# CheckMate

Test Case Document

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Revision History

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| --- | --- | --- | --- |
| Name | Date | Changes | Version |
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| Kyle Eng  Ngoc Nguyen  Phuong Nguyen  Thy Nguyen | 03/3/2018 | Third draft - Content added to Test Cases sections | 1.1 |
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# 1. Introduction

## 1.1 Purpose of Document

This document describes the approaches to testing CheckMate, including thorough descriptions of the test cases used and their expected results. The test cases are designed to measure how well the program fulfill the requirements outlined in the specifications document.

## 1.2 Scope of Document

The testing methods and cases described in this document pertain to only environment testing and functional requirements.

## 1.3 References

This document contains several references to the Requirement Specification document and the Design Document.

# 2. Testing Environment

## 2.1 Environment 1: Windows 10

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Machine Name** | Windows PC | **DB directory** | N/A | | |
| **OS and Version** | Windows 10 Home | **Interpreter Platform** | Java 1.8.0 | **Client Server/ Back-end** | N/A |
| **Tester Name** | Ngoc Nguyen, Kyle Eng | | **Test Date** |  | |
| **New Log** | List the new log (results or errors) after test has been run. | | | **State** | Passed |

## 2.2 Environment 2: macOS Sierra

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Machine Name** | Macbook Pro | **DB directory** | N/A | | |
| **OS and Version** | macOS Sierra 10.13.3 | **Interpreter Platform** | Java 1.8.0 | **Client Server/ Back-end** | N/A |
| **Tester Name** | Phuong Nguyen, Thy Nguyen | | **Test Date** |  | |
| **New Log** | List the new log (results or errors) after test has been run. | | | **State** | Passed |

# 3. Setup Information and Prerequisites

The following prerequisites must be met to run CheckMate:

* A copy of the binaries of CheckMate, which can be downloaded from a public repository, is already present on the machine in which the testing environment is set up.
* The OS of the testing environment is either Windows 10, or macOS Sierra.
* Java Runtime Environment 8 or higher is installed.
* The machine has a working WIFI/LAN Internet connection.

# 4. Test Cases

## 4.1 Host Game

### 4.1.1 Description

This test case covers the process that lets the user host a game.

### 4.1.2 Preconditions

Java Runtime Environment and the binary of CheckMate are installed on the system.

### 4.1.3 Test Cases

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ID | Requirement(s) | Priority | Description | Execution Steps | Expected Results | Actual Results |
| A1 |  | High | Launch Application |  | Console shows the main menu (i.e. the options labelled Start Game, Exit App, About). | Console shows main menu with the aforementioned options |
| A2 | 3.1 | Mid | Start Game | Select “Start Game” option (Enter “1”) | Console displays “Host game” and “Connect to host”. | Console displays “Host game” and “Connect to host”. |
| A3 | 3.1 | High | Host Game | Select “Host game” option (Enter “1”) | Console prints the IP address of the host and “Waiting for other player to connect.” | Console prints the IP address, the host name, and the port number of the host |
| A4 | 3.1 | High | Client connects | Host waits for client to connect via socket. | Console prints “Connection accepted” and a new game begins. The console shows the initial game board. | Console prints “Connection accepted” and a new game begins. The console shows the initial game board. |
| A5 |  | Mid | No connection (Client fails to connect) | Host waits for client to connect via socket. After 2 minute wait time, socket fails to connect. | Console prints “No connection” and display options to continue waiting or to quit back to main menu. | Console prints “Connection to server” and display options to continue waiting or to quit back to main menu. |

Comments: N/A

## 4.2 Connect To Host

### 4.2.1 Description

This test case covers the process of a client connecting to host.

### 4.2.2 Preconditions

Java Runtime Environment and the binary of CheckMate are installed on the system.

### 4.2.3 Test Cases

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ID | Requirement(s) | Priority | Description | Execution Steps | Expected Results | Actual Results |
| B1 |  | High | Launch Application |  | Console shows the main menu. | Console shows the main menu |
| B2 | 3.1 | Mid | Start Game | Select “Start Game” option (Enter “1”) | Consoles shows 2 options: “Host game” and  “Connect to host”. | Consoles shows 2 options: “Host game” and  “Connect to host”. |
| B3 | 3.1 | High | Connect to host | Select “Connect to host” option (Enter “2”).  Then type in the host’s IP address. | Console prints out connection status. | Console prints the following, for example: “---Connecting to host---  Joined host's game  Type in the host IP Address: [some\_address]  Type in the host port: 44245  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Game start \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  You are player 2. Choose 'o' to move  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |
| B4 | 3.1 | High | Successful connection | Client socket connects to host player’s socket. | Console prints out “Connected” and a new game starts. The console shows the initial game board. | Console prints out “Connected” and a new game starts. The console shows the initial game board. |
| B5 | 3.1 | Mid | Unsuccessful connection | Socket fails to connect to a server with the given IP address. | Console prints out “Socket Connection failed” and shows 2 options to either reconnect or quit back to main menu. | Console prints out “Socket Connection failed” and shows 2 options to either reconnect or quit back to main menu. |

Comments: N/A

## 4.3 Play Game

### 4.3.1 Description

This test case covers the steps of playing the game by both players. It will test if move validation is implemented correctly -- i.e. it follows the Checkers rules and can also handle invalid input from user.

### 4.3.2 Preconditions

Socket connection between players is already established and the game is already started.

