Chess Help Contents

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Overview

Chess is a captivating and charming game that has intrigued the human imagination since the beginning of time. On a simple board with a handful of pieces, kingdoms arise and tragically fall without the loss of a single drop of blood.

Welcome to this computerized portal into the world of Chess! For those of you already familiar with the game, you've just found yourself a new playing partner. For those who are just discovering it, this is a gateway into a game that transcends all others.

Origin of Chess

Tracing the history of chess is like tracing the history of humanity. Early roots of the game date back 2,500 years to ancient Hindustan. In 500 B.C. people were already creating imaginary worlds to rule, though early games were believed to have been guided by dice.

Over the next 1,000 years it evolved into a game similar to what we know today. By 500 A.D., a game called Chaturanga was making its way from India to Persia. Chaturanga, means the four parts of an army: chariots, elephants, horses, and foot soldiers. These are much like the present game's rooks, bishops, knights, and pawns. The word chess is derived from the Persian word shah, meaning king.

From Persia, Muslims taught the game to the Spanish, and from the Byzantines the game moved into Italy. Chess swept across Europe, especially embraced by royalty and the aristocracy, and along the way was transformed into the game we play today.

Origin of computer chess

Probably the most famous of the early chess machines was called "The Turk." Built in 1770 by Baron Von Kepelen, his apparatus, manipulated the board pieces with mechanical hands. The machine displayed unquestionable human intelligence and played chess remarkably well. How was human intelligence achieved in a machine nearly 200 years before the birth of the integrated circuit and the quest for artificial Intelligence? Hidden within the cabinetry of the machine sat a very small man, who was quite a fine player.

A more thoughtful effort was made by Charles Babbage (1792-1871), the English mathematician who looked at the punched-card controls of a Jacquard loom and decided that information could be woven together in a similar fashion. The logic he sketched out for how one of his "analytical engines" might play chess is found, at least in spirit, in many of the chess programs still being developed more than a century after his death.

The race for a machine able to play chess really kicked into gear in the late 1940s and early 1950s with the separate works of Claude Shannon, a scientist at Bell Labs, and Alan Turing in Great Britain. In both cases, the scientists wrote programs to control the decision trees that the computer needs to explore. When considering moves and possible counter moves for each piece on the board, a computer can get bogged down in a decision tree with billions of nodes.

A human Grand Master is able to eliminate all but the most relevant branches of the decision tree, and computer programmers dream of re-creating that ability in a machine. Some of the best minds in the field of artificial intelligence have been drawn into the race for a program that can beat the very best humans at the game. The day may come when the finest chess players in the world are machines. But long after that day comes and goes, chess will retain its special status as an uncommonly fascinating companion for the human mind.

Meet Ziggurat, your new chess partner

The analytical engine within this program is called Ziggurat. Ziggurat took its name from the soaring towers of old Asyrian temples. From the highest reaches of those towers, Ziggurat is journeying in search of students.

Ziggurat will help you improve your game by displaying board coordinates, highlighting your endangered pieces, listing all moves that have been made, allowing you to back up and reset the board to correct a

mistake, saving games for later review, and selecting the level at which you would like Ziggurat to play. In addition, Ziggurat is ready to offer you a hint before every move.

See Also

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Playing the Game

If you already know the basics of chess, this section explains how to play using this program. If you would like to review the basic rules and moves of chess, see Chess Pieces and Their Moves in the Rules of the Game section.

To start a new game

1 From the Game menu, choose New, or press F2.

   Chess displays the Select Players dialog box.

2 Type your name in the box labeled Player 1, and Ziggurat displays it on your side of the board.

3 Choose your game:

   Player vs. Player (Ziggurat leaves the decision making up to the humans).

   Player vs. Computer (you have the white side of the board and move first).

   Computer vs. Player (you have the black side of the board and move second).

   Computer vs. Computer (you can sit back and watch the computer play itself).

To choose a skill level

▶   From the Game menu choose Level, and then choose Beginner, Novice, Intermediate, Advanced, or Expert (Expert is the initial setting).
        A check mark is displayed next to the level you choose.

