

CHESSO™

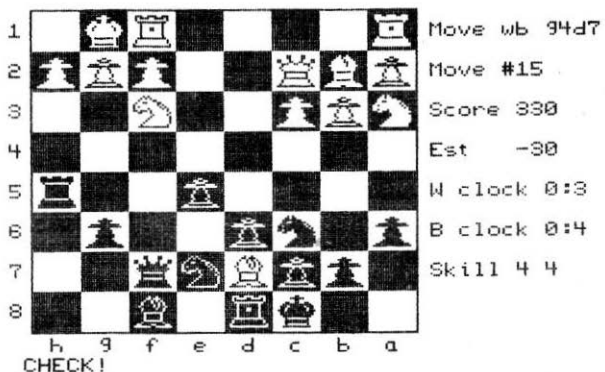


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ChesSD™ V1.0
Software Dynamics' Chess Program
for Radio Shack Color Computers

ChesSD is a Chess program for the Radio Shack Color Computer. It makes your Color Computer into a worthy opponent. Players can set or change the lookahead level at any point during play, from novice to advanced levels. Built-in time control allows true tournament-style play, as well as "Rapid Transit" play modes. A disk-based opening book allows the program to play sophisticated openings quickly.

All Chess moves are recognized or played as needed, including En Passant, Castling and Promotion to any piece. All moves are entered through the keyboard using a well known algebraic notation. A built-in opening book assures the game gets off to a good start. The player may play as either Black or White, or he may switch sides in the middle of the game.

ChesSD for the Color Computer uses high-resolution mode graphics with easily recognized pieces to display the board, so the operator needs no Chessboard of his own. Because the displayed board reflects accurately the state of the game, there is no confusion (as occurs sometimes with Chess computers) as to where the pieces really are.

ChesSD requires 64K of RAM for operation.

ChesSD for Color Computers can be obtained through:

COMPUTER SYSTEMS DISTRIBUTORS
Post Office Box 9769
Anaheim, California 92802
Phone: (714) 772-1390

ChesSD is a trademark of Software Dynamics.

ABOUT THE RULES OF CHESS

This document and the ChesSD program are NOT intended to be a tutorial on how to play Chess. There are many fine books in your local bookstore that describe the rules and even how to play Chess well; if you are not familiar with the rules, we suggest you get one of them.

For the novice player, we suggest

 An Introduction to Chess, the Creative Game

 Allan G. Savage

published by Prentice-Hall, Inc., Englewood Cliffs, New Jersey, and is generally available.

If you already know how to play and want a good reference book on Chess rules, we suggest

 Official Rules of Chess

 Second Edition

published by the United States Chess Federation, and generally available in book stores.

SOME TERMINOLOGY

Chess players use the term "Rank" to mean a row on a Chessboard from the point of view of one of the players; for instance, all of the Pawns are initially set up on a single Rank.

The term "File" means one of the 8 sets of squares that run from one player's side of the Board to another.

SETTING UP TO PLAY

ChesSD is a disk-based program. Your Radio Shack Color Computer must have 64K bytes of RAM memory, a floppy disk controller and a disk drive 0.

To run the program, reset the computer (getting the "Disk Extended Color BASIC" display), insert the diskette in drive 0 (it will not work in other drives), and type:

RUN "CHESS"

The results in the screen displaying a "Loading..." message. The disk heads will step quickly (make a "tick tick tick" noise). After about 10 seconds the screen will clear again, and the ChesSD banner and the Software Dynamics copyright message will be displayed. After another few seconds, a Chessboard will be displayed.

If you get funny characters in the upper left-hand corner of your "Loading..." screen then your system is having difficulty reading the diskette. This is a rare event which indicates a worn-out diskette (cure: make a new copy from your backup), or maybe a drive alignment or other electronic problem.

If the message "Self-test checksum error" appears, either your diskette has been written upon, or the memory in your Color Computer is questionable or failing. In either case, the program will not run correctly until the problem is fixed.

THE DISPLAY

ChesSD normally displays a large Chessboard with pieces on it, some summary information to the right of the Chessboard display, a single informative line of text about the state of affairs, and a line showing a partially entered operator command.

Since the Color Computer displays Green in a high resolution graphics mode, ChesSD uses the convention that "Green" is really "White," so Green squares are really White squares, and Green Bishops are really

White Bishops. In the rest of this document, the term "White" will generally be used where Green is what is displayed.

The displayed Chessboard is interpreted as follows:

Black squares are Black squares

Green squares are really "White" squares

The pieces should be easily recognizable:

Pawns have a large foot, a round middle and a shelf with a knob on top.

Knights look like horse-heads.

Bishops have a notch in the bottom and in the candle-flame-shaped top.

Rooks have two rectangular notches in the top.

