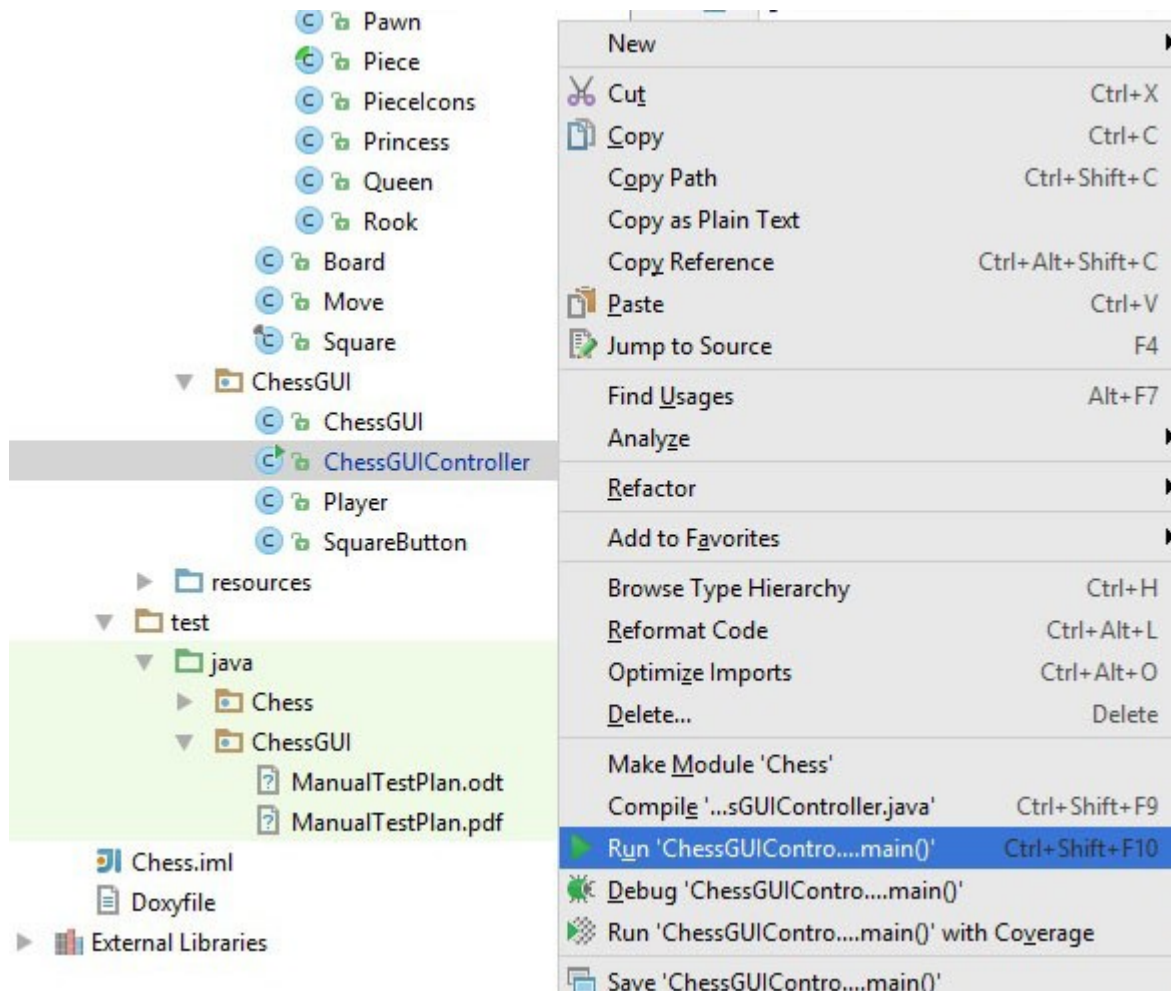


Running the Program :

1. Right click ChessGUIController in the project panel and run it.



*** Each of the following tests assumes you are opening a new window. After each test, please close the current Chess program window before starting the next.**

Testing the Name Prompt:

1. Load the program.
2. You should receive a prompt to enter text like the one below. One for the White Piece Player and another for the Black Piece Player.

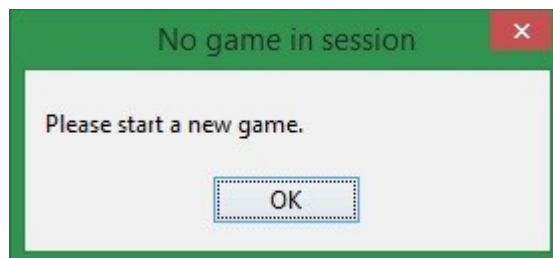


3. Try any combination of the following inputs for the prompts:
 - a. Blank input (press Ok without typing anything, press Cancel, or close the prompt window)
 - b. Input with trailing/leading spaces
 - c. Input with multiple spaces in between characters
 - d. Inputs longer than 12 characters
 - e. Inputs shorter than 12 characters
4. Verify the displayed name. The following should be observed:
 - a. If either prompt was left blank, the displayed name for that Player will only be the color of the Piece in they are playing, i.e. White or Black
 - b. Any trailing/leading spaces should have been stripped off.
 - c. Multiple spaces between characters should have been collapsed to one space.
 - d. Names will have either (W) or (B) appended to indicate the color that person is playing.
 - e. Any inputs longer than 12 characters (after stripping off lead/trailing spaces and collapsing spaces) should be truncated to 12 characters. This does not include the Color indicator appended to the name.
5. Close and reload the program before trying a new combination of inputs.

