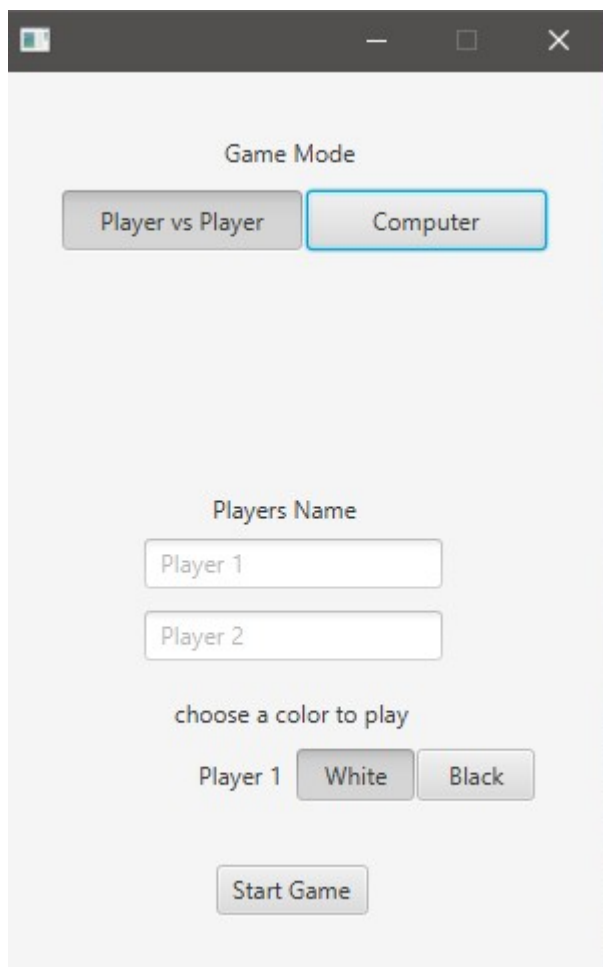


## **operation manual for the graphical user interface:**

### Home screen:

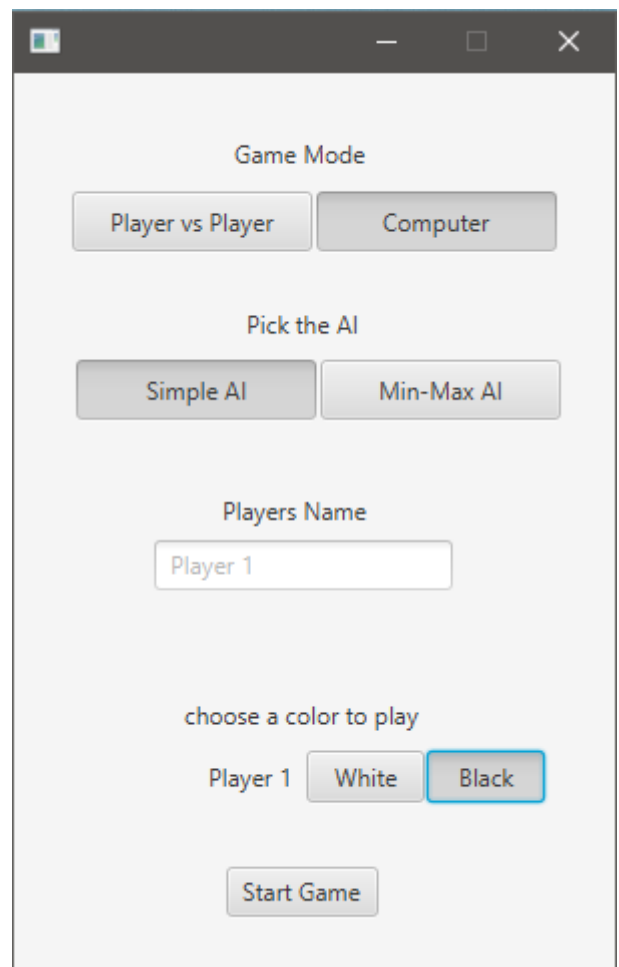
In this screen you can choose a game mode whether yo want to play against another player or the computer with

### **p vs. p**



The screenshot shows a window titled 'Game Mode' with two buttons: 'Player vs Player' and 'Computer'. The 'Computer' button is highlighted with a blue border. Below this, under the heading 'Players Name', there are two text input fields labeled 'Player 1' and 'Player 2'. Further down, under 'choose a color to play', there is a label 'Player 1' followed by two buttons: 'White' and 'Black'. At the bottom is a 'Start Game' button.