Queens have four points on top tipped by small circles.

Kings have a small cross on top.

The color of a piece is determined by the color of its interior. A White piece on a Black square will be solid White; the same piece on a White square will have a Black outline and a White interior. A Black piece on a Black square will have a White outline and a Black interior; the same piece on a White square will be solid Black.

Two pieces, Kings and Rooks, are shown at the beginning of the game with a small square dot in their center. The dot indicates that the pieces has never been moved; when the piece has been moved, the dot will disappear. The purpose of the dot is to help the player determine if he can perform the Castling move (see Castling).

The Chessboard display is labelled with numbers on the Ranks and letters on the Files to allow unambiguous designation of squares (see SQUARE DESIGNATORS).

When playing a game against the computer, the player's pieces always start at the bottom of the screen, and the computer's pieces always start at the top of the screen.

The summary display to the right of the displayed Chessboard shows various information about the game. This summary information will be blank at the beginning of the game, and will remain blank until updated by a move.

Move shows the last move made by ChesSD, in the same form as moves are entered.

Move # shows the move number from the beginning of the game.

Score shows the raw score from the computer's point of view. At the start of a game, the score is zero. For each piece captured by the computer, the score is increased for each piece lost by the computer, the score is decreased. Pawns are treated with a value of 100 points, Knights are worth 300, Bishops 330, Rooks 500, Queens 900 and Kings are worth about 20,000 points. The more positive a score, the further "ahead" the computer thinks it is; the more negative, the more likely the computer thinks it is that it will lose.

Est shows how well the computer "estimates" it will do in the near future. It has the same form as Score, but the value may vary somewhat as "positional" information is also included. If the estimated score is significantly different than the actual score, the computer thinks that some radical change is about to occur in the game.

B Clock shows how much time the player with the Black pieces has used so far during the game. The time is shown in the form of HH:MM for hours and minutes. Seconds are not shown.

W Clock shows how much time the player with the White pieces has used so far during the game. The time is shown in the form of HH:MM for hours and minutes.

Skill shows the amount of effort the program put into thinking about its move. This is just informational, and the player need not understand this portion of the display. The first number shows the depth, in "number of ply" (sequences of moves by either side) the program searched, examining every possible move. The second number shows, for the chosen move, how deep the program had to look to find a "quiet" position (one in which the position is stable). The bigger the numbers, the longer it takes.

THE INFORMATION LINE

A single line below the Chessboard column labels is reserved for displaying information about the state of the game. Messages that appear here include:

"Thinking..." which indicates that the computer is deciding what move to make.

"CHECK!" indicates that the computer has made a move which threatens to capture the player's King.

"Mate in N", which indicates the computer expects to win the game after "N" half-moves.

"Book Move", which indicates that the last move made by the computer follows a well-known opening sequence.

"Draw Game", which indicates that a stalemate has occurred, and neither player can win.

"You lose, over on time", which indicates that the player has entered his latest move too late to satisfy the most recent "time control" period. A "time control" requires that each player make a certain number of moves within a fixed amount of clock time for his side. This occurs when playing in "TOURNAMENT" mode. Typical time control rules are 40 moves in the first two hours, and then 10 moves for each half hour after the first two hours. If you play the computer in TOURNAMENT mode, a time control will be in effect and you will need to be careful not to exceed it; the "WClock" or "BClock" display will help you determine how much time you have left. The computer accepts the move anyway, and keeps right on playing, so you can see how the game would have turned out as if no time controls were present.

"Computer loses, over on time", which indicates that the computer has not made enough moves to satisfy its most recent time control period. The computer tries very hard not to lose on time, so this message should be quite rare.

"CheckMate", which is displayed when the computer has finally trapped the player's King, and the game is won.

"CHOMP SLURP YUM", which occurs if the player insists on playing a move after "Checkmate" has occurred, and demonstrates how the computer could capture the player's King.

"You took my King!", which occurs only when the player goes beyond Checkmate and polishes off the computer's King.

USING THE KEYBOARD

ChesSD requires that the player type in Chess moves and various commands on the bottom line of the screen. A flashing "question mark"

indicates that the program expects the player to enter something. The player may enter a command or a move specification; ChesSD will not act on the command or move specification until the ENTER key is depressed. Illegal keys cause ChesSD to <BEEP> and the keystroke is ignored (note: the space bar is an illegal key). If a typing error is made, individual keystrokes can be erased by depressing the "Left Arrow" or the "O" key. Illegal commands cause ChesSD to <BEEP>, erase the command line, and request entry of another command. In the text of this document, some commands are shown in upper case to set them off; however, with the exception of unmoved King and unmoved Rook piece names, commands must be entirely entered in lower case.

Before we describe the commands, we need to describe some notations used in the commands.