*** The tests from now on will assume you have already loaded the program and entered names into the name prompts. It will not matter what you entered as your names (even blank is fine).**

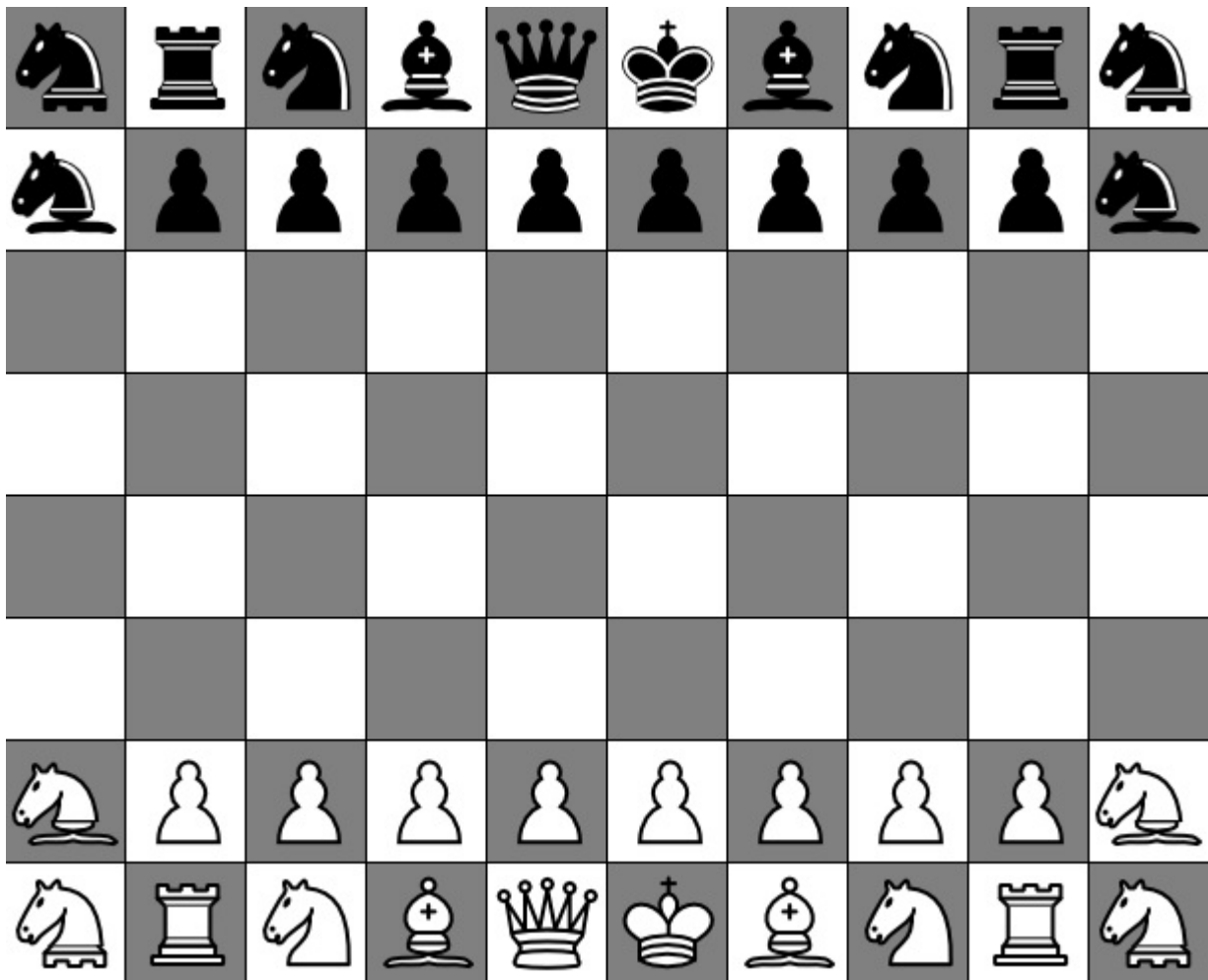
Testing the Initial Window:

1. Load the program.
2. Click any square on the board or any of the buttons except for New Game.
3. You should receive an alert asking you to start a new game.



