

DZSARGON

By Dan and Kathe Spracklen

Adapted to the DAZZLER by Bob Ammerman

The SARGON program was developed in 1978 and ran on a Wavemate Jupiter II system. At the 1978 West Coast Computer Faire's microcomputer chess tournament the program won all 5 of its games, a perfect performance. Still in 1978, the entire source of the program was printed in the book Sargon: A Computer Chess Program.

Many years ago, I typed in the source and ported the program to, of all things, the TI-84Plus calculator, which is Z80 based. My son was able to play chess when he was supposed to be paying attention in math class.

After the modest success of DZMASIC, I decided to try porting the program to CP/M and the Dazzler. This involved replacing the entire UI of the program, mostly with a graphical representation on the Dazzler, but with the move list displayed on the system console. To get enough resolution for the pieces (especially the Knight), I had to use the 128-by-128 monochrome mode of the Dazzler. The entire program, including my additions, is written in Z80 assembly language. Note: the program requires a Z80. It will not run on an 8080.

I have done all the development on the AltairZ80 SIMH-based emulator. I don't even have a working Dazzler. But I do have an untested Dazzler II. Also, my NorthStar Horizon doesn't yet run CP/M. I intend to use the JAIR card in memory and I/O mode, with the NorthStar Z80 CPU to run CP/M on that system, my only S100 computer.

THE COMMAND LINE

The command line of the program is very simple. It is parsed character-by-character. Spaces are not significant.

- If you have a joystick, include the letter 'J' to enable Joystick support. Unfortunately, joystick support is not yet implemented. It needs to wait until I have real hardware working. All references to the joystick below are documentation of how it will work once it is implemented.
- You can provide the clock speed of your system in Megahertz as a decimal integer. This is used to generate appropriate timing for blinking squares and displaying messages. The default is 4 and the valid range is 1 to 1000 (to handle fast emulators).

PROGRAM STARTUP

When you start the program, it will ask you two yes/no questions:

- Play a game? – Answering “Y” will take you to the game play section of the program, explained in detail below.
- Analyze? – Answering “Y” will take you to a special screen where you can enter a starting position, perhaps from a puzzle. This is explained in more detail in a section below.

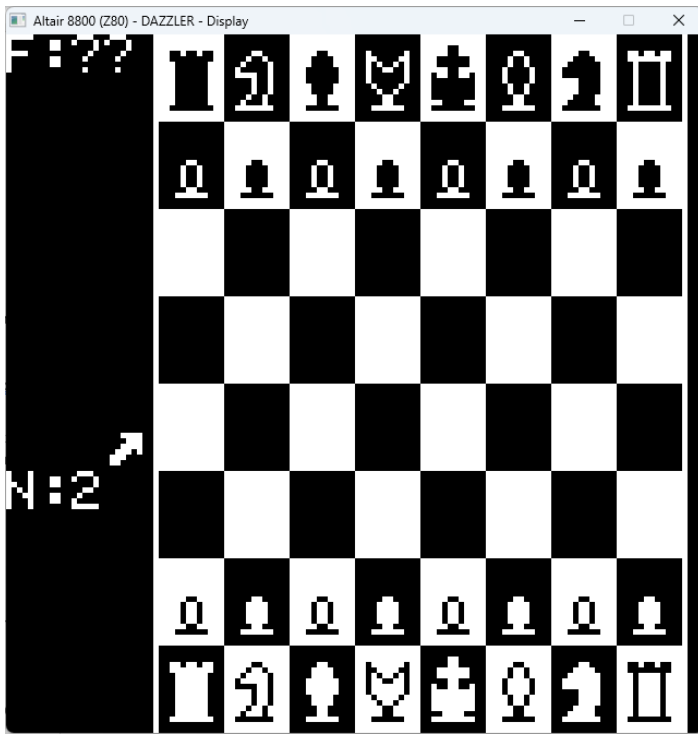
If you answer “N” to both questions, the program will terminate. Also, typing Control-C at any time the program is expecting input will immediately terminate the program and return to the CP/M prompt. Note that Control-C won't interrupt the program's attempt to find a move, nor while a timed message is displayed.

PLAYING A GAME

The game-playing portion of the game starts by asking two additional questions:

- Play as B or W? – Enter “B” or “W” to play as black or white.
- Look ahead(1-6) – Enter a digit in the range of 1 to 6. This is the number of moves the program will look ahead to find a move. Note that the program looks deeper when handling multiple pieces attacking a square. At level 1 the program plays quite quickly, but rather poorly. Level 2 is somewhat slower, but still very tolerable on a real Z80. Level 3 can take a couple of minutes or more per move. Levels 4 through 6 require a lot of patience or a fast emulator.

When these two questions have been answered, a graphical representation of the board is displayed:



The squares here don't appear to be too square, but on a real Dazzler or Dazzler II with a 4:3 aspect ratio they should be much closer to square.

The upper left corner of the screen is reserved as the input area. It is where you enter your move. You enter the "from" square after the "F:" prompt using standard "algebraic" notation. Squares are identified by rank and file. The ranks are numbered from one to eight, starting at the bottom of the board. Files are labeled A through H, starting at the left. Thus, the white King is in square "E1", and the black Queen's Knight's Pawn is

in square "B7" at the start of the game.

The number following the "N:" is the current look ahead value. It can be changed anytime it is your turn to enter a move.

