

# System Test Plan: Connect Game

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## **Introduction:**

All tests are executed running ConnectGame from the csc116-601-CE-02/ConnectGame/bin directory. Test files and redirected output are in the csc116-601-CE-02/ConnectGame/test\_files directory.

Output for some tests can be very lengthy. The expected results only include the information required for determining if the test passes. Usually, this will be the end of the output unless the test specifically requires intermediate checks.

## **Test Files: Used for console input**

- testCreateEightByEightBoard.txt
- testCreateTenByTenBoard.txt
- testCreateTwelveByTwelveBoard.txt
- testThirdArgument.txt
- testFourthArgument.txt
- testInvalidInputString.txt
- testInvalidInputZero.txt
- testInvalidInputGreaterThan.txt
- testAddPieceToFullColumn
- testValidInputPlayer1.txt
- testValidInputPlayer2.txt
- testIncrementLongestConnect.txt
- testMaxContiguousHorizontalAndVertical.txt
- testMaxContiguousDiagonal.txt
- testVerticalVictory.txt
- testHorizontalVictory.txt
- testForwardSlashVictory.txt
- testBackSlashVictory.txt
- testExtraLongHorizontalVictory.txt
- testExtraLongDiagonalVictory.txt
- testDraw.txt
- testStartNewGameError.txt
- testStartNewGameNo.txt
- testStartNewGameYes.txt
- testMultiGameStatIncrease.txt

Output corresponding to these input files is piped to files with the same name prefixed with output\_.

## Test Cases:

Test ID	Description	Expected Results	Actual Results
testCreateEightByEightBoard  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2  (display game board)  Enter the column to place your X piece (1 - 8): <b>q</b>	Welcome to Connect Four Player1 plays first with symbol X Player2 plays next with symbol O  1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   Player Player1 (X) has 0 connected pieces. Enter the column to place your X piece (1 to 8) or q to quit:  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testCreateEightByEightBoard.txt
testCreateTenByTenBoard  Author: Christine Weld	\$ java ConnectGame 5 Player1 Player2 ... (display game board)  Enter the column to place your X piece (1 to 10) or q to quit: <b>q</b>	Welcome to Connect Five Player1 plays first with symbol X Player2 plays next with symbol O  1 2 3 4 5 6 7 8 9 10  _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _   Player Player1 (X) has 0 connected pieces. Enter the column to place your X piece (1 to 10) or q to quit:  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testCreateTenByTenBoard.txt

Test ID	Description	Expected Results	Actual Results
testCreateTwelveByTwelveBoard  Author: Christine Weld	\$ java ConnectGame 6 Player1 Player2 ... (display game board)  Enter the column to place your X piece (1 to 12) or q to quit: <b>q</b>	Welcome to Connect Six Player1 plays first with symbol X Player2 plays next with symbol O  1 2 3 4 5 6 7 8 9 10 11 12  _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   _ _ _ _ _ _ _ _ _ _ _ _ _ _   Player Player1 (X) has 0 connected pieces. Enter the column to place your X piece (1 to 12) or q to quit:  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testCreateTwelveByTwelveBoard.txt
testInvalidGameSizeSmall  Author: Christine Weld	\$ java ConnectGame 3	Usage: java ConnectGame (4 - 6) player1 player2	As expected:  Usage: java ConnectGame (4 - 6) player1 player2
testInvalidGameSizeLarge  Author: Christine Weld	\$ java ConnectGame 7	Usage: java ConnectGame (4 - 6) player1 player2	As expected:  Usage: java ConnectGame (4 - 6) player1 player2
testInvalidFirstArgument  Author: Christine Weld	\$ java ConnectGame X	Usage: java ConnectGame (4 - 6) player1 player2	As expected:  Usage: java ConnectGame (4 - 6) player1 player2
testSecondArgument  Author: Christine Weld	\$ java ConnectGame 4 Alpha ...	Usage: java ConnectGame (4 - 6) player1 player2	As expected:  Usage: java ConnectGame (4 - 6) player1 player2