Testing the New Game Button:

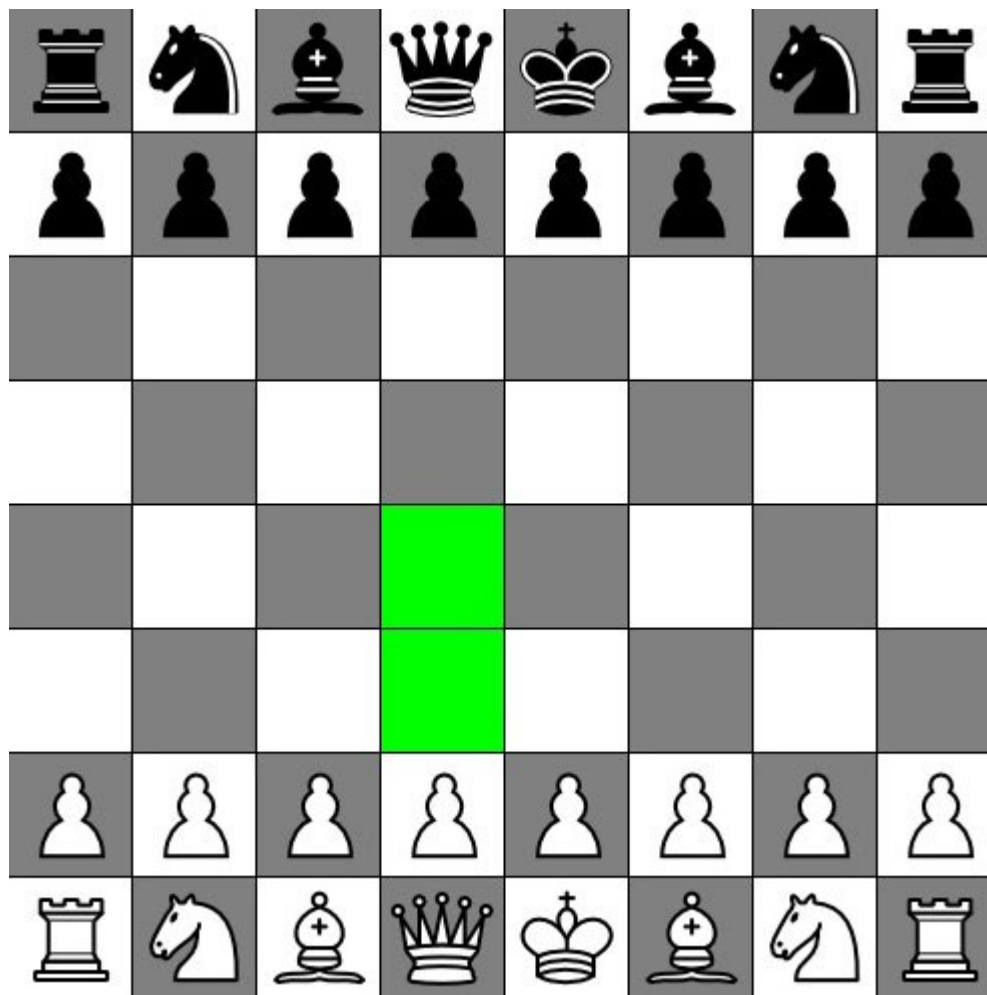
1. Click the New Game button.
2. Select either Standard or Custom for the Game Mode.
 - a. If you selected Standard, you should see a standard chessboard setup.
 - b. If you selected Custom, you should see a 10x8 board like the one below.
3. Make sure the score stayed at 0-0 when you made a New Game.
 - a. The score should never change when starting a new game, regardless of score values.
4. Click New Game again.
5. A confirmation window for each player should appear this time.
6. Select No or click the X button for one or both windows.
 - a. A new game should not start unless both players click Yes.
7. Click New Game again.
8. The confirmation windows should still appear.
9. Click Yes for both windows this time.
10. Select the other game mode when prompted
11. Verify that the board changes, that the setup is correct, and that the score has not changed.



*** Unless specified, you can select any mode when starting a new game for the following tests.**

Testing Moving a Piece:

1. Start a New Game.
2. Click on every Black piece and empty square and confirm nothing lights up.
3. Click on any White pieces. If they have legal moves according to the rules of Chess, you should see the squares they can move to light up in green. On the first move, only the white pawns, knights, and the custom pieces (if you're playing a custom game) should have moves.



4. After you see squares lit up, click on any non-lit square.
5. The lit squares should revert to their original color.
6. Click on a piece with legal moves.
7. Click on a lit square.
8. You should see the piece move to that position.
9. Repeat the same process for the Black pieces.

