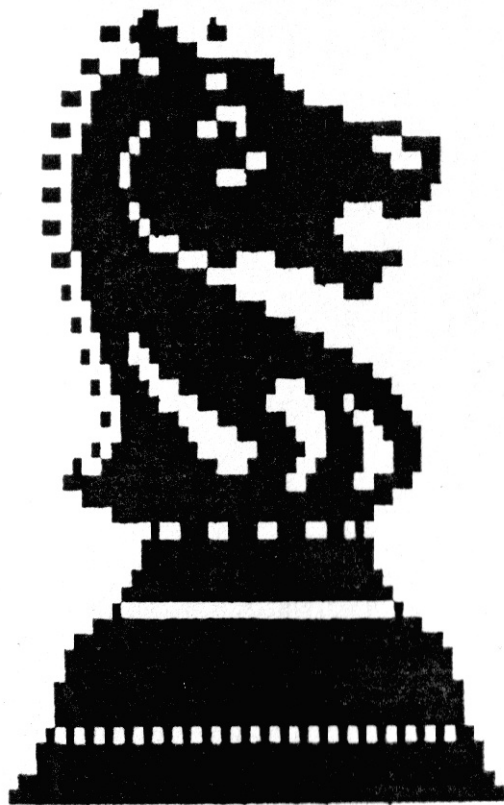


CHES



color computer



RAINBOW
CERTIFICATION
SEAL

Requires 64K or 32K RAM
Extended or Color BASIC

Copyr. 1986 by Roger S. Young
Applied Machine Intelligence

AMI

C H E S S

KEY FUNCTIONS

MISC. COMMANDS:

A Print an analysis of the position.
SHIFT A Another (new) game.
SHIFT E Exit to BASIC.
ENTER Enter all commands and make the move.
F Mark from space.
SHIFT F Fast mode (on/off).
SHIFT G Get the saved position.
SHIFT I Inv~~e~~rt the board.
SHIFT L Change the playing level.
SHIFT O Play other color.
SHIFT S Save position.
T Mark to space.
SHIFT U Undo last moves.
SHIFT V Change the randomness level (vary).
SHIFT W Black and white t.v.
SHIFT C Change color to move.
SHIFT M Turn off comments (!,?).
SHIFT Z Turn off opening book.

SETTING UP POSITIONS COMMANDS

SHIFT CLEAR Clear the board.
SPACEBAR Clear a space.
P Add a black pawn.
N Add a black kn~~ig~~ht.
B Add a black bishop.
R Add a black rook.
Q Add a black queen.
K Add a black king.
SHIFT P Add a white pawn.
SHIFT N Add a white kn~~ig~~ht.
SHIFT B Add a white bishop.
SHIFT R Add a white rook.
SHIFT Q Add a white queen.
SHIFT K Add a white king.

DISK COMMANDS

RUN "CHESS" Start chess game.
RUN "SAVE" Save position to disk.
RUN "HISTORY" Display or print game history.
RUN "CHESSB" Start disk book version of Chess.
RUN "HISTORYB" Print game history for disk book version.
RUN "MANUAL" Display the disk manual menu.

TAPE COMMANDS

CLOAD "CHESSC" Load chess program driver.
RUN Run chess program.

CURSOR COMMANDS

→ Move cursor right.
← Move cursor left.
↑ Move cursor up.
↓ Move cursor down.

