

CYRUS II

Chess Program for Amstrad
PCW 8256 and PCW 8512

INSTRUCTION MANUAL

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1. INTRODUCTION

Cyrus II is a chess program to interest players of all levels. Its abilities range from almost instantaneous play suitable for a beginner, through to tournament-style play for chess experts. It offers a wide range of operating features, enabling you (for example) to take moves back, replay a game that is over, or set up special positions for problem-solving.

Cyrus II can also play against itself, allowing you to learn by study and example. Or it can stand aside, keeping a watchful eye on a game between two humans – ready, when asked, to analyse the situation and give advice.

A novel feature of the program is its attractive “three-dimensional” chessboard display. A more conventional diagrammatic display is also provided as an alternative.

If you like, start up the program and find out by experiment how to use it. No harm can come, whatever key you press, and Cyrus will do its best to understand your intentions.

We recommend, however, that you read this manual as far as section 5 (“Special moves”) in order to get under way quickest. You can then return to the manual for reference whenever you need to.

2. LOADING THE PROGRAM

Connect up the computer and printer, as described in the PCW’s operating manual. After loading the CP/M system disk, as described in the PCW’s manual, remove the CP/M system disk and insert the Cyrus disk into the drive. Now type `CYRUS <RETURN>`.

When loading is complete, a chessboard appears, and the pieces are inserted in their starting positions.

3. STARTING A GAME

Inside the square at the bottom left-hand corner of the board, you will see a flashing white arrow. This is the **marker**, which is used for indicating your moves to the computer.

By means of the four “direction” keys (←↑↓→), you can move the marker around the chessboard to position it wherever you want. A quick key-press moves the marker one square in the direction indicated. If you hold the key down, the marker keeps on moving until it reaches the edge of the board, or the key is released.

If you are playing White, make your first move like this:-

- (a) Place the marker on the square occupied by the piece you want to move (so that it points towards the base of the piece).
- (b) Press the ENTER key. The computer “beeps”, and the marker stops flashing.
- (c) Press a “direction” key again; you will now see two markers. One is flashing, and responds to your commands; the other one, pointing towards your piece, remains static.
- (d) Move the flashing marker to the square where you want the piece to go.
- (e) Press ENTER again (“beep”).

Your move is now carried out, and Cyrus starts computing its reply. When it is ready, it “beeps” and moves its piece on the board. Make your next move in the same way as before.

Note that the two keys marked RETURN and ENTER are identical in their effect.

You can make the program move first – if you want to play Black – by pressing M. In this case, before the game starts, you will probably want to invert the chessboard by pressing the I key.

The strength and speed of the computer’s play can be altered whenever you like; see “levels of Playing Strength” on page 8, as well as “Message Display” (page 6).

4. THE TWO CHESSBOARD DISPLAYS

If you press the EXIT key, the “three-dimensional” image of the board and pieces is replaced by a two-dimensional diagrammatic display. On the diagram, the marker takes the form of a flashing square. The operation of the program is just the same whichever display you are using, and the EXIT key can be used to switch from one to the other at any time.

5. SPECIAL MOVES

A capture is made no differently from any other move – simply move your own piece to its destination square. The same goes for a pawn capture en passant.

In order to castle, make the move of the King, and the rook’s move is made for you automatically.

If you advance one of your own pawns to the far end of the board, this pawn will repeatedly move back and forth until you tell the computer what piece you want in its place. Press Q, R, B or N according to whether you want a queen, rook, bishop or knight. (Other keys have the same effect as Q. When Cyrus promotes one of its own pawns, it always chooses a queen.)

6. CORRECTING ERRORS

If there is only one marker visible, and it is not on a square occupied by a piece that can move – then press on an ENTER key will have no effect.

This is also true if you press ENTER when the static marker is pointing to one of your own pieces and the flashing marker is on a square where this piece cannot legally go.

In either case, simply re-position the flashing marker and continue entering your move.

If the static marker is pointing to a piece which you decide not to move after all, bring the flashing marker back to this same square – so that it disappears, leaving only the static marker visible. Then re-press ENTER. The marker begins flashing, and you can start again to move another piece.

7. MESSAGE DISPLAY

On the “two-dimensional” display, the word CYRUS or PLAYER at the top or bottom, shows whether the computer or the user is playing from this end of the board, and with which colour.

On the “three-dimensional” screen, the contestant playing from the bottom end is recorded on the left-hand side below the chessboard, and the other player on the right.