Testing Turn Switching:

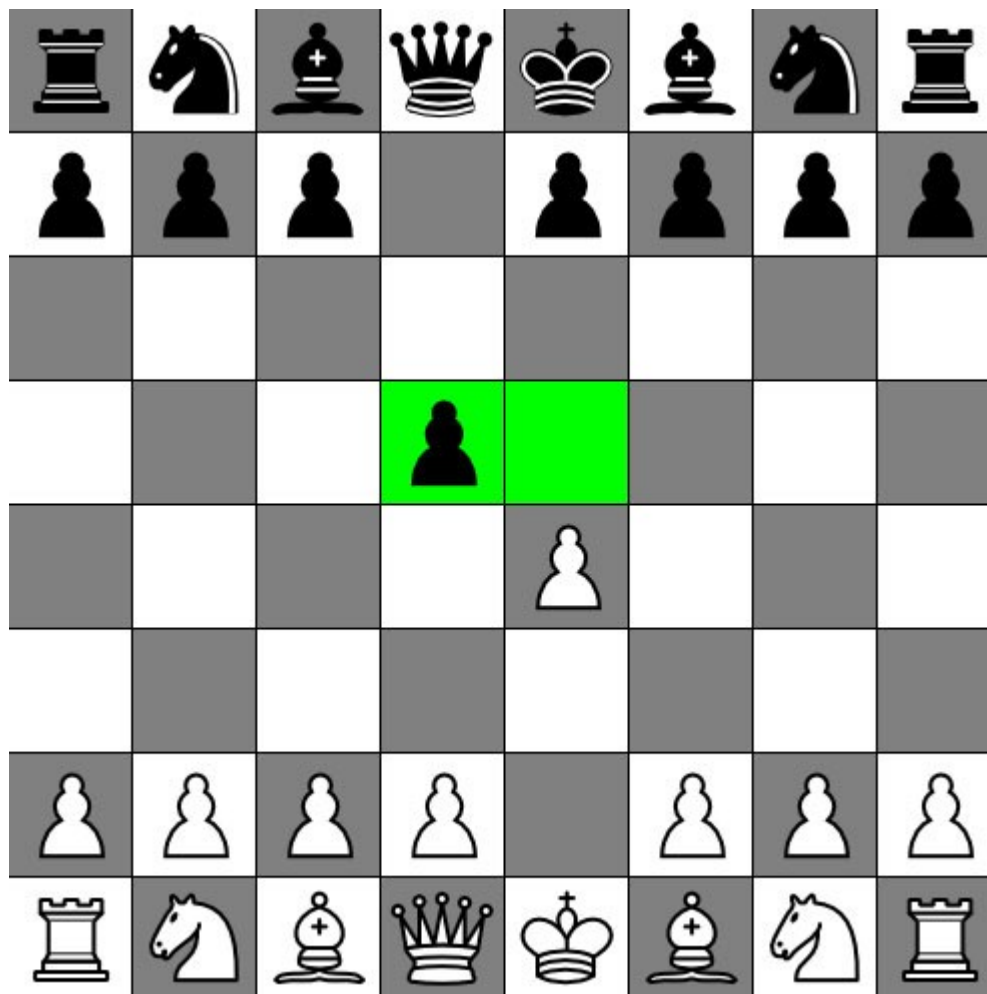
1. Start a New Game
2. Confirm the White Player's name is in blue font.
3. Click every Black piece and empty square and confirm no squares light up.
4. Move a White Piece.
5. Confirm that now the Black Player's name is in blue font.
6. Click every White piece and empty square and confirm no squares light up.
7. Move a Black Piece.
8. Continue making moves and confirming that the color of the names switches with each turn and that nothing from the opposing color can move during a color's turn (i.e. Black cannot move during White's turn).

Testing the New Game Button with Moves:

1. Start a New Game.
2. Move a piece.
3. Click New Game.
4. Click No or the X button on either confirmation window.
5. Confirm that you are still able to move a piece.
6. Repeat steps 2-5 for three or more cycles.
7. Click New Game.
8. Click Yes on both confirmation windows.
9. Select any game mode.
10. Confirm that the new board has all the pieces in its correct starting positions.

Testing Capturing a Piece:

1. Start a New Game.
2. Move a White pawn two spaces.
3. Pick a Black pawn that is in a column adjacent to the column that White pawn is in.
4. Move the Black pawn two spaces.
5. The White pawn should have the option to capture the Black pawn.



6. Capture the Black pawn.
7. Move any Black piece without capturing the White pawn.
8. Move the White pawn forward. There should be no piece left behind.
9. Continue capturing pieces and confirming no pieces are left behind after a capture.

Testing Forfeit:

1. Start a New Game.
2. Click Forfeit Game.
3. A message should appear saying White has forfeit.
4. The Black Player's score should increment.
5. Click any square, Undo, or Forfeit. A message asking you to start a New Game should appear.
6. Start a New Game. Confirm Black still has 1 point.
7. Move a White Piece.
8. Click Forfeit Game.
9. A message should appear saying Black has forfeit.
10. Now the White Player's score should increment. Confirm the score is now 1-1.
11. Click any square, Undo, or Forfeit. A message asking you to start a New Game should appear.
12. Start a New Game.
13. Make any number of moves.
14. When you click forfeit, the opposing player (the one who's name is not blue) should have their score increment.
15. Clicking anything other than New Game after a forfeit will alert the user asking to start a New Game.

