

Monkey Chess V1.0

User Manual

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Monkeys with Typewriters

Copyright

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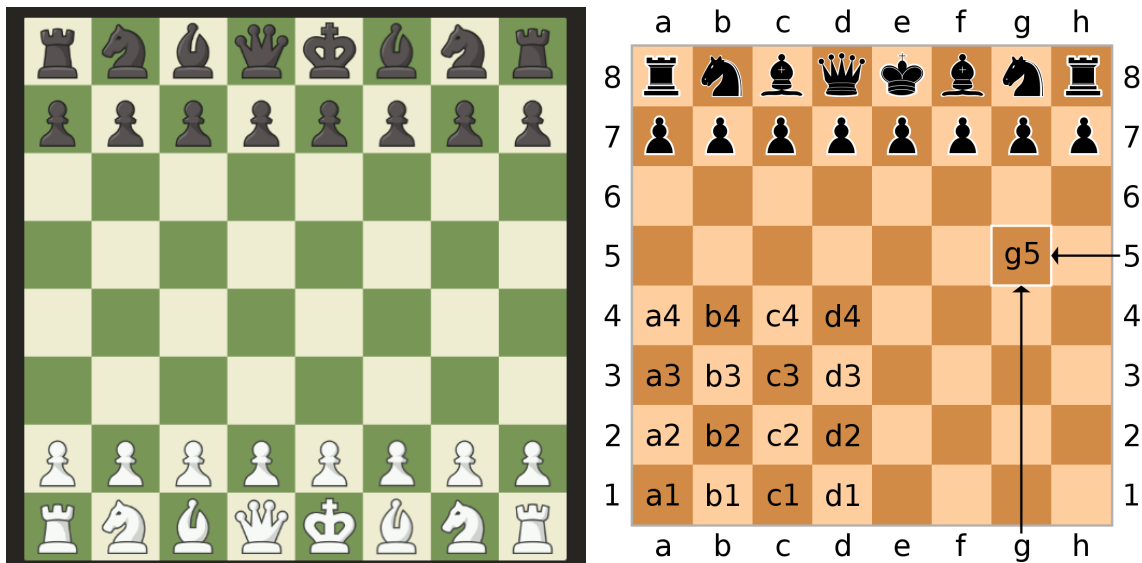
Getting Started

Introduction to Chess:

The Board:

The **chess board** is a 8x8 grid, where both players have equal pieces and are placed on the last two rows.

The horizontal rows are referred to by the first 8 letters of the alphabet, while the vertical columns are notated with decimal. This allows us to name each position on the board.



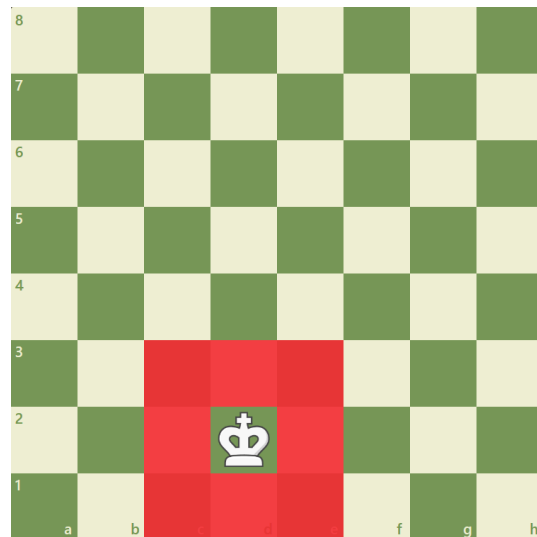
Each player's board is perfectly mirrored, so the queens are on the same side (on left for white, and on right for black).

The front row is going to be filled with pawns, and the back row will be placed in a specific order.

The Rooks are placed in the corners(column A and H), followed by the Knights (in columns B and G), then the Bishops (columns C and F), and lastly the King and Queen (King column E and Queen on Column D).