SQUARE DESIGNATORS

The columns and rows of the Chessboard are correspondingly labelled with letters and digits. These labels are used to designate individual squares according to standard "algebraic" Chess notation. If the player has the White pieces, the notation "a1" refers to the lower left hand corner, while "h8" refers to the upper right hand corner square. If the player has the Black pieces, the labelling on the display will change accordingly.

PIECE NAMES

A piece name is two letters, giving the piece color and the piece type. A piece color is a lower case letter only.

Piece Color Letter	Actual Piece Color
b	Black
w	White

Piece types are single letters corresponding to the type of piece. Note that unmoved pieces are distinguished by use of a capital letter.

Piece Type Letter	Corresponding Piece Type
p	Pawn
n	Knight
b	Bishop
r	Rook (that has been moved)
q	Queen
k	King (that has been moved)
R	Unmoved Rook (still castleable)
K	Unmoved King (still castleable)

An empty square has a "piece name" consisting of a single "period" (".") character.

MAKING A MOVE

ChesSD accepts an algebraic notation to specify moves. The form of a move is:

l1d1

where "l" represents a lower case letter, and "d" represents a lower case digit. The first letter-digit pair specifies the square containing the piece to be moved, and the second letter-digit specifies the square to which the piece should be moved. As an example:

e2e4

(at the beginning of a game) means "move the Pawn in front of the King two squares forward." If a player specifies an illegal or impossible move, ChesSD will <BEEP> and ignore the move entered.

After the player enters his move, ChesSD will update the summary information, and then automatically start thinking about what its response should be. Once ChesSD has decided, it will flash the piece it will move, flash the target square, move the piece, <BEEP> (so the player will know to return if he has gone to another room), and update the summary information to the right of the displayed Chessboard.

MOVING INTO CHECK

A traditional rule of Chess is that it is illegal to move into Check (i.e., a situation in which the opponent can immediately capture a King). However, ChesSD will not object if this situation occurs after a move is made; it will simply respond by immediately capturing the King. This unusual characteristic allows the Chess program to run faster.

MAKING A CAPTURE MOVE

Capture moves are specified the same way as non-captures; the first square designator specifies the piece to be moved, and the second designator specifies the square containing the piece to be captured.

CASTLING

Castling is a move that "swaps" the locations of the King and the Rook, and can only be performed if the King has NOT been moved, all squares between the King and Castling Rook are vacant, and the Castling Rook has NOT been moved. Castling moves are made by specifying that the King to be Castled moves TWO squares in the direction of the Rook with which it is Castling. Kingside Castling for White is thus specified as

e1g1

After Castling, the display may still show the Rook as "unmoved." This is normal and will have no effect on proper play. ChesSD will automatically Castle when it thinks it is appropriate.

EN PASSANT

An En Passant move allows a Pawn to capture another Pawn on the same Rank, provided that the Pawn to be captured was just moved forward two squares by the opponent. The capturing Pawn moves diagonally to the empty square directly "behind" the captured Pawn, and the captured Pawn is removed from the Board. An En Passant capture is specified by giving the square number of the Pawn doing the capturing, and the square number to which the capturing Pawn is to be moved. ChesSD will automatically remove the captured Pawn.

ChesSD will capture En Passant if appropriate.

PAWN PROMOTION

Pawn promotion allows a player to convert a Pawn arriving at the 8th Rank (counting the Rank from which the Pawn started as the 2nd Rank) into a Queen, Rook, Bishop or Knight. A player specifies a Pawn Promotion move in the same form as a conventional move, with an additional trailing letter specifying the type of piece promoted-to. Only "q," "r," "b" or "n" are allowed, for Queen, Rook Bishop or Knight respectively. For example:

b7c8q

means "Pawn moves to 8th Rank (capturing something) and promotes to a Queen."

STARTING A NEW GAME

To play a game of Chess against ChesSD, the player needs to specify that a new game should be started, the mode of play (TOURNAMENT or SKILL), some timing parameters that determine how long the game will last, and what color pieces the player should have. After the new game has been set up, moves may be entered.

NEWGAME

is the command that tells ChesSD that the current game is over, and a new game is desired. ChesSD sets up the Board assuming the player will be White. The PLAY mode must be selected before choosing Black pieces to play or entering any moves. Once a PLAY mode has been selected and the game has started, it generally cannot be changed; that is signalled by a <BEEP> when the new PLAY mode is entered. To change PLAY modes, NEWGAME must be entered. Once the PLAY mode has been selected, if the player would like to play the Black pieces, he must enter the PLAY command, which will exchange sides of the Board, and cause ChesSD to determine its first move.

