



TCP2201 PROJECT

TRIMESTER 2310

BY GROUP 1 TT8L

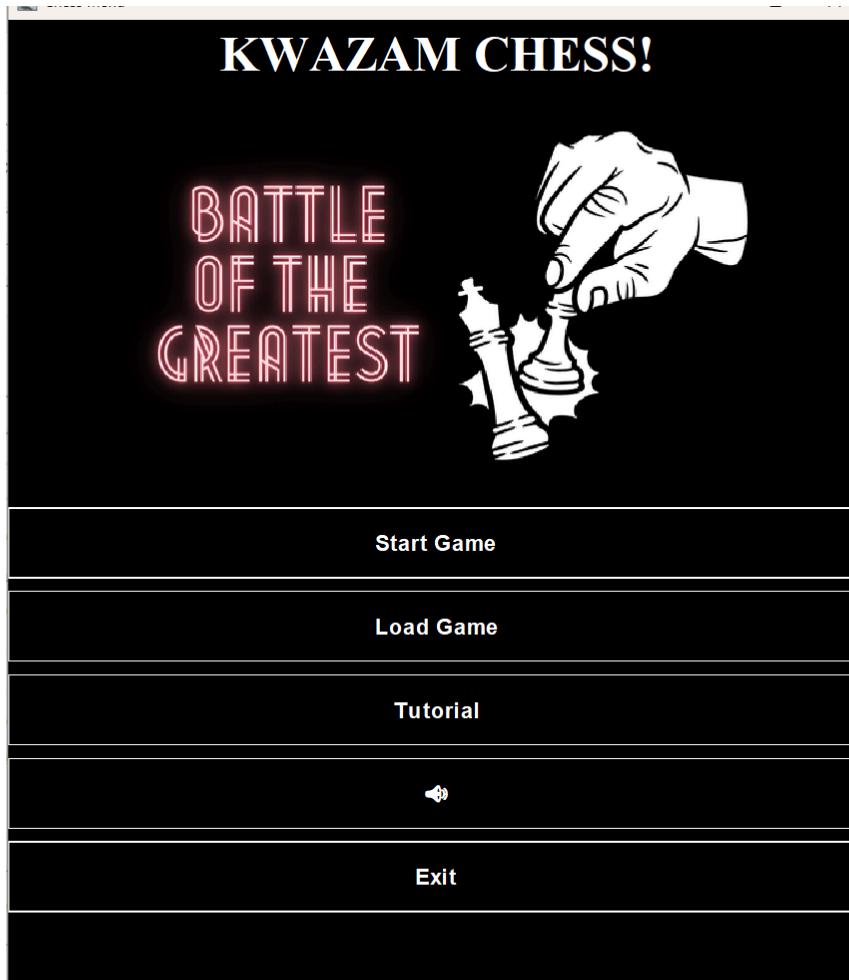
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1 Compile and run instructions

```
Command Prompt - java Mai + ▾  
Microsoft Windows [Version 10.0.26100.2894]  
(c) Microsoft Corporation. All rights reserved.  
C:\Users\Issye>cd "C:\Users\Issye\OneDrive\Documents\Year 2 Tri 1\OOAD\chessGame\chessGame 8.2 FINAL COMPLETE"  
1  
C:\Users\Issye\OneDrive\Documents\Year 2 Tri 1\OOAD\chessGame\chessGame 8.2 FINAL COMPLETE> javac *.java  
2  
C:\Users\Issye\OneDrive\Documents\Year 2 Tri 1\OOAD\chessGame\chessGame 8.2 FINAL COMPLETE>java Main  
3
```

- 1) Change the directory to the folder that contains the game
Command: cd (paste the folder path)
- 2) Compile all the Java files using this command so that they will be automatically compiled.
- 3) Run the program from the Main file



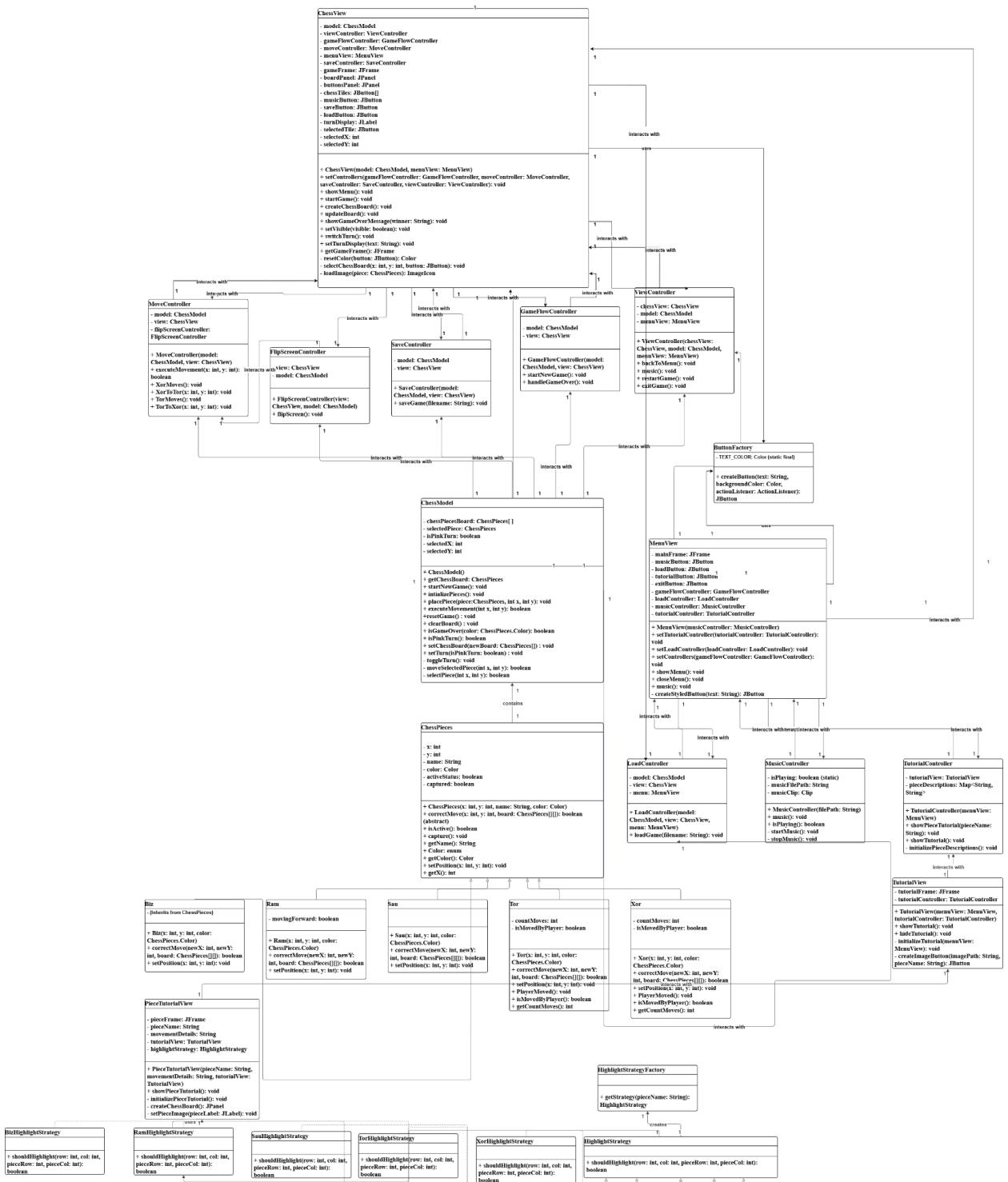
2 UML Class Diagram

Dear Sir,

Due to the large size of the diagram, we were unable to paste it directly. Instead, we have attached a link to the UML diagram. You can zoom in to view a clearer version of the class diagram.

Link for the google drive:

[https://drive.google.com/drive/folders/1_BXNnF9ibCPsYqLN2T2J5Fpn3wBJD27O
?usp=drive_link](https://drive.google.com/drive/folders/1_BXNnF9ibCPsYqLN2T2J5Fpn3wBJD27O?usp=drive_link)