To move a chess piece

▶   Drag the chess piece you want to its new position.
        The status bar displays who moves next. Ziggurat won't accept an illegal move.

To reverse a move

▶   On the toolbar, click the Back button to reverse a move, or choose Take Back from the Move menu.
Note: Whenever you choose the Back button or the Take Back command, the game automatically pauses. To resume play, click the Continue button on the toolbar, press F3, or choose Continue from the Game menu.

To return to a move

▶   On the toolbar, click the Forward button to return a move that you have reversed, or choose Go Forward from the Move menu.
Note: Whenever you choose the Forward button or the Go Forward command, the game automatically pauses. To resume play, click the Continue button on the toolbar, press F3, or choose Continue from the Game menu.

To get a hint

▶   On the toolbar, click the Hint button, or choose Suggest A Move from the Practice menu.
Note: You can decide whether you want your hints presented in descriptive or algebraic move notation by choosing Preferences from the Game menu, and then choosing Display.

To pause a game

▶   On the toolbar, click the Pause button.
        Chess stops the clock on your game and the Pause button turns into the Continue button. To resume your game, click the Continue button. You can also pause or continue the game by pressing F3, or by choosing Pause and Continue from the Game menu.

To force a move

▶   On the toolbar, click the Force button, or choose Force Move from the Move menu.

This forces the computer to stop evaluating moves and proceed with its current best choice. Use the Force button if you want to cut down on the computer's ability to think about its own moves, or if you want to speed up the game.

To switch sides

▶ From the Move menu, choose Switch Sides.
This allows you to switch sides with the computer. For example, you take over the black pieces and the computer assume the white pieces.

To offer a draw

▶ From the Move menu, choose Offer Draw.
Ziggurat does not always accept.

To resign

▶ From the Move menu, choose Resign.
The tireless computer asks you to confirm your request.

To choose display preferences

1 From the Game menu, choose Preferences, and then choose Display.

    The Display Preferences dialog box is displayed.

2 Choose the display preferences you want.

    Clock tracks the time you and your opponent use to make a move. You can drag the clock to the position you want.

    Move List displays all moves made in a game. Depending on the move notation you choose, Chess displays your moves in either <u>descriptive</u> or <u>algebraic</u> abbreviations. You can drag the Move List box to the position you want.

    Invert Board rotates the chessboard so you are facing the opposite direction.

    Captured Pieces helps you keep track of pieces you've lost and captured. You can drag the Captured Pieces box to the position you want.

    Computer's Thoughts provides insight into the evaluation process for a move. You can drag the Evaluation box to the position you want.

    Board Coordinates displays notation coordinates around the borders of the chessboard. The horizontal rows are called <u>ranks</u>. The vertical rows are called <u>files</u>. Display Coordinates provide the traditional numbering of ranks 1 through 8, and the traditional labeling of files A through H. This is a great help when learning positions, and when interpreting the suggestions provided by the Hint button.

    Move Notation allows you to choose between descriptive or algebraic abbreviations.

To select basic preferences

1 From the Game menu, choose Preferences, and then choose Basics.

    The Basic Preferences dialog box is displayed.

2 Choose the options you want:

    Use Opening Book contains a set of standard chess openings developed by chess masters over the last few centuries. Choosing this option allows for a speedy entry into a classic game, which you can then craft to your own liking. If you don't choose this option, Chess uses Ziggurat, its internal chess engine.

    Display Opening Name displays the Opening Book title, such as <u>Ruy Lopez</u>, in the status bar. You must first choose Use Opening Book for this display to work.

    Announce Check announces that you or your opponent's king is in <u>check</u> by displaying it in the status bar. If sound is turned on, the announcement is either a beep or the voice of Ziggurat.

    Allow Resignation allows Chess to prompt you for a new game when you and your opponent have

reached a <u>stalemate</u>.

Think On Opponent's Time gives the computer a head start by letting Ziggurat think about the next move while you are still trying to figure out yours.

Pause When Minimized pauses the game clock when you minimize Chess.

To set time control preference

1 From the Game menu, choose Preferences, and then choose Time Control.

The Time Control Preferences dialog box is displayed.

2 Choose Infinite if you don't care how long the computer thinks. You can always force a move by clicking the Force button on the toolbar.

