

# **Software Engineering Group 17**

## **User Interface**

Author: Tate Moore [tam41] and Adrian Enache [ade12]  
Config Ref: SE\_GP17\_UISpecification  
Date: 19th March 2023  
Version: 1.7  
Status: Release

## CONTENTS

1.	INTRODUCTION .....	3
1.1	Purpose of this Document .....	3
1.2	Scope.....	3
1.3	Objectives.....	3
2.	TYPICAL USERS .....	4
2.1	General Users .....	4
2.2	Specific User Types .....	4
2.3	Conclusion .....	4
2.4	Examples.....	4
3.	USE CASES .....	6
3.1	Textual Walkthrough .....	6
3.2	Use Case Diagram.....	8
4.	ERROR CONDITIONS.....	9
	REFERENCES .....	10
	DOCUMENT HISTORY .....	10

# 1. INTRODUCTION

## 1.1 Purpose of this Document

This document is part of the user interface specification and describes the use cases for the Chess Tutor program.

## 1.2 Scope

This document was produced alongside and in conjunction with user interface prototype presentation [1] which is a presentation walkthrough of all the important steps for each use case. This is described in SE.QA.04 [2] which the document will follow, it will also obey the document standards found in SE.QA.02 [3]. The document will also follow the Requirements Specification which is described in SE.QA.RS [4]

## 1.3 Objectives

The objectives of this document are:

- To recognise all possible user needs by explaining all typical user types, which includes the general user class and specific types of users.
- To help with specific user type comprehension and understanding by giving a fictional person example of each type.
- To deliver a firm grasp of each possible user task by supplying a clear explanation and a use case diagram.
- To provide analysis of a variety of possible errors that can occur from each use case including what the user interface can do about them.

## 2. TYPICAL USERS

### 2.1 General Users

This is what all users have in common, we are assuming they can use a computer; they know their way round a basic, typical interface and can use a mouse and keyboard decently. For example, “How do I load an old game? Well, I am guessing I go the ‘File’ tab then click ‘Load’.”

Virtual chess has very simple controls, you click on a piece, you then click somewhere else on the board so we will be relying on our assumption of our users’ ability to use a computer.

### 2.2 Specific User Types

#### 2.2.1 Novice

- Has little to no knowledge of chess,
  - Upon playing the game they will be pondering many questions such as:
    - What does this piece do?
    - Can I select this piece?
    - Is it my turn?
    - How does the game end?
- From this we can conclude they need to be delivered a great deal of guidance.

#### 2.2.2 Occasional

- Has played chess to some extent where they know the basic rules of chess.
- They may forget some moves over time, for example, it may slip their mind castling is possible.
- Accordingly, they will need a little guidance.

#### 2.2.3 Expert

- Has vast knowledge and experience of chess.
- They know the best move to make and want to transfer that onto the virtual chessboard and have it carried it out as quickly as possible.
- In other words, they don’t need guidance and the game must not slow them down or hinder them in any way.

### 2.3 Conclusion

Many of our users (occasional and novice types) will need guidance however it is important for our expert users that this guidance does not slow or hinder them. This is significant for how we need to create and tailor the guidance.

### 2.4 Examples

#### 2.4.1 Novice

Rahim is a 9-year-old in primary school and has been encouraged by a friend to play chess with him. They do not have access to a chessboard and enjoy using computers. As a result, they are searching for an application online.

### **2.4.2 Occasional**

John is a young adult; he has recently started working after graduating university and is looking to spruce up his life with some hobbies and reconnect with some university friends. He previously played chess with his father when he was a child. He cannot remember some of the rules, but he is thinking about playing chess with friends on the computer.

### **2.4.3 Expert**

Kaylie is a 40-year-old mother who previously played in secondary school chess clubs and even in competitions (winning most of the matches). She is extremely confident and skilled at the game. She commutes by train to work and is interested in using a chess application on her laptop whilst on the train with a work colleague.