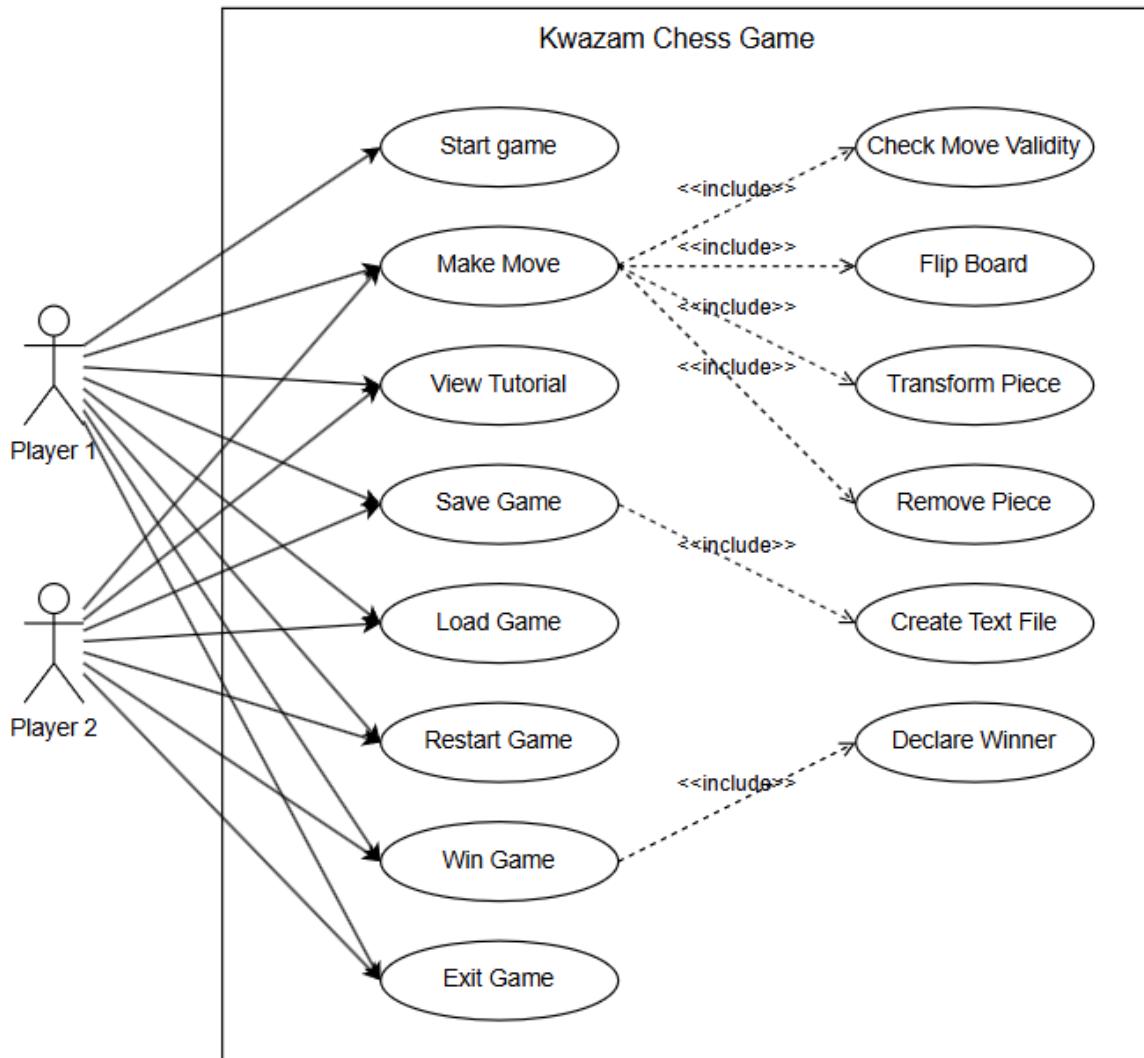
NO	CLASS	PURPOSE	DESIGN PATTERN
1	ChessPieces	Abstract base class for all chess pieces, encapsulating shared attributes like position, name, color and behavior such as capture and movement validation.	Template method design pattern
2	Biz	Represents a chess piece with L-Shaped movement	
3	Tor	Represent a chess piece with orthogonal movement (horizontal or vertical)	
4	Xor	Represents chess piece that moves diagonally	
5	Ram	Represents chess piece that moves forward one step but reverses direction upon reaching the board's edge	
6	Sau	Represents chess piece that moves one square in any direction	
7	ChessModel	Manages the chessboard state, piece movements and game flow(turn switching, piece placement, checking game-over conditions)	MVC - Model
8	SaveModel	Handles saving the current game state(turn, board configuration, piece details) to a file	Command design pattern - Encapsulates the save operation, allowing the game state to be stored externally without modifying the core game logic
9	LoadModel	Restores a previously saved game state by reading a file and updating ChessModel and ChessView	Command design pattern - Encapsulates the load operation, restoring the game state
10	CaptureModel	Provides method to handle piece	MVC- Model

		capture and validate moves in the game	
11	TutorialView	Provides a GUI for displaying chess rules and movement tutorials for each piece. It serves as a learning tool for users.	MVC - View
12	ChessView	Serves as the main game UI, displaying the chessboard, turn information, and game controls (e.g., save, load, restart).	MVC - View
13	PieceTutorialView	Provides a dedicated tutorial view for each chess piece, including movement rules and visual aids like a highlighted chessboard.	MVC - View Strategy Design Pattern - Uses HighlightStrategy to determine the specific movement highlighting logic for each piece dynamically.
14	MenuView	Manages the main menu interface, allowing users to start a new game, load a game, access the tutorial, toggle music, and exit the application.	MVC - View Factory Design Pattern - (Button Creation): Delegates button creation to the ButtonFactory class for consistent button design.
15	ButtonFactory	Provides a utility for creating styled buttons with consistent design and behavior across the application	Factory Design Pattern
16	FlipScreenController	Handles flipping the chessboard after each turn by reversing the rows and updating the board state and view.	MVC - Controller
17	MoveController	Manages the logic for player moves, including validation, piece transformation (Xor to Tor and vice versa), and turn-based operations like flipping the screen and checking game-over conditions.	MVC - Controller

18	MusicController	Manages background music playback, including starting, stopping, and toggling music during the game.	MVC - Controller
19	GameFlowController	Handles starting new game	MVC - Controller
20	TutorialController	Manages the tutorial functionality, including displaying piece-specific tutorials and handling interactions in the tutorial view	MVC - Controller
21	SaveController	Handles saving the game state by delegating to the SaveModel utility class.	MVC - Controller Command Pattern - Encapsulates the "save game" operation as a command, allowing it to be executed without exposing the underlying logic.
22	LoadController	Manages game loading by transitioning from the menu view to the game view and updating the game state using the LoadModel.	MVC - Controller Command Pattern - Encapsulates the "load game" operation, simplifying its execution.
23	ViewController	Coordinates UI actions such as navigating back to the main menu, restarting the game, and toggling music or exiting.	MVC - Controller
24	HighlightStrategyFactory	Provides a centralized mechanism to obtain the correct HighlightStrategy implementation for a given chess piece	Factory Method Pattern: Dynamically instantiates the appropriate HighlightStrategy implementation based on the piece name.
25	TorHighlightStrategy	Implements the highlighting logic for the "Tor" piece, highlighting all squares in the same row or column as the piece.	Strategy Pattern - Encapsulates the Tor-specific highlighting logic

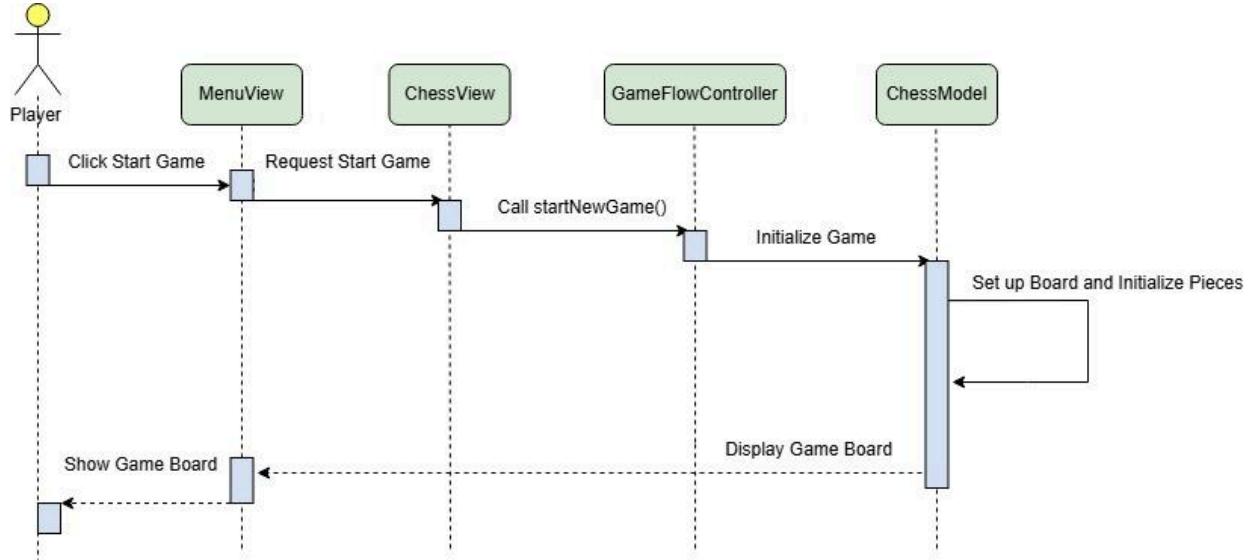
			within a reusable and interchangeable strategy.
26	RamHighlightStrategy	Implements the highlighting logic for the "Ram" piece, highlighting only one step forward or backward along its column.	Strategy Pattern - Encapsulates Ram-specific highlighting rules.
27	BizHighlightStrategy	Implements the highlighting logic for the "Biz" piece, highlighting squares based on its L-shaped movement	Strategy Pattern - Encapsulates Biz-specific movement highlighting logic.
28	XorHighlightStrategy	Implements the highlighting logic for the "Xor" piece, highlighting squares along its diagonal paths.	Strategy Pattern - Encapsulates Xor-specific movement highlighting rules.
29	SauHighlightStrategy	Implements the highlighting logic for the "Sau" piece, highlighting all adjacent squares (horizontal, vertical, and diagonal).	Strategy Pattern - Encapsulates Sau-specific movement highlighting rules.
30	HighlightStrategy (Interface)	Defines a common contract for all movement highlighting strategies, ensuring consistency and flexibility in implementation.	Strategy Pattern - Serves as the base interface for all piece-specific highlighting strategies.
31	Main	To run the file	