### 4.3.3 Test Cases

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ID | Requirement(s) | Priority | Description | Execution Steps | Expected Results | Actual Results |
| C1 | 3.2 | High | Making a valid move | Select “Make Move” (Enter “1”) and type in to console the position of your piece to move (e.g. 3b), and when prompted type in to console the destination position. | The new updated board (i.e. board with piece moved) will be printed to console. | The new updated board is printed to console |
| C2 | 3.2 | High | Making an invalid move - original position (of piece to move) or desired new position not on board | Select “Make Move” (Enter “1”) and type in to console the position of a piece to move, and when prompted type in to console a position outside the board. | Console displays, “Invalid position. Please enter a valid position.” Console then accepts user input again. | Console displays, “Invalid position.” Console then accepts user input again. |
| C3 |  | High | Making an invalid move - the piece belongs to the other player | Select “Make Move” (Enter “1”) and type in to console a position of piece (owned by other player) to move. | Console displays, “Invalid piece. ” Console then accepts user input again. | Console displays, “Invalid piece. ” Console then accepts user input again. |
| C4 | 3.2 | High | Making an invalid move - desired new position violates Checkers rules | Select “Make Move” (Enter “1”) and type in to console the position of a piece to move, and when prompted type in to console a position on the board. | Console displays, “Invalid position. Please enter a valid position.” Console then accepts user input again. | Console displays, “Invalid position. Please enter a valid position.” Console then accepts user input again. |
| C5 |  | High | Incorrect input format | Select “Make Move” (Enter “1”) and type in to console the position of a piece but in an incorrect format (e.g. 3A or 13 instead of A3). | Console displays, “Invalid format of input.” Console then prompts for user input again. | Console displays, “Invalid format of input.” Console then prompts for user input again. |
| C6 |  | High | Eliminate the opponent’s piece(s) | - When there is a chance to eliminate an opponent’s piece based on Checkers rules, follow C1 to make a valid move.  - When there is a chance to eliminate multiple opponent’s pieces (i.e. jumping), follow C1 when prompted to make a move. | A new board game with the opponent’s piece eliminated will be printed to console and the user’s turn ends.  The user will keep making a move until his/her piece has no more jumps to make. The updated board will then be printed to console after the user’s turn ends. | A new board game with the opponent’s piece eliminated will be printed to console and the user’s turn ends.  The user will keep making a move until his/her piece has no more jumps to make. The updated board will then be printed to console after every time a jump is made. |
| C7 |  | High | Become a King | If a piece gets to the end of the opponent’s side of the board safely, it will become a king.  A king piece can move both forward and backward, so follow C1 to move backward and. | When a piece becomes a king, its appearance on board will change to an uppercase letter (“x” to “X” and “o” to “O”).  A king piece can move both forward and backward, so following C1 to move backward will not prompt any error messages. | When a piece becomes a king, its appearance on board will change to an uppercase letter (“x” to “X” and “o” to “O”).  A king piece can move both forward and backward, so following C1 to move backward will not prompt any error messages. |
| C8 | 5.1.5,  5.1.6 Player Option Prompts | High | Game Status contains information includes player number, whose turn it is, and pieces left, and player option prompts. The prompts are Make Move, Offer Draw, and Quit Game. | Follow A2 or B2 to start a game and observe the status at the start of the game.  Follow C1 to make a valid move and observe the status after the turn ends. | At the start of the game and every time a turn ends, the game status will display the player number, whose turn it is, and pieces left, and player option prompts. The prompts are Make Move and Quit Game. | At the start of the game and every time a turn ends, the game status will display the player number, whose turn it is, and pieces left, and player option prompts. The prompts are Make Move and Quit Game. |
| C9 |  | High | Each player can only move if it’s their turn | After a player makes a move, he/she cannot make a move until the other player’s turn ends. | The game board will not be updated if the player make a move when it’s not his/her turn. | The game board will not be updated if the player make a move when it’s not his/her turn. |

Comments: N/A

## 4.4 End Game

### 4.4.1 Description

This test case covers the steps of ending a game by either quitting or winning.

### 4.4.2 Preconditions

Socket connection between players is established, a game is started and accepts user input to make a move, and all test cases in 4.1, 4.2, 4.3 are passed.

### 4.4.3 Test Cases

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ID | Requirement(s) | Priority | Description | Execution Steps | Expected Results | Actual Results |
| D1 | 5.1.6 Player Option Prompts | High | Quit game | Select “Quit Game” (Enter “2”). | The user will be taken back to main menu screen. The main menu will be displayed to console. No game status will be displayed. |  |
| D2 | 3.1 | Mid | Winning | Follow C1 to play game until all opponent’s pieces are eliminated or until opponent can no longer make a move (i.e. all available pieces are blocked in). | Console will display “You win” or “You lose” for both players and main menu screen will be displayed again. |  |
| D3 |  | High | Draw | Both players can no longer make moves to get a win, or each player agrees to a draw. | Console will display “Draw” for both players and main menu screen will be displayed. | Not implemented |
| D4 |  | High | Time out | A player does not make a move for 2 minutes. | Console will display “Session timeout” for both players and main menu screen will be displayed. | Not implemented |
| D5 | 6.3.3 | High | Socket connection fails | Socket connection fails (on client, host or both of their sides) while game is still being played. | Console displays “Socket connection failed”, and then main menu screen is displayed. | Console displays “Socket connection failed”, and then main menu screen is displayed. |

Comments: N/A

# 5. Appendix

### 5.1 Glossary

Socket - refers to Socket peer-to-peer connection between two program instances over Internet connection.

Opponent - refers to other player -- who could be Host or Client -- playing the game.

Host - refers to player hosting the game. The host tells the client his/her IP address so the client can connect to his/her game.

Client - refers to the player who connects to the host’s game.

### 5.2 Notes

\* Test Case C8 refers to an “Offer Draw” as a part of the player option prompts. This prompt was added as it is part of the scenario where either player can offer to make the game a draw. The other player must agree in order to end the game as a draw (within this particular draw offer scenario).