Test ID	Description	Expected Results	Actual Results
testThirdArgument  Author: Christine Weld	<p>\$ java ConnectGame 4 Alpha Beta</p> <p>...</p> <p>Enter the column to place your X piece (1 - 8): <b>1</b></p> <p>(display game board)</p> <p>Enter the column to place your O piece (1 to 8) or q to quit: <b>q</b></p>	<p>...</p> <p>Player Alpha (X) has 0 connected pieces.</p> <p>Enter the column to place your X piece (1 to 8) or q to quit:</p> <p>1 2 3 4 5 6 7 8</p> <pre> _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _ </pre> <p>Enter the column to place your O piece (1 to 8) or q to quit: <b>q</b></p> <pre> X _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _ </pre> <p>Player Beta (O) has 0 connected pieces.</p> <p>Enter the column to place your O piece (1 to 8) or q to quit:</p> <p>Thank you for playing today. Good bye!</p>	<p>As expected:</p> <p>See /test_files/output_testThirdArgument.txt</p>
testFourthArgument  Author: Christine Weld	<p>\$ java ConnectGame 4 Alpha Beta Gamma</p> <p>...</p> <p>Enter the column to place your X piece (1 - 8): <b>1</b></p> <p>(display game board)</p> <p>Enter the column to place your O piece (1 to 8) or q to quit: <b>q</b></p>	<p>...</p> <p>1 2 3 4 5 6 7 8</p> <pre> _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _ </pre> <p>Enter the column to place your O piece (1 to 8) or q to quit: <b>q</b></p> <pre> X _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _ </pre> <p>Player Beta (O) has 0 connected pieces.</p> <p>Enter the column to place your O piece (1 to 8) or q to quit:</p> <p>Thank you for playing today. Good bye!</p> <p>(Any more than three command line arguments are ignored)</p>	<p>As expected:</p> <p>See /test_files/output_testFourthArgument.txt</p>
testInvalidInputString  Author: Christine Weld	<p>\$ java ConnectGame 4 Player1 Player2</p> <p>...</p> <p>Enter the column to place your X piece (1 to 8) or q to quit: <b>abc</b></p> <p>Enter the column to place your X piece (1 to 8) or q to quit: <b>q</b></p>	<p>...</p> <p>Player Player1 (X) has 0 connected pieces.</p> <p>Enter the column to place your X piece (1 to 8) or q to quit:</p> <p>Not a number, please try again.</p> <p>Enter the column to place your X piece (1 to 8) or q to quit:</p> <p>Thank you for playing today. Good bye!</p>	<p>As expected:</p> <p>See /test_files/output_testInvalidInputString.txt</p>

Test ID	Description	Expected Results	Actual Results
testInvalidInputZero  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2 ... Enter the column to place your X piece (1 to 8) or q to quit: <b>0</b>  Enter the column to place your X piece (1 to 8) or q to quit: <b>q</b>	... Player Player1 (X) has 0 connected pieces. Enter the column to place your X piece (1 to 8) or q to quit: Invalid column number, please try again. Enter the column to place your X piece (1 to 8) or q to quit:  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testInvalidInputZero.txt
testInvalidInputGreaterThan  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2 ... Enter the column to place your X piece (1 to 8) or q to quit: <b>13</b>  Enter the column to place your X piece (1 to 8) or q to quit: <b>q</b>	... Player Player1 (X) has 0 connected pieces. Enter the column to place your X piece (1 to 8) or q to quit: Invalid column number, please try again. Enter the column to place your X piece (1 to 8) or q to quit:  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testInvalidInputGreaterThan.txt
testAddPieceToFullColumn  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2 ... Player1: 1, Player2: 1, Player1: 1, Player2: 1, Player1: 1, Player2: 1, Player1: 1, Player2: 1  Enter the column to place your X piece (1 to 8) or q to quit: <b>1</b>  Enter the column to place your X piece (1 to 8) or q to quit: <b>q</b>	... 1 2 3 4 5 6 7 8  O _ _ _ _ _ _ _   X _ _ _ _ _ _ _   O _ _ _ _ _ _ _   X _ _ _ _ _ _ _   O _ _ _ _ _ _ _   X _ _ _ _ _ _ _   O _ _ _ _ _ _ _   X _ _ _ _ _ _ _   Player Player1 (X) has 1 connected pieces. Enter the column to place your X piece (1 to 8) or q to quit: Sorry, that column is full, please try again: Player Player1 (X) has 1 connected pieces. Enter the column to place your X piece (1 to 8) or q to quit:  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testAddPieceToFullColumn.txt