### **p vs. computer**

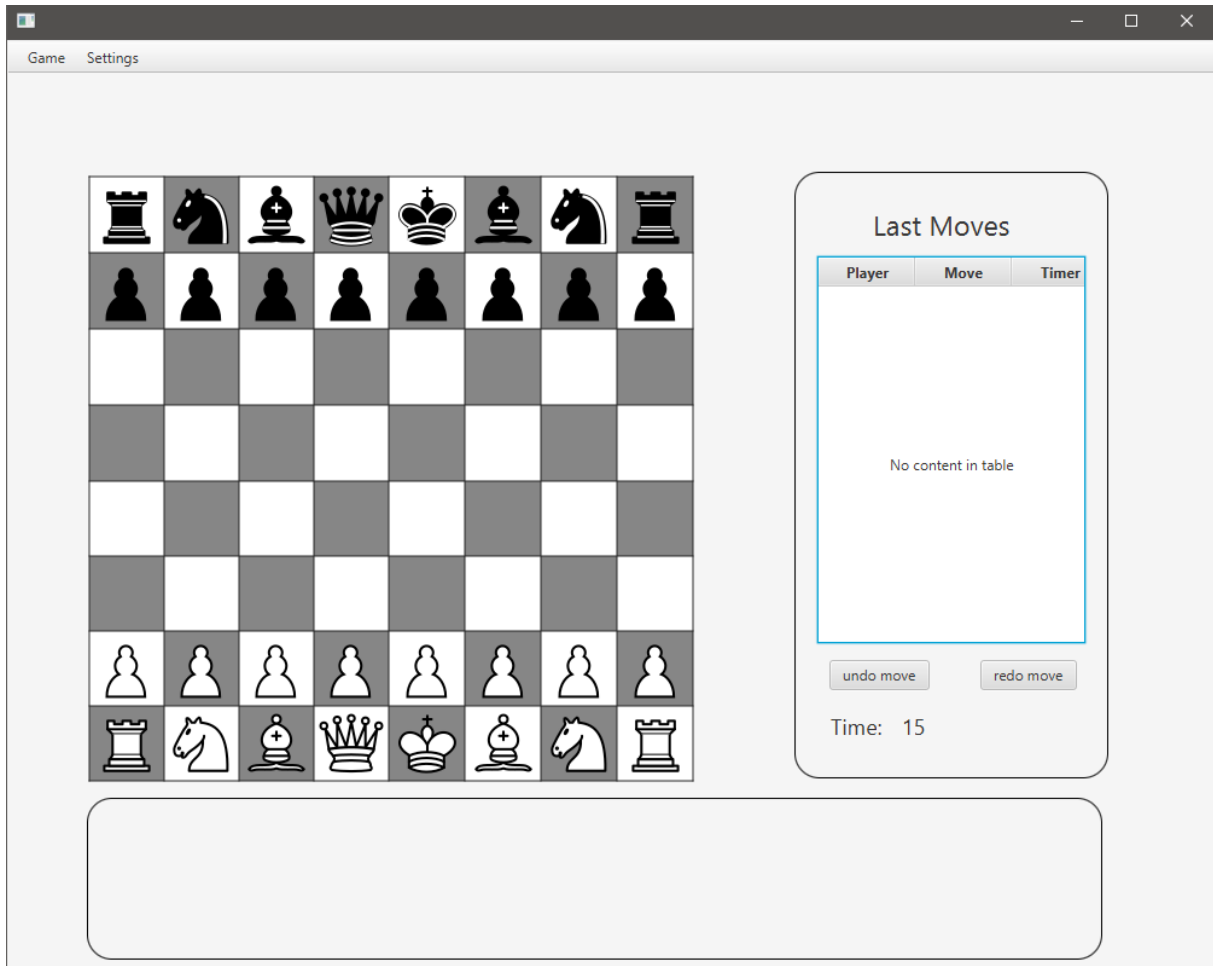


The screenshot shows a window titled 'Game Mode' with two buttons: 'Player vs Player' and 'Computer'. Below this, under the heading 'Pick the AI', there are two buttons: 'Simple AI' and 'Min-Max AI'. Under the heading 'Players Name', there is a single text input field labeled 'Player 1'. Further down, under 'choose a color to play', there is a label 'Player 1' followed by two buttons: 'White' and 'Black'. The 'Black' button is highlighted with a blue border. At the bottom is a 'Start Game' button.

the player can pick his name and a color to play with.

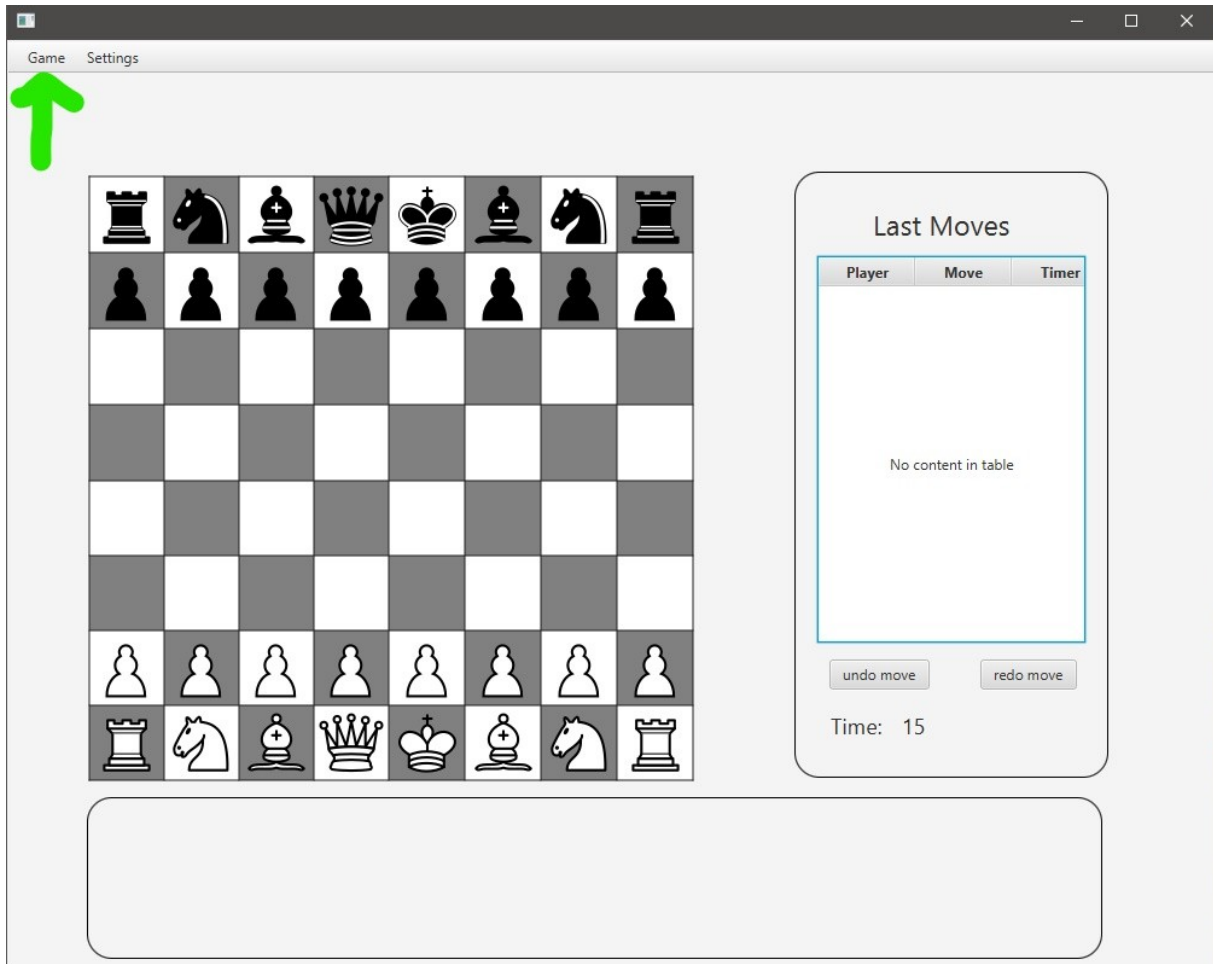
### Game screen:

This screen is self explanatory. you got the chess board on the left, a list of the last played moves on the right with ability to undo/redo last moves and pieces cemetery on the bottom.