A clock reading is also displayed for each opponent, for example:

01:17:36

– meaning that the total thinking time so far used by this side is one hour, seventeen minutes and thirty-six seconds. By seeing which “clock” is going, you can tell which side is to move next.

If you press the space bar, the screen changes to a different type of display. In place of the chessboard, you will see a record of the last few moves made and a list of the commands currently at your disposal.

Here is how moves are recorded. Each file (or vertical column of squares) is given a letter; viewed from the “White” side, the letters range from “a” (on the extreme left) to “h”. Each rank (or horizontal row) is given a number, running from 1 (at White’s end) to 8. Each square is designated by the letter of its file and the number of its rank. (So at the start of the game, the White king is on e1, the Black queen is on d8, etc.) A move by a pawn is recorded by simply naming the pawn’s old and new squares. When any other piece moves, its initial letter (or N in the case of a knight) is inserted before the departure square.

Example:- 1 e2-e4 d7-d5
 2 e4xd5 Ng8-f6
 3 Bf1-b5+

White has started by moving his pawn from e2 to e4 (i.e. the pawn in front of his king has gone two squares forward). Black has replied with a double advance of the pawn in front of his queen from d7 to d5. Then the white pawn has captured the Black one (a capture is indicated by "x"), and Black has brought out his knight from g8 to f6. On his third move, White has played his bishop from f1 to b5; the "+" sign shows that this move gives check.

White's moves are always listed on the left, Black's on the right. Castling (on the king's side or queen's side respectively) is denoted by "O-O" or "O-O-O".

Below the game-record, you will see either the word THINKING (if Cyrus is computing the next move) or else YOUR MOVE.

Lower down the screen, there is a list of the commands that are currently available, e.g.:

B - Back

- reminding you that by pressing the B key you can retract a move as described on page 10. The full list of commands (which is reproduced on page 16) should be clear to you once you have read the remaining sections of this manual.

To return from the message screen to the chessboard screen, press the space bar again.

8. RESULT OF THE GAME

The message screen displays CHECKMATE or STALEMATE if such a situation has come about.

If Cyrus recognises that the same position (with the same side to move) has arisen three times, it announces a DRAW.

A draw is also announced if, over the space of 50 consecutive moves (played by one side and answered by the opponent), no piece has been captured and no pawn moved.

To signify the end of the game, one of the kings (that of the player whose opponent made the last move) repeatedly "flashes" on the chessboard display.

If you want to check up on the rules which determine a drawn result, turn to the Appendix, page 30.

INTERRUPTING THE COMPUTER

If you press the M key while Cyrus is computing its move, it will cut short its calculations and play the move assessed as best according to its analysis so far.

Notice that most of the special operating features described below (e.g. selection of the "level", retraction of moves, etc) will not work when it is the program's turn to move. By inducing a move, you enable any of the features to be used.

10. NEW GAME

You can begin a new game at any time, by pressing the G key. The screen then shows:

New Game (Y/N)

To confirm your command, press Y. The starting position reappears, and both "clocks" are set back to zero.

Note that until you actually enter a move or start Cyrus computing, the previous game still remains in the computer's memory. You can return to any position in that game by using the F key - see page 10.

If you have pressed G by accident, a key-press other than "Y" allows play to be resumed.

11. LEVELS OF PLAYING STRENGTH

There are various levels of skill on which Cyrus II may be instructed to play. Obviously, the program plays more strongly the more thinking time it has for its moves. The following table shows the approximate average time it takes for a move on Levels 1–9.

Level	Time
1	2 seconds
2	6 seconds
3	15 seconds
4	30 seconds
5	45 seconds
6	1 minute
7	2 minutes
8	3 minutes
9	3 minutes 30 seconds

There are also three further levels, called “adaptable”, “infinite” and “problem”.

When playing on the adaptable level, Cyrus aims to play at roughly the same rate as its opponent; it measures your thinking time over a series of moves, then speeds up or slows down as necessary.

When computing a move on the infinite level, Cyrus will normally carry on thinking until you tell it to move by pressing M. If you don't do this, the computer will not actually play a move unless:

- (a) it has a “book” move available (see below);
- or (b) it finds a forced mate, or completes as deep an analysis of the position as is within its capacity;
- or (c) there is only one legal move it can make.

On the problem level, the program searches for a way to force checkmate in 5 moves or less; for more details, see the section on “Chess Problems” (page 14).