Testing Undo:

1. Start a New Game.
2. Press Undo Last Move.
3. A message saying there are no moves to undo should appear.
4. Move a pawn one space.
5. Press Undo Last Move. Confirm the pawn moves back to its original spot.
6. Confirm that it White's turn again.
7. Move a pawn two spaces.
8. Press Undo Last Move. Confirm the pawn moves back to its original spot.
9. Confirm that it White's turn again.
10. Confirm you can still move that same pawn two spaces.
11. Repeat the steps 4-10 for the Black pawns.
12. Make any number of moves.
13. Press Undo until the board returns to its starting state.
14. Press Undo again.
15. A message saying there are no moves to undo should appear.

Testing Undo Capture:

1. Start a New Game
2. Make any number of moves till a piece is captured.
3. Press Undo.
4. Confirm that the captured piece is restored and the capturing piece has moved back.
5. Capture the piece again, but do not undo it this time.
6. Repeat steps 2-5 for any number of cycles.
7. After at least 5 captures, press Undo until the board returns to its starting state.
8. Press Undo again and confirm that a message appears saying there are no moves to undo.

Each column is labeled by a letter starting from A from left to right. Each row is labeled by a number starting from 1 from bottom to top. For example, on a standard Chessboard, the bottom-left square is A1, the bottom-right is H1, top-left is A8, and top-right is H8. The GUI convenient adds these labels to the board for you.

Using this notation for squares, the following tests will use the following notation for a move:

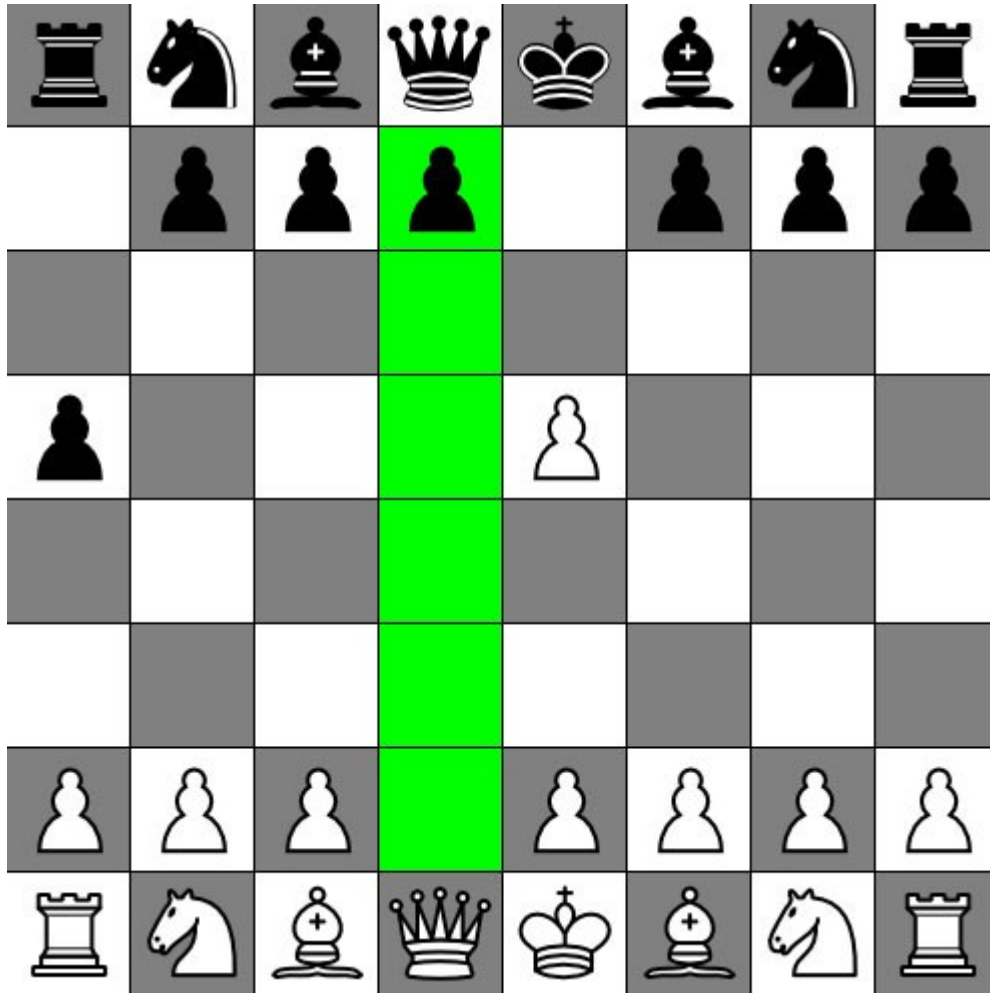
[Square of a piece, Square of its destination]

For example [C2, C4] would move the piece at C2 to the square C4. If starting from the initial configuration, this would move a white pawn forward two spaces.