### Game menu bar:

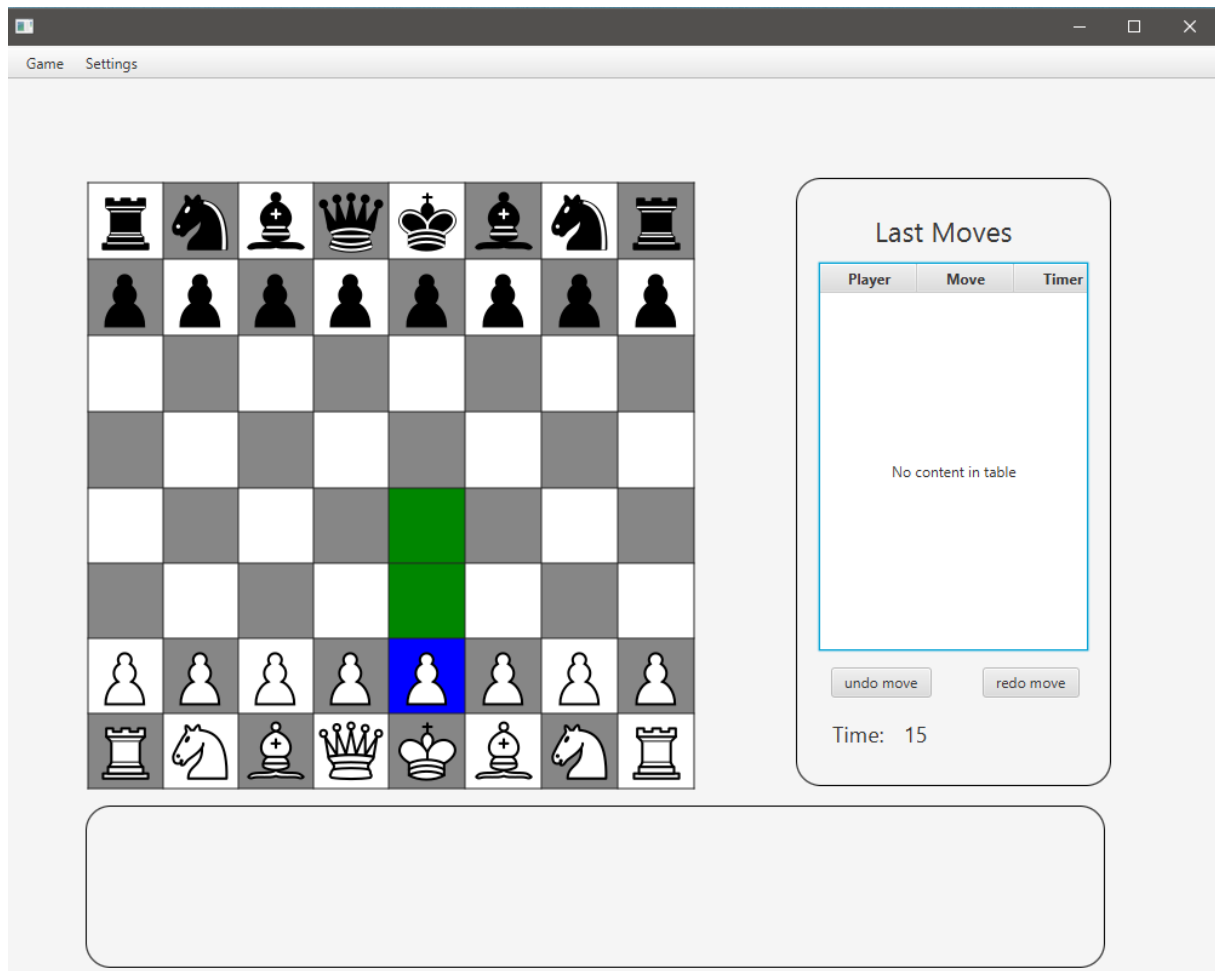
here you would be able to reset the game or go back to the home menu.



### Settings menu bar:

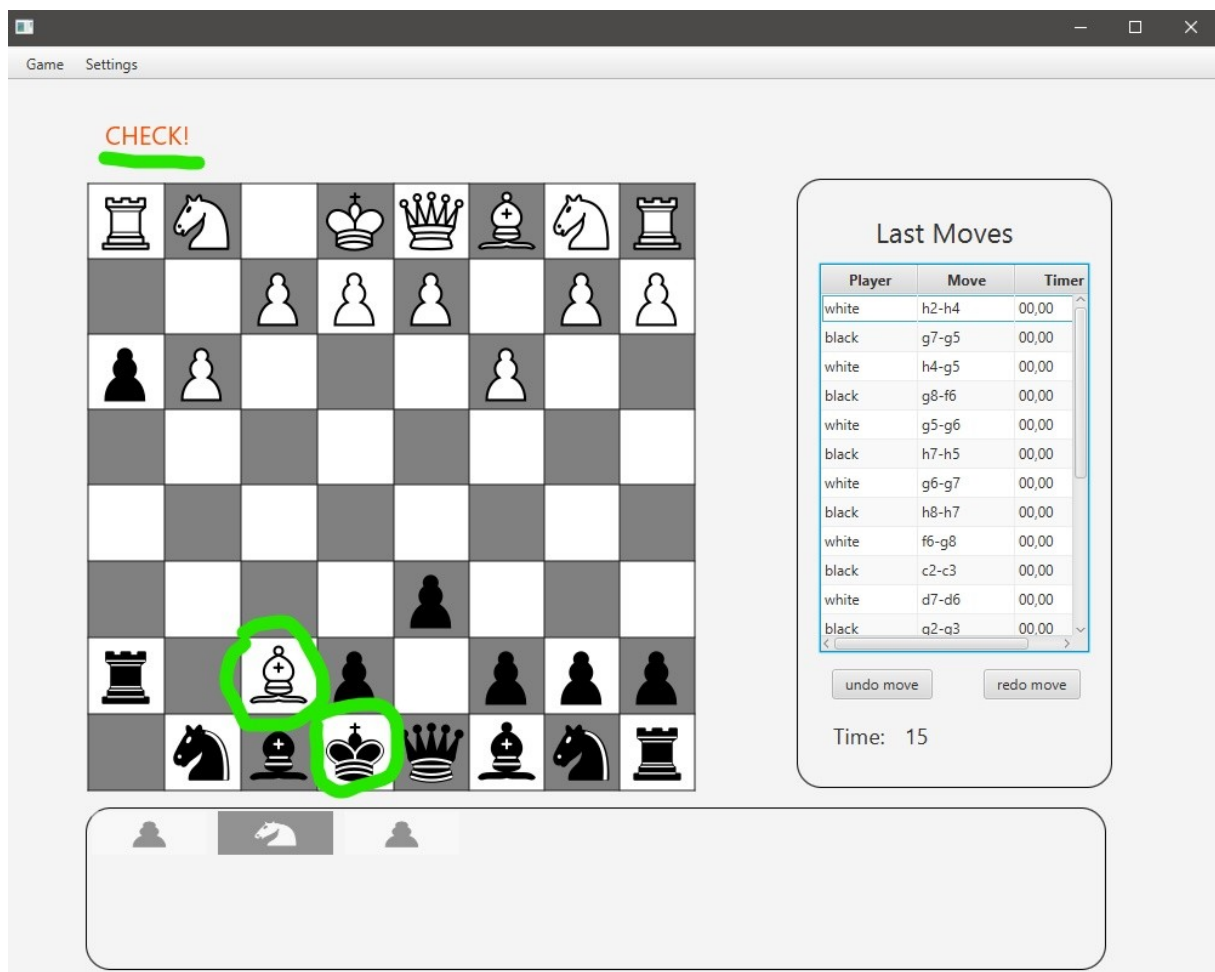
In this menu bar you could do the following:

- 1) turn on/off show possible moves

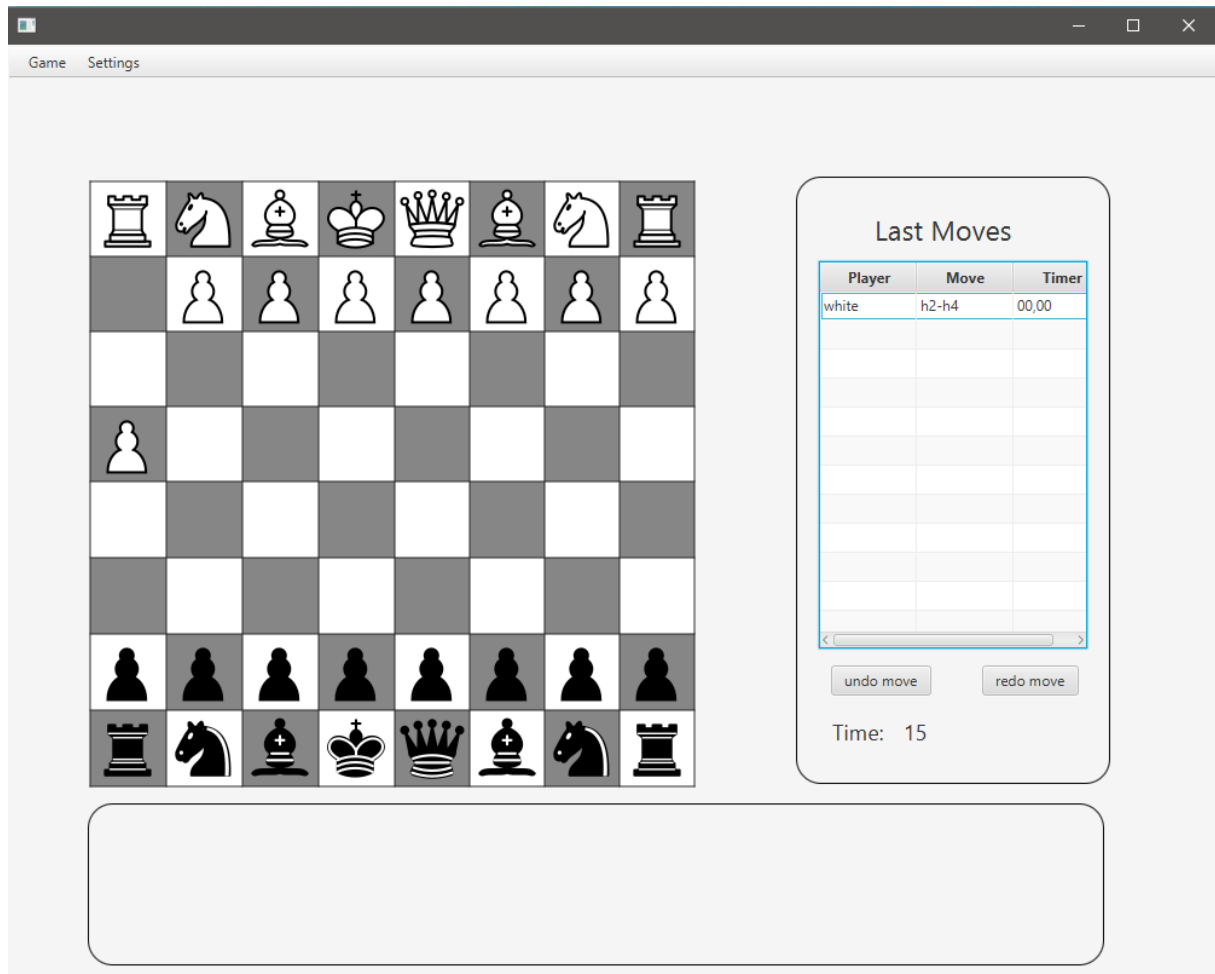


2) enable clicking on multiple pieces which is self explanatory.

3) turn on/off show if a player is in check

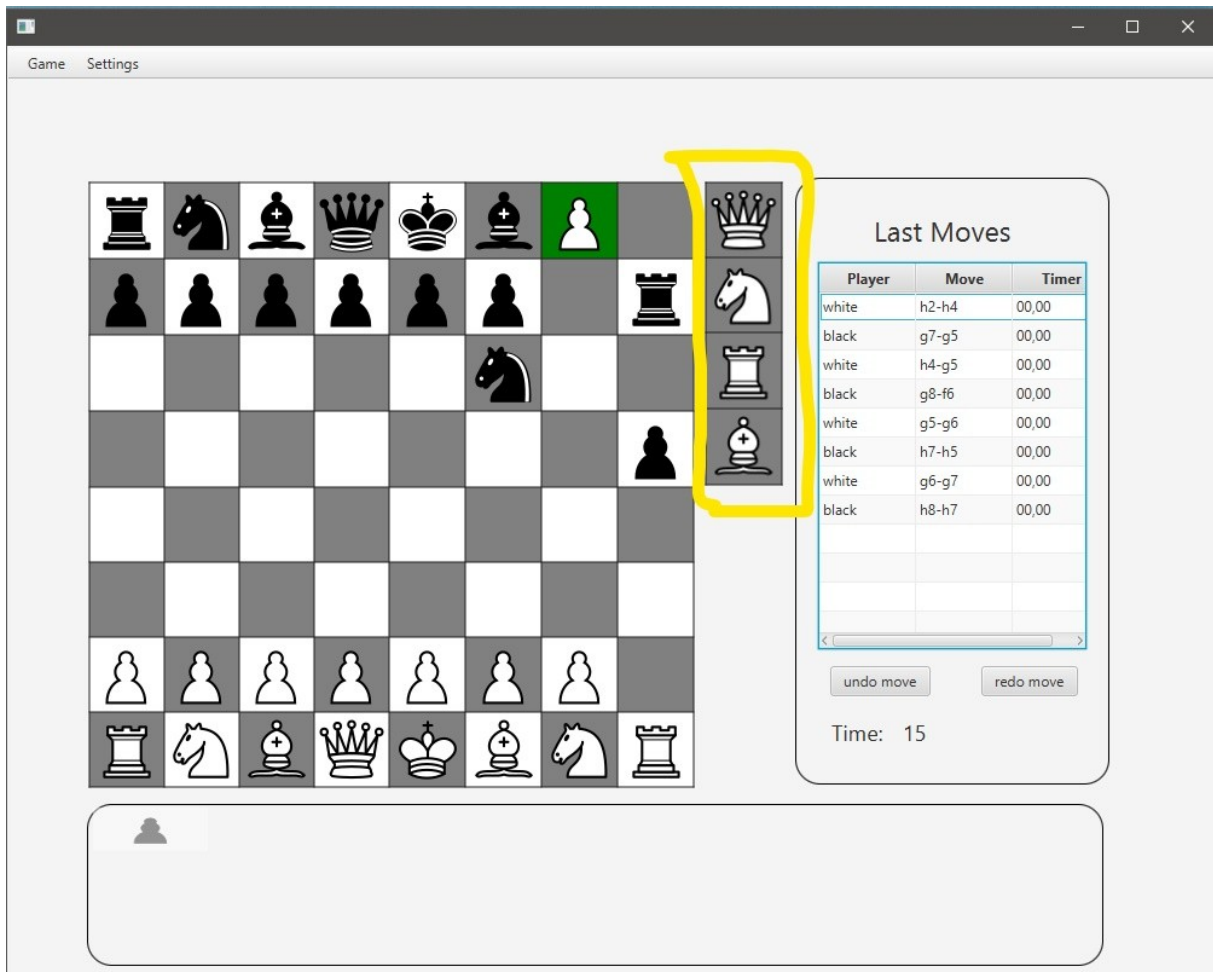


4) enable/ disable rotating the board after each move



### Pawn promotion:

once a pawn reaches the other end, the user can pick one of these pieces on the right to promote to