### 3. USE CASES

#### 3.1 Textual Walkthrough

##### 1. Beginning the game/start page

###### Use Case 1.1 – Starting a New Game (FR1, FR2)

Starting a new game can be done by clicking on a 'start new game' button on the screen which will lead to a new game set-up scene. On the new game set-up scene, players will choose their team themselves and be able to enter their names into two text fields with their corresponding colour presented next to each other.

On the new set-up game scene, there will be two buttons: one to confirm the player names and teams and the other to cancel and go back to the menu.

###### Use Case 1.2 – Loading an Old Game (FR1, F11)

Two players may wish to resume a game later or replay a finished one, upon that time they will need to load a save file, the only information they will need is the file's name and folders in which it is stored. In order to select a saved game, the user will select "Load a Game" in the main menu. If the game is not finished, then the game will continue from the last saved point automatically. If the game has finished, the user will be able to replay the game. When replaying a game, the user will have the option to go forwards and backwards through the moves. They can do this by pressing the "Forward / Backward" buttons located on the screen.

###### Use Case 1.3 – Exiting the Program (FR9)

When the user wishes to exit the program, there is a button on the screen to do this.

##### 2. On the chessboard

###### Use Case 2.1 – Selecting a Piece (FR3, FR4)

To select a piece on the board, the user must know all the available pieces that can be selected, this will be shown through a display of chessboard with pieces.

Secondly, what if a player is unsure whether it is their turn or not? Suitable presentation will be rotation of the board (bottom shows the acting team).

Lastly, the user will need confirmation that they have successfully selected a valid piece which will appear as a glowing white outline around it. The way you will select a piece is by clicking it with mouse button 1.

###### Use Case 2.2 – Moving a Piece (FR2, FR3, U.C.2.1)

Each piece type has a different set of available moves they can make, for a piece this set is restricted by other pieces and the edges of the board. There are also special chess moves which are complex and hard to remember. As this can be complicated to novice users and some occasional users, we can conclude it is important to present the possible moves to the users.

There are 5 types of moves a piece can make, the following sub sections go into them. To move a piece must have been selected beforehand.

###### Use Case 2.2.1 – Moving to an Empty Square (FR2, FR3, FR5, U.C.2.1)

Valid empty squares are presented by grey glowing icons, clicking on one with mouse button 1 will move the selected piece (which will be highlighted in grey) to its square.

### **Use Case 2.2.2 – Taking a Piece (FR2, FR5, U.C.2.2.1, U.C.2.1)**

Valid opposing pieces that can be taken shown by yellow glowing outlines, clicking on one with mouse button 1 will move the selected piece (which will be highlighted in white) to take the piece.

### **Use Case 2.2.3 – Castling (FR2, FR4, FR5, U.C.2.2.1, U.C.2.1)**

Castle and king pieces can perform castling under several conditions, most novice and occasional users will forget about this move.

When the king is selected and if it can castle, then that piece is shown by a grey highlighted square. Where, when clicking upon it with mouse button 1 will execute the castling.

### **Use Case 2.2.4 – Pawn Promotion (FR2, FR5, U.C.2.2.1, U.C.2.1)**

When a pawn is moved to the farthest rank from its starting position (opposite end of board), it is promoted to either a queen, rook, bishop or knight. You can get to the end of the board by either moving to an empty square (UC 2.2.1) or taking a piece (UC 2.2.2). This will inherit their method of moving and information presentation.

What the piece the pawn will be promoted to will be shown by 4 buttons, each representing a possible piece. Clicking on one of the buttons with mouse button 1 will convert the pawn to its corresponding piece.

### **Use Case 2.2.5 – En Passant (FR2, U.C.2.1)**

From its starting position, if a pawn advances two squares to a place where it is to the side of an opposing pawn and another in front, it may be taken by the pawn to the side however it will move to the square behind the pawn. This square will be shown with a white glowing icon, clicking with mouse button 1 upon it will execute the move.

### **Use Case 2.2.6 – Check (FR2, FR5, U.C.2.1)**

When in check, the user can only perform specific legal moves to get out of check. The king is also highlighted in red.