3 Use Case Diagram



4 Sequence Diagram

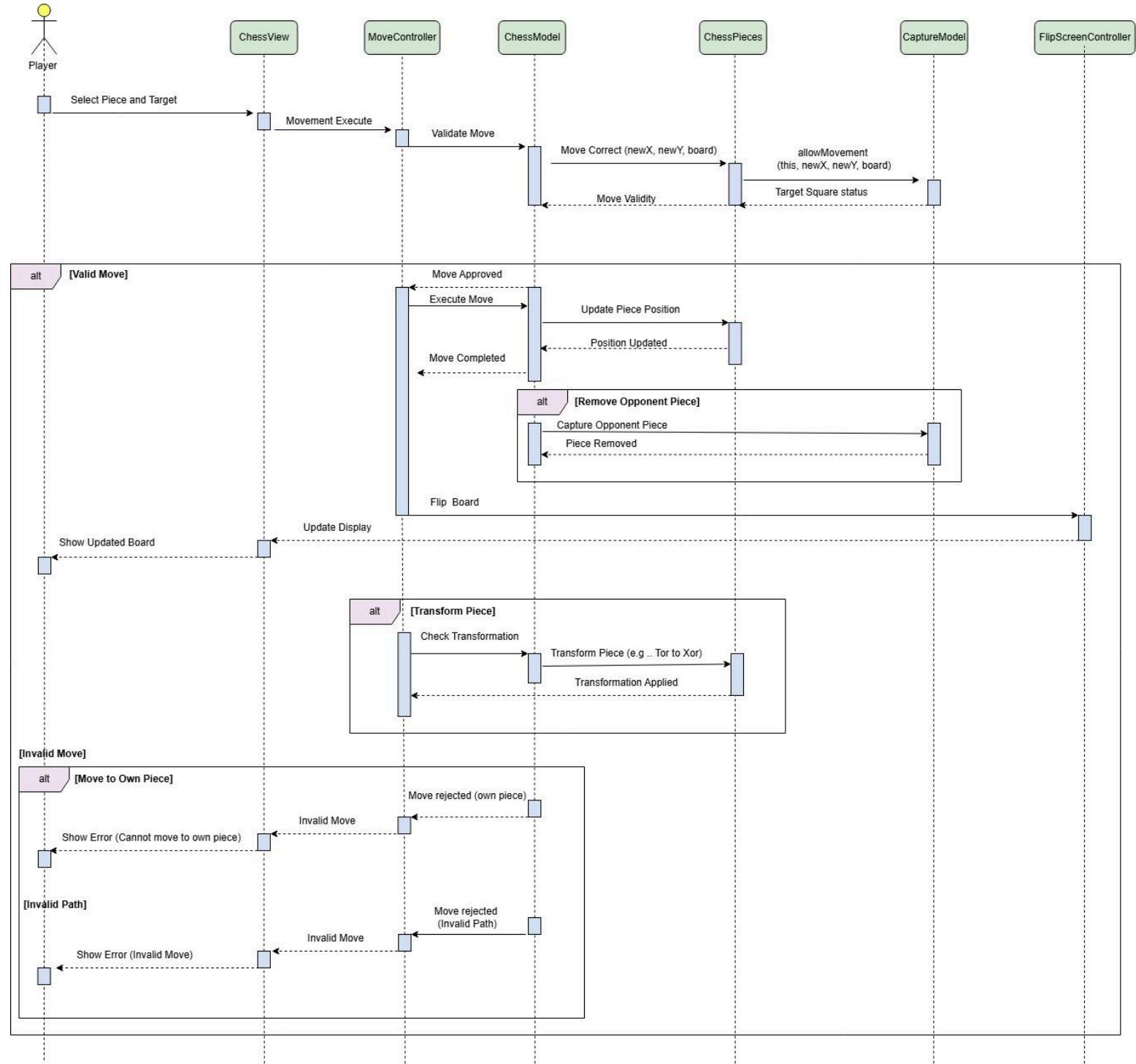
4.1 Start Game Sequence Diagram



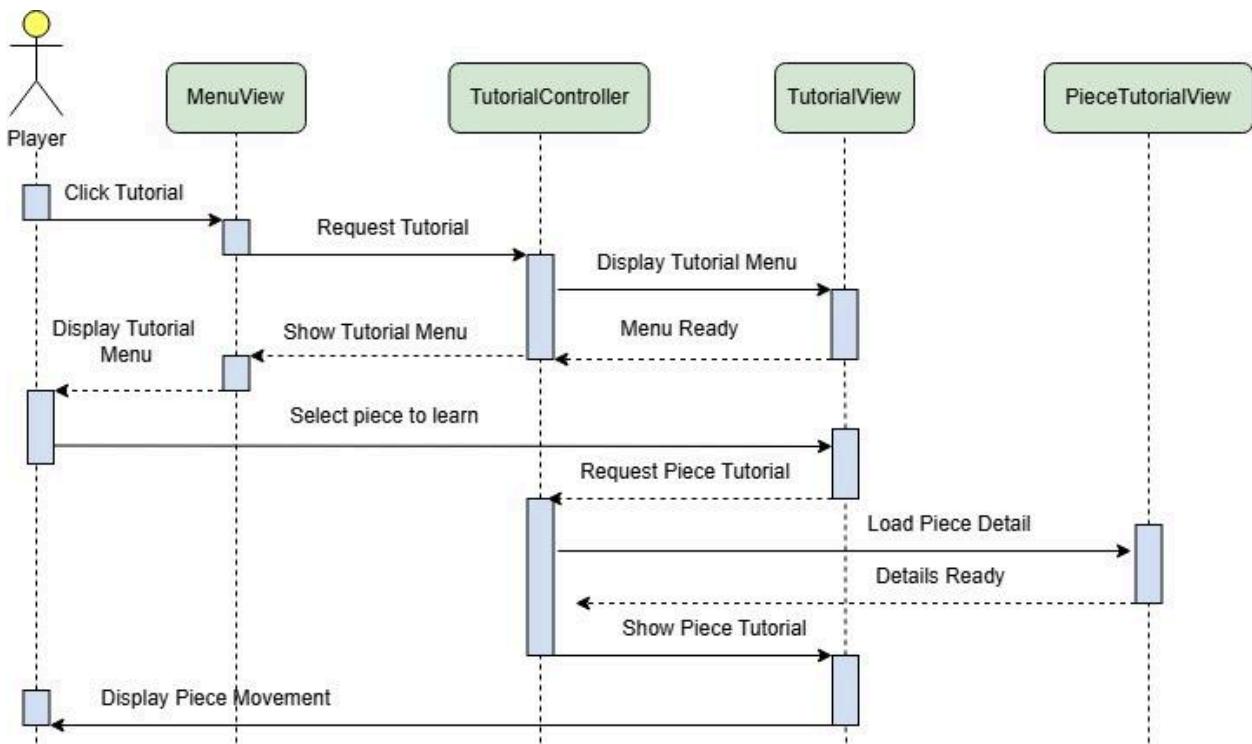
4.1 Start Game Sequence Diagram

4.2 Make Move Sequence Diagram

4.2 Make Move Sequence Diagram

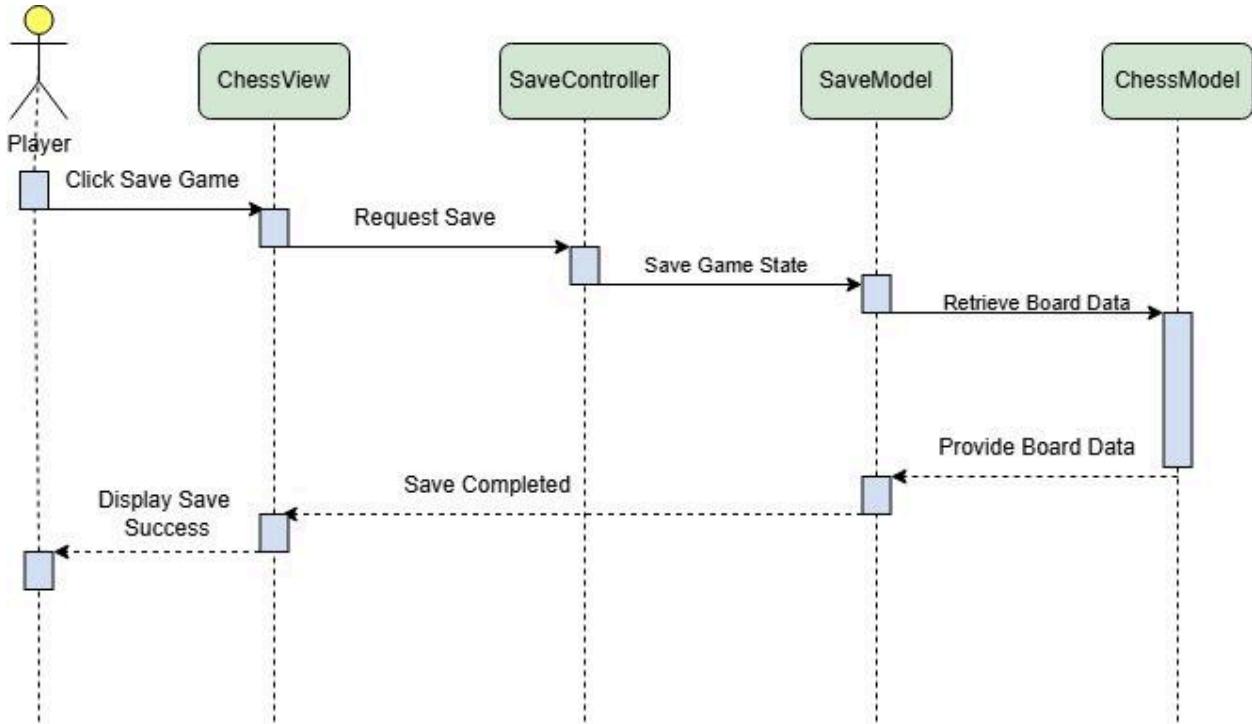


4.3 View Tutorial Sequence Diagram



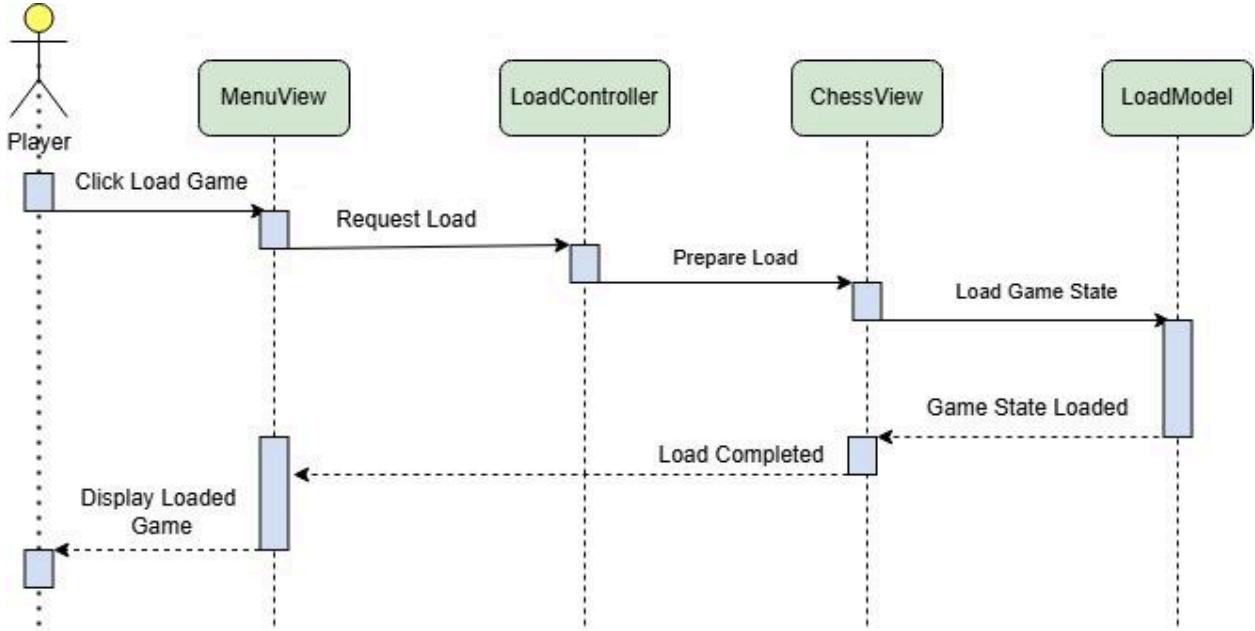