## **operation manual console:**

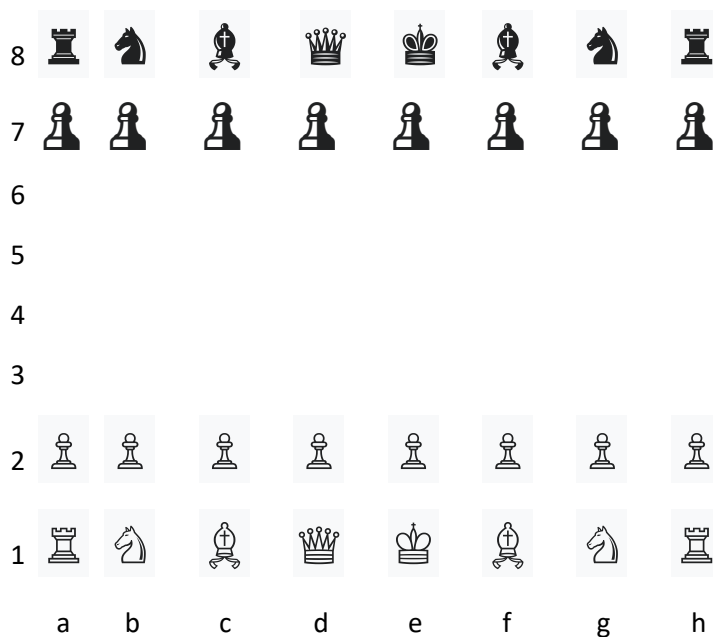
### **The goal of the game:**

The goal of the chess game is to checkmate the opponent. Matt means that the king is in chess and has no way of making a move without being in chess again.

### **The game board:**

The game is played on a game board with 64 fields, divided into an 8x8 grid. Each field is identified by a letter / number combination. The columns from a to h and the rows from 1 to 8 are counted. The game board is positioned so that the lower left corner is labeled a1 from the white player's perspective.

At the start of the game, the chessboard looks like this:



The white pawn are on the second row and the black pawn on the seventh. From the point of view of the white player, the figures are placed on the first and eighth rows in the following order: Rook, Knight, bishop, Queen, King, bishop, Knight and Rook.

### **Trains:**

The players take turns. The player with the white pieces begins. A move always includes the movement of your own figure. An exception is the "castling", in which the king and tower are moved together.



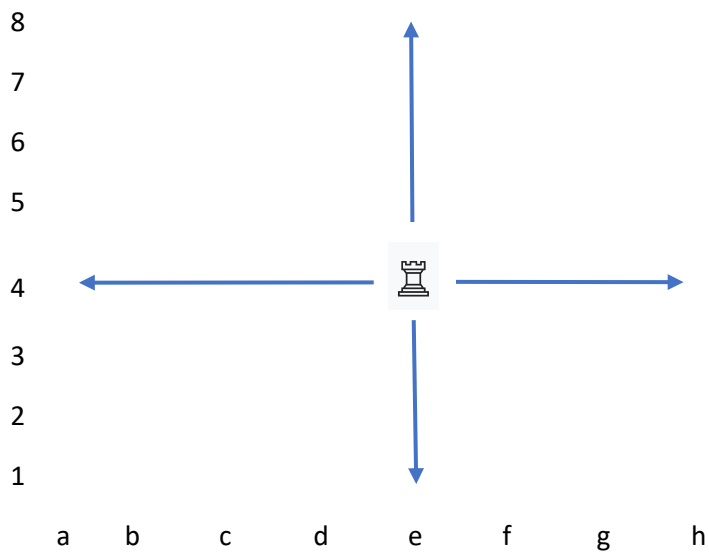
### Beating figures:

A player can hit an opponent's figure by moving his own figure onto a field on which there is an opponent's figure. The opponent's figure is then removed from the game board.

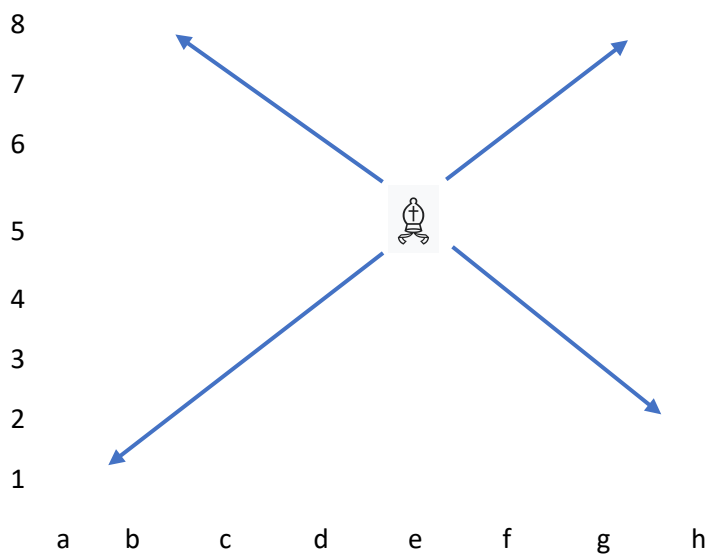
### The movement of the characters:

The following shows which moves are possible with the individual figures.

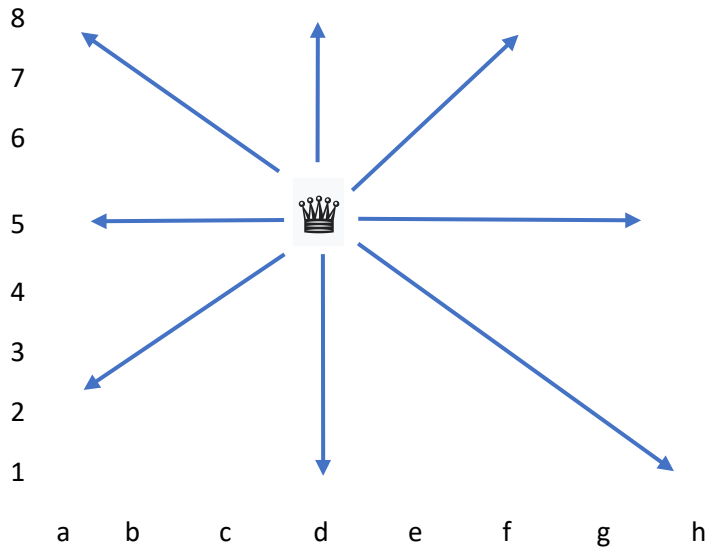
Rook: The Rook moves horizontally and vertically across rows and columns. Other figures cannot be skipped.