When initiating a move, first click on the square of the piece. Before clicking on the destination square, confirm that the destination square is included in the highlighted squares. After confirming, click on the destination square. Using [C2, C4] as an example. You would click C2, verify that C4 is among the lit up squares, then click C4.

Testing Check #1:

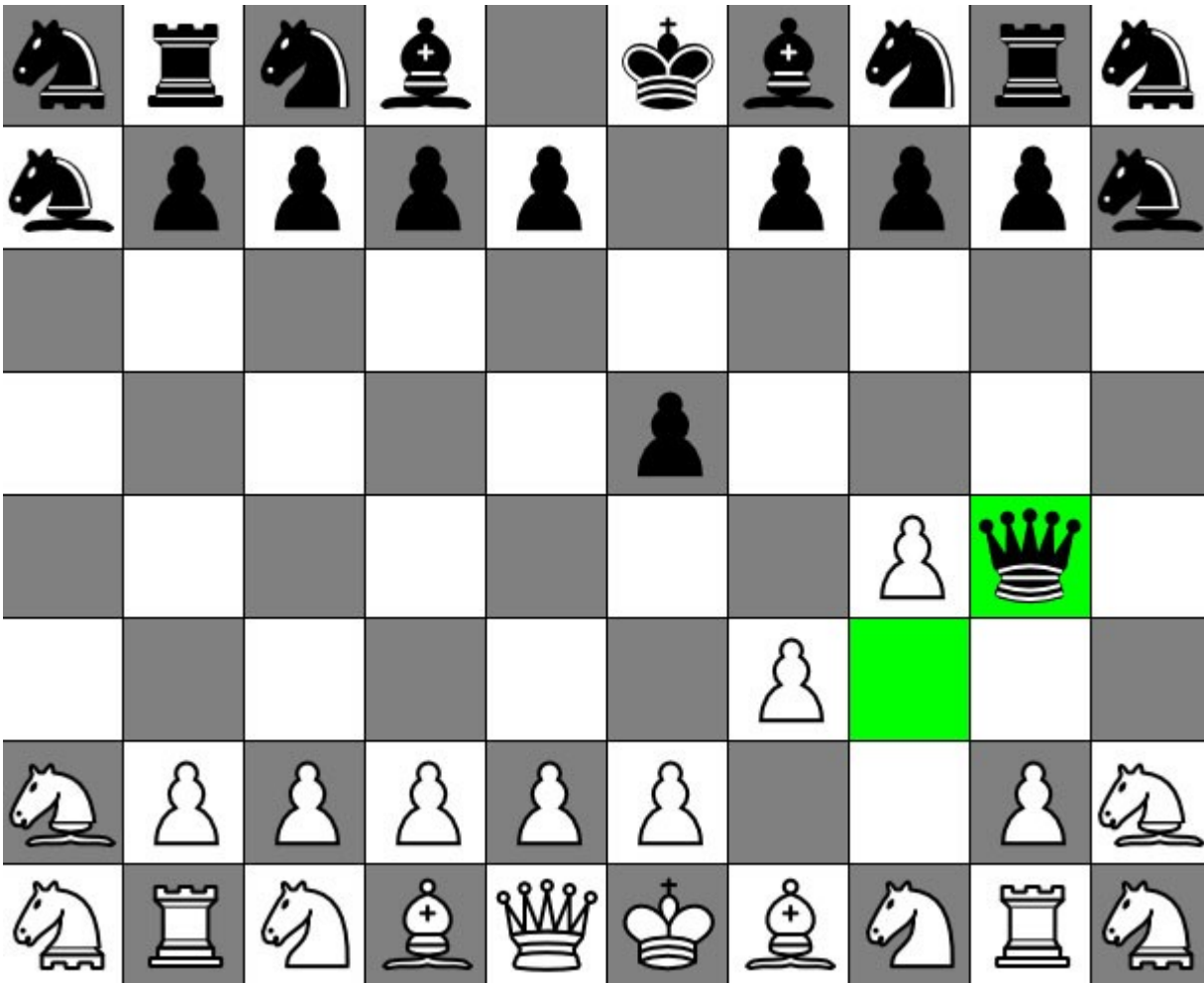
1. Start a New Game (Standard)
2. Perform the following sequence of moves:
 - a. [D2, D4] White moves
 - b. [E7, E5] Black moves
 - c. [D4, E5]
 - d. [A7, A5]
 - e. [D1, D7]



3. After the last move, the Black player will be alerted that it is in Check.
4. At this point, the only Black pieces that should have moves are the left-most knight, left-most bishop, the queen, and the king.
 - a. Click on each of these pieces. Confirm that legal moves are lit up for each of these pieces. All of them should only be able to capture White queen.
 - b. Click on any other piece. Confirm that no other Black piece has legal moves. No White piece should be able to move either.
5. Capture the White queen.
6. Press Undo.
7. The message saying that Black is in Check should reappear.
8. Capture the White queen again.
9. Confirm that Black can still make moves.