Or, type a number in the Seconds Per Move box, including decimals.

See Also

<u>Rules of the Game</u>

<u>Strategy and Hints</u>

<u>Overview</u>

Rules of the Game

The basic moves of chess can be learned in a few minutes (after which you can spend the rest of your life in the rewarding exploration of the finer points of the game). As a game opens, two armies face off from across the board. The object is to capture the opposition's king, while protecting your own. The strategy comes from making the best use of the unique moving abilities of each chess piece.

Chess Pieces and Their Moves

Each chess piece has a distinct personality with a unique move. The queen is the most powerful piece while the weakest is the pawn. The computer assigns a value of 9 to the queen, 5 to a rook, 3.2 to a bishop, 3 to a knight, and 1 to a pawn.

A capture is made when one piece moves onto the square occupied by an opposing piece. These capture moves can only be made within the normal patterns of movement for the piece.

- The king can move one square at a time in any direction to any square that is safe from attack and unoccupied by one of its own pieces. This creates eight possible moves.
- The queen can move in a straight line across any number of unoccupied squares, diagonally, vertically, and horizontally.
- The rook, sometimes called a castle, can move across any number of unoccupied squares, vertically or horizontally.
- The bishop can move diagonally across any number of unoccupied squares in a straight line. The bishop can't change the color of the squares it travels on. At the beginning of the game you have one bishop to travel the white <u>diagonals</u>, and one to travel the black diagonals.
- The knight is the only chess piece that can jump over other pieces when moving or capturing. It can move in any direction in an L-shaped configuration: two spaces forward and then one space to its right or left, or one space forward and two to its right or left.
- The pawn can only move forward one square at a time and never backward, with two exceptions: (1) When moving a pawn for the first time, you have the option of moving it ahead two squares instead of one; and (2) You must move the pawn one square diagonally to capture. Also, a pawn advanced to the opposite end of the board is promoted to any piece, except a king or another pawn.

In addition to the regular moves of the chess pieces, there are two special moves: <u>castling</u> and <u>en passant</u>.

The Basic Rules of Chess

The chessboard consists of 64 checkered squares that make up <u>files</u>, <u>ranks</u>, and <u>diagonals</u> used by the chess pieces for position and movement. Each square is identified using conventional abbreviations and either <u>descriptive</u> or <u>algebraic</u> move notation. You and your opponent start the game with a set of 16 chess pieces that are always referred to as white or black, regardless of actual color variations.

- White plays first.
- Move only one chess piece on your turn (except when castling).
- Only one piece can occupy a square.
- You must move a piece when it is your turn.
- To capture an opponent's chess piece, move to the square your opponent occupies and the computer will remove the opponent's piece from the board.
- Call "check" when you place your opponent's king in jeopardy.
- You must protect your king from check (attack). Use one of the following moves to save your king: Capture your king's attacker, move your king away from the attack, or block the attack with one of your other pieces.
- You are not obligated to capture a piece unless there is no other way to make your move.
- The knight is the only piece who can jump over other chess pieces to make a move or capture.
- The king is never actually captured; instead, he is forced to surrender by means of <u>checkmate</u>, at which point the game ends.
- A game can end by resignation when it is obvious that defeat can't be avoided.
- A forced mate is the term given to a resignation when certain precise material advantages are

enjoyed by one side. Traditionally a forced mate ends the game as if it were played to a checkmate conclusion. Examples of classical forced mate material advantages include (but aren't limited to):

Two knights and a king versus a lone king.

A queen and a king versus a lone king.

A knight, bishop and king versus a lone king.

Two bishops and a king versus a lone king.

▸ It is possible to have a draw, or tie, if one of the following conditions occur: (1) Both players agree to a draw; (2) Neither player has enough chess pieces to put a king in checkmate; (3) There is a stalemate; (4) The exact board positions have been repeated three times; (5) Neither player has made a capture or moved a pawn during the last 50 moves.

See Also

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Playing the Game

Strategy and Hints

This section contains helpful hints for getting the most out of Chess and for tapping into the rich tutorial advice that Ziggurat, the program's chess engine, has to offer.