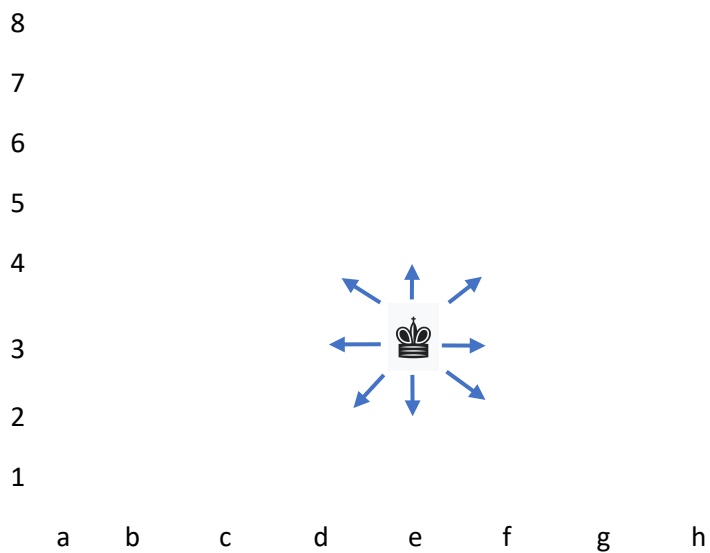
bishop: The bishop moves diagonally across the board, other characters cannot be skipped.



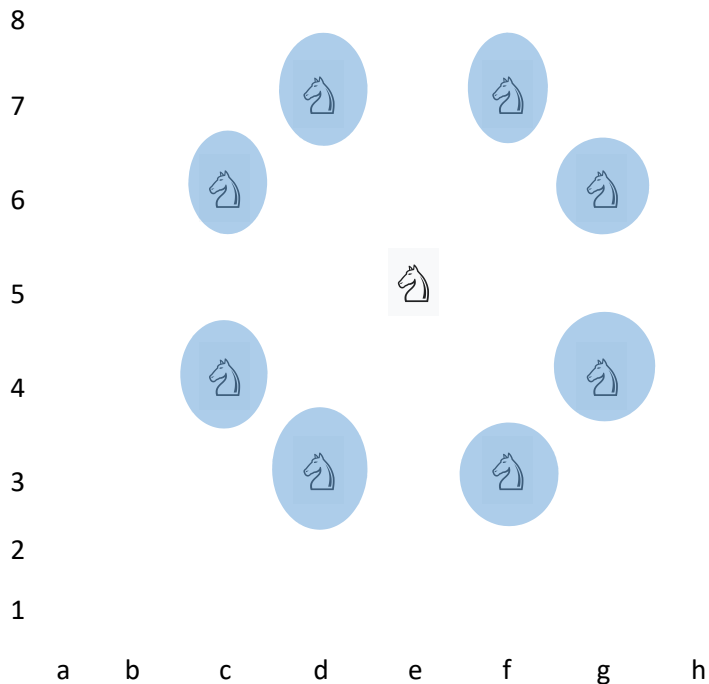
Queen: The Queen combines the move options of the tower and the runner and is thus the figure with the greatest freedom of movement. The Queen can be moved horizontally, vertically and diagonally. She cannot jump over other figures either.



King: The king can be moved to all adjacent, free spaces on which he cannot be beaten by an opposing figure.



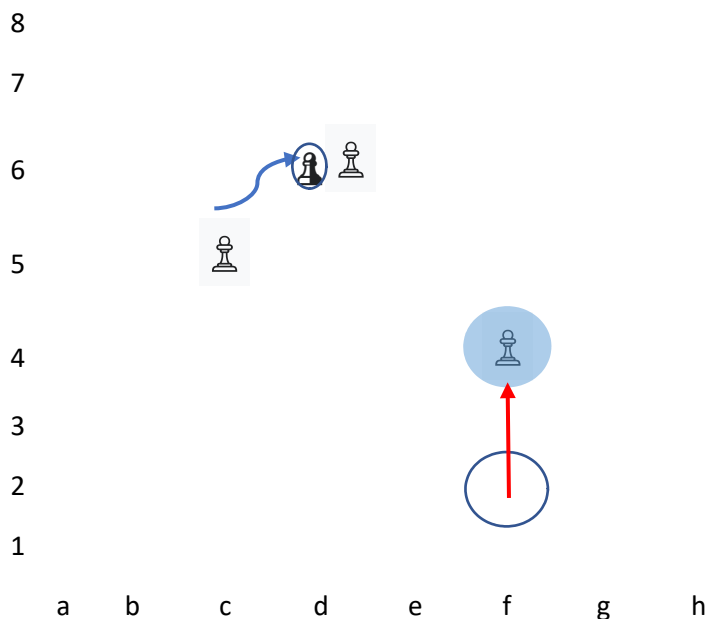
**Knight:** The Knight either draws one field horizontally and two fields vertically, or two fields horizontally and one field vertically. The Knight is the only figure that can jump over other figures. This means that the knight can move over fields that are occupied by other figures. The skipped fields are not affected.



**pawn:** The pawn moves a space on his column towards the opposing side, i.e. white pawns move from the second to the eighth row, black pawns move from the seventh to the first row.

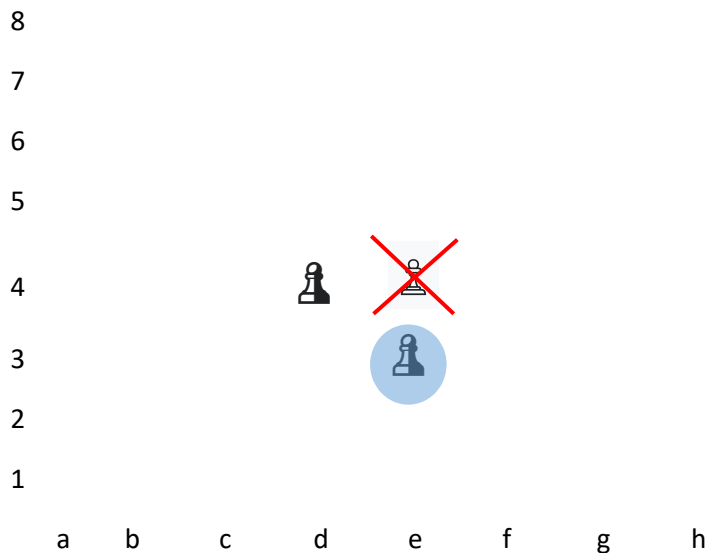
An exception is the beating of opposing figures with the pawn. The movement takes place diagonally forward. If there is a figure of the opponent in front of a pawn to the right or left in the direction of the move, this figure can be beaten.

**Double train:** A pawn who has not yet been moved, i.e. a white pawn on the second row or a black pawn on the seventh row can move two spaces forward in one go. No other figures may be between the starting and ending positions.