4.3 View Tutorial Sequence Diagram

4.4 Save Game Sequence Diagram



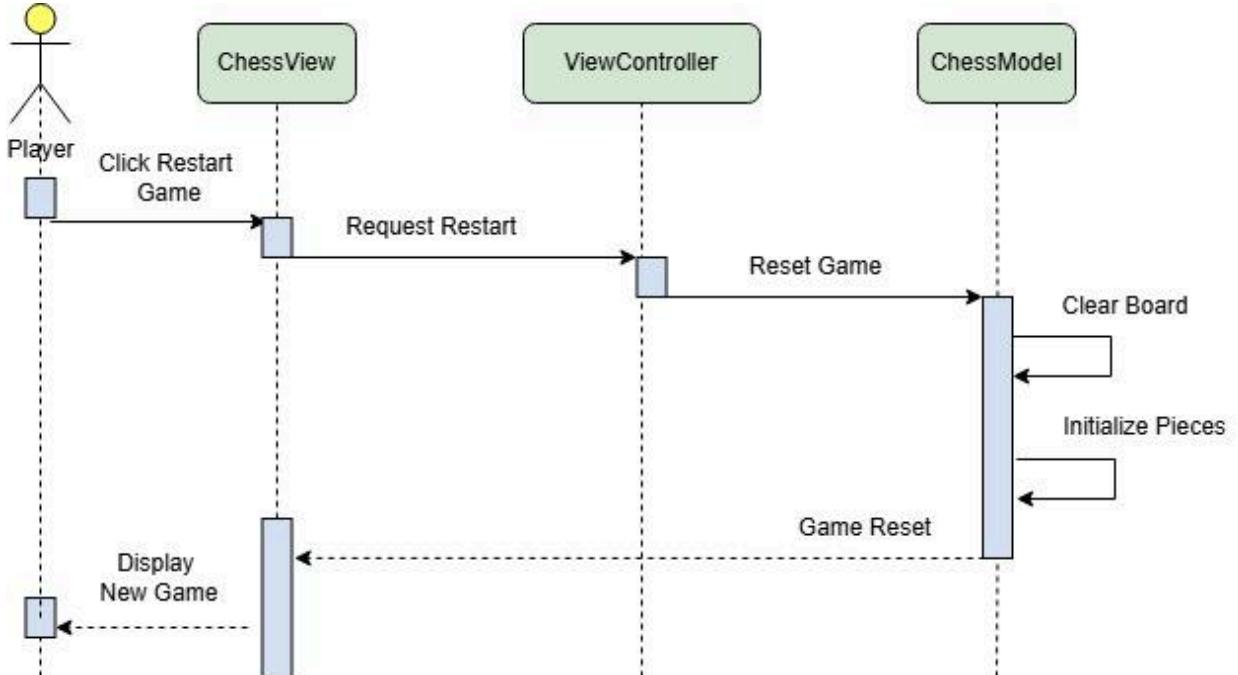
4.4 Save Game Sequence Diagram

4.5 Load Game Sequence Diagram



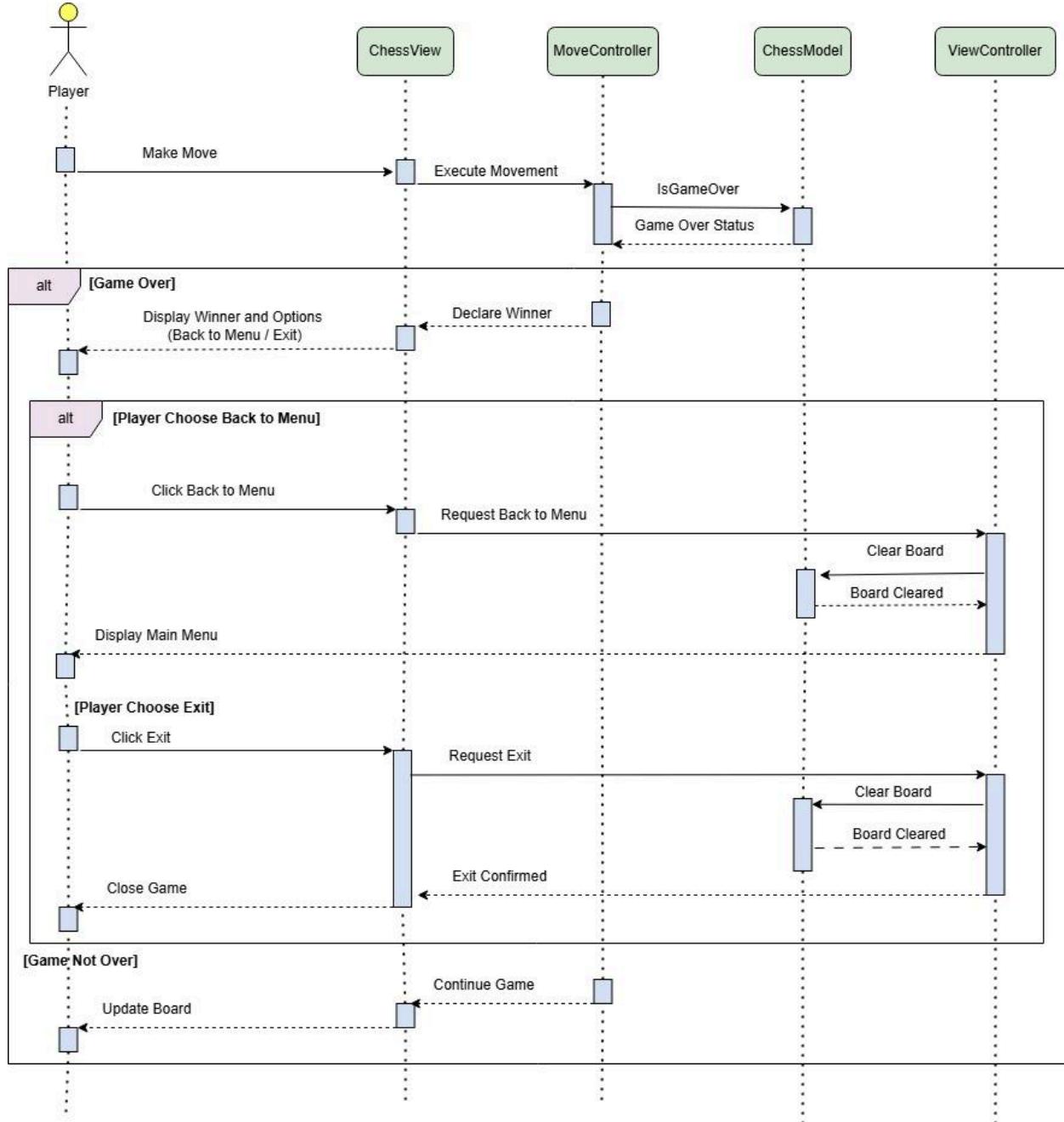
4.5 Load Game Sequence Diagram

4.6 Restart Game Sequence Diagram



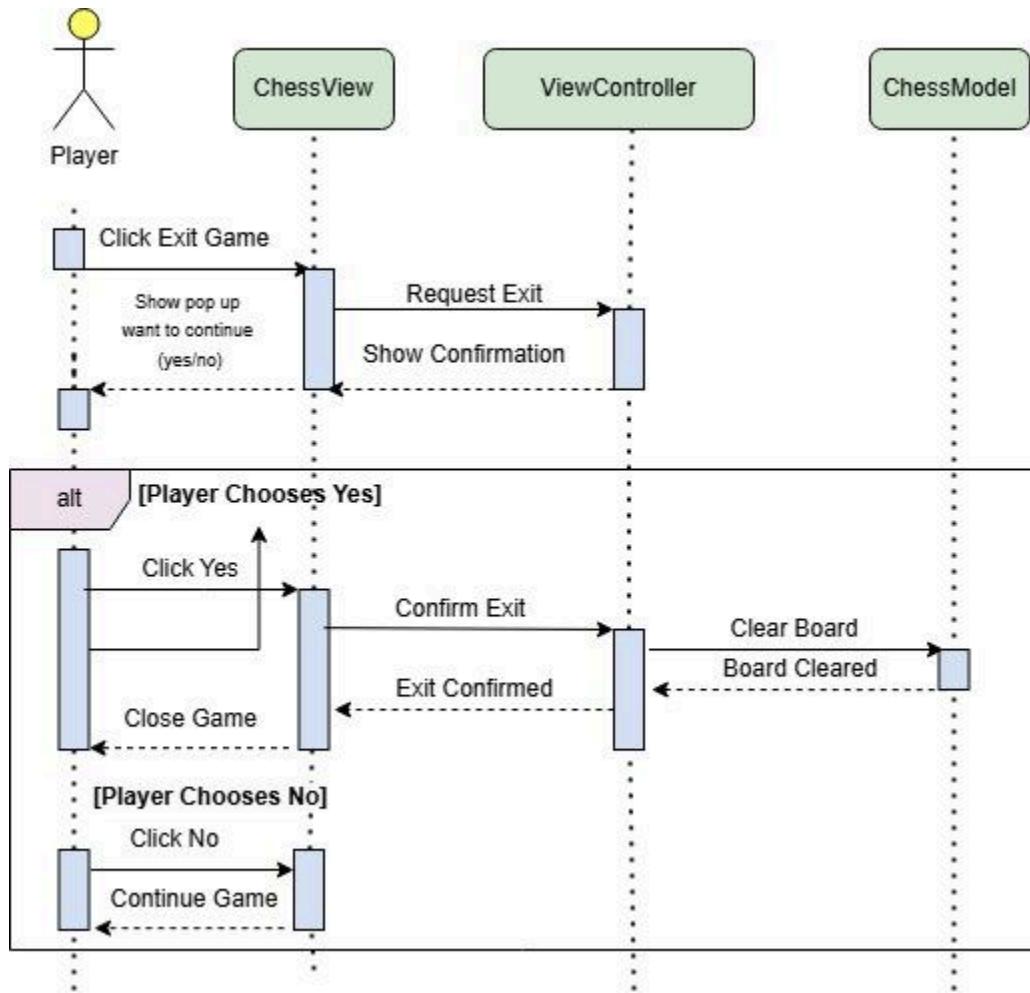
4.6 Restart Game Sequence Diagram