Testing Check #2:

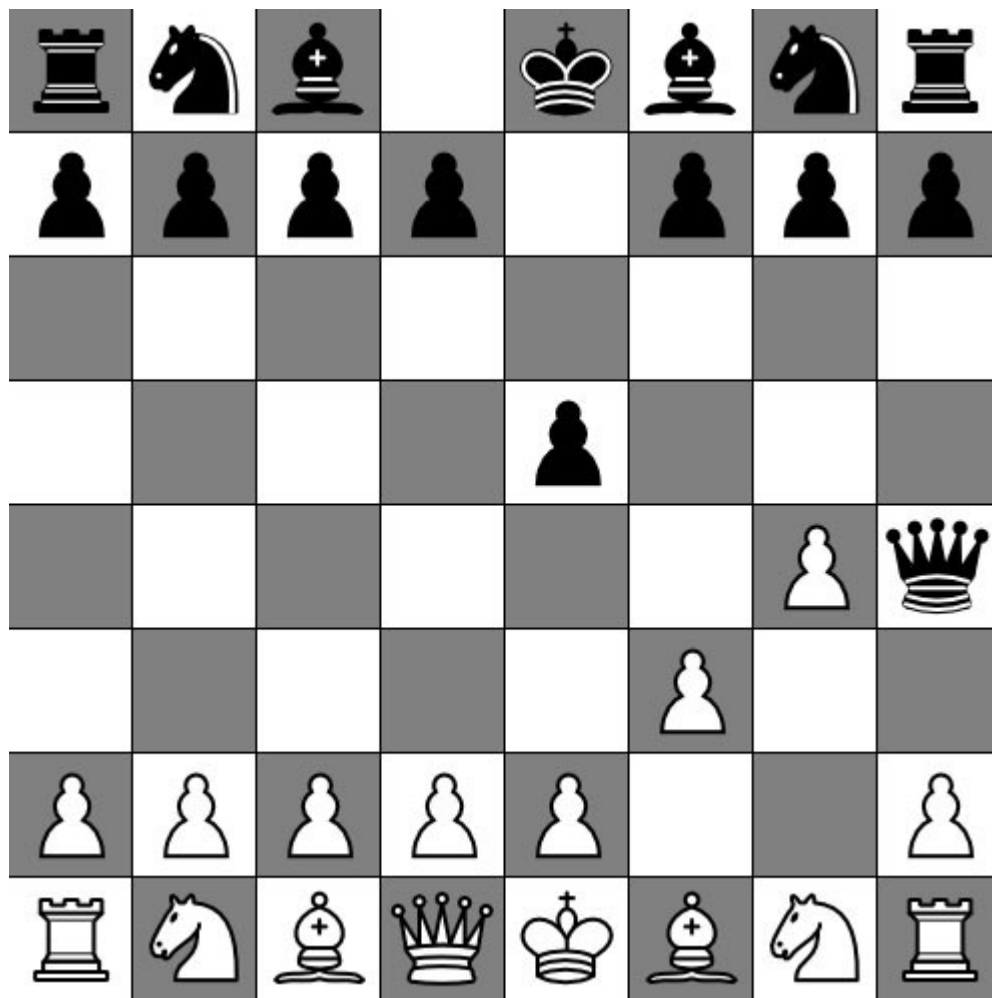
1. Start a New Game (Custom)
2. Perform the following sequence of moves:
 - a. [G2, G3]
 - b. [F7, F5]
 - c. [H2, H4]
 - d. [E8, I4]
3. After the last move, the game should announce that white is in Check.
 - a. The only piece able to move should be the rightmost Princess (Knight+Bishop)



4. Capture the White queen.
5. Press Undo.
6. The message saying that Black is in Check should reappear.
7. Capture the White queen again.
8. Confirm that Black can still make moves.