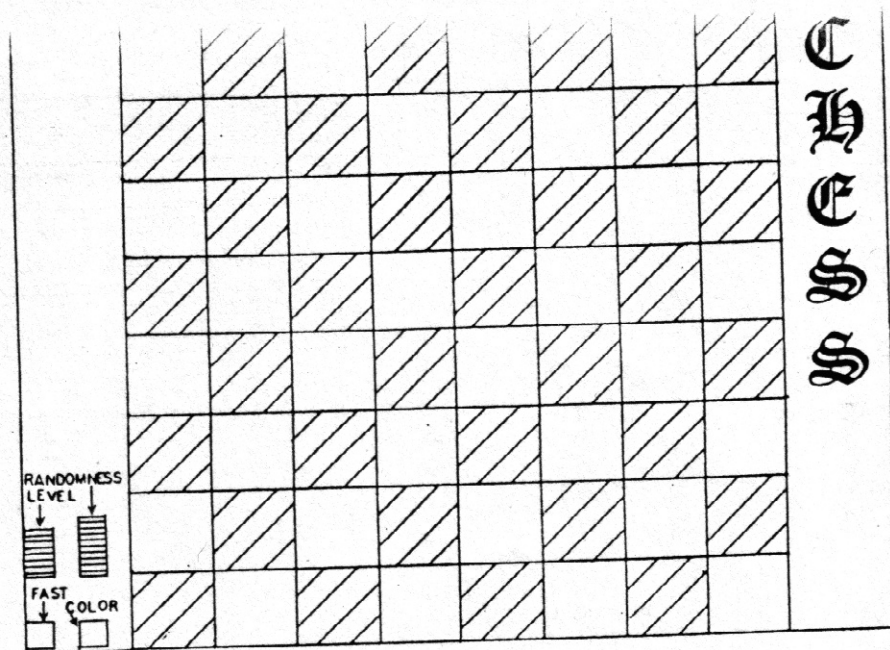


TABLE OF CONTENTS

	page
INTRODUCTION	1
GETTING STARTED	1
OPTIONS	2
TECHNICAL DATA	5
MAKING COPIES	5
COPY FORM	6

INTRODUCTION

Congratulations on your purchase of CHESS-32K, a Color Computer version of the popular board game. This game is designed to give many hours of entertaining, instructive, and challenging play to players with varied levels of chess skill. Your chess game is not copy protected for your convenience in making backups for your own use (see, also, "Making Copies" in the back of this booklet).

GETTING STARTED

LOADING THE PROGRAM FROM TAPE.

1. Rewind the tape to the beginning of side 1. (Side 2 is identical to side 1.)
2. Press "PLAY" on the recorder.
3. Type CICAD "CHESSC" (including the quotation marks).
4. Press the (ENTER) key.
5. Type RUN . (Keep the recorder's play key down.)
6. You will see a title display and, in about two and a half minutes, a chess board with the pieces already set up.

LOADING FROM DISK.

1. Make a backup copy of the disk. Then use the backup copy. (You cannot save games to the original unless you remove the write protect tab.)
2. Insert the disk into the disk drive.
3. Type RUN "CHESS" (including the quotation marks.)
4. Press the (ENTER) key.
5. You will soon see a chess board with the pieces already set up.

STARTING TO PLAY When the program has loaded, you should see a board with the chessmen already set up. The cursor should be blinking. (If not, press the (ENTER) key.) You can now set up any position that you like. (See "setting up and changing positions".) If you would rather just start playing, press (ENTER).

MAKING A MOVE To make a move:

1. Use the arrow keys to move the cursor (it "wraps around") to the space that you want to move from.
2. Press the "f" key to indicate the from space.
3. Use the arrow keys to move the cursor to the space that you want to move to.
4. Press the "t" key to indicate the to space.
5. Press (ENTER) to make the move.
6. The computer will then think about, flash, and make its move.
7. When you have decided on your next move, press (ENTER) to start the cursor blinking and return to step 1.
(Note: When castling, just move the king.) Also, if level 0 (Beginner) or level 1 (Novice) tries to castle while in check, use 'UNDO' and remake your last move. The computer will not re-

MODES The computer is always in one of the following modes of operation:

Command Mode: In this mode, you may enter any command to change options or enter your moves. Command mode is indicated by a flashing cursor.

Waiting Mode: In this mode, the computer is waiting for you to press (ENTER) before proceeding.

Thinking Mode: In this mode, the computer is thinking. If the "fast" option is set, the screen will be blank. Also, the keyboard is locked out until the computer has chosen its move.

OPTIONS

Options are changed by pressing a key (often, while holding down the (SHIFT) key) while in the command mode (flashing cursor).