## **3. Ceasing Play**

### **Use Case 3.1 – Ending the Game (FR8, FR11)**

The game is usually ended through a program decided checkmate however a user may resign or both users may agree to draw.

This can be done on the chessboard scene by clicking one of two buttons – one for resign and the other draw.

This will lead to an end game scene that gives allows the saving of the game for future replaying.

### **Use Case 3.2 – Quitting the Game (FR2, FR9, U.C.1.3)**

A chess game may not be done in one sitting, users may wish to quit the game and resume it later. The user can either just quit or save the game too.

This can be done on the chessboard scene by clicking one of two buttons– one for quit and the other save & quit.

### 3.2 Use Case Diagram

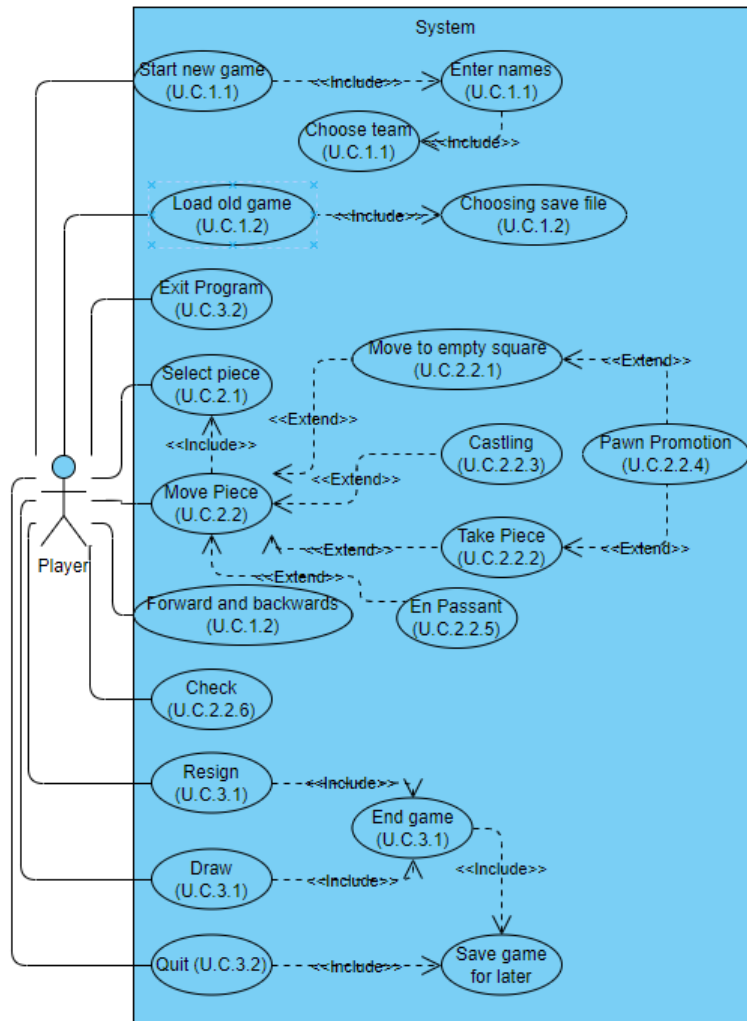


Figure 1: Use Case Diagram for the Whole Chess Tutor Game System.