4.7 Win Game Sequence Diagram



4.7 Win Game Sequence Diagram

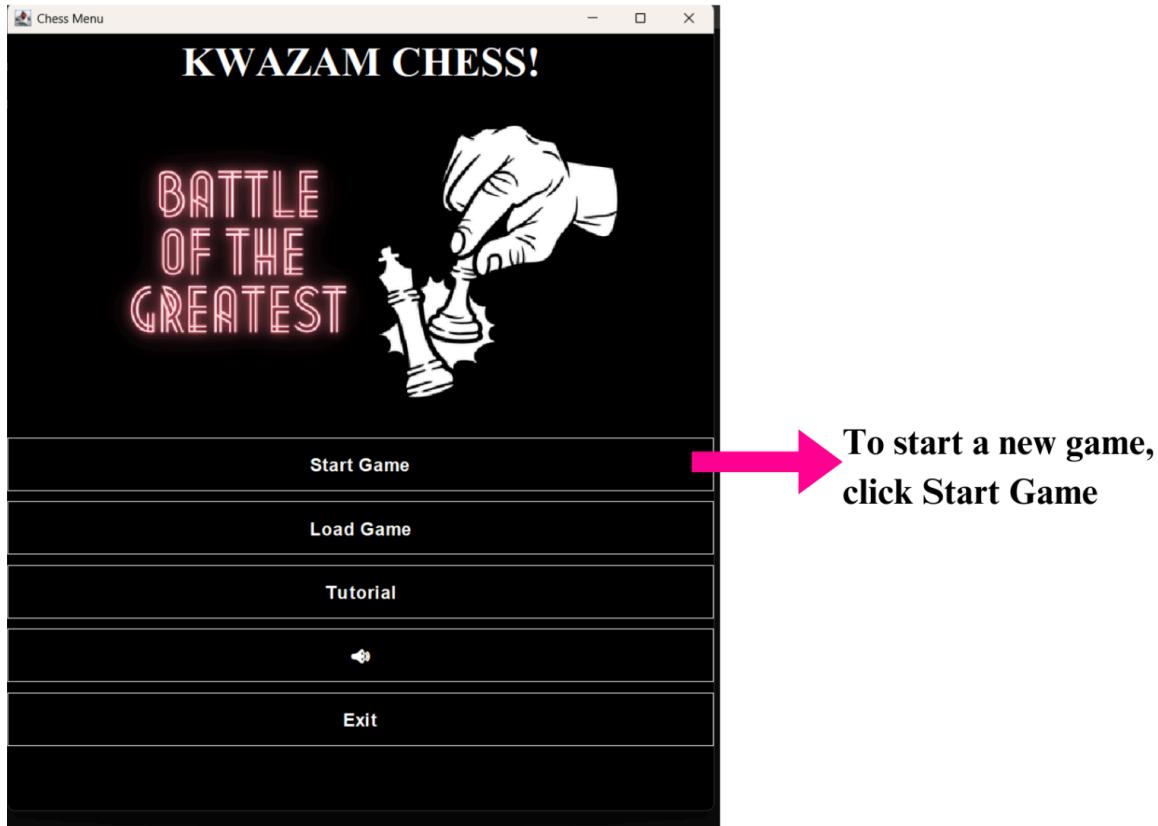
4.8 Quit Game Sequence Diagram



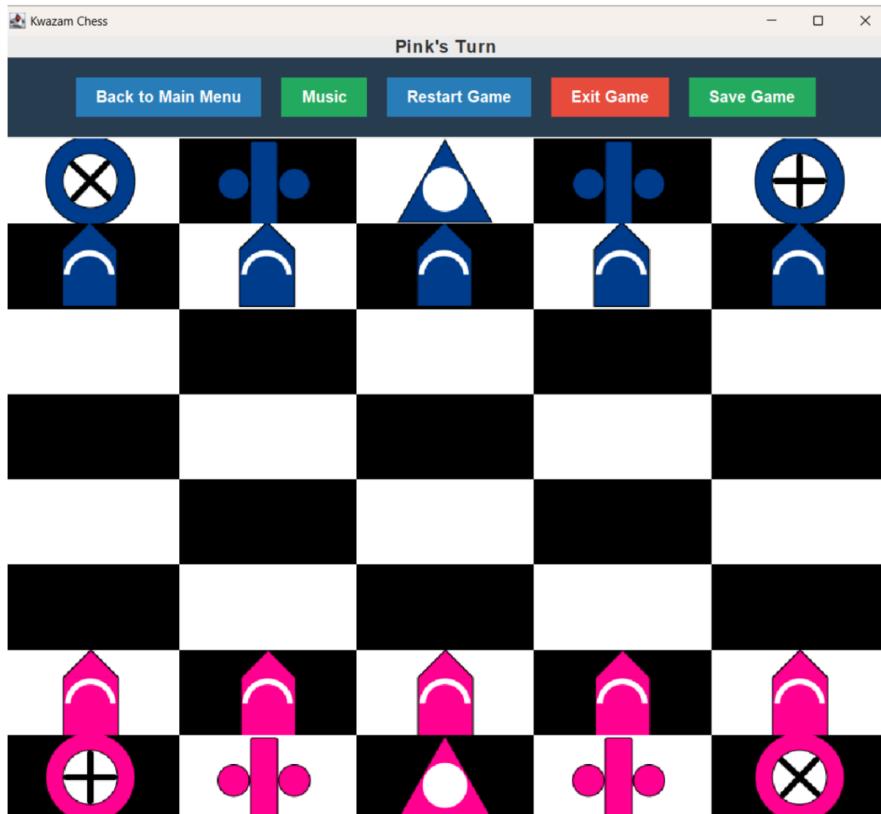
4.8 Quit Game Sequence Diagram

5 User Documentation

5.1 Starting a new game

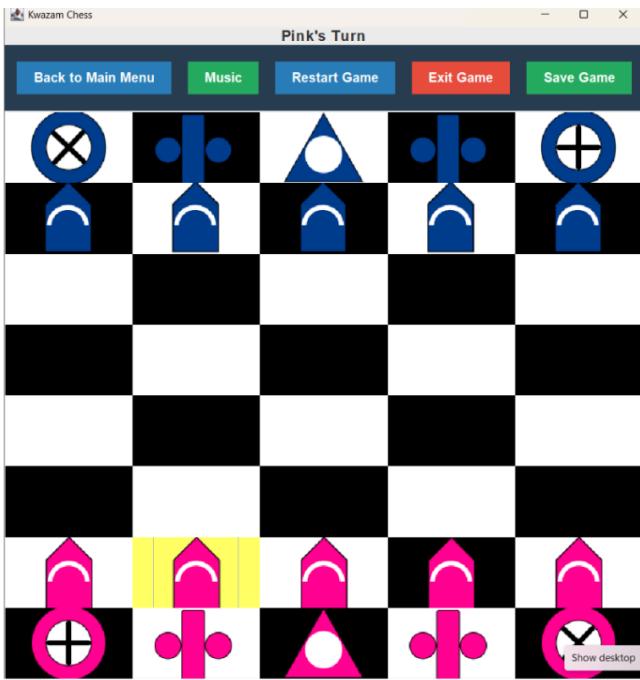


A new chessboard will appear for a fresh game.