BASIC OPTIONS:

BLACK AND WHITE T.V. If you are using a black and white t.v., press "(SHIFT) S" so that the black men show up on black spaces.

ANOTHER GAME To start a new game, press "(SHIFT) A". When you exit the command mode with (ENTER), a new game will be set up.

EXIT To exit to BASIC, press "(SHIFT) E". This command will be executed when you leave the command mode (by pressing (ENTER)).

LEVEL To change the computer's playing level (skill), press "(SHIFT) L". You will see the playing level column at the left edge of the screen change. Each pair of yellow and green (white and grey) bars indicates an additional playing level. The (unofficial) ratings for the playing levels are:

0 - Beginner	3 - Challenger	6 - Grandmaster
1 - Novice	4 - Expert	7 - Postal Master
2 - Apprentice	5 - Master	8 - Postal Grandmaster

UNDO To undo your last move (and any following computer moves), press "(SHIFT) U".

OTHER COLOR To change colors, (for example, if you would rather play black at the beginning of the game), press "(SHIFT) O" (color indicator to left of board).

ADVANCED OPTIONS:

ANALYSIS To see an analysis of the position, press "a". At the top of the text screen is a representation of the position. Below it, in dark numbers, is the computer's estimate of the value of the position, in pawns, from your point of view. Below that is the principle variation (the series of moves expected by the computer) in an algebraic notation. The first move is the computer's last move, the next move is the move that the computer expects you to make next, etc. (the second move is the computer's hint, if you would like one.)

INVERT BOARD To invert the board, so that the computer plays from the bottom, press "(SHIFT) I". (This is useful for computer vs. computer games.)

SAVE POSITION To save the present position to the computer's memory (RAM), press "(SHIFT) S".

RECALLING A BOARD POSITION To recall the saved board position from the computer's memory (RAM), press "(SHIFT) G".

SAVING A GAME TO DISK To save a game to disk, save the position in the computer's memory (RAM) with "(SHIFT) S" and immediately after returning to BASIC, transfer the position (from RAM) to disk with RUN "SAVE".

RECALLING A GAME FROM DISK To recall from disk, press "(SHIFT) G" (get) (before pressing "(SHIFT) S"). (The last position saved to disk is automatically loaded into RAM when the program is loaded.)

PRINTING A GAME HISTORY (disk systems only) To print a game history after returning to BASIC (and saving the position to disk, if desired), type RUN "HISTORY". You will be prompted for the form of the history: screen or printer, descriptive or algebraic notation, and long or abbreviated (and, sometimes, slightly ambiguous) move descriptions. Each move's description may be followed by an annotational marker. "+" means check and "checkmate" and "stalemate" are self explanatory. Your moves may also be followed by "!" (good move, gains a pawn), "!!" (great move, gains at least two pawns), "?" (error, loses a pawn), or "???" (blunder, loses at least 2 pawns). (Of course, queens are worth 9 pawns; rooks, 5; bishops, 3; knights, 3; and pawns, 1.)

Vary To change the level of randomness of the computer's play, press "(SHIFT) V". You should see the randomness indicator column to the left of the board change. There are 9 randomness levels (0 through 8). The higher the randomness level, the more randomly the computer will play after the opening. (The (book) opening is always played randomly.) At the highest levels of randomness, the quality of the computer's play can be significantly affected. Thus, after the computer has varied from a line of play that you have played too often, you may want to return the randomness to a lower level (even 0).

SETTING UP AND CHANGING POSITIONS To set up or change positions, move the cursor with the arrow keys and use the commands:

SHIFT CLEAR Clear the board.
 SPACEBAR Clear a space.
 P Add a black pawn.
 N Add a black knight.
 B Add a black bishop.
 R Add a black rook.
 Q Add a black queen.
 K Add a black king.
 SHIFT P Add a white pawn.
 SHIFT N Add a white knight.
 SHIFT B Add a white bishop.
 SHIFT R Add a white rook.
 SHIFT Q Add a white queen.
 SHIFT K Add a white king.

