Group 9 - Test Specification

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Introduction

Purpose of this document

This document contains all the tests ran on the Chess Tutor project and will be used to confirm what functional requirements are passed and failed.

Scope

This document describes every possible system test for the entire chess tutor project, serving as a guidance for creators to create a refined and immaculate procedure of tests that helps with keeping track of validity functionable software.

This document should be read by all project members. It is assumed that the reader is already familiar with the **QA Plan [1]**.

Objectives

The Objective of this document :

1. Provides a detailed description of how the testing will be running when it has been fully developed, to allow accurate estimation of the final project.

2. Further refining the testing approach and identify features to be covered by the design and all of its associated tests.

3. Specifies the purpose of a specific test while identifies the required inputs and expected results, procedures for executing the tests, and configuration of fail or pass criteria in order to determine acceptance of the project.

Test Specification

Test Ref	Req being tested	Test Content	Input	Output	Pass Criteria
SE-F-001	FR1	Check whether new game works properly	Click 'New game'	New game is started	New game is started
SE-F-002	FR1	Check whether 'Restore previous game' works properly	Click 'Restore previous game'	Previous game is restored	Previous game is restored successfully
SE-F-003	FR2	Both players names, pieces and colour is tracked correctly	Makes a move	Updated board	The players name should match the pieces and colour
SE-F-004	FR3	Tutor keeps track of current player and shows visually whos turn it is	New turn	Changed turn	Changes turn and has a visual to show whos turn it is
SE-F-005	FR3	Unambiguous board representation	New game and move a piece	Board clearly displayed	Unambiguous board and pieces represented
SE-F-006	FR4	Only current player can move there pieces	Move piece from other player and current player	Players moving pieces	Only current player can move there coloured pieces
SE-F-000	FR4	Check if piece selection works	Click piece that is available to move	Available piece moves are shown	All available positions should be shown to move to
SE-F-000	FR4	Check if piece selection works	Check piece that cannot move as it is pinned	Available piece moves are shown	No available moves are shown that would move piece so it's no longer blocking check
SE-F-000	FR4	Check if piece selection works	Check piece that cannot move as it is check	Available piece moves are shown	No available moves are shown that aren't preventing check (ie: capturing the checking piece)
SE-F-000	FR4	Check if piece reselection works	Select a piece and then reselect another piece	The new piece should be selected and the old piece should deselect	The new piece's moves should not be shown and the old piece should not have its moves shown.

SE-F-007	FR5	Check whether Pawn Pieces are moving legally	Clicking on Pawn Pieces To only move vertically one or two steps as any legal moving spaces are highlighted	Pawn Pieces should only move one or at most two steps	Pawn Pieces moved correctly
SE-F-000	FR5	Test functionality of Pawn Pieces for capturing pieces	Pawn Pieces could only move towards enemy pieces as in diagonally to the left or right while any enemy pieces that are allowed to be captured are highlighted	Pawn Pieces could only capture enemy pieces diagonally and then landing on its designated location	Pawn Pieces attacked correctly
SE-F-000	FR5	Test Pawn Pieces applying En Passant rule which only occurs when a pawn captures a horizontally adjacent enemy pawn piece that made an initial two square advance	Pawn Pieces could only capture enemy pawn pieces if it advances two square which its position is adjacent to the player's pawn piece and the space is highlighted	Pawn Pieces could only capture enemy pawn pieces if it met the requirements of En Passant	Pawn Pieces applying the En Passant rule
SE-F-000	FR5	Check if players intend to move Pawn Pieces into restricted spaces	Players attempting to move Pawn Pieces into illegal spaces	Pawn Pieces return back to its initial moving space and flashes red	Pawn Pieces flashes red and is not moved
SE-F-000	FR5	Check Pawns cannot capture illegally	Click Pawn and then attempt to move across the board	Pawn piece flashes red	Pawn piece flashes red and is not moved
SE-F-008	FR5	Check whether Bishop Pieces are moving legally	Clicking on Bishop Pieces to only move diagonally as many steps as desired as any legal moving spaces are highlighted	Bishop Pieces should only move diagonally	Bishop Pieces moved correctly
SE-F-009	FR5	Test functionality of Bishop Pieces for capturing enemy pieces	Bishop Pieces could only move diagonally in any steps while any enemy pieces that are allowed to be captured are highlighted	Bishop Pieces could only capture enemy pieces diagonally and then landing on its designated location	Pawn Pieces attacked correctly
SE-F-000	FR5	Test functionality of Bishop making illegal move	Move bishop piece horizontally	Bishop piece flashes red	Bishop piece flashes red and is not moved
SE-F-010	FR5	Check whether Knight Pieces are moving legally on the top side	Clicking on Knight Pieces to only move one space left or right horizontally and then two spaces up or down vertically as any legal moving spaces are highlighted	Knight Pieces should only move as in a 'L shape'	Knight Pieces moved correctly (top side)

