Zot - Mate Chess

User Manual

Interactive Computer Chess
Program

Version 1.0

Checkers

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Glossary

Pieces:

Pawn: Moves one space at a time, only forward and cannot go over pieces. The only exception to this is the first move of the pawn (when the pawn hasn't been moved), it is allowed to move two spaces forward. The Pawn attacks only diagonally forward and takes the position of the piece it attacks.

Rook: Moves any amount vertically or horizontally, and cannot go over pieces. The Rook attacks along his path of movement, and takes the position of the piece it attacks.

Knight: The Knight moves either two spaces vertically and an additional one space horizontally, or two spaces horizontally and an additional space vertically. The Knight, in a way, moves diagonally. The Knight can jump over pieces, but the pieces it jumps over are not affected in any way. If there is a piece where the Knight lands, it will take that piece and its position - this is how the Knight attacks.

Bishop: The Bishop moves in a diagonal line in any direction desired. The Bishop cannot jump over any pieces and if there is a piece where the bishop lands, it takes the piece and it's position - this is how the Bishop attacks.

Queen: The Queen can move any amount of spaces vertically, horizontally, or diagonally. The Queen essentially can move either like the Rook or Bishop. The Queen cannot jump over any pieces and if there is a piece where the Queen is to land, it will take the piece and its position - this is how the Queen attacks.

King: The King can only move one space, like the Pawn, but in any direction desired - this is how the King attacks. Take note that the King is the most important piece, and it is not recommended to use it as an attacking piece.

Special Moves:

Taking en-passant: This rule occurs when a pawn moves two spaces forward, and there is an enemy pawn in an adjacent space next to the pawn that moves two spaces. The enemy pawn can attack the recently moved pawn diagonally landing on the space behind it and take the recently moved pawn. However, this special move can only be done immediately when the move is available. If it is not done, then the move cannot be performed on that pawn.

Promoting a Pawn: If a Pawn manages to get to the other side of the board (one of the last spaces of the last row), the Pawn can be promoted to a Rook, Knight, Bishop, or Queen. It

essentially becomes either of the above pieces. Note, the Pawn does not have to be promoted to a taken piece, and it is possible to have more than the given amount of Rooks, Knights, Bishops, or Queen.

Castling: Castling is a special move where the King and Rook both move in one turn, however, this special move comes with many conditions that need to be met. First, both the King and the Rook could not have been moved previously. Second, the King is not in a check position, the end of the castling cannot result in the King being left in a check position, and the King cannot perform the castle if any piece can check it throughout the entire castling. Finally, all spaces between the King and Rook must be empty, and the King and Rook and have to be in the same row.

Game Ending Conditions:

Check: This occurs when the king of the enemy is able to be taken by one of your own pieces. The enemy would then have to move his King out of harm's way, or move another of their pieces in the line of the piece that can take the King, in a way performing a sacrifice. It is common courtesy to say "check" when you put the enemy's King in a check position.

Checkmate: If the player is able to put the enemy's king in check and the enemy cannot move his King out of check, or move a piece to take the King out of check, then the king is considered mated. The player whose King was mated loses the game, and the other player wins the game.

StaleMate: If a player cannot make any legal move, and is not in check then the player is said to be in a stalemate. The game ends in a draw.

50 Moves Rule: If there have been 50 moves in total without any piece taken, or any pawns moved then the game ends in a draw.

Resign Rules: The player can resign the game, officially stating the player's defeat.

Repetition of moves: If both players perform the same move three times consecutively, then the player can claim a draw.

1 Computer Chess

1.1 Usage Scenario

From the complete chess novice to the chess grandmaster, Zot-Mate is the perfect chess application for anyone interested in chess. Challenge your friends to a game of wits with the player vs player mode, or if you're like most Engineers at UCI and you have no friends, challenge yourself and play against the computer, with adjustable difficulty levels. However you play, Zot-Mate has you covered!
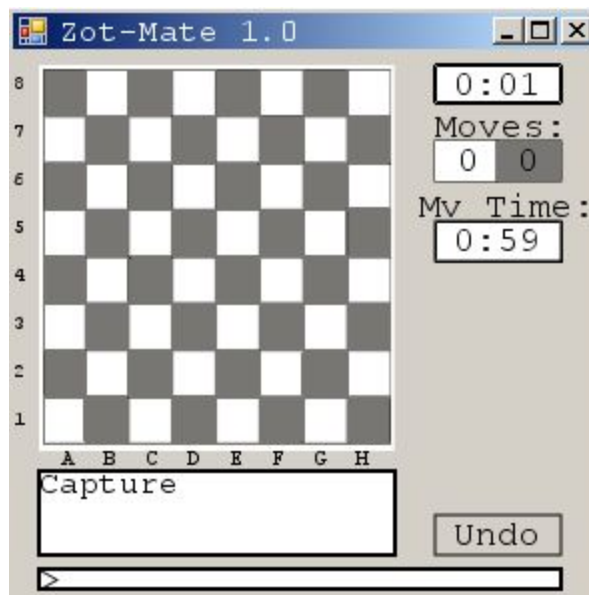
1.2 Goals

1.2.1 Win the Game

The main goal of the game is to checkmate the opponent's king. There are two ways to win the game:

- The king is checkmated and cannot escape anymore.
- The opponent declares resign.