FAST To double the clock speed, press "(SHIFT) F". The indicator at the far bottom left of the screen will turn yellow (white) while this is on (like most options, press it again to turn it off). The computer will now think (only) twice as fast (half as long) but the screen will be blank while the computer is thinking.

CHANGE COLOR TO MOVE If it's white's move, but you want it to be black's move, press "(SHIFT) C". You might want to use this option when setting up positions (for example, for problems). You may change from black-to-move to white-to-move in the same way.

TURN OFF OPENING BOOK To stop the computer from using book moves from its small internal (non-disk) opening book, press "(SHIFT) Z". This should be done when entering problems, especially when there is a pawn on its starting space on the king or queen file of white and it's white's move.

TURNING OFF COMMENTS To turn the comments (?, ??, !, !!) off, press "(SHIFT) M". You might also want to do this when setting up positions.

USING THE DISK OPENING BOOK If you want to go to some more trouble, after getting used to the game, to make the program play even stronger or to play a wide variety of openings, you can use the disk opening book. The disk opening book consists of about 500 common opening book positions along the strongest and most commonly played opening lines. To use the disk opening book:

1. Turn the computer off and on.
2. Insert the main chess disk.
3. Type RUN "CHESSB" (for chess book).
4. The computer will prompt you with some questions and provide further instructions.

When printing a listing of a game after using the disk opening book, use RUN "HISTORC" instead of RUN "HISTORY".

DISK MANUAL Type RUN "MANUAL" for the menu.

To choose its moves, the computer uses the standard brute force method. A depth first, iterative search of a min-max game tree is done. The first few (depth) iterations usually use a full positional evaluation and the later iterations consider material only. Alpha-Beta pruning is used to prune the tree. About 30 positional or 200 material-only evaluations are done per second in fast mode. Move ordering is used to increase the efficiency of the pruning. The moves are ordered as follows: pawn promotions, captures, "killer" moves, positional considerations. Quiescence searching is done, basically, until there are no captures (or pawn promotions) for the side to move. A separate "mop up" evaluation function is sometimes used late in the game. A small opening book provides randomness in the opening. The disk opening book is a separate module, written in BASIC. It contains approximately 500 positions along the most common opening lines.

MAKING COPIES

You may make up to 10 copies of this program and manual for your friends for \$1.00 per program by following these steps (your friends can then do the same):

1. Copy the disk or tape and the manual..
2. Copy the serial number onto the label of the new disk, appending your friend's initials to the serial number.
3. Fill out and sign the "copy form" in the back of this manual (or a copy of it) and send the form plus \$2 (cash O.K.) to:
Applied Machine Intelligence
P.O. Box 358
Salida, CO
81201

Of course, you may make backup copies for personal (or anyone using your computer, naturally) use. You may not accept reimbursement for more than \$5.95.

Note: To copy the tape machine code routine "CHESSM/BIN":

1. Type PCLEAR 1 (ENTER).
2. Type CLEAR 100,10750 (ENTER).
3. Position the original tape just after "CHESSC" (use SKIPF).
4. Press "play" on the tape recorder.
5. Type CLOADM "CHESSM" (ENTER).
6. Position the new tape to just after "CHESSC".
7. Press "record" and "play" on the tape recorder.
8. Type CSAVEM "CHESSM",10751,32767,12928 (ENTER).

Note: To copy the program from disk to tape, turn the machine off and on and use:

1. PCLEAR 1
2. CLEAR 100,10750
3. LOAD "CHESSC"
4. CSAVE "CHESSC"
5. LOADM "CHESSM"
6. CSAVEM "CHESSM",10751,32767,12928

COPY FORM

Name of original purchaser

Serial number of original tape or disk

Address of original purchaser

Serial number of copy

I hereby affirm that I have not accepted and will not accept reimbursement for more than \$ 5.95 from my friend for the consideration of a copy of this program.

Further \$ 2.00 is enclosed in return for the rights to make a copy of this program for my friend.

Original Purchaser's signature Date