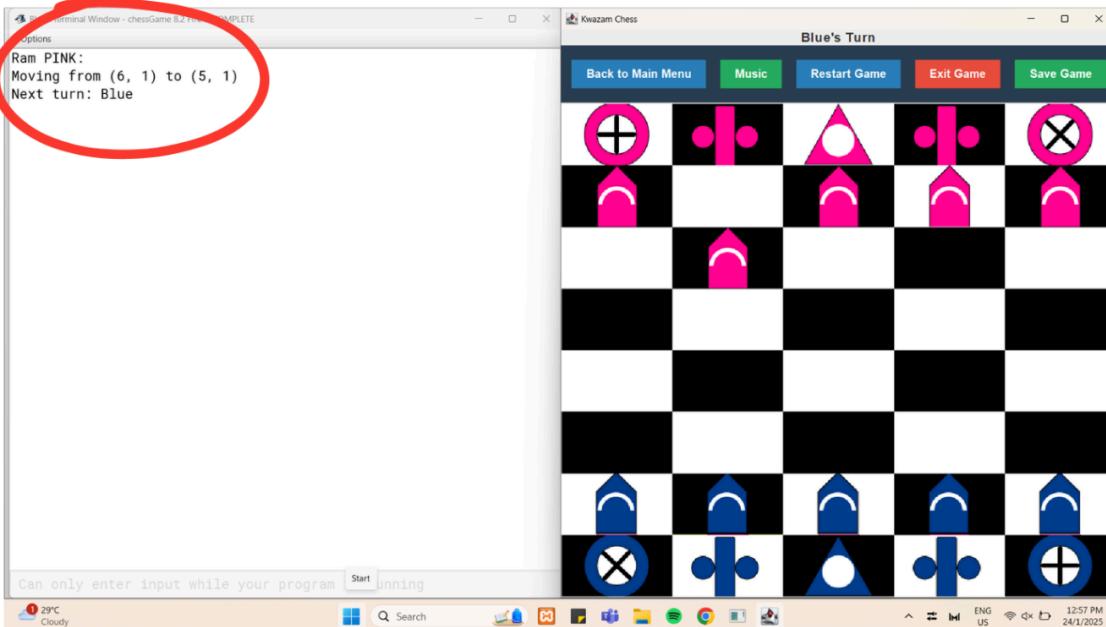
5.2 Moving a chess piece

1



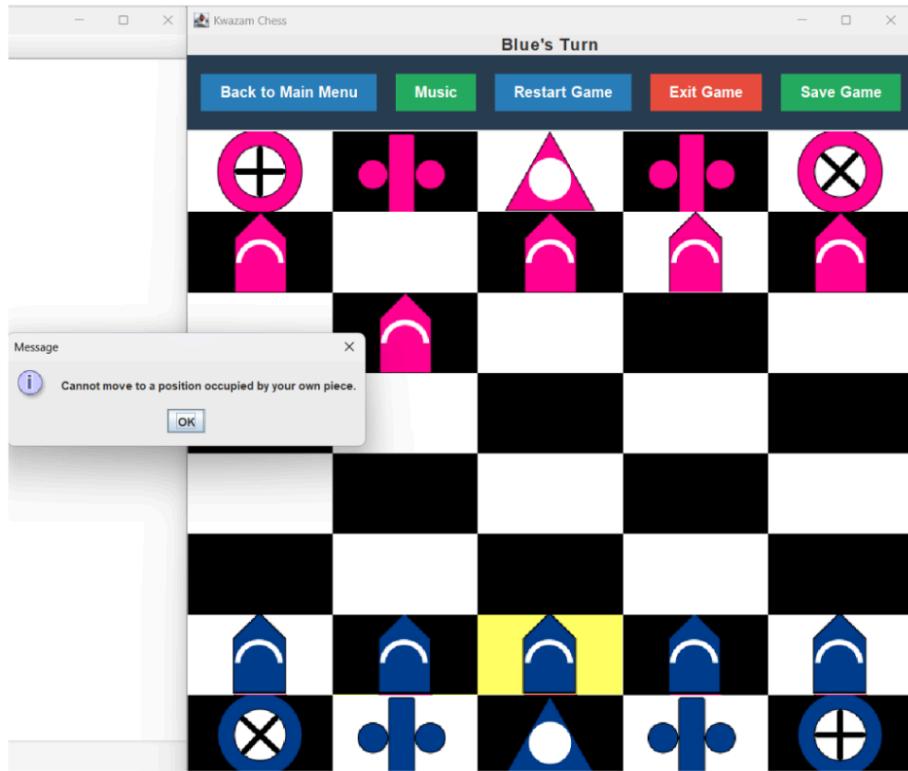
Click on the desired chess piece. A yellow highlight will appear on the piece, indicating that you have selected it.

2



If the move is successful, it will be logged in the console.

The screen will flip, and the turn will switch to the second player.



The terminal window on the left shows the game log:

```

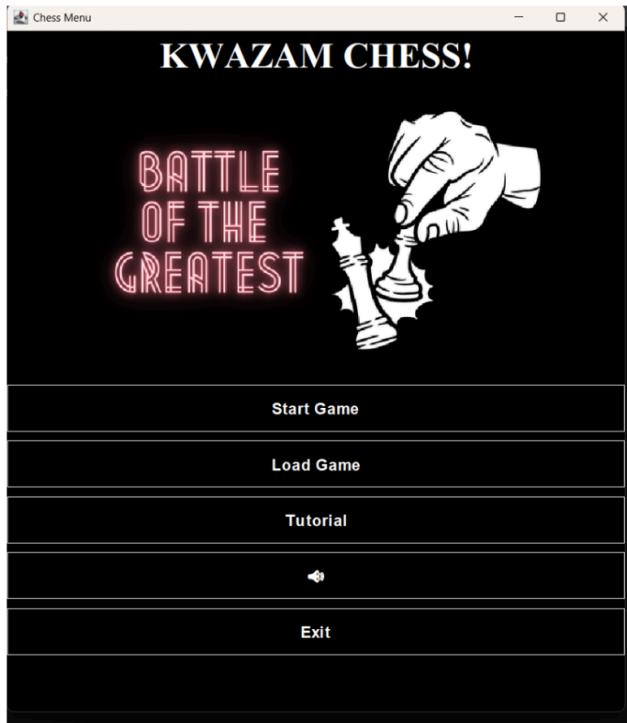
Ram PINK:
Moving from (6, 1) to (5, 1)
Next turn: Blue
Ram BLUE:
Moving from (6, 1) to (5, 1)
Next turn: Pink
Biz PINK:
Moving from (7, 3) to (5, 4)
Next turn: Blue
Ram BLUE:
Moving from (6, 2) to (5, 2)
Next turn: Pink
Ram PINK:
Moving from (5, 1) to (4, 2)
Invalid move for Ram.
  
```

The message box in the center says "Invalid move for Ram." with an OK button. The chessboard shows the state after the invalid move attempt.

If the move is invalid, a pop-up message will appear.