Test ID	Description	Expected Results	Actual Results
testIncrementLongestConnect  Author: Christine Weld	<p>\$ java ConnectGame 4 Player1 Player2 ... Player1: 1, Player2: 2, Player1: 1, Player2: 2  (display game board)</p> <p>Player1: 1, Player2: 2  (display game board)</p> <p>Player1: Enter the column to place your X piece (1 - 8): <b>q</b></p>	<p>Player Player2 (O) has 2 connected pieces. Enter the column to place your O piece (1 to 8) or q to quit: 1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   X O _ _ _ _ _   X O _ _ _ _ _ </p> <p>Player Player1 (X) has 2 connected pieces. Enter the column to place your X piece (1 to 8) or q to quit: 1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   X O _ _ _ _ _   X O _ _ _ _ _   X O _ _ _ _ _ </p> <p>Player Player1 (X) has 3 connected pieces. Enter the column to place your X piece (1 to 8) or q to quit:</p> <p>Thank you for playing today. Good bye!</p>	<p>As expected:</p> <p>See /test_files/output_testIncrementLongest Connect.txt</p>







Test ID	Description	Expected Results	Actual Results
testHorizontalVictory  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2 ... Player1: 2, Player2: 1, Player1: 3, Player2: 1, Player1: 4, Player2: 1  Enter the column to place your X piece (1 - 8): <b>5</b>  (display game board)  Would you like to play again (y/n)? <b>n</b>	... 1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   O _ _ _ _ _ _   O _ _ _ _ _ _   O X X X X _ _ _   Player1 wins!  Wins Losses Draw Player1: 1 0 0 Player2: 0 1 0  Would you like to play again (y/n)?  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testHorizontalVictory.txt
testForwardSlashVictory  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2 ... Player1: 1, Player2: 2, Player1: 2, Player2: 3, Player1: 3, Player2: 4, Player1: 3, Player2: 4, Player1: 1, Player2: 4  Enter the column to place your X piece (1 - 8): <b>4</b>  (display game board)  Would you like to play again (y/n)? <b>n</b>	... 1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ X _ _ _ _   _ X O _ _ _ _   X X X O _ _ _ _   X O O O _ _ _ _   Player1 wins!  Wins Losses Draw Player1: 1 0 0 Player2: 0 1 0  Would you like to play again (y/n)?  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testForwardSlashVictory.txt

Test ID	Description	Expected Results	Actual Results
testBackSlashVictory  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2 ... Player1: 4, Player2: 3, Player1: 3, Player2: 2, Player1: 2, Player2: 1, Player1: 2, Player2: 1, Player1: 4, Player2: 1  Enter the column to place your X piece (1 - 8): <b>1</b>  (display game board)  Would you like to play again (y/n)? <b>n</b>	... 1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   X _ _ _ _ _ _   O X _ _ _ _ _   O X X X _ _ _   O O O X _ _ _   Player1 wins!  Wins Losses Draw Player1: 1 0 0 Player2: 0 1 0  Would you like to play again (y/n)?  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testBackSlashVictory.txt
testExtraLongHorizontalVictory  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2 ... Player1: 1, Player2: 1, Player1: 2, Player2: 2, Player1: 3, Player2: 3, Player1: 5, Player2: 5  Enter the column to place your X piece (1 - 8): <b>4</b>  (display game board)  Would you like to play again (y/n)? <b>n</b>	... 1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   O O O _ _ _   X X X X _ _ _   Player1 wins!  Wins Losses Draw Player1: 1 0 0 Player2: 0 1 0  Would you like to play again (y/n)?  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testExtraLongHorizontalVictory.txt

Test ID	Description	Expected Results	Actual Results												
testExtraLong DiagonalVictory  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2 ... Player1: 1, Player2: 2, Player1: 2, Player2: 3, Player1: 4, Player2: 3, Player1: 3, Player2: 4, Player1: 5, Player2: 5 Player1: 5, Player2: 5 Player1: 5, Player2: 6 Player1: 4, Player2: 7  Enter the column to place your X piece (1 - 8): <b>4</b>  (display game board)  Would you like to play again (y/n)? <b>n</b>	... 1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ X _ _ _   _ _ X 0 _ _ _   _ X X X _ _ _   _ X 0 0 0 _ _ _   X 0 0 X X 0 0 _   Player1 wins!  <table> <tr> <td></td><td>Wins</td><td>Losses</td><td>Draw</td></tr> <tr> <td>Player1:</td><td>1</td><td>0</td><td>0</td></tr> <tr> <td>Player2:</td><td>0</td><td>1</td><td>0</td></tr> </table> Would you like to play again (y/n)?  Thank you for playing today. Good bye!		Wins	Losses	Draw	Player1:	1	0	0	Player2:	0	1	0	As expected:  See /test_files/output_testExtraLongDiagonalVictory.txt
	Wins	Losses	Draw												
Player1:	1	0	0												
Player2:	0	1	0												