When you first set up the program, Cyrus is ready to play on Level 1. The current level can always be seen on the message display. You may change the level any time when it is your turn to move, by pressing the L key. A single key-press takes you one level higher. If you hold the key down, you will see the level constantly changing – after going up to Level 9, the screen shows ADAP, INF, PROB, and then Level 1, Level 2 . . . and so on.

When the level that you want is displayed, simply carry on playing. The program remains on the same level (even after a new game starts), until you change it again; you may do so as often as you like.

- NB:
- (a) Like a human player, Cyrus normally takes more time in a complicated position than in a relatively simple one. So the time it takes for an individual move is sometimes much more than the average for the level.
 - (b) Cyrus has knowledge of a large number of standard chess openings, so the first few moves of a game (on any level) are likely to be played fast. In a position where the program has two or more “book” moves available, it chooses between them largely at random. The total number of moves in the “openings book” is nearly 1900.
 - (c) Cyrus normally continues analysing the position even when it is your turn to move; so if it anticipates your next move correctly, it may reply instantaneously irrespective of the level.

12. CHANGING SIDES

If you press the M key when it is your turn to move, Cyrus will start computing a move for the side that you have been playing, and will expect you to take over the other side.

You can change sides like this as often as you like. When you do so, you will probably want to turn the chessboard round, so that you will still be playing "up the screen". To invert the board, press the I key.

13. PLAYING BOTH SIDES

It's possible for you to play a series of moves for both White and Black. For example, you may want to enter the moves of an opening variation which interests you, to see how Cyrus handles the resulting position. To do this, press S followed by M (you will then see the word PLAYER at both sides of the chessboard screen). You can now enter moves for both sides in turn. When you want Cyrus to carry on playing, re-press the M key.

This "multi-move" feature enables two human opponents to play a game against each other with the screen display as their chessboard.

14. DEMONSTRATION

If you press the C key, both sides will be taken over by the program, as a demonstration game. (Then CYRUS will be displayed at both sides ends of the screen). After finishing a game, the program will pause for a few seconds and then begin a new one. To halt the demonstration, press M. Then, after the next move is made, you may continue the game against the computer.

15. RETRACTING AND REPLAYING MOVES

If you've played a move but then have second thoughts about it, you can easily take it back. Wait for Cyrus to reply, or make it do so at once by pressing M. Then press B, and the program's move is retracted. A second press on this key retracts your own last move, and you may make another one in its place. A move can be taken back even when the program is displaying checkmate or a draw.

By pressing the B key repeatedly or holding it down, you can take back a whole series of moves by both sides (going right back to the start of the game if you want). Notice that if you take back one more move for White than for Black (or vice versa), you swap sides with the computer.

The F key ("forward") has the opposite effect to the B key; it replays the move or moves that you have taken back. As one example of its use, suppose that during a game you want to have another look at a position which arose 10 moves earlier. Take back the 10 moves with the B key; then, after you have finished examining this position, hold down the F key until you arrive again at the position where you interrupted the game. Play can now be resumed.

You can retract and replay the same sequence of moves as many times as you like. You may also carry on playing from any position within the sequence. This means you can find out what would have happened if you had played differently at a particular stage of the game.

Note, however, that when – in any position – you enter a new move or press M (or C), you are erasing from the computer's memory the moves that had previously been played from this position onwards. Those moves can no longer be replayed with the F key.

To review the entire game, you can press the G key (so that the starting position reappears), then repeatedly press F. This is not, however, possible if the game began from a position which you "set up" (see Section 18).

16. HINT

If you want Cyrus to suggest a move for you, press H. One of your pieces makes a move on the board, and then goes back again. It is for you to decide whether to act on this hint; it is not necessarily the best move available (especially on the program's lower levels), though Cyrus will not deliberately mislead you.

If you press H when Cyrus is computing the next move, one of the program's pieces is moved back and forth in the same way. This shows you what move was rated as best at the outset of the analysis.

17. ANALYSIS

If you would like some further insight into the program's train of thought, press the A key. The word ANALYSIS appears on the message screen. If Cyrus has just started computing its move, the display will now remain unchanged for a few moments, but after that a series of moves will be recorded just above the list of commands. The first move in this series is the one that Cyrus is thinking of playing next – the best move according to its analysis so far. The following move is your expected reply, then comes the computer's intended answer to that ... and so on.

For this feature, a simplified form of notation is used – each move is indicated merely by giving the old and new squares of the piece. The analysis display can be cancelled by re-pressing the A key.

