spectator mode the other players moves are still reflected onto your board
2. Final Leaderboard:
    a. As every player finishes the placement they finished is recorded (1st, 2nd, 3rd)
    b. Once one player remains the screen automatically transitions to a Post Game screen
3. Post Game Screen:
    a. In the post game screen on the left side the leaderboard is shown with who finished in what spot
    b. There is a chat area (chat room) on the right for players to communicate with each other
    c. A text field at the top to send messages to the chat room

Additional Features:

Pregame:
- Pre-game lobby GUI
- Live player count on lobby screen (_/4 players connected.)
- Randomized backgrounds in the lobby screen
- Dropdown menu with game board sizes to play on
- Dropdown menu with win conditions (# chips in a row)

In game:
- Animated chip drops where the user clicks
- Turn-based prompting and status on GUI for each players turn
- Spectator mode after a player wins the game with all functionality staying the same only they cannot place any more chips as they are a "spectator" now with the remaining players still able to play on
- Colorblind friendly color palette within all aspects of the GUI

Post game:
- Post game lobby GUI
    - Switches to this once only 1 player has not won the game
- Chat function for post-game chat room that labels message sender with what player they are on messages sent
- Leaderboard displays the order of players finishing and entering the respective "spectator" mode