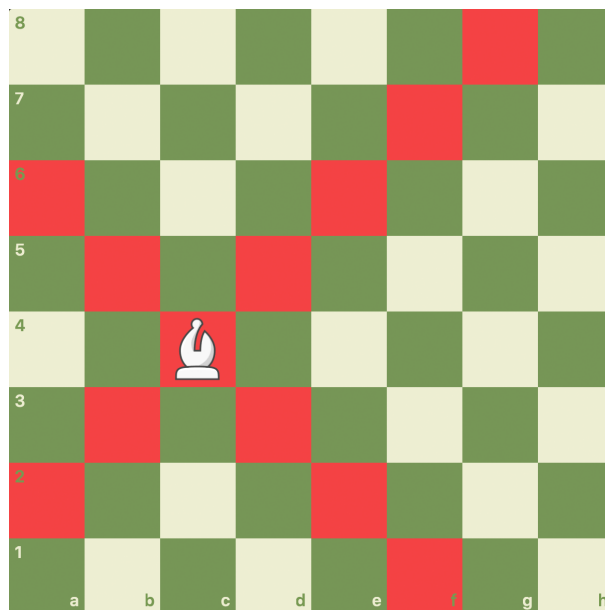
The Pieces:

The **king** is the most important piece within the game of chess. The king can move in any direction, but it can only move one square at a time.

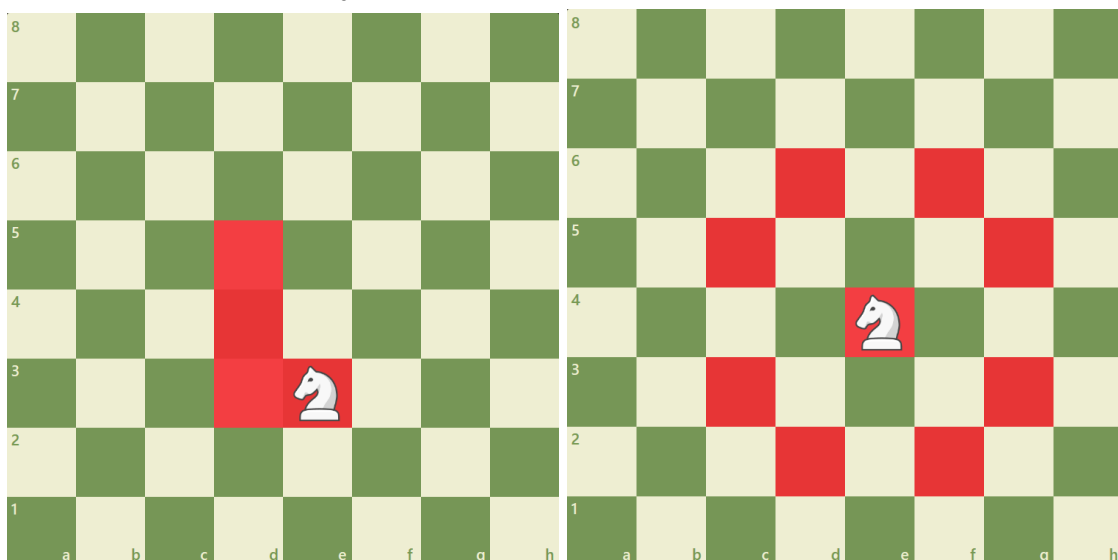


Unlike any other piece, the king can never be captured but can be attacked. The king instead can be put in check and checkmate more in-depth information regarding these is in the next section.

The **bishop** is a piece that can move diagonally on the same color squares as many as it wants. A light-squared bishop can only move on light squares and a dark-squared bishop can only move on dark squares. Some other limitations to the movement of a bishop is if there are other pieces in the way. The red squares in the image below show the possible squares the bishop can move to.



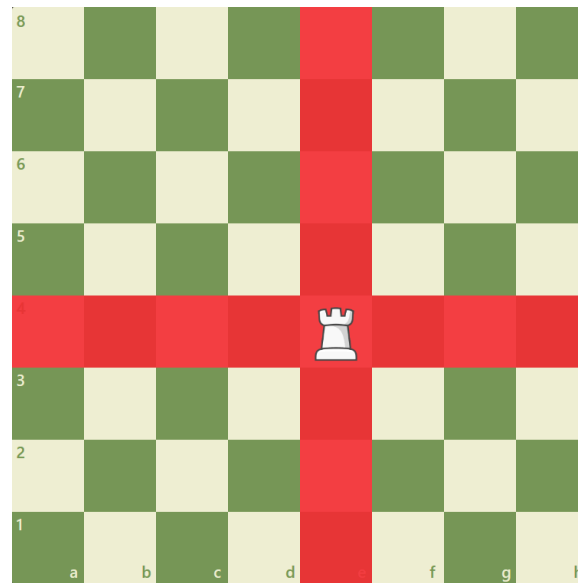
The **knight** is the horse piece and is the strangest piece available. The knight moves two squares forward in any direction and then one square sideways. When possible, a knight has 8 squares where it can move or “jump” to.