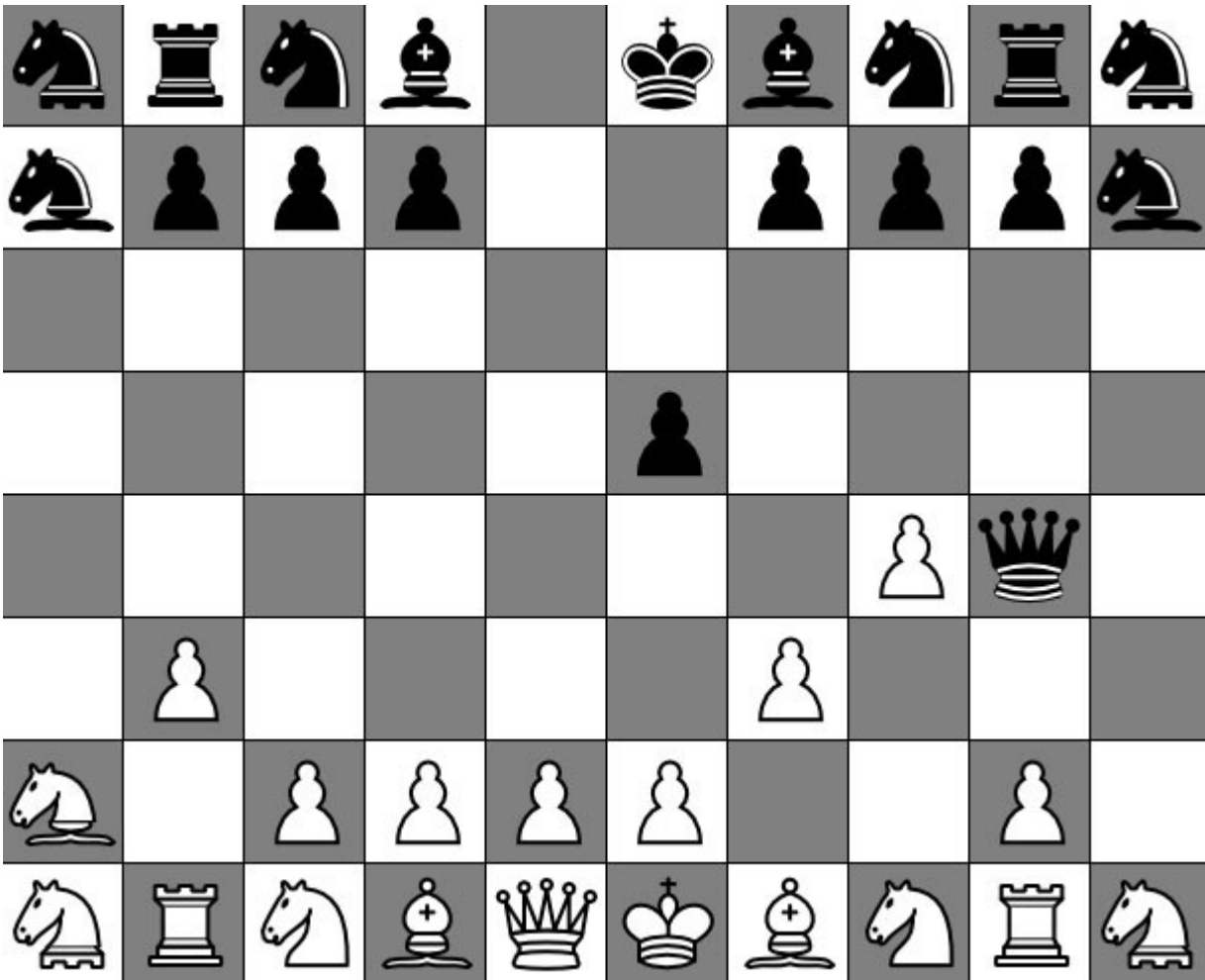
Testing Checkmate #1:

1. Start a New Game (Standard)
2. Perform the following sequence of moves:
 - a. [F2, F3]
 - b. [E7, E5]
 - c. [G2, G4]
 - d. [D8, H4]
3. After the last move the game should announce a Checkmate and that Black has won.
4. After closing the alert message, confirm that Black's score has incremented, and that clicking any button or square other than New Game will ask the user to start a New Game.
5. Click New Game. It should immediately display the game mode selection window. There should be no confirmation windows.
6. Close the prompt window and confirm that clicking anything other than New Game yields a window asking to start a New Game.
7. Start a New Game and select any mode. Confirm the score has not reset.



Testing Checkmate #2:

1. Start a New Game (Custom)
2. Perform the following sequence of moves:
 - a. [G2, G3]
 - b. [F7, F5]
 - c. [J2, E7] Black is in Check
 - d. [E8, E7]
 - e. [B2, B3]
 - f. [E7, F7]
 - g. [H2, H4]
 - h. [F7, I4]
3. After the last move the game should announce a Checkmate and that Black has won.
4. After closing the alert message, confirm that Black's score has incremented, and that clicking any button or square other than New Game will ask the user to start a New Game.
5. Click New Game. It should immediately display the game mode selection window. There should be no confirmation windows.
6. Close the prompt window and confirm that clicking anything other than New Game yields a window asking to start a New Game.
7. Start a New Game and select any mode. Confirm the score has not reset.



Testing Stalemate:

1. Start a New Game(Standard) and perform the following moves:
 - a. [C2, C4]
 - b. [H7, H5]
 - c. [H2, H4]
 - d. [A7, A5]
 - e. [D1, A4]
 - f. [A8, A6]
 - g. [A4, A5]
 - h. [A6, H6]
 - i. [A5, C7]
 - j. [F7, F6]
 - k. [C7, D7] Black in Check
 - l. [E8, F7]
 - m. [D7, B7]
 - n. [D8, D3]
 - o. [B7, B8]
 - p. [D3, H7]
 - q. [B8, C8]
 - r. [F7,G6]
 - s. [C8, E6] Stalemate
2. Confirm that neither score has changed and that clicking any button or square other than New Game will ask the user to start a New Game.
3. Click New Game. It should immediate display the game mode selection window. There should be no confirmation windows.