►   **Watch the computer play itself.** When you start a new game, choose Computer vs. Computer in the Select Players dialog box. There is a lot to be learned as an observer.

►   **Ask Ziggurat.** Use the Hint button on the <u>toolbar</u> or the Suggest A Move command on the Practice menu to get advice on your next move.

►   **Show Valid Moves.** Use this command from the Practice menu to see all the possibilities. When you click on a chess piece, the board highlights each square you can legally move it to, including squares where you can capture one of your opponent's pieces.

►   **Show Threatened Pieces.** Use this command from the Practice menu to learn lessons in attack and defense. Ziggurat highlights all pieces endangered by the most recent move.

►   **Learn the board with display coordinates.** Choose Preferences from the Game menu, and then choose Display. In the Display Preferences dialog box, choose the Board Coordinates option. Soon you'll be talking, and even playing, like a master.

►   **Switch sides.** Choose Switch Sides from the Move menu and see problems that are encountered on the other side. You'll develop a fuller appreciation for the logic of the game.

►   **Take back mistakes.** As a supremely patient tutor, Ziggurat allows you to take back your mistakes by just clicking the Back button on the toolbar.

►   **Learn from the classic openings.** Choose Preferences from the Game menu, and then choose Basics. In the Basic Preferences dialog box, choose the Use Opening Book and Display Opening Name options. The computer will guide you through classic openings.

►   **Build your own collection of famous games.** Chess books are packed with classic games, world championship showdowns, human-versus-computer matches and other great games. To begin your own collection for study and review, you can choose New from the Game menu, choose Player vs. Player from the Select Players dialog box, and then play both sides as described in the book. If you make a mistake, just use the Back button on the toolbar to reverse the move. When completed, save the game. Now, whenever you want you can open the game and click the Back button or Forward button to navigate through some of the greatest matches of all times.

►   **Study the computer's thoughts.** Choose Preferences from the Game menu, and then choose Display. In the Display Preferences dialog box, choose Computer's Thoughts for a fine window into the decision hierarchy of the chess engine. If the computer's suggested move is different from your own, you can study Ziggurat's list of Best So Far and Thinking About to see how your move stacks up against the others. This also provides a great perspective on the range of moves that are available at each point of a game. For an extra insight into how Ziggurat cranks numbers, there is some technical information in the top half of the Evaluation dialog box:

         Value is a measurement based upon material values (9 for a queen, 5 for a rook, 3.2 for a bishop, 3 for a knight, 1 for a pawn) and board position values, such as effective pawn structure.

     Positions shows the number of board positions Ziggurat has examined. Allow Ziggurat infinite time to examine a move and see how fast the count can exceed one billion.

     Time shows how long Ziggurat has been contemplating its next move.

     Positions/Sec is the result of dividing Positions by Time to tell you how fast the chess engine is searching.

     Best shows how long Ziggurat searched to find the best move so far.

     Depth shows how many moves ahead Ziggurat has searched.

►   **Create your own chess scenarios.** From the Practice menu, choose Setup Board. You can now create any playing situation you like and still ask the computer for playing hints. Using Setup Board you can add scenarios from chess books and articles by simply duplicating the placement of the pieces and then saving the situation. A palette of chess pieces sits to the right of the board. You can drag pieces that you don't need from the board to the palette. And you can drag pieces from the palette to set up the board for a practice situation.

     When you choose Setup Board, a new screen is displayed and a special Edit menu is the only menu

available. You can use the commands on the Edit menu to save the board configurations you create, load any saved games, play any of the games you have configured, reset your board pieces, and clear pieces so you can set up practice situations. For more information on the Edit menu, see the Edit Menu Commands section.

See Also

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Rules of the Game

How to Play

This section contains information about how to play Chess.

Commands

This section contains information about commands in Chess.

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Game Menu Commands

This section contains information about Game menu commands in Chess.

New

Starts a new game of Chess.

In the Select Players dialog box, you can choose the <u>color</u> you want for your pieces. You can also choose your opponent: Player vs. Player, Player vs. Computer, Computer vs. Player, Computer vs. Computer.

Open

Opens a game that you've saved previously.