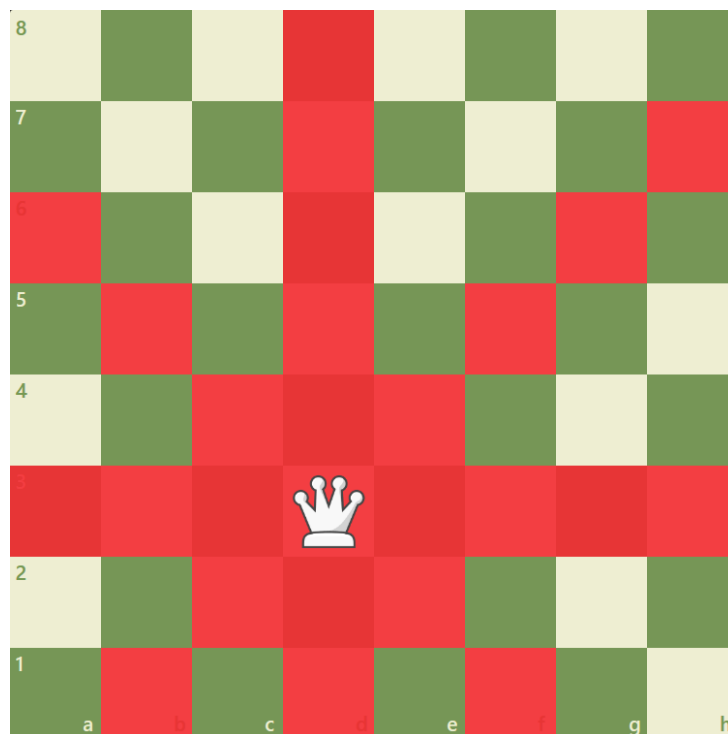
It is noted that the knight is allowed to jump over pieces to get to possible squares.



The **rook** is the piece that resembles a castle which can only move vertically and horizontally. This piece is not limited to any specific squares unless it is blocked by another piece. This is also the second strongest piece in the game.



The **queen** is the most powerful piece on the chess board. It can move like a rook and bishop combined. The queens will always be placed in the D column of the board on the **back ranks** of the board.



The **pawn** is the weakest piece in the game of chess. It can only move forward one space, except for the first move where it can move forward two spaces. It can only capture pieces by moving one space diagonally.



The Rules:

The player with the white pieces always moves first.

From the start of the game, the objective is to “**checkmate**” the opponent’s king, or attack the other king in a way where there are no legal moves left for the other player.

A king is attacked when an opponent’s piece would be able to capture it in the next move, this is known as **check**. When a king is in check, the only valid moves are ones that stop the check. This can be done by either moving the king, capturing the attacking piece, or moving another piece to protect the king.



Here we see that the Black King is in check from the Bishop. Additionally, the King is unable to move in a way that leaves the check, so the only valid moves to leave check are to block the attack with a different piece.



Here the White King is in Checkmate.
The King is in check, and no moves exist that will stop the check.

Special Rules

There are special moves in chess to make the game more fun and interesting.

Castling: A move to move two pieces at once (King and Rook). The move involves moving the King two squares to the left or right toward its Rook and the Rook goes beside the King and toward the center of the board. These are known as Queenside and Kingside Castling which refer to which way the king castles. In terms of notation, castling kingside is denoted O-O and castling queenside is O-O-O which refers to the amount of space between the king and rook. Something to note is that castling is only possible when there are no other pieces between the king and respective rook and when the king and that rook have yet to move.

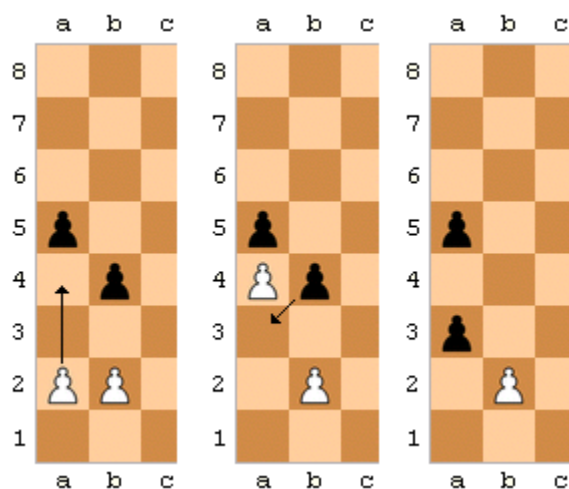


Kingside castling



Queenside castling

En Passant: If a pawn moves 2 squares on its first move and lands to the side of an opponent's pawn, the opponent's pawn has the option of capturing it as if the initial pawn was only moving one space.