SE-F-011	FR5	Check whether Knight Pieces are moving legally on the bottom side	Clicking on Knight Pieces to only move two spaces left or right horizontally and then one space up or down vertically as any legal moving spaces are highlighted	Knight Pieces should only move as in a 'L shape'	Knight Pieces moved correctly (bottom side)
SE-F-012	FR5	Test functionality of Knight Pieces for capturing enemy pieces on the top side	Knight Pieces could only move one space left or right horizontally and then two spaces up or down vertically while the enemy pieces that are allowed to be captured are highlighted	Knight Pieces could only capture enemy pieces after attacking and then landing on its designated location	Knight Pieces attacked Correctly (top side)
SE-F-013	FR5	Test functionality of Knight Pieces for capturing enemy pieces on the bottom side	Knight Pieces could only move two spaces left or right horizontally and then one space up or down vertically while the enemy pieces that are allowed to be captured are highlighted	Knight Pieces could only capture enemy pieces after attacking and then landing on its designated location	Knight Pieces attacked correctly (bottom side)
SE-F-000	FR5	Test functionality of knight piece making illegal move	Move knight to across the board to a square it shouldn't be able to go	Knight piece should not be moved	Knight piece should flash red and not move
SE-F-014	FR5	Check whether Rook Pieces are moving legally as in vertically	Clicking on Rook Pieces to only move vertically for as far as desired as any legal moving spaces are highlighted	Rook Pieces should only move vertically as in a straight line	Rook Pieces moved correctly (vertically)
SE-F-015	FR5	Check whether Rook Pieces are moving legally as in horizontally	Clicking on Rook Pieces to only move horizontally for as far as desired as any legal moving spaces are highlighted	Rook Pieces should only move horizontally as in a straight line	Rook Pieces moved correctly (horizontally)
SE-F-016	FR5	Test functionality of Rook Pieces for capturing enemy pieces vertically	Rook Pieces could only move vertically for as many spaces as desired while the enemy pieces that are allowed to be captured are highlighted	Rook Pieces could only capture enemy pieces in a vertical direction and then landing on its designated location	Rook Pieces attacked correctly (vertically)
SE-F-017	FR5	Test functionality of Rook Pieces for capturing enemy pieces horizontally	Rook Pieces could only move horizontally for as many spaces as desired while the enemy pieces that are allowed to be captured are highlighted	Rook Pieces could only capture enemy pieces in a horizontal direction and then landing on its designated location	Rook Pieces attacked correctly (horizontally)
SE-F-000	FR5	Test functionality of rook moving illegally	Attempt to move rook piece diagonally	Rook piece flashes red and isn't moved	Rook piece flashes red and isn't moved

SE-F-018	FR5	Check whether Queen Piece is moving legally	Clicking on Queen Piece to move in any directions and any distance as in vertically, horizontally and diagonally as any legal moving spaces are highlighted	Queen Pieces could move into any highlighted space desired	Queen Piece moved correctly
SE-F-019	FR5	Test functionality of Queen Piece for capturing enemy pieces	Queen Piece could move in any direction and any distance regardless of vertical, horizontal or diagonal while any enemy pieces that are allowed to be captured are highlighted	Queen Piece could move in any direction and any distance regardless of vertical, horizontal or diagonal to capture any enemy pieces and then landing on the designated location	Queen Piece attacked correctly
SE-F-000	FR5	Test functionality of queen piece making illegal move	Move queen piece to a position is shouldn't be able to move	Queen piece should flash red and not move	Queen piece should flash red and not move
SE-F-020	FR5	Check whether King Piece is moving legally	Clicking on King Piece to only move one space in any direction as any legal moving spaces are highlighted	King Piece should only move one space in any direction	King Piece moved correctly
SE-F-021	FR5	Test functionality of King Piece for capturing enemy pieces	King Piece only moves one space in any direction as vertical, horizontal or diagonal to capture enemy pieces while any enemy pieces that are allowed to be captured are highlighted	King Piece could only move in one space in any direction as vertical, horizontal or diagonal to capture enemy pieces and then landing on the designated location	King Piece attacked correctly
SE-F-000	FR5	Test functionality of king piece moving illegally	Move king piece to across the board to a square it shouldn't be able to move	King piece should flash red and not move	Kind piece should not move and flash red
SE-F-000	FR5	Test functionality of kingside castling when allowed	Castling when neither the king or rook has moved yet and there is space between on the kings side	The king should move 2 spaces right from players perspective and the rook should be one square to the left of king	Should be king and rook next to each other king on the left side of rook from the player's perspective.
SE-F-000	FR5	Test functionality of queenside castle when allowed	Castling when neither the king or rook has moved yet and there is space between on the queens side	The king should move 2 squares to the left from players perspective and the rook should be one square to the right of king	Should be king and rook next to each other with the rook on the right side of the king