## 4. ERROR CONDITIONS

UC-ER	Description	What can the UI do
1.1.1-A	An inputted player name is too short (0 characters) or too long (20 characters +).	Suitable error text message explaining the name is too short/long, what the valid range is.
1.1.1-B	An inputted player name contains invalid characters (New line/Special characters)	Suitable error text message explaining the name contains invalid characters.
1.1.1-B	The user loads a game of an incorrect file extension. (Not JSON)	Suitable error text message explaining the accepted file extension.
1.2.1-A	The user loads a wrongly formatted game save file.	Suitable error text message explaining the file is not in the correct format.
2.1-A	When trying to select a piece, the user clicks outside the chessboard.	Do nothing.
2.1-B	A piece of the opposition (non-acting player) is selected.	Do nothing.
2.2-A	The user attempts to move a selected piece outside the board.	Deselects the selected piece.
2.2-B	Within its movement set/range, a user attempts to move a selected piece onto a friendly piece.	Deselects the selected piece.
2.2-C	The user attempts to move a piece outside its range/set of movements.	Move is not displayed as a valid move as it is an illegal move.
2.2-D	The user attempts to move a piece which has its movement restricted by check.	Move is not displayed as a valid move as it is an illegal move.
2.2.3-A	The user attempts to castle when the king has moved previously.	Move is not displayed as a valid move as it is an illegal move.
2.2.3-B	The user attempts to castle when the chosen rook has moved previously.	Move is not displayed as a valid move as it is an illegal move.
2.2.3-C	The user attempts to castle when at least one piece is between the rook and king.	Move is not displayed as a valid move as it is an illegal move.
2.2.3-D	The user attempts to castle into check.	Move is not displayed as a valid move as it is an illegal move.
2.2.3-E	The user attempts to castle while being in check.	Move is not displayed as a valid move as it is an illegal move.
2.2.4-A	When choosing a pawn promotion, the user clicks an area that is not belonging to the buttons.	Suitable error text message explaining that they must choose a piece before playing on.
2.2.5-A	The user attempts en passant however the targeted pawn did not move two squares to current square last turn.	Move is not displayed as a valid move as it is an illegal move.

## REFERENCES

- [1] User Interface Presentation – SE\_GP17\_UIPresentation\_01
- [2] Software Engineering Group Projects: User interface Specification Standards. C.W. Loftus. SE.QA.04. 1.4 Release
- [3] Software Engineering Group Projects: General Documentation Standards. C.W. Loftus. SE.QA.02. 2.6 Release
- [4] Software Engineering Group Projects: Requirement Specification. C.W. Loftus SE.QA.RS. 1.1 Release

Figure 1: Visual Paradigm International Ltd.. 2002. Visual Paradigm CE 17.0. [Software]. [Accessed 19<sup>th</sup> March 2023].

## DOCUMENT HISTORY

<i>Version</i>	<i>Issue No.</i>	<i>Date</i>	<i>Changes made to document</i>	<i>Changed by</i>
0.1	N/A	21/02/2023	New Document	ADE12, TAM41
0.2	12	21/02/2023	Updated Front Cover	ADE12, TAM41
0.3	13	21/02/2023	Updated Document Structure	ADE12, TAM41
0.4	14	21/02/2023	Minor Changes to “Typical Users” Structure	ADE12, TAM41
0.5	15	21/02/2023	Updates section “Use Cases”	ADE12, TAM41
0.6	16	21/02/2023	Updated section ‘Error Conditions’.	ADE12, TAM41
0.7	13	22/02/2023	Updated section ‘References’.	ADE12
0.8	16	22/02/2023	Updated section ‘Error Conditions’.	ADE12
0.9	15	26/02/23	Updated section ‘Use Cases’.	ADE12, TAM41
0.10	14	26/02/23	Updated section ‘Typical Users’.	ADE12, TAM41
0.11	16	26/02/23	Updated section ‘Error Conditions’.	ADE12, TAM41
0.12	N/A	27/02/23	Overall document improvements	ADE12, TAM41
1.0	N/A	27/02/23	Released For Deadline (Amendments Still Needed)	ADE12, TAM41
1.1	20	07/02/23	Fix formatting	ADE12
1.2	22	10/03/23	Fix error conditions	ADE12
1.3	21	12/03/23	Fix use cases	ADE12
1.4	21	17/03/23	Colour correction for highlighting	ADE12
1.5	21	17/03/23	Added referencing	ADE12
1.6	21	19/03/23	Updated figure 1	ADE12
1.7	22	19/03/23	Updated error conditions	ADE12