18. SETTING UP A POSITION

Now and again you may want to see Cyrus solve a chess problem; or you may wish to set up a position from a game that has been published, to see how the program handles it. In order to rearrange the position on the chessboard, first press the S key. The wording SET UP appears on the chessboard screen, to show that the program is ready for a special mode of operation. Notice the new list of commands on the message screen – in "set up position" mode, some of the keys have different uses from their normal ones.

As long as SET UP is displayed, you can do any of the following things:

- (a) You can clear the entire chessboard by pressing Y. Usually you will want to do this before anything else – but not if the position that you intend to set up differs only slightly from the position currently displayed.
- (b) To clear an individual square, position the marker on that square and press W.
- (c) To insert a piece on the board, bring the marker onto the desired square and press the appropriate key: K (king), Q (queen), R (rook), B (bishop), N (knight) or P (pawn). The way to select the colour of the piece will be explained presently.
- (d) Both of the clock times can be sent back to zero by pressing Z. (Notice that as long as the program is in "set up position" mode, the clocks are stopped).

On the screen you will see the word WHITE or BLACK. This shows which colour a new piece will be, if you now place one on the board. To change over from one colour to the other, press X.

The word WHITE or BLACK also indicates which side will move next if play is commenced at this moment. So once the position is ready, you may need to press X to display the correct colour.

Finally press the S key, to take the program out of "set up position" mode again. The normal list of commands will now be shown on the message screen, and play may proceed.

Here's an example of how a position is set up. We'll suppose that the position you want is the following, and that White is to move.

Press S "SET UP" appears on
the chessboard screen.

Press Y The board is cleared.

If the word BLACK is displayed, press X (message: WHITE). You can now place White pieces on the board.

Bring the marker onto the square where you want the White king (b2).

Press K A White king appears
 Bring the marker onto the square for the White pawn (b3).
 Press P A White pawn appears
 Bring the marker onto the square for the White queen (c4).
 Press Q A White queen appears
 Press X The word BLACK appears. You can now enter Black pieces.
 Bring the marker onto the square for the Black king (f6).
 Press K A Black king appears
 Bring the marker onto the square for the Black queen (g5).
 Press Q A Black queen appears
 Press the X key again (message: WHITE). Cyrus now knows that when play continues from this position, it will be White to move next.
 Finally, press S. The wording SET UP disappears, and YOUR MOVE is shown on the message screen. Play can now begin. Adjust the "level", if you want; then press M, to start Cyrus computing. (Or else, if you are playing White yourself, make a move in the usual way.)

In connection with setting up positions, there are a few more points to be noted:-

- (a) Illegal positions:- If you've set up a position in which (say) there are no kings, or one side has two queens as well as eight pawns, or Black's king is in check when White is to move – then Cyrus recognises this position as illegal. With such a position on the board, it is impossible to take the program out of "set up position" mode and continue playing; when you press S, the computer will merely give the "error buzz" and display ILLEGAL SETUP. Correct the position as necessary.
- (b) Castling:- If a king or rook has been placed on the board in the way we have just described, there can be no castling with that piece. A position in which (say) White has the right to castle King's side may be set up as follows. First press G and Y (the starting position appears), then enter "set up position" mode by pressing S. The White king and King's rook should now be left alone, while unwanted pieces are removed individually with the W key.
- (c) En passant captures:- After a position has been set up, the next move cannot be a pawn capture en passant. To create a position where such a capture is legal, set up the immediately preceding position and then make the move which permits the capture.
- (d) Game record:- When play proceeds after you have set a position up, the numbering of subsequent moves always begins from 10. The computer's memory of any game you had previously been playing is now erased.

This does not, however, mean that the foregoing moves are erased from memory if you press S by accident in the middle of a game. As long as you repress the same key without actually having made any alterations to the position, play may continue as before. The numbering of the moves remains unchanged, and if you like they can be "taken back" or "replayed" in the normal way.

19 CHESS PROBLEMS

Most chess problems carry some such wording as "White to play and mate in three moves" – meaning that you have to find a move which enables White to give checkmate on his third move at the latest, no matter how Black tries to defend himself.

Cyrus II can solve problems for mate in anything up to 5 moves. Set up the position as described in the preceding section. Make sure Cyrus knows which side moves

next. Select "problem" level with the L key. On leaving "set up position" mode, press M to start Cyrus computing.

