SYSTEM REQUIREMENTS

This program requires the following hardware and software to be present in your system:

7K of RAM occupying 0440-1FFF.
ETI 640 memory MAPPED VDU which must be located at 7800-7FFF.
BINBUG, MIKEBUG, C-BUG, or any other monitor program designed to run the VDU.

This chess program makes the following subroutine calls into the systems monitor program:

CHIN	located at	0286
COUT	located at	02B4
CRLF	located at	008A

If your monitor does not have these routines in these locations, one can change chess at the following locations, to point to the routines.

Location	Present Contents	Change to -
074C	0286	Location of CHIN or equiv.
09C7	0286	Location of CHIN or equiv.
074E	02B4	Location of COUT or equiv.
07CB	008A	Location of CRLF or equiv.
16E9	008A	Location of CRLF or equiv.

The chess program plus data occupies 440-177F, but uses scratchpad areas in the rest of page 0, so a full 7K of RAM is needed. Also, the program contains embedded data and temporary locations so it cannot be easily disassembled and will not run in ROM. The program is not easily relocatable in page 0, and will not run outside of page 0. The cassette supplied is 300 band binary format.

GAME PRELIMINARIES

The starting location for chess is 0800. When first started, the program will reply

"Welcome to CHESS! Care for a game?" (Y or N)

If you type N, see below, To Analyse a Position. If you type Y, you will be playing a normal game. Note, no carriage return is required when typing replies to the program. The program will now ask you:

"Do you want to play black or white?" (B or W)

Reply, and the computer will now ask:

"Select lookahead" (1-6)

This number indicates the difficulty of the game. Reply, and the board will now be displayed. Proceed to the section THE GAME'

To Analyse a Position.

The computer will now ask you "Do you want to analyse a position?" (Y or N)

If you reply N, the program will exit back to your monitor program at location H"0022". If you reply Y, the board will be displayed with the top left hand square flashing, and you are in a position to set up any position you want.

The flashing square is your "cursor". To non-destructively manipulate the cursor, use either CR key for forwards, or backspace key. Note that backspace jumps 1, 2 or 3 squares at a time, depending on where the cursor is.

To enter a piece on an empty or occupied square you must type three keys.

1st key -	P, N, B, R, Q, or K indicating the piece	
2nd key -	B or W, indicating its colour	
3rd key -	0 or 1	

0 - indicating the piece has never moved before
1 - the piece has moved at least once before.

i.e., to enter a black knight which has moved before, type NB1.

_To_ empty a square of piece, type the space key. Any other key pressed while setting up the board defaults to _piece._

When you have finished to your satisfaction, type the escape key. You will then be asked

"Is this right?"

If you reply N, the board is redisplayed, and you can continue to set up a position.

If you type Y, you will then be asked three questions pertaining to the situation. Answer with a single key press each time. The game now commences. Proceed to THE GAME.

THE GAME

By this time the board will be displayed, and either you or the computer will have the first move. The board is set out in standard algebraic chess fashion.
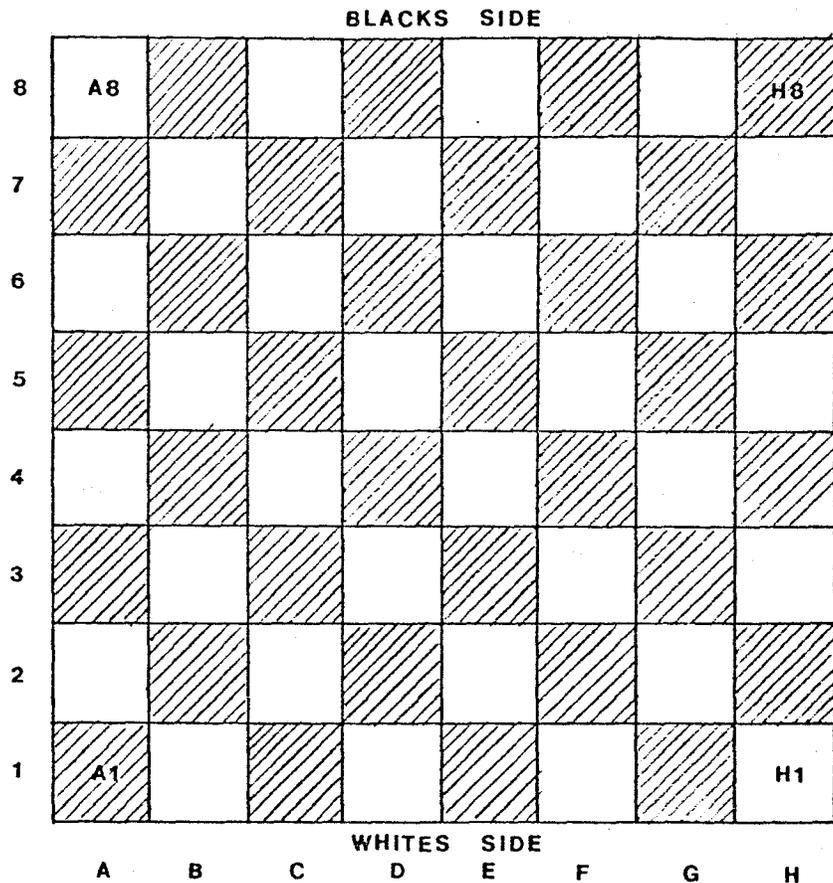
To enter your move, use standard algebraic notation. Firstly type in the coordinate of the square from which you are moving. The computer will now display the pair (if valid), and insert a dash after them. Now type the destination coordinates. Once again, no carriage returns are required. If valid and legal, the move will be executed, and the computer will now have its move.