SE-F-000	FR5	Test functionality of kingside castle when not allowed because king or castle previously moved	Attempt castling when there is space to castle but the king or rook have already moved	It shouldn't work and the king should flash red	The king flashes red and no move is made
SE-F-000	FR5	Test functionality of queenside castle when not allowed because king or castle previously moved	Attempt castling when there is space to castle but the king or rook have already moved	It shouldn't work and the king should flash red	The king flashes red and no move is made
SE-F-000	FR5	Test functionality of kingside castle when not allowed because there are pieces in the way	Attempt castling when there is no space to castle however the king and rook haven't moved	It shouldn't work and the king should flash red	The king flashes red and no move is made
SE-F-000	FR5	Test functionality of Pawn Pieces which are eligible for promotion	Clicking on Pawn Pieces which have advanced until the starting point of the enemy	display a window for players to allow them choose which piece to promote to from a Pawn Piece into a Queen, Knight, Bishop or Rook Piece	Pawn Pieces are valid to undergo the promotion process
SE-F-000	FR5	Detects any Pawn Pieces which are on the starting line of the enemy where their promotion is mandatory	Each of the Pawn Pieces on the starting line of the enemy has the ability to promote to a Queen, Knight, Bishop or Rook Piece	Indicates the player that a Pawn Piece is ready for promotion	Players must choose between the pieces to promote from a pawn
SE-F-000	FR6	Tutor detects whether if the opponent's king is currently in stalemate state	It is the opponent's turn but player's King Piece does not have any legal moves left	Display on the board as the opponent's King Piece isn't allowed to move	The player is indicated that the opponent's King Piece is in stalemate
SE-F-000	FR6	Tutor detects whether if the player's king is currently in stalemate state	It is the Player's turn but player's King Piece does not have any legal moves left	Display on the board as the player's King Piece isn't allowed to move	The player is indicated that the player's King Piece is in stalemate
SE-F-022	FR6	Tutor detects whether if the opponent's king is currently in the checked state	Only appears when the opponent's King Piece is being attacked	Display opponent's king with a colour to indicate it as in a checked state	The player is indicated that the opponent's king is in check
SE-F-000	FR6	Tutor detects whether if the player's king is currently in the checked state	Only appears when the player's King Piece is being attacked	Display user's king with a colour to indicate it as in a checked state	The player is indicated that the player's king is in check

SE-F-023	FR7	Tutor detects whether if the opponent's king is in the state of checkmate	Only appears when the opponent's King Piece is in checked state and do not have any legal moves left	Display opponent's king with a colour which indicates that it is in checkmate and the player has won the game	The player is indicated that the opponent's king is in checkmate
SE-F-000	FR7	Tutor detects whether checkmate is avoidable by moving piece to block check	Put a player in check and then have the only option to block the checkmate	Piece is moved and checkmate blocked	Checkmate is blocked and game continues
SE-F-000	FR7	Tutor detects whether checkmate is avoidable by moving piece to capture attacking piece	Put a player in check and have the only option to capture the attacking piece to avoid checkmate	Piece is moved and opponents piece is captured, checkmate avoided	Checkmate is blocked and game continues
SE-F-000	FR7	Tutor detects whether checkmate is avoidable by moving king out of checkmate	Put a player in check and have the only option to move the king to avoid checkmate	King is moved and checkmate is avoided	Checkmate is blocked and game continues
SE-F-000	FR7	Tutor detects whether if the player's king is in the state of checkmate	Only appears when the player's King Piece is in checked state and do not have any legal moves left	Display player's king with a colour which indicates that it is in checkmate and the opponent has won the game	The player is indicated that the player's king is in checkmate
SE-F-000	FR8	Stalemate	One player is in stalemate	Game finishes in a draw	Game ends and players asked if they want to save the game
SE-F-024	FR8	Checkmate	One player is checkmated	Game finishes	Game ends and players asked if they want to save the game
SE-F-025	FR8	Resign	One player has resigned the game	Game finishes as one player has resigned	Game ends and players asked if they want to save the game
SE-F-026	FR8	Agree to finish (Draw)	Both players agreed to end the game	Game finished	Game ends and players asked if they want to save the game
SE-F-000	FR8	Resign the game after game is won (checkmate)	Resign the game after you have already won	Nothing as game is not running	Game does not allow you to resign as you have already won the game

SE-F-027	FR9	Game quit	One player quits game	Game finishes with save prompt	Game closes and players asked if they want to save the game
SE-F-000	FR9	Exit game without quiting	One player force closes the game	Game is saved for later	Game is saved although it was force closed
SE-F-028	FR10	Game replay	Player clicks replay game	Game runs through in replay mode	Players can go forward or back in the replay
SE-F-029	FR11	Game saved while playing	Move made	Game is saved to a file to later be either restored or replayed	If program crashes the game can be restored. If game is saved it can be replayed

REFERENCES

[1]- Requirements Specification for Chess Tutor
[2]- UI-Spec-Docu-GP9 - User Interface Specification
[3]- SE.QA.06 - Test Procedure Standards

Document history

Version	Issue No.	Date	Changes made to document	Changed by
1.0	N/A	10/02/2023	Added tests for each functional requirement	jib16
1.1	N/A	20/02/2023	Trimmed out the structure of the test specification document	ckc2