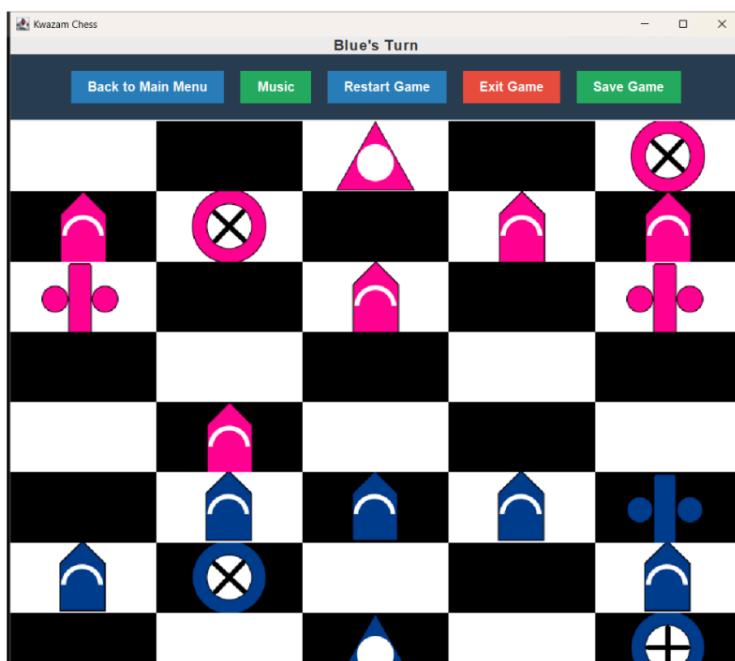
5.3 Load a game from previously saved progress

1



Click Load Game
button

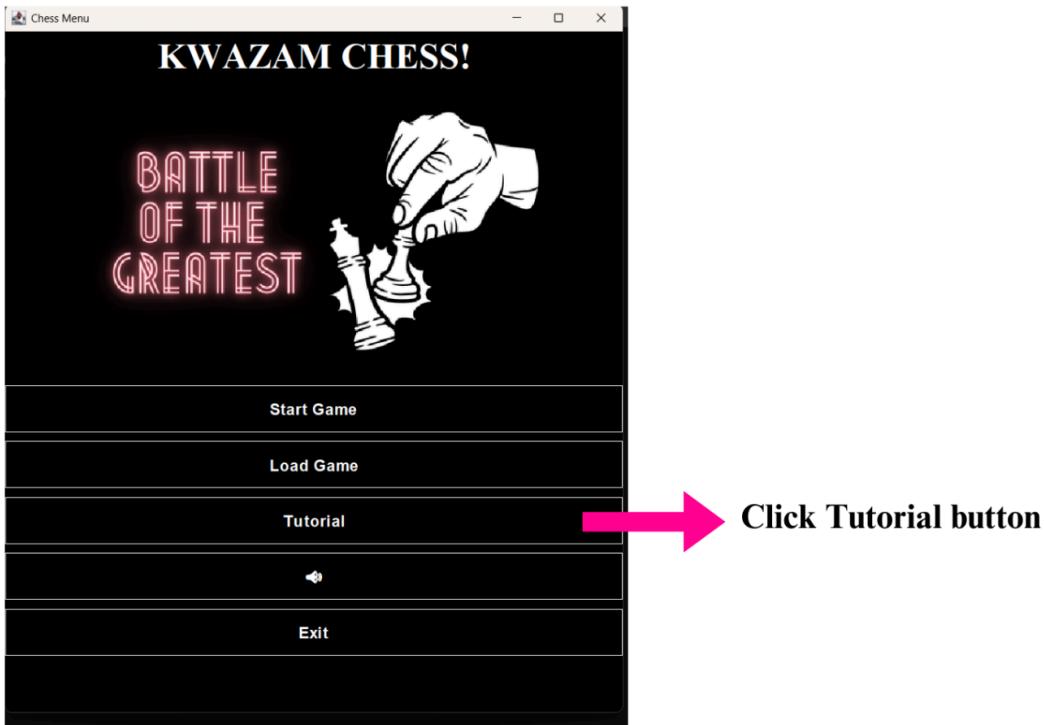
2



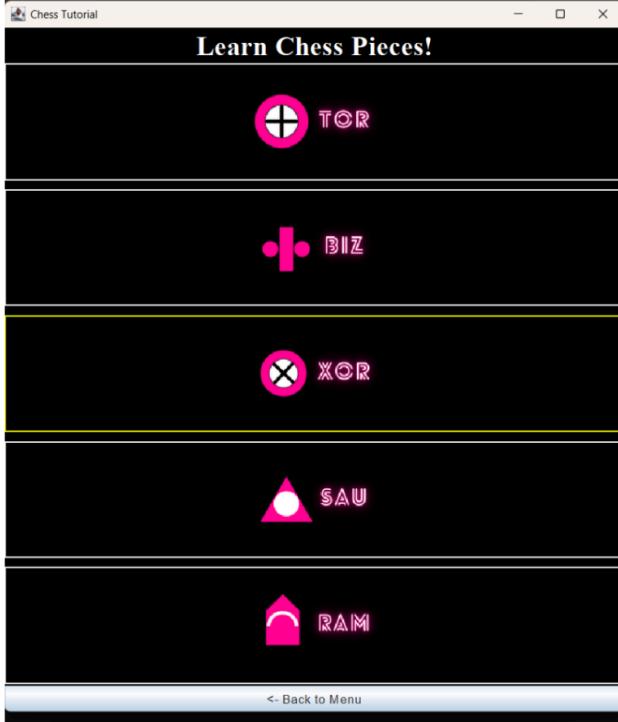
A board with your saved game will appear, and the console will confirm that the game has been loaded successfully

5.4 Learn how each chess piece moves and master the basics of the game

1

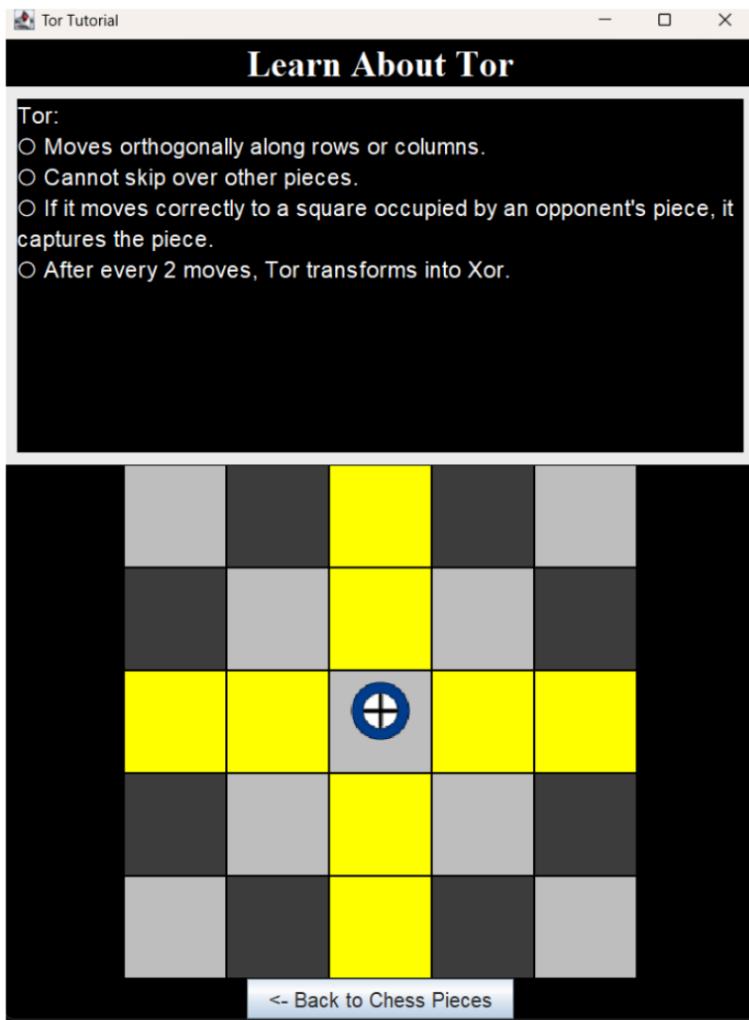


2



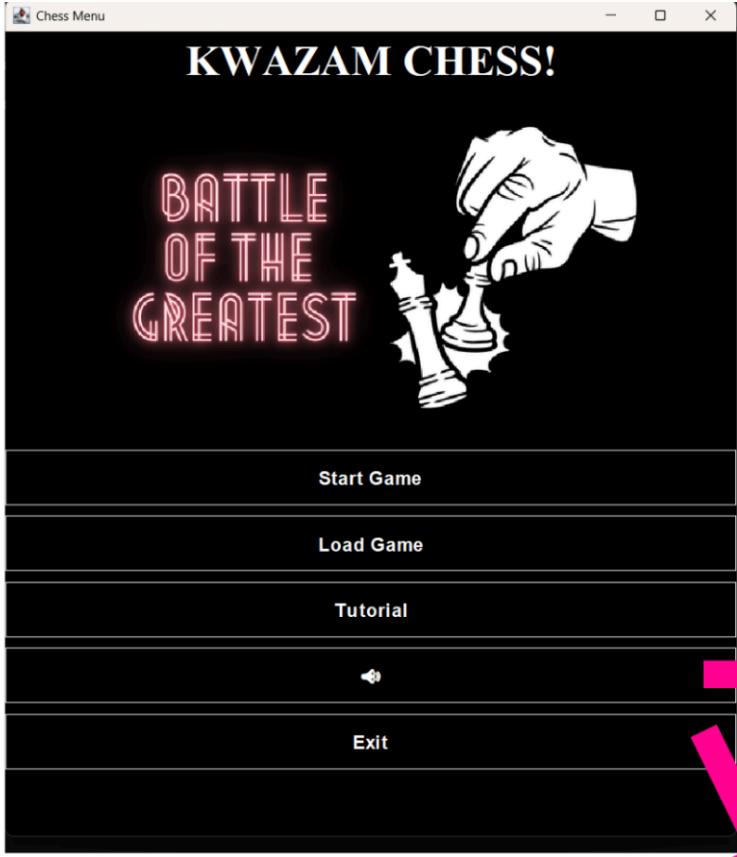
A page displaying a list of chess pieces will appear.
Click on any piece to learn about its movements.

3



When you click on a specific piece, a description of its movements will appear, along with a picture showing highlighted chess tiles for better visualization.