The Open dialog box is displayed so you can choose the game you want to resume.

Save

Saves a game.

The Save As dialog box is displayed so you can type a name for the game you want to save.

Preferences

Lets you select display and game preferences for Chess. Offers choices within five separate categories, each with its own dialog box.

▶ Display. For more information on the Display Preferences dialog box, see the Playing the Game section.

▶ Colors. The Select Colors dialog box provides a palette of colors for the game board and pieces.

▶ Sound. The Sound Preferences dialog box provides a choice of game sounds: Off, Beeps, and Speech.

Note: You need a sound card and a sound driver to hear game sounds.

▶ Basics. For more information on the Basic Preferences dialog box, see the Playing the Game section.

▶ Time Control. The Time Control Preferences dialog box allows you to determine how much time the computer has to think between moves.

Level

Defines the skill level for the computer: Beginner, Novice, Intermediate, Advanced, or Expert. Expert is the initial setting.

Pause

Stops the game clock and pauses the game.

You can also click the Pause button on the <u>toolbar</u>, or press F3. To resume play after the game has been paused, click the Continue button, press F3, or choose Continue from the Game menu.

Print

Prints a copy of the board or the move list (from the Display Preferences dialog box).

Copy

Copies the board or the move list (from the Display Preferences dialog box) so you can then paste them into another application (for example, your word processor or mail program).

Exit

Quits Chess. You can quit at any time, even in the middle of a game.

Move Menu Commands

This section contains information about the Move menu commands in Chess.

Take Back

Reverses the move that you just made.

You can also click the Back button on the <u>toolbar</u> and go backwards through either the existing game or a previously saved game, repositioning the pieces to an earlier state of play.

Note: The game pauses automatically when you choose the Take Back command. To resume play, click the Continue button; press F3, or choose Continue from the Game menu.

Go Forward

Restores a move you've just taken back.

You can also click the Forward button on the toolbar and go forward in either the existing game or a previously saved game where you've taken back moves.

Note: The game pauses automatically when you choose the Go Forward command. To resume play, click the Continue button; press F3, or choose Continue from the Game menu.

Force Move

Forces the computer to make the best move it has found so far.

Switch Sides

Lets you to take over the computer's side of the board, and forces the computer to play the side you've abandoned.

Offer Draw

Tells the computer that you consider the game a tie. The computer might not agree.

Resign

Allows you to resign from a game.

Practice Menu Commands

This section contains information about the Practice menu commands in Chess.

Setup Board

Allows you to create your own game scenarios by positioning chess pieces on the board and then returning to play.

Note: When you choose Setup Board, a new screen is displayed and a special Edit menu is the only menu available.

Show Valid Moves

Highlights all the possible legal moves.

Show Threatened Pieces

Highlights threatened pieces after each move.

Suggest A Move

Provides a hint for your next move.

You can also click the Hint button on the <u>toolbar</u>.

Edit Menu Commands

This section contains information about the Edit menu commands in Chess.

Note: The Edit menu is the only menu available when you choose Setup Board from the Practice menu.

Save As

Saves any board configuration you create under Setup Board.

The Save As dialog box is displayed so you can type a name for the board setup you want to save.

Load

Lets you load any games you have saved into Setup Board.

The Open dialog box is displayed so you can choose the game you want to load.

Exit Setup

Retains your positions from Setup Board and returns you to game play.

Reset Pieces

Resets your board pieces for a new game.

Clear Pieces

Removes all pieces except the two kings. From the palette beside the board, you can drag whatever pieces you want to practice with.

White To Move

Lets white have the first move after you setup the board and choose Exit Setup.

A check mark is displayed beside the command name when white has the first move.

Black To Move

Lets black have the first move after you setup the board and choose Exit Setup.

A check mark is displayed beside the command name when black has the first move.

checkmate

The king is under attack and has no way to escape. The game ends.

diagonals

The corner-to-corner, same-colored squares that crisscross the chessboard.

files

The eight rows that run vertically up and down the chessboard.

ranks

The eight rows that run horizontally across the chessboard.

check

A threat to attack the opposing king. When you put your opponent's king in check, you must, by tradition, call "check." You must attempt to protect your own king from check by one of the following: capture the attacker, move your king away from the danger, or block the attack with another piece.

castling

Each player can castle once during a game if: (1) Neither the king nor the rook have moved before; (2) The king can't be put in check or removed from check through castling; and (3) The spaces between the king and rook are clear of other pieces, and while traveling across these spaces, the king is not exposed to an attack.