The arrow just above the "N:2" is a pointer or cursor used to select a square. It can be moved by the joystick or from the keyboard. Keyboard motion is controlled by alphabetic keys since many (most?) CP/M keyboards don't have arrow keys. The keys and their actions are:

- "I"—move the cursor up one square.
- "J"—move the cursor left one square.
- "K"—move the cursor down one square.
- "L"—move the cursor right one square.

When prompted for the "from" square ("F:") you can enter the following characters:

- "A" through "H" – sets the file for the desired square.
- "1" through "8" – sets the rank for the desired square.
- Backspace or Escape (or button 2 or 3 on the joystick— clears out the entry area to "??".
- "X"—resigns the game. You will be prompted "Resign(y/n)?".
- "N"—resets the value of the look ahead to a value in the range 1 through 6. You must follow the "N" with the desired value.

- “I”, “J”, “K” and “L”—move the cursor.
- Enter (or button 1 on the joystick) – selects the square pointed to by the cursor.

Note: as soon as you enter both the rank and file, or use the enter key to select a square, the program will prompt you for the “to” square with “T:”. In response to this prompt, you can enter the following.

- “A” through “H” – sets the file for the desired square.
- “1” through “8” – sets the rank for the desired square.
- Backspace (or button2 on the joystick)—If the “to” square is not “??”, it will be reset to “?”. If it is already “??”, the program will return you to entering the “from” square.
- Escape (or button 3 on the joystick)— returns to entering the “from” square.
- “I”, “J”, “K” and “L”—moves the cursor.
- Enter (or button 1 on the joystick) – selects the square pointed to by the cursor.

Note: as soon as you enter the rank and file of the “to” square, the program will immediately accept the move. So, be careful as you type it in.

There are some special moves that you can enter:

- To castle, simply move the King two squares towards the Rook. The program will notice this (which would normally be an invalid move) and will jump the Rook over the King into the square the King passed over. Remember that this can only be done under certain conditions.
- To capture a Pawn en-passant, simply move the capturing Pawn into the square that was skipped over by the Pawn to be captured. The program will notice this and will remove the Pawn that advanced two spaces. Note that this move is only valid immediately after the opposing Pawn’s move.

ANALYZING A POSITION

The program can set up a position to be analyzed. This can be used to see how the program will respond to a particular situation, or to have the program solve chess puzzles.

When you respond “Y” to the “Analyze?” question at program startup the program will display an empty board. There will be four prompts:

- “S:”—enter the square to be filled.
- “C:”—enter the color of the piece.
- “P:”—enter the “name” of the piece.
- “M:” – enter whether the piece has moved.

The “S:” prompt works very much like the “F:” and “T:” prompts when entering a move while playing the game. You have to specify the rank and file of the square to be filled. The valid inputs are:

- “A” through “H” – sets the file for the desired square.
- “1” through “8” – sets the rank for the desired square.
- Backspace or Escape (or button 2 or 3 on the joystick)– clears the entry area back to “??”.
- “X”—indicates that you are done entering pieces. You will be prompted “Done(y/n)?”. If you reply “Y”, you will be prompted for a couple of values (see below) and will then be transferred to the game-playing portion of the program.
- “R”—resets the board to the standard layout as found at the start of a game. You will be prompted with “Reset board?”.
- “Z”—“zaps” the board to all empty squares. You will be prompted with “Clear board?”.
- “I”, “J”, “K” and “L”—move the cursor.
- Enter (or button 1 on the joystick) – select the square pointed to by the cursor

After you enter the square, the program then prompts with “C:” for color. The valid inputs are:

- “B” or “W” – sets the piece to be black or white.
- “ ” (space) – sets the square to be blank. This will return immediately to the “S” prompt.
- Backspace or Escape (or button 2 or 3 on the joystick)– returns to the “S:” prompt.

After selecting the color, you will be presented with a “P:” prompt. You enter a single character which defines the piece to be placed in the square” The valid inputs are:

- “P”, “N”, “B”, “R”, “Q”, “K” – defines the piece to be placed in the square: pawn, knight, bishop, rook, queen or king, respectively. Note that “N” is used for Knight, since “K” is required for King.
- “ ” (space) – sets the square to be blank. This will return immediately to the “S” prompt.
- Backspace (or button 2 on the joystick)—returns to the “C:” prompt.
- Escape (or button 3 on the joystick)—returns to the “S:” prompt.

Finally, after selecting the piece, you will be prompted as to whether the piece has ever been moved. This is most important for Kings and Rooks because it determines whether castling is an option. The valid inputs are:

- “Y”, “N” – flags the piece as moved or not.
- Backspace (or button 2 on the joystick)—returns to the “P:” prompt.
- Escape (or button 3 on the joystick)—returns to the “S:” prompt.

After all the desired pieces have been entered, and you respond “X” to the “S:” prompt, you will be presented with several questions:

- Play as “B” or “W”? – press “B” to play as black, “W” to play as white.
- Look ahead(1-6)—enter the initial value of the look ahead level.
- Whose move? – press “B” if black should move first, otherwise press “W”.

CODA

Of course, this is not the only chess program available for the Dazzler. There is also Dazzler Chess, which was part of the original games pack from Cromemco. However, DZSARGON is a **much** stronger program, because of the amazing engine created by the Spracklens.

This was a fun project, although it took quite a bit longer than I expected. I hope you and others will enjoy playing the game. I’d love to hear about your experience with the program.

Thanks,

A handwritten signature in black ink, appearing to read "Bob Ammerman". The signature is fluid and cursive, with a long horizontal stroke at the end.

Bob Ammerman

rvammerman@gmail.com