SKILL<digit>

tells ChesSD that it should play according to a certain quality level throughout the game. The larger the <digit>, the longer it takes between moves; each successive skill level takes 5-10 times as long per move as the preceding level. No time controls are established on the game, so the player may take as long as he likes on each move. Novices should try SKILL2 until they consistently beat the computer, and then try SKILL3, etc. Once SKILL has been selected as the PLAY mode, the skill level may be adjusted up or down, but other PLAY modes cannot be selected. The <digit> tells ChesSD how many ply to fully search while deciding on a move. If you are playing SKILL mode, and the computer is taking too long to move for your taste, you can hit the BREAK key and the computer will move instantly. SKILL mode can also be used to solve Chess problems. Unless otherwise stipulated, the program automatically selects SKILL2.

Skill Level	Approximate Time Per Move
1	<illegal>
2	instant
3	3 second
4	30 seconds
5	3 minutes
6	30 minutes
7	5 hours

TOURNAMENT

tells ChesSD that the PLAY mode is a conventional TOURNAMENT game, complete with time controls. The default setting is 40 moves in 2 hours by one side for the first time control, with 10 moves each half hour for succeeding time controls, and makes for an interesting game. TOURNAMENT<digits> specifies that 40 moves must occur in <digits> minutes, with 10 moves every <digits> divided by 4 minutes for succeeding time controls. Once the TOURNAMENT command is entered, the clock starts ticking for White. If the player wants Black pieces, he should type the command PLAY immediately, or he will unnecessarily penalize the White clock for the computer.

Some examples of how to start games:

Start a novice-level game:

```
newgame  
e2e4
```

Start a more advanced game and play with the Black pieces:

```
newgame  
skill3  
play
```

Start a tournament game:

```
newgame
tournament
d2d4
```

Start a Rapid-Transit-like game (very limited time)

```
newgame
tournament5
e2e4
```

THE OPENING

ChesSD keeps a large set of possible opening (book) move sequences stored on its floppy disk. To play through the early part of the game, the floppy disk **MUST** remain in drive 0; if it is not in the drive, ChesSD will turn on the drive select light and wait for the floppy to be re-inserted. Inserting the wrong floppy will cause the program to make unpredictable moves.

On the first few moves of the opening, ChesSD may take a few seconds to respond to a move made by the player; it is looking in its opening book. Once it determines that the move is/is not in the opening book, it will actually make the move on the display.

HOW TO STOP RUNNING ChesSD

When you are through using ChesSD, and wish to run RSBASIC again, first you need to remove the diskette from drive 0, and then press the **RESET** button on the Color Computer. Control will return to RSBASIC.

MISCELLANEOUS COMMANDS

The commands described in this section allow various options of ChesSD to be invoked.

CLEARBOARD

is used after NEWGAME to make the board entirely devoid of pieces. This is primarily useful when setting up partly-completed games or Chess problems.

ENTERMOVES

is used after NEWGAME to allow a player to enter a sequence of moves from the beginning of the game up to a desired position. This is generally useful when only the moves of a game have been recorded, and a set up of the resulting position is desired. After the ENTERMOVES command has been entered, ChesSD will alternately accept moves for White followed by moves for Black, switching the board display each time, and checking each move for legality, until a PLAY command is entered.

PLAY

causes the computer to choose a move for the player's pieces, and to give the computer's former pieces to the player. If you are losing and would like to see how the computer might wriggle out, you can use this command. You cannot use the PLAY command in a TOURNAMENT mode, except on the very first move (to allow the computer to play White).

PIECE PLACEMENT

New pieces can be placed arbitrarily on the Chessboard (this procedure should not be used to move pieces). This is useful when setting up game situations. Piece placement commands take the following form:

ldct

where "ld" represents two keystrokes specifying a square number and "ct" represents two keystrokes specifying a piece name. "c" is the piece color, "t" is the piece type, "l" is a letter specifying a File, and "d" is a digit specifying a Rank.

e4bn

places a Black Knight in the middle of the Board.

The special form

ld.

is used to remove a piece from the board. Note the period in the command.

The piece placement commands can be used to "take back" a move by placing pieces back in their positions before the mistaken move was entered.

COMMAND SUMMARY

<rank><file><rank><file>
e2e4

<rank><file><rank><file><piecetype>
f7f8q

<rank><file><color><piecetype>
b5wb

<rank><file><period>
c2.

newgame
skill<digit>

skill3
tournament<digits>

tournament25

entermoves

clearboard
play

Move a piece
Moves Pawn on square e2
to square e4

Promote a Pawn
Moves Pawn to 8th Rank
and Queens it

Place a piece
Puts a White Bishop on
square b5

Erase contents of a square
Makes contents of square
c2 empty

Start a new game

Select <digit>-ply play
mode

Select 3 ply search mode

Select tournament play
mode

Select 40 moves in 25
minutes

Allow entry of recorded
moves

Make Board empty

Make computer take
player's side