5.5 Understanding the remaining buttons in the Kwazam Chess menu

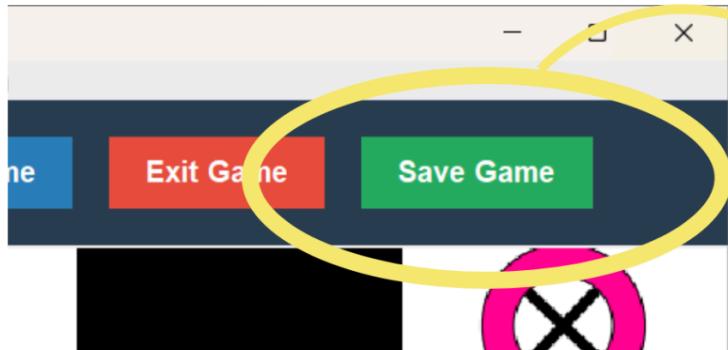


In this game, music plays automatically. If you wish to turn it off, click this button

Exit button to quit the game

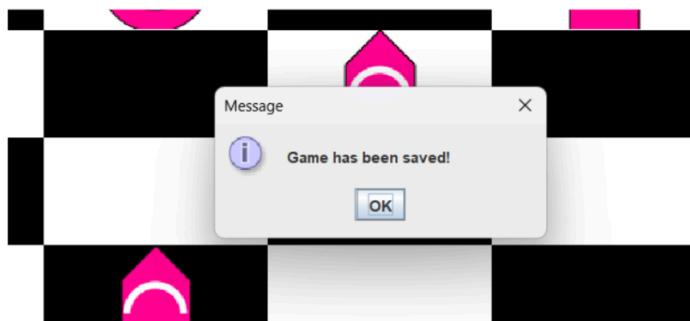
5.6 Saving the game progress

1



Save your game progress
by clicking this the save
game button

2



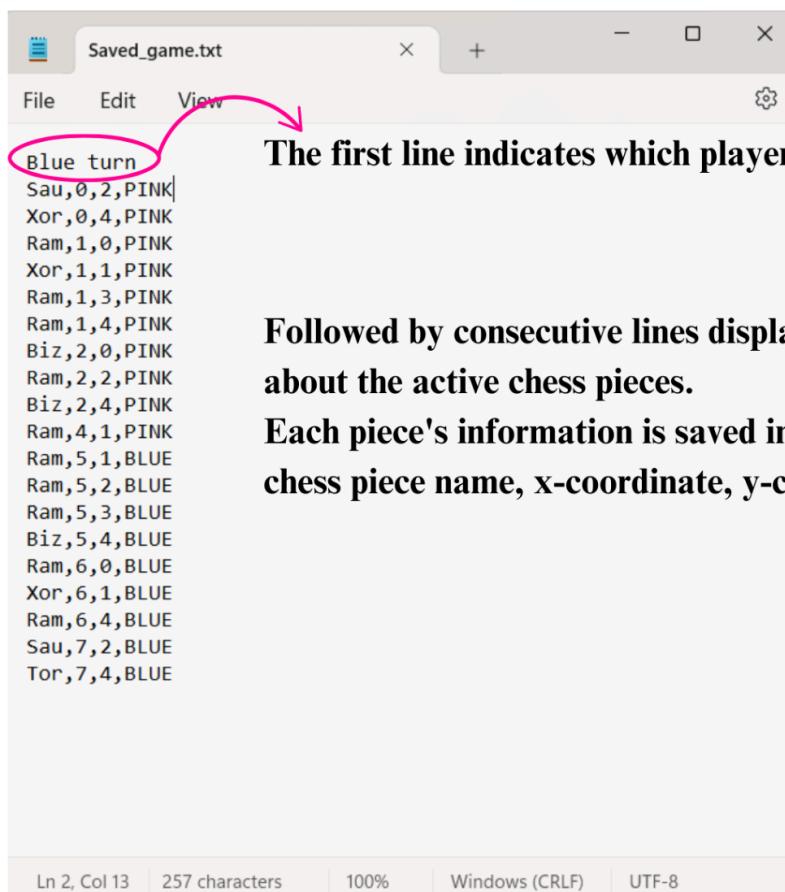
A confirmation popup will
appear, and you're all set!

3

	SAVECONTROLLER	14/1/2025 11:20 AM	JAVA .
	Saved_game	20/1/2025 10:42 PM	Text .
	CLOUDMODEL CLASS	21/1/2025 9:45 AM	CLASS .

The saved game can be found
in the saved_game.txt file.

4



```
Blue turn
Sau,0,2,PINK
Xor,0,4,PINK
Ram,1,0,PINK
Xor,1,1,PINK
Ram,1,3,PINK
Ram,1,4,PINK
Biz,2,0,PINK
Ram,2,2,PINK
Biz,2,4,PINK
Ram,4,1,PINK
Ram,5,1,BLUE
Ram,5,2,BLUE
Ram,5,3,BLUE
Biz,5,4,BLUE
Ram,6,0,BLUE
Xor,6,1,BLUE
Ram,6,4,BLUE
Sau,7,2,BLUE
Tor,7,4,BLUE
```

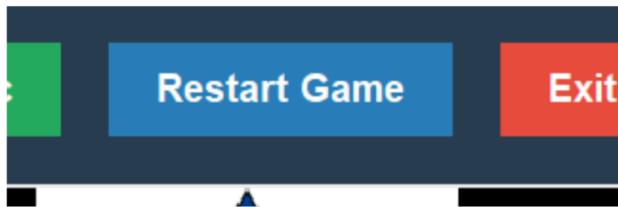
The first line indicates which player's turn it is

Followed by consecutive lines displaying information about the active chess pieces.

Each piece's information is saved in the following order: chess piece name, x-coordinate, y-coordinate, color.

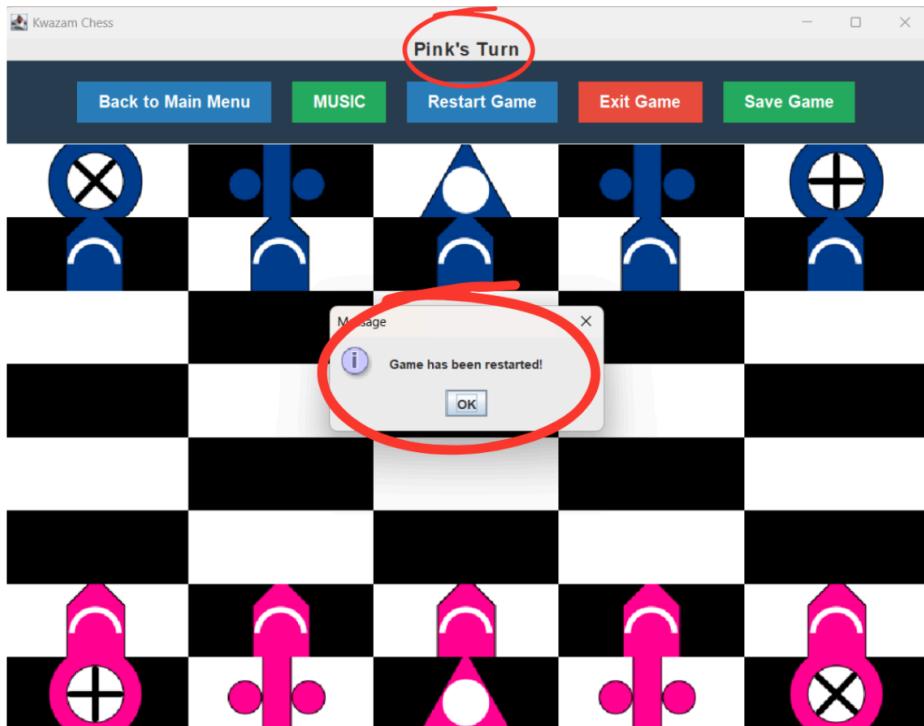
5.7 Restarting the game

1



To restart the game, simply click the 'Restart Game' button

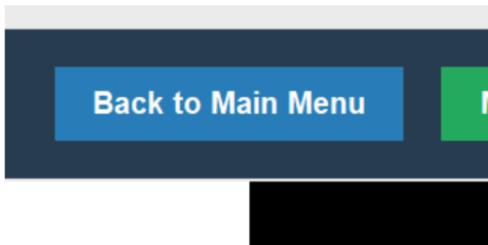
2



A popup message confirming that your game has been restarted will appear, and the turn will reset to the first player (pink)

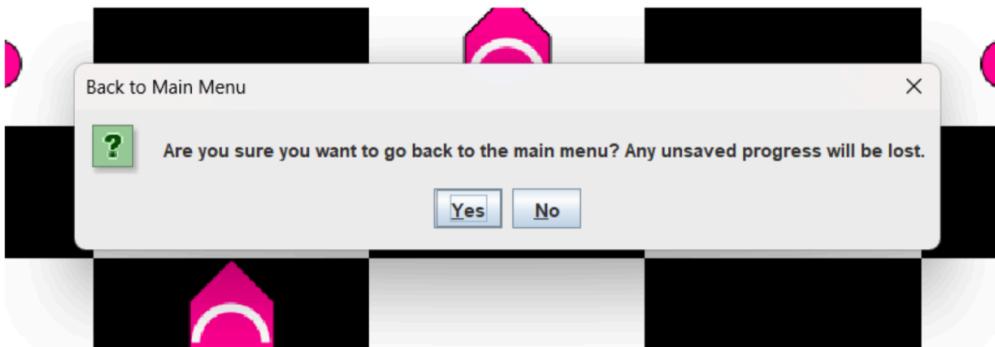
5.8 Return to main menu during game play

1



To return to the main menu during game play, simply click the 'Back to Main Menu' button

2



A popup message will appear, confirming that you understand you will lose your game progress

Please ensure you save your game first if you wish to continue later