Promotion: When a pawn reaches the other side of the board, it can be promoted to any chess piece besides a pawn or king.

Installation

System Requirements

- Linux operating system (Ubuntu, Debian, CentOS, etc.)
- SSH client (PuTTY, Command Prompt, Terminus, etc.)
- Terminal access
- Internet connection

Setup and configuration

The following instructions also can be found in the README.txt file packaged with the program.

Steps:

1. Download the .tar.gz file from a UCI EECS Server using the following cp command.

```
cp /users/ugrad2/2017/winter/team13/projects/chess/Chess_V1.0.tar.gz .
```
2. Navigate to the same directory as the tarball and use the following command to unpack the game files:

```
tar -xf Chess_V1.0.tar.gz
```
3. Start the game by executing the following command:

```
./bin/monkechess
```
4. Enjoy The Game!!!

Uninstalling

To Uninstall, the user needs to delete the “monkey chess” file from their linux server account using the following script in the /monkeychess/bin directory:

```
./uninstmkychess.sh
```

Computer Chess

Usage Scenario



This is a capture of what the chess board looks like.

We will play using a mouse.

To start the game, the user will choose between going against a computer or against another player. If they choose to go against a computer, then they will select their difficulty. Afterwards, they will select which side of the board (black or white) they would like to start on.

To play the game, the player will click on the piece they would like to move and which square they would like to move to. If they click on a square where their piece cannot move to, they will get an error message. The AI (or second player) will then move a piece and this will go on until either the player or other player wins.

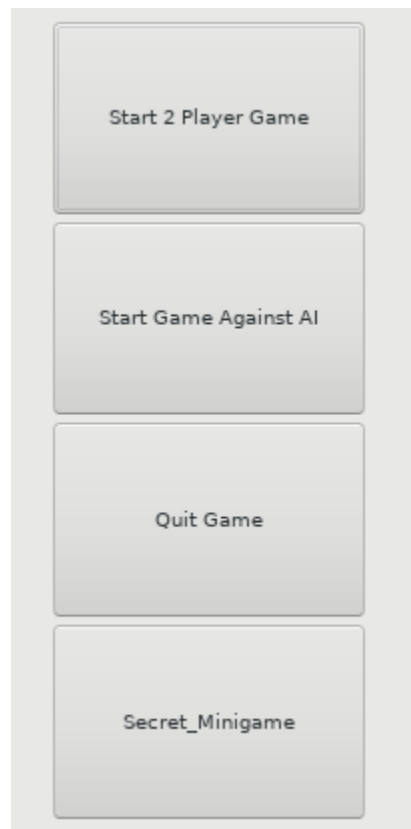
Objective

The objective of chess is to checkmate your opponent's king.

Features

Start Screen

- The start screen of the program, where it allows the user to choose between playing against another user or a computer, quit game, and a secret mini game.
 - If they have chosen to go against a computer, they have a further option to select which side of the board to start on (black or white).



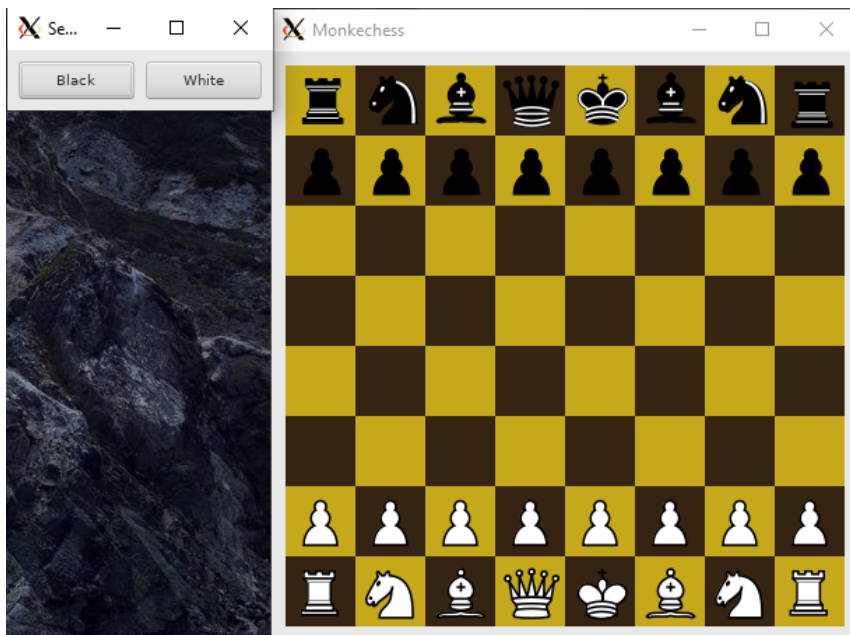
Player vs Player Screen

- When selecting “Start 2 Player Game”, it shows a chess board where players make moves. The program will check for invalid/illegal moves that players are trying to take.