Test ID	Description	Expected Results	Actual Results												
testDraw  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2  Player1: 1, Player2: 2 Player1: 1, Player2: 2 Player1: 1, Player2: 2 Player1: 2, Player2: 1 Player1: 2, Player2: 1 Player1: 2, Player2: 1 Player1: 2, Player2: 1 Player1: 1, Player2: 2 Player1: 1, Player2: 2 Player1: 1, Player2: 2 Player1: 3, Player2: 4 Player1: 3, Player2: 4 Player1: 3, Player2: 4 Player1: 4, Player2: 3 Player1: 4, Player2: 3 Player1: 4, Player2: 3 Player1: 3, Player2: 4 Player1: 3, Player2: 4 Player1: 5, Player2: 6 Player1: 5, Player2: 6 Player1: 5, Player2: 6 Player1: 6, Player2: 5 Player1: 6, Player2: 5 Player1: 6, Player2: 5 Player1: 5, Player2: 6 Player1: 5, Player2: 6 Player1: 7, Player2: 8 Player1: 7, Player2: 8 Player1: 7, Player2: 8 Player1: 8, Player2: 7 Player1: 8, Player2: 7 Player1: 8, Player2: 7 Player1: 7, Player2: 8 Player1: 7, Player2: 8  Would you like to play again (y/n)? n	1 2 3 4 5 6 7 8  X O X O X O X O   X O X O X O X O   O X O X O X O X   O X O X O X O X   O X O X O X O X   X O X O X O X O   X O X O X O X O   X O X O X O X O   It's a draw!  <table> <tr> <td></td><td>Wins</td><td>Losses</td><td>Draw</td></tr> <tr> <td>Player1:</td><td>0</td><td>0</td><td>1</td></tr> <tr> <td>Player2:</td><td>0</td><td>0</td><td>1</td></tr> </table> Would you like to play again (y/n)?  Thank you for playing today. Good bye!		Wins	Losses	Draw	Player1:	0	0	1	Player2:	0	0	1	As expected:  See /test_files/output_testDraw.txt
	Wins	Losses	Draw												
Player1:	0	0	1												
Player2:	0	0	1												
testStartNewGameError  Author: Christine Weld	\$ java ConnectGame 4 Player1 Player2  Player1: 1, Player2: 2, Player1: 1, Player2: 2, Player1: 1, Player2: 2  Enter the column to place your X piece (1 - 8): 1  Would you like to play again (y/n)? Boo	... Would you like to play again (y/n)? Unrecognized response Boo, please enter y or n.	As expected:  See /test_files/output_testStartNewGameError.txt												

Test ID	Description	Expected Results	Actual Results
testStartNewGameNo  Author: Christine Weld	Using the previous test input ... Would you like to play again (y/n)? <b>n</b>	... Player1 wins!  Wins Losses Draw Player1: 1 0 0 Player2: 0 1 0  Would you like to play again (y/n)?  Thank you for playing today. Good bye!	As expected:  See /test_files/output_testStartNewGameNo.txt
testStartNewGameYes  Author: Christine Weld	Using the previous test input ... Would you like to play again (y/n)? <b>Yes</b>  (display game board)  Enter the column to place your O piece (1 - 8): <b>q</b>	... Would you like to play again (y/n)?  1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   Player Player2 (O) has 0 connected pieces. Enter the column to place your O piece (1 to 8) or q to quit:  Thank you for playing today. Good bye!  (Second player starts second game)	As expected:  See /test_files/output_testStartNewGameYes.txt

Test ID	Description	Expected Results	Actual Results
testMultiGameStatIncrease  Author: Christine Weld	Using the previous test input twice ... Would you like to play again (y/n)? <b>Yes</b>  (display game board)  Enter the column to place your O piece (1 - 8): <b>q</b>	... Player1 wins!  Wins Losses Draw Player1: 2 0 0 Player2: 0 2 0  Would you like to play again (y/n)?  1 2 3 4 5 6 7 8  _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   _ _ _ _ _ _ _   Player Player1 (X) has 0 connected pieces. Enter the column to place your X piece (1 to 8) or q to quit:  Thank you for playing today. Good bye!  (First player starts third game)	As expected:  See /test_files/output_testMultiGameStatIncrease.txt