If you type an invalid character pair, or an illegal move, the computer will say so. Try again.

To Castle

To castle, enter the king's move for the castling move, i.e.

Castle on white's queen side, type E1C1
Castle on black's king side, type E8G8.

The computer will then execute the double move for you. Should the computer castle on its move, it will display either 0-0 or 0-0-0 on its move list, whichever is relevant.

capture.
.o capture enpassent, enter the move for your moving pawn. Once again, the computer will complete the move for you. The computer will display Pxpxp if it makes this move.

THE END GAME

At any stage during a game, you can prematurely end it by pressing the escape key instead of your move, when it is your turn. You will now be asked:

"Care for another game?" (Y or N)

Y - will get you a new game from the opening position

N - you may either set up a position, as in Analyse a Position or exit from chess.

Checkmate.

If either you or the computer gets the other in checkmate, it will be announced on the screen with an appropriate message. To continue, press any key, and you will be asked:

"Care for another game?" (Y or N) See above.

Stalemate.

If the computer places you in stalemate, it will not say so, but naturally will not allow any move on your part. The only thing to do is use the escape key. Should you place the computer in stalemate it will display an appropriate message. Press any key and continue as for checkmate.

Mate in x.

If during a game the computer discovers it has you checkmated in x moves, it will say so. The program continues normally, but without much hope for you. (Note, see below in notes on plynumber.)

NOTES

Lookahead, or Plynumber:

The difficulty of the game played and also the response time is very dependent on the number you enter for lookahead, or plynumber. It is a rough indication of the number of halfmoves the computer will look ahead. During questioning before a game commences the program displays:

Select Lookahead (1-6)

For normal play, it is adviseable to stick to these limits (1-6) and in fact for reasonable response times, lookahead should be restricted to 1, 2, or 3. However, the response time is also very dependent on the complexity of the game, so very simple board situations can be examined at higher plies in reasonable times. In fact, if the board situation is very simple, the program will accept ply requests above 6, up to 9, and still respond.

The above comments must be considered with one restriction. The internal scratchpad is limited, and scratchpad use is roughly proportional to ply depth and board complexity. Thus if complex situations are examined at high plies, the program will probably abort with an appropriate error message,

Internal stack overflow

One may then either continue at a lower ply or abandon the game. Note that if you try again at a lower ply, your response to

New Ply

must be in the range 1 - 6. A number out of this range, in this case, will default to 2.

To examine situations for the possibility of Mate in x moves, one must use the following ply numbers.

Mate in x	Ply Number or Lookahead
1 (checkmate)	1
2	3
3	5
4	7
5	9

Once again it is emphasised that response time and possibility of overflow is highly dependent on the board situation and ply number being used. i.e. 9 ply searches have been done in under a minute on some occasions whereas 5 ply search caused overflow in another case.

ADDENDUM

Your program has been modified to allow you to examine or alter the Ply search level whenever it is your move.

To use this facility, enter either PØ or P1 to P9 when it is your move. PØ will display the current ply level. P1 to P9 will alter the Ply level to that specified.

You may now make your move.

With this modification fitted, your program extends to 17CF not 177F as shown on the face sheet.

REMEMBER with large specified look-ahead levels, the time for the processor to make its move can be <u>very</u> long at the start of the game. An opening game at ply 5 will take several hours per move, but will reduce as pieces are captured. To play the computer at an advanced level, start with a low ply search (e.g. 3) and increase the number as the game progresses.

Your cassette is numbered, and this number is also coded into the program. This is to allow us to know which version you have in the event of any queries, and to protect us under copyright. If you wish to be advised of any updates or modifications to Chess, please send a stamped, self-addressed envelope, and the code number of your program to the author:

Mr A. Scott
38 Taylor St
BALMORAL Q 4171

Should you have any problems or queries regarding this program, you should always quote your cassette code number in any correspondence.