Castling affords the king greater protection by moving it away from the attack lanes of the center-board pieces and by bringing a rook into a more protective position. You are not allowed to castle to get out of check.

en passant

The French term for "in passing." Might be called the ambush or the surprise attack if it were created today. This highly restricted means of capture works in this way: If a pawn moves two spaces on its first move, and in doing so moves through the attack space of another pawn, then the opposing pawn has the ability to capture the pawn as if it had only moved one space. This can only be done on the very next move.

Example: White has advanced a pawn to G5. Black on its first move of pawn F7, takes the two-space option and moves the pawn to F5. On the next move, and only on the next move, white has the option of making an en passant capture by moving its pawn to F6, the square the black pawn would have been on had it moved only one. In effect, white picked off the black pawn as it was passing through F6. Note that white moved not horizontally to F5, but diagonally to F6.

descriptive move notation

Each square on the chessboard has a designator indicated by file, rank, chess piece, and conventional abbreviation. The squares in the files (vertical rows) are named after the chess piece in position at the start of the game. All squares above the rook, for example, include an R (rook) in the designator. To further specify, all squares to the left of the queen's position are prefixed by Q (queen) and likewise for the king: queen's knight (QN) or king's knight (KN). The squares in the ranks (horizontal rows) are numbered 1 through 8, counting away from the player. The code for a pawn in place, for example, in line with the rook to the left of the queen in position is QR2.

algebraic move notation

Each square on the chessboard has an absolute designator indicated by file, rank, and conventional abbreviation. The files (vertical rows) are lettered A through H counting from left to right on the white end of the chessboard. The ranks are numbered from 1 to 8, counting up from the white end of the chessboard. The code for a queen in place at the beginning of a game, for example, is QD1 for the white queen and QD8 for the black queen.

piece color

Regardless of the color you choose for your light and dark chess pieces, Chess always refers to them as white and black. White always plays first.

stalemate

Occurs when one player can't make a legal move but is not in check. Stalemates can occur, for example, when a king and two knights are left against a lone king, or when a king, two knights, and one bishop are left against a lone king.

toolbar

Located at the top of the chessboard. Offers instant access to the most frequently used Chess commands. By simply clicking a button, you can reverse a move, go forward in the game, force the computer to make a move, pause the game, or ask for a hint.

Ruy Lopez opening

The Ruy Lopez opening is one of the most analyzed openings in chess:

PE2-E4 PE7-E5

NG1-F3 NB8-C6

BF1-B5

Many of the lines in the Ruy Lopez opening go over 20 plies deep.

status bar

An area at the bottom of the screen that displays the following information: which player moves next, when a player is in check, and what the title of the Opening Book is.

Charles Babbage

Babbage did not have the computer hardware necessary to implement his ideas, but he wanted to give an "automaton" the ability to play. He sketched out several layers of analysis his automaton would conduct. The first question the automaton would ask of itself was whether the pieces on the board were legally placed. Then it would ask whether its own king was in check. If not, then it would ask if its opponent's king was in check. If not, it would ask if it could place the opponent in check on the next move. If so, it would do so. If not it would ask if its opponent could achieve check on the next move, if so the automaton would examine how to block the move. Further into the design, Babbage's automaton would ask itself whether it could make one move that would expose the opponent to check in two different ways.

Claude Shannon

Celebrated for his approaches to evaluating the changing states of the pieces on the board. His 1949 paper, "Programming a Computer for Playing Chess," presented a logical system for evaluating the possible states of the board. He looked at such things as material advantages, pawn formation for center-board control, pawn value per location, protection of advanced pieces. He also looked at the mobility of pieces, and the availability of pieces. Was a piece available for attack? Or was it better used to protect another piece, or to pin down an opposing piece? He also pioneered work in selective searches to help the computer search deepest on the most likely decision branches.