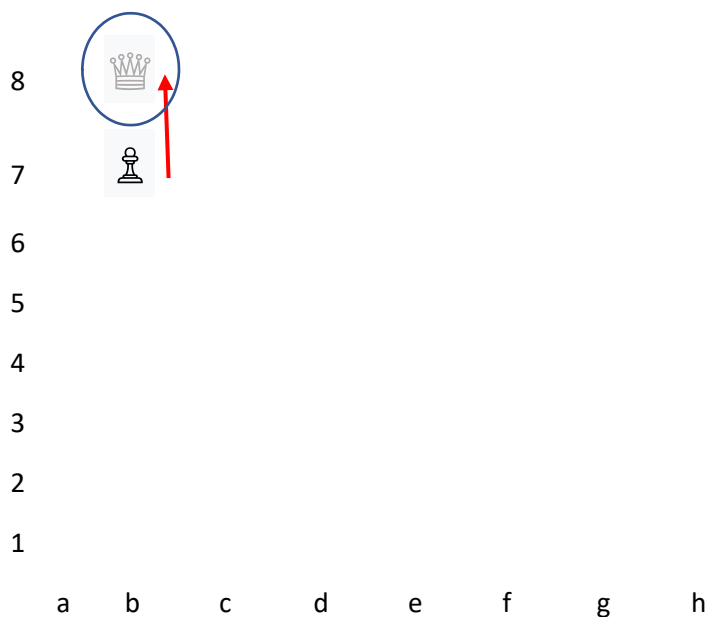


**Beat en passant:** If a pawn makes a double move as described above, opposing pawns have the option of beating the pawn just moved as if the pawn had just made a single move.

If there is an opposing pawn to the left or right of the drawn pawn after the double move, the opposing pawn can occupy the corresponding square diagonally in front of him and beat the double drawn pawn a passant. This rule only applies immediately after the double move.

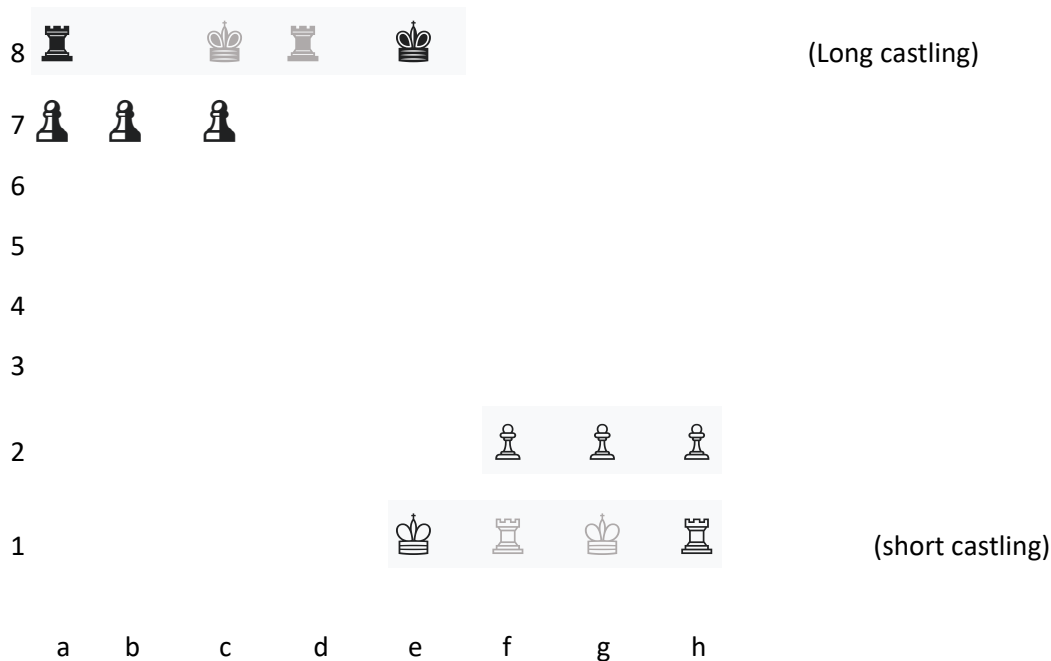


**Promotion of pawns:** When a pawn reaches the opposing side of the board, this means the eighth row for white pawns, or the first row for black pawns, then this is converted into another figure. The player can choose between knight, bishop, rook and queen.



**The castling:**

Another special train is the castling. It is the only move in which two figures are moved, namely king and rook. The king is moved two spaces to the right or left. At the same time, the rook whose direction the king was moved is placed on the field between the king and the king's starting position.



#### Requirements for castling:

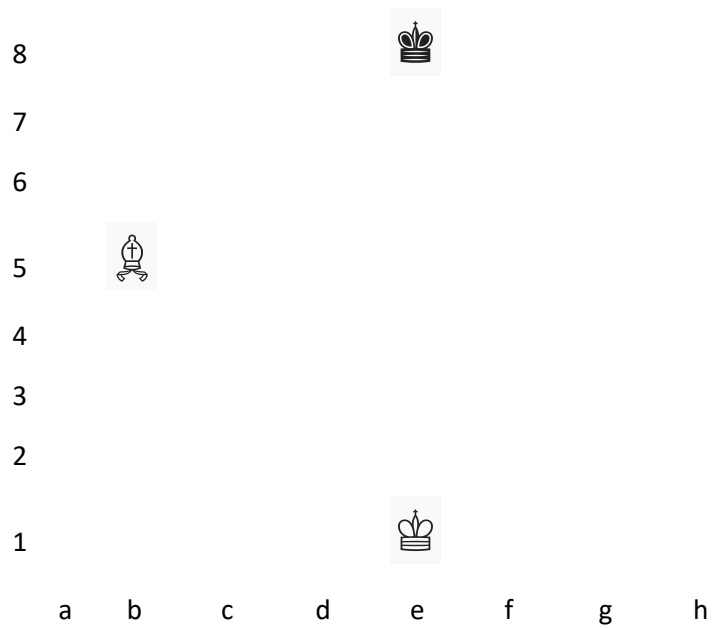
- The king and rook must not have been moved yet
- There must be no figures between the king and the rook
- The king must not be in check before the castling
- In the castling, the king is not allowed to skip a field that threatens check
- At the end of the castling, the king must not be in a field in which he is in check

**Check and checkmate:** The terms check and checkmate are explained below.

Check: The king is in check whenever he can be beaten by an opposing piece. Moves according to which the own king would be in check are not permitted and are automatically prevented by the board game network.

As soon as your own king is in check, you must ward it off with the next move.

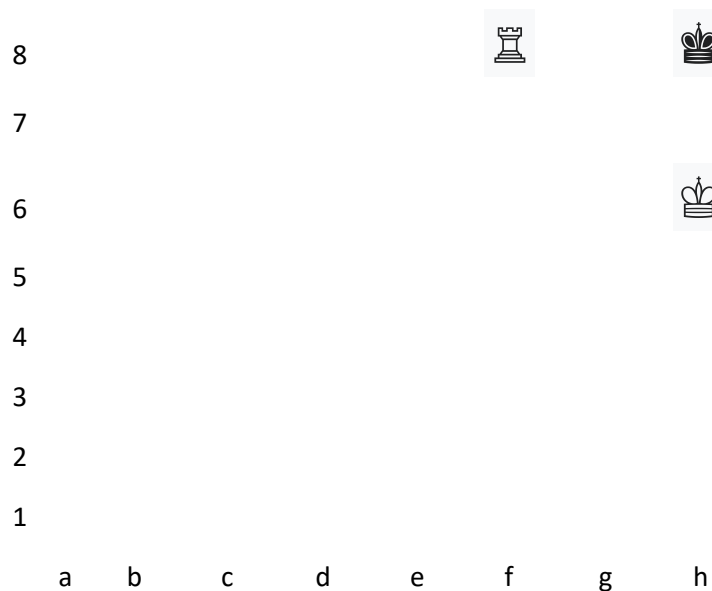
Example: The black king is in check



Checkmate: Checkmate occurs when the king is in check and the player cannot make a move that blocks check.

