



# Chess

## Materials

- The game is played on an  $8 \times 8$  grid that consists in 2 colors(light colored and dark), each tile having a neighbor of a different color(except for the diagonal).
- Sixteen "light" and sixteen "dark" pieces are placed on the board at the beginning of the game. The board is placed so that a light square is in each player's near-right corner.
- Each player controls sixteen pieces (all of the same color).
- Each tile has their own coordinates: The bottom left square from the perspective of the player that is playing with the white pieces is denoted by "a1". The numbers are placed vertically(1 to 8) and the letters horizontally (a to h) so the upper right corner (from the perspective of the player with white pieces) will be denoted by h8.
- The chess pieces are: Rooks(x2), Knights(x2), Bishops(x2), The Queen(x1), The King(x1), Pawns(x8).
- Positioning of pieces:
  - Rooks are placed on the outside corners, right and left edge.
  - Knights are placed immediately inside of the rooks (on the horizontal axis).
  - Bishops are placed immediately inside of the knights(on the horizontal axis).
  - The queen is placed on the central square of the same color of that of the piece: light coloured queen on the light coloured square and dark queen on the dark square.
  - The king takes the vacant spot next to the queen.
  - Pawns are placed one square in front of all of the other pieces.

## Game Objective

- To check-mate the opponent, make him run out of time or surrender(see details below)

## Initial State

- Before the game starts, each player will be randomly assigned either the light or the dark pieces. The light pieces make the first move.
- The pieces will be arranged as explained in the "Positioning of pieces" paragraph.
- The timer of the player with white pieces starts.

## How the game works

### Movement:

- Each type of chess piece has its own method of movement. A piece moves to a vacant square except when capturing an opponent's piece.
- Except for any move of the knight and castling, pieces cannot jump over other pieces. A piece is captured (or taken) when an attacking enemy piece replaces it on its square. The captured piece is thereby permanently removed from the game (unless a pawn promotes = reaches the end opposite row and can be replaced by any piece of the same color). The king can be put in check but cannot be captured.
- The king moves exactly one square horizontally, vertically, or diagonally. A special move with the king known as castling is allowed only once per player, per game (see below).
- A rook moves any number of vacant squares horizontally or vertically. It also is moved when castling.
- A bishop moves any number of vacant squares diagonally. (Thus a bishop can move to only light or dark squares, not both.)
- The queen moves any number of vacant squares horizontally, vertically, or diagonally.

- A knight moves to one of the nearest squares not on the same rank, file, or diagonal. (This can be thought of as moving two squares horizontally then one square vertically, or moving one square horizontally then two squares vertically—i.e. in an "L" pattern.) The knight is not blocked by other pieces; it jumps to the new location.
  - Pawns have the most complex rules of movement:
    - A pawn moves straight forward one square, if that square is vacant. If it has not yet moved, a pawn also has the option of moving two squares straight forward, provided both squares are vacant. Pawns cannot move backwards.
    - A pawn, unlike other pieces, captures differently from how it moves. A pawn can capture an enemy piece on either of the two squares diagonally in front of the pawn. It cannot move to those squares when vacant except when capturing en passant. The pawn is also involved in the two special moves en passant and promotion.
- Castling:
  - Castling consists of moving the king two squares towards a rook, then placing the rook on the other side of the king, adjacent to it. It is not allowed to move both king and rook in the same time, because "Each move must be played with one hand only. Castling is only permissible if all of the following conditions hold:
    - The king and rook involved in castling must not have previously moved;
    - There must be no pieces between the king and the rook;
    - The king may not currently be under attack, nor may the king pass through or end up in a square that is under attack by an enemy piece (though the rook is permitted to be under attack and to pass over an attacked square);
    - The castling must be kingside or queenside.
    - An unmoved king and an unmoved rook of the same color on the same rank are said to have castling rights.

- En passant:
  - When a pawn advances two squares on its initial move and ends the turn adjacent to an enemy pawn on the same rank, it may be captured en passant by the enemy pawn as if it had moved only one square. This capture is legal only on the move immediately following the pawn's advance.
- Check:
  - A king is in check when it is under attack by at least one enemy piece. A piece unable to move because it would place its own king in check (it is pinned against its own king) may still deliver check to the opposing player.
  - It is illegal to make a move that places or leaves one's king in check. The possible ways to get out of check are:
    - Move the king to a square where it is not in check.
    - Capture the checking piece (possibly with the king).
    - Interpose a piece between the king and the opponent's threatening piece (block the check).
  - The game will communicate to the player that his king is in check.
- Promotion:
  - If a player advances a pawn to its eighth rank, the pawn is then promoted (converted) to a queen, rook, bishop, or knight of the same color at the choice of the player (a queen is usually chosen). The choice is not limited to previously captured pieces. Hence it is theoretically possible for a player to have up to nine queens or up to ten rooks, bishops, or knights if all of the player's pawns are promoted.
- Time:
  - There will be a game mode without a timer.
  - In the game modes that involve a timer, each player will have an allocated time to make moves: 1min(for bullet), 3min(for blitz) and 10min(for rapid).
  - When a player's turn comes to make a move, his clock will run down until he submits his move. After he does so, his timer stops and his opponent's

timer will start running down.

## Final State

- Checkmate:
  - If a player's king is placed in check and there is no legal move that player can make to escape check, then the king is said to be checkmated, the game ends, and that player loses. Unlike the other pieces, the king is never captured.
- Resigning:
  - Either player may resign at any time, conceding the game to the opponent. Running out of time:
  - If a player runs out of time and his opponent has enough materials to deliver a checkmate, he will lose the game.
- Draws:
  - The game ends in a draw if any of these conditions occur:
    - The player to move is not in check and has no legal move. This situation is called a stalemate.
    - Both players agree to a draw after one of the players makes such an offer.
    - Fifty moves have been made by each player without a capture or promotion of a pawn.
    - The same position has appeared three times (or has appeared twice and the player claiming the draw can force the third appearance)
    - A player runs out of time and his opponent doesn't have enough materials to checkmate.
- After the game ends the following actions take place:
  - Destroy the game materials
  - Display corresponding message to the loser("YOU LOST") and the winner("YOU WON")

- Save the game stats(winner, loser, number of total moves) in the game history
- Update the statistics for each player, add a lose to the loser and a win to the winner

## Miscellaneous

- On player disconnect, start 30s and wait for player to return
- If timer ends the game enters the final state, the winner is the player waiting