Controlling the center of the chess board is an important strategy. Acquire more room for your pieces while pushing your opponent's pieces into a corner by making less space for him. The more space you have, the better for strategies. You should use all your chess pieces in the game. Because a chess piece becomes worthless if it is sitting in the back line.

1.2.2 Protect the King

The most important piece in the game is the king. As soon as you sense the king near danger, try to protect him. Usually, castling is a significant defensive move. Many people make mistakes when they are only focusing to checkmate opponent's king by putting their own king in danger.

1.2.3 Value Every Piece

Every piece is valuable in chess game. Try your best not to lose pieces carelessly. There is a common valuing system that most players use to keep track of the value of chess pieces.

- A pawn is worth 1 point
- A knight is worth 3 points
- A bishop is worth 3 points
- A rook is worth 5 points
- A queen is worth 9 points
- The king is worth infinity points

Even though those points are not actually worth anything, it is a simple system to keep track of the value of pieces and make decision during the game.

1.2.4 Draw the game

There are some reasons that the game is decided as a draw:

- Both of the players agree to a draw and end the game.
- There aren't enough chess pieces to checkmate from both sides.
- If both players perform the same move three times consecutively.

1.3 Features

1.3.1 Basic Features

Our Chess program features:

- Full compliance with the official rules of chess
- A GUI (more info below)
- Interactive and automatic players
- The human user can choose which side to play
- A .txt log file of all moves
- The computer moves in under 1 minute per turn

1.3.2 Full GUI

A full Graphical User Interface is incorporated and features:

- A Main Menu with three playing options (Human vs CPU with three difficulties, Human vs Human, and CPU vs CPU) and a rulebook button
- A Game Window, including:
  - The Chess Board with custom drawn pieces
  - A deadpool displaying wiped out pieces
  - Total elapsed time and move timer
  - An undo and redo button
  - A move count for black and white pieces
  - A quit button (with verification)
- A command line window for human players to move

1.3.3 Advanced Features

Advanced Features incorporated:

- Human vs Human
- Computer vs Computer
- Adjustable difficulties for the Computer player
- Timers for both players
- Supports Algebraic Notation of Chess moves

2 Installation

2.1 System Requirements

- OS: Windows 7 or higher
- Processor: 2.0 GHz Dual Core
- Memory: 2GB RAM
- Network: Broadband Internet Connection
- Storage: 500 MB
- Terminal shell

2.2 Setup and Configuration

- Open the command prompt
- Extract directory
- Run command "make all"
- Execute the program "./chess"

2.3 Uninstalling

- Open the command prompt
- In extracted file, run the command "make clean"

3 Chess Program Functions and Features

3.1 Official Rules of Chess

The game fully complies with all of the official rules of chess, from basic moves, to advanced moves, to win, loss, and stalemate conditions.

3.2 Full GUI

The game features a full Graphic User Interface which allows the user to easily select whatever options they desire. There will also be a full GUI implemented for the game so the user can see the board.

3.3 Player vs. CPU Mode

The user can choose to play a match of chess against the computer. The player will take turns against a simulated chess player. The skill level of the simulated player can be changed based on the player's preference.

3.4 Two Player Mode

This mode allows two people to play against each other just like in real life!

3.5 CPU vs CPU Mode

The user can optionally set two CPUs to play a game against one another and spectate the match. The skill level of each individual CPU can be set and the game will be played at an accelerated pace. Like a normal game, all of the moves will be logged for the user to review after the match has concluded.

3.6 Variable AI Difficulty

The user can alter the skill level of the Computer player. The Computer player can be set to beginner, intermediate, or expert level. Each of the Computer players can be set to different difficulties in a CPU vs CPU game as well.

3.7 Game Log Files

Every movie in each game is recorded in a log file that can be reviewed by the user after the game is over. The log is saved in a .txt file.

4   Back Matter

4.1 Copyright

This installation or use of this game is not guaranteed to be bug free, use at your own risk. No refunds, and any user of this application cannot sue our company. We are not liable for any harms done to your machine. All rights reserved. Copyright.

4.2 Help and Error Messages

- "Start move out of bounds"
    - When this error shows up, it means that the starting move block does not exist; invalid input
- "End move out of bounds"
    - When this error shows up, it means the ending move block does not exist; invalid input
- "Start move unoccupied"
    - This error means that the start move entered has no piece occupying it; invalid input
- "Bad Move"
    - This error means the player has selected an incorrect move for a piece, ie. moving a pawn sideways; invalid input
- "Check!"
    - A King has gone in check
- "Checkmate!"
    - A King has gone in checkmate and the game is over
- "Time out!"
    - The player has ran out of time.

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