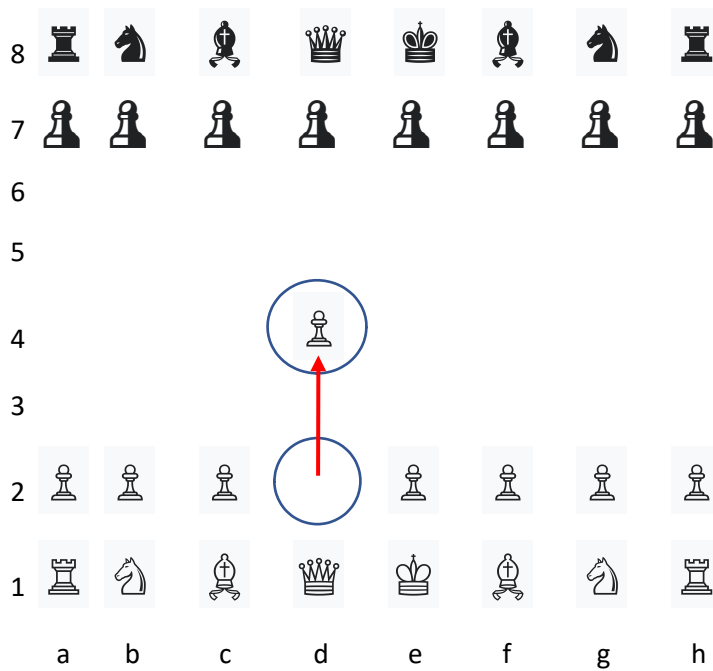
As soon as a player's king is checkmated, he has lost the game.

Example: Black on the move is matt



Input: Moving a chess figure we type the letter of the column and the number of the row where the figure is then minus (-) the letter of the column and the number of the row where the figure has to move.

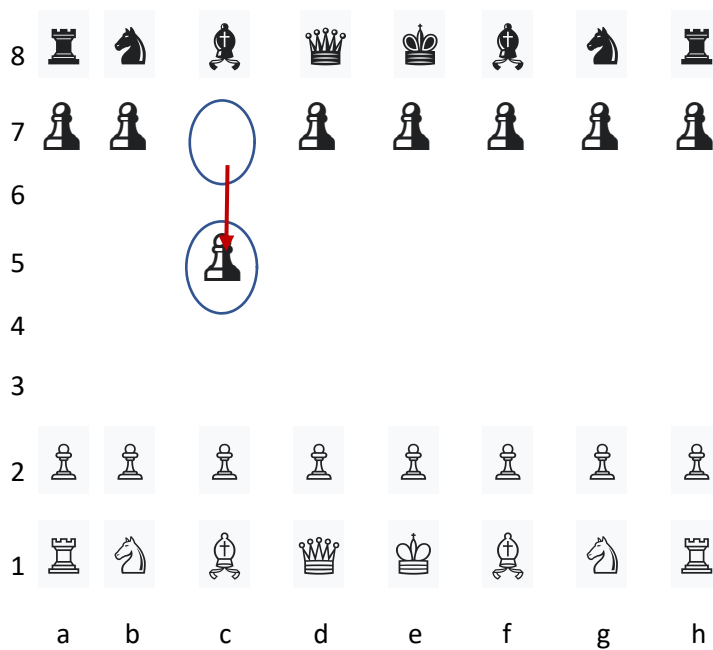
Example: we want to move White pawn: d2-d4.



after each movement the turn changes to the other games (once white piece and once black piece)

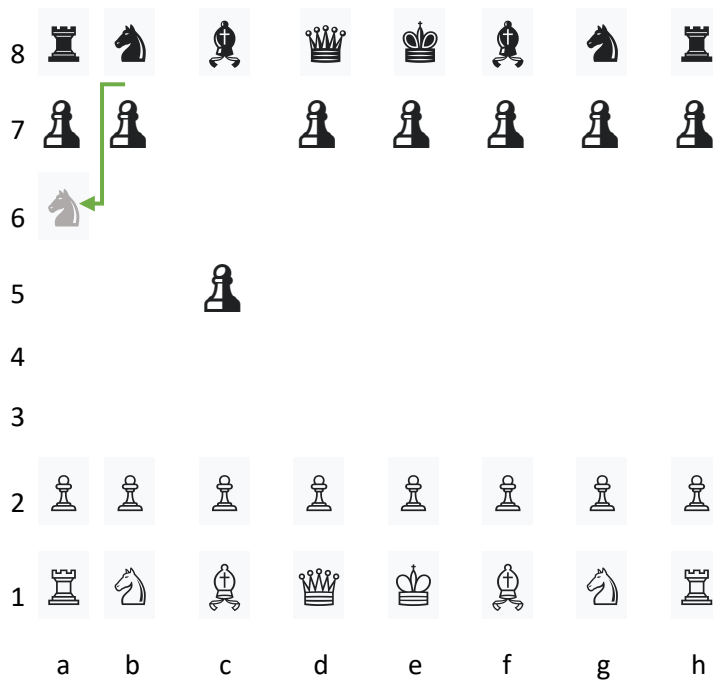
White piece or black piece Play two movements one after the other (not possible) Here the game shows who's turn

Example: Black piece entering e7-e5



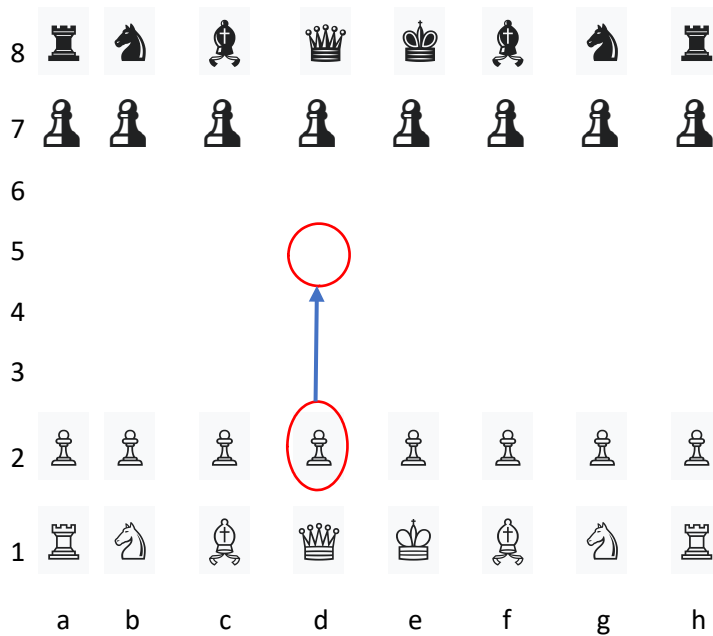
gives the black one more b8-a6 console shows: It's not your turn!





Invalid Move: when the move command is wrong ( Syntax or Semantic ), there is a validation Method gives True when the move command is right and falls if not

Example: d2-d5 "Invalid move"



**Cemetery:** list of the beating figure input beaten