Player vs Computer Screen

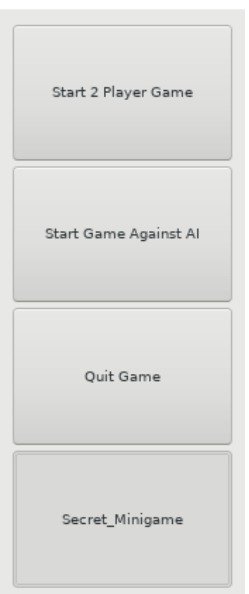
- When selecting “Start Game Against AI” the user must choose which color of pieces to start on.
- White will go first, then black will go afterwards
 - e.g. Player chooses white, AI moves automatically after player moves
- The game will take the input in and wait for the AI move and then outputs both the user’s move and the AI’s



Secret Minigame Screen

- When selecting “Secret_Minigame”, the ASCII table version of the program will appear and the program will run from there.

```
[theodt2@bondi chess]$ make run
./bin/monkechess
1: Start Game
2: Start Game w/ ai
3: Quit Game
Select: 2
```



Quit Game

- To quit midway through game, click on the “X” button on the top right corner of the window, then the program will quit
- In the Start Menu, when “Quit Game” is clicked, it closes the program



Chess Program Functions and Features

Player vs Player (Optional)

In this feature, a player would play against another player.

The player that is the white side will play first by clicking on their piece and moving it, then the black player will do the same for their piece. The players will then continue taking turns moving pieces playing a full game until one player wins.

Player vs Computer

In this feature, a player would go against a computer. The game will start by asking which side the player wants to be either black or white. In this mode the player will play the same way as in Player vs Player by clicking on their piece and moving it. Afterwards the computer will make its move automatically.



x

Error Messages

This section briefly describes each error message the game may produce.

Error:

“Not valid option”

- An incorrect input has been given for the start menu
- Confirm what is entered matches one of the provided options

“This move is not legal!”

- Incorrect move for the selected piece.
- Piece already on this square
- No piece to take on this square

“Out of memory for move list! Exiting...”

- The system has run out of memory
- The game will automatically close

“Move not created! Exiting...”

- The system has run out of memory
- The game will automatically close

“Unable to open chess log!”

- System cannot open the text document of logged chess moves
- The game will automatically close

“Wrong color”

- The piece selected is the wrong color
- Pick a piece with the corresponding turn color

“Not a piece”

- The selected square on the board does not have a piece

Glossary

Backrank: Rows 1 and 8 of a chess board.

Bishop: A piece that can only move diagonally.

Castling: A special move that allows the player to move two pieces at once (rook and king)

Check: When a king is attacked by another piece.

Checkmate: a check from which a king has no legal moves to avoid the attack; one of the ways that results in ending the game.

Chess Board: An 8 by 8 board with alternating colors.

En Passant: A special move that allows a pawn to capture an opponent's pawn while moving.

King: A piece that can move in all directions, left, right, up, down, and diagonally.

Knight: A piece that moves in the shape of an "L", two squares in one direction and then more at a 90-degree angle.

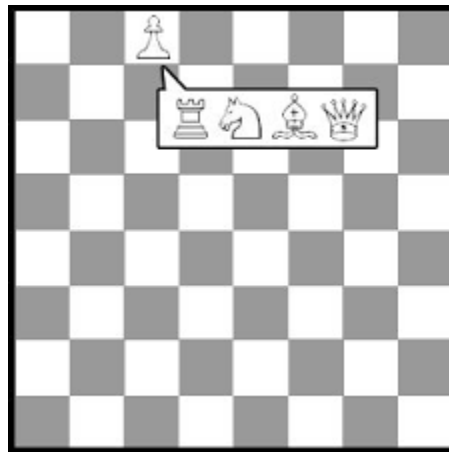
Pawn: The least powerful chess piece which can be promoted to any other pieces (besides the king).

Piece: A figure used to play the game of chess.

Promotion: When a pawn reaches the opposite side, or their respective backrank, it can change into any other piece, except a king.

Queen: A piece that moves like a rook and bishop.

Rook: A piece that can move horizontally or vertically as far as it wants (as long as the square is unoccupied)



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