Cyrus now begins by looking for a move that gives checkmate immediately. If it discovers that this is not possible, it displays NO MATE IN 1 on the message screen, and starts searching for a way to force mate in two moves . . . and so on. If the program finds (say) a forced mate in 3 moves, it momentarily displays MATE IN 3, and makes the appropriate move on the chessboard. You may now make a move for the defending side. Then (after re-computing if necessary), Cyrus will play the next move of the solution. After that, you can, if you like, take back the last pair of moves, and play a different move for the defence, to see how the program answers it.

If Cyrus discovers, by performing an exhaustive analysis of the position, that it is impossible to force checkmate within 5 moves, it displays NO MATE IN 5, and simply makes the move it considers best.

- NB: (a) If there is a "book" move available, Cyrus will move immediately, without performing any analysis.
- (b) Cyrus cannot solve problems that require "underpromoting" a pawn to rook, bishop to knight.

20. SAVING AND LOADING GAMES

The record of a game may be saved on disk, and at a later date re-loaded into the computer for resumption of play, or for replay and analysis, etc.

Insert a suitable disk (NOT THE ORIGINAL CYRUS DISK!) into the built-in disk drive and press the D key. You then have the following options (the text on the message screen will guide you in your operations):-

- (a) To save a record of the game you have been playing, press S. The computer then prompts you to give the game a name (for instance FIRSTGAME); this must comply with the format for filenames as explained in the computer's operating manual. It cannot include blank spaces. Type the name and press ENTER. This will begin the saving process; once it is finished, the program reverts to normal playing conditions.
- (b) To load a game from disk press L. Type the name under which the game was recorded, followed by ENTER. When loading is complete, the final position of the game record can be viewed on the chessboard screen, and you may make use of any of the program's functions.
- (c) To allow play to be resumed (if, say, you pressed the D key by mistake), press any key other than S or L.

WARNING!

DO NOT UNDER ANY CIRCUMSTANCES SAVE YOUR GAME POSITIONS ONTO THE ORIGINAL CYRUS II DISK. DOING SO WILL PREVENT THE GAME FROM LOADING IN THE FUTURE.

PLEASE USE A NEW 8256 FORMATTED DISK TO SAVE YOUR GAME POSITIONS.

21. PRINTER

If you have a printer connected, pressing the P key allows you to give instructions for its operation. This key-press automatically switches to the message screen, which lists a special set of commands. The options are as follows:-

- (a) For a print-out of the complete game-record in memory, press G.
- (b) Pressing B causes the current position on the board to be printed.
- (c) Press C for a continuous listing of moves. This means that when play continues, each move will be printed out as soon as it is made. The listing

can subsequently be halted by repeating the same command.

- (d) The facility of inserting a "line feed" together with each "carriage return" can be switched off or on by pressing L. An asterisk on the screen indicates that the facility is "on".
- (e) Any other key-press allows play to be resumed.

Also you can obtain a screen dump at any time by pressing the EXTRA and PTR keys together. This can be used to get a picture of the 3-D screen for example.

22. SUMMARY OF COMMANDS

- A. Display analysis (predicted continuation). Repeat to cancel.
- B. Take back last move; promote pawn to bishop.
- C. Cyrus v Cyrus demonstration mode.
- D. Disk operation.
 - L Load game record.
 - S Save game record.(Other keys: return to normal playing mode).
- F Step forward, i.e. replay move taken back.
- G. New game.
 - Y Yes(Other keys: no.)
- H. If user to move, give hint; if program to move, show move currently assessed as best.
- I. Invert chessboard.
- L. Change level.
- M. Take over the side which is to move; if already on this side, move immediately.
- N. Promote pawn to knight.
- P. Printer operation
 - B Print board position.
 - C Continuous listing (each move printed when played). Repeat to cancel.
 - G Print game record.
 - L Carriage return + line feed (off/on).(Other keys: return to normal playing mode.)
- Q. Promote pawn to queen.
- R. Promote pawn to rook.
- S. Selects "set up position" mode.
 - B Bishop
- K. King
- M. Multi-move mode (user plays both sides).
- N. Knight
- P. Pawn
- Q. Queen
- R. Rook
- S. Return to normal playing mode
- X. Change colour of pieces to be entered and side to move
- Z. Set both clocks to zero

W. Clear square

Y. Clear entire chessboard

ENTER During move entry, selects square of departure or destination

EXIT Switch between chessboard screens

←|→ Move cursor

space bar Switch between chessboard and message screen

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