Crystal Mine

A Hide And Seek Game Of Deductive Reasoning

By John W. Felton, New Age Software

By John W. Felton,

557 Happy Valley Road,
Pleasanton, CA 94566

PRODUCED USING COPYRIGHTED SOFTWARE PRODUCTS OF MONARCH DATA SYSTEMS, COCHITUATE, MA 01776.

TABLE OF CONTENTS

PREFACE

Welcome to the crystal mines of Saturn! Here fragile and highly precious crystals are carefully extracted from the hard Saturn soil.

Crystal mining is done in three stages: cutting, finding, and cleaning. The cutter's job is to slice sheets of rock from the walls of the mine. These sheets of rock are hauled to the surface of the planet where the finder takes over.

The finder's job is to locate the crystals in the slab of stone using a sonic probe. By firing rays into the slab and noting where they exit (if they exit at all), the finder can map the locations of the crystals without cutting into the stone.

From here the cleaner takes over and with the aid of the finder's crystal map meticulously extracts each crystal.

You are a finder. Your task is to locate crystals with the aid of your sonic probe. Unfortunately sonic probes use a large amount of energy (a scarce quantity on Saturn). So it is important to make every shot count. With a keen deductive mind and the right knack you may just strike it rich.

GOOD LUCK!

Forward

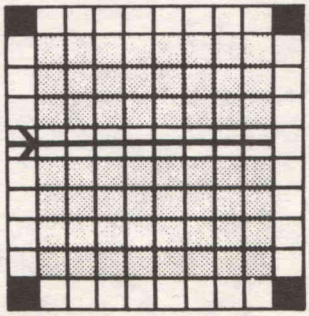
Crystal mine is a game of deduction. Crystals are hidden in a slab of rock (on an 8x8 grid) and it is your job to find out where. Your only clues to the whereabouts of the crystals are obtained by shooting "rays" into the slab. When a ray encounters a crystal, its path is altered. By noting the entrance and the exit points of the rays you gain clues as to the location of the crystals in the slab.

OBJECT

The object of Crystal= Mine is to correctly locate all of the crystals using the fewest number of clues.

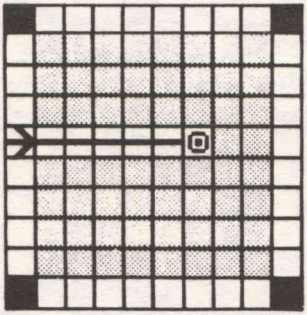
RAY MOVEMENT

A ray will move in a straight line if there are no crystals in front of it or to its immediate left or right.



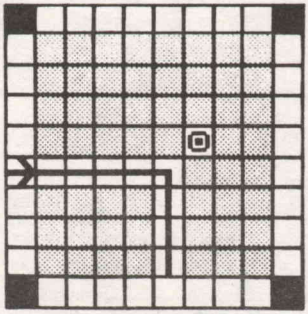
ABSORPTION

A ray that encounters a crystal directly in front of it will be absorbed by the crystal and not exit the slab.



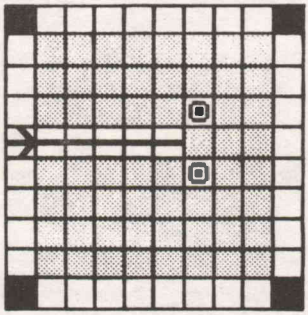
DEFLECTION

When a ray encounters a crystal in front and to one side of it , it will be deflected at a ninty degree angle away from the crystal.



REFLECTION

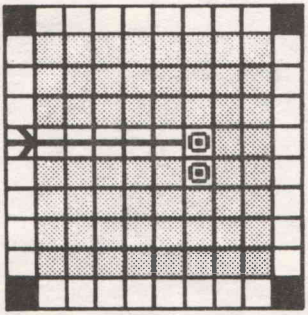
When a ray encounters crystals in front and to each side of it , it will be reflected back and exit where it entered.

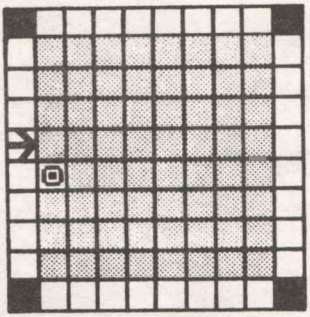


SPECIAL CASES

Two additional facts about the movement of rays must be explained. First due to a ray's tendency to move in a straight line, it will be absorbed before it will be deflected. The ray below is absorbed though one of the two crystals is trying to deflect it.

Secondly, a ray which tries to enter the slab next to a crystal on the slab's edge is reflected. Because the crystal is trying to deflect the ray before it enters the slab, the ray never makes it in and is considered to have exited from its entrance place.





CLUES

When a ray is fired into the slab matching markers are placed at its entrance and exit points. If the ray is absorbed in the slab (has no exit point) a solid red square is placed at the rays entrance point. If the ray is reflected (exits at the same place that it entered) a solid yellow square is placed next to the rays entrance point.

THE WORK AREA

The grid shown on the screen is a work area which you will use to map out the locations of the crystals. Markers are placed on the grid to show the locations of the crystals. You may move them around until you think they are in the same locations as the crystals. The location of the markers and the crystals are then compared and your final score is determined.

SCORING

The object is to get as low a score as possible. Your score is equal to the number of clues you recieved plus five for every incorrectly guessed crystal. Absorptions and reflections add one to your score due to the single clue at the ray's entrance. Deflections add two to your score due to the clues at the ray's entrance and exit points.

GETTING STARTED

Turn off the computer. Be sure that all cartridges have been removed from the cartridge slots. Turn on disk drive #1 and wait for the busy light to go out. Insert the Crystal Mine diskette into drive #1 and turn on the computer and monitor (TV). Crystal Mine will load into memory automatically. The first screen is a title page. Press the start key to start the game from this point.

NUMBER OF PLAYERS

Crystal Mine can be played by one or two players. The number of players is selected at the beginning of each game using a joystick in port one or two. Push forward for two players. Pull backward for one player. When the number next to the flashing word "players" equals the number of players you want, press the trigger on your joy stick.

NUMBER OF CRYSTALS

Next, the number of crystals to be hidden is selected. It can be any number from one to nine. Push the joystick forward to increase the number next to the flashing word, "crystals", by one. Pull the joystick back to decrease it. Push the trigger when you have selected the desired number of crystals. The more crystals you select the harder it will be to find them all. Three crystals is a good number with which to start. More than five can become quite difficult.

TIMED GAMES

The word, "timed", will now flash, prompting you to respond with a "yes" or "no" to the timed game option. Push forward on the joystick for yes, pull back for no. Push the trigger when the approriate response is displayed.

If you have chosen the timed option you will next enter the starting time for each player. Select the digit that you wish to change by pushing the joystick to the left or right. The digit which is to be modified will be white. Each time the joystick is pushed forward this digit will be increased by one. Pulling back will decrease the digit by one. Push the trigger when the proper time has been selected.

Any time selection other than zero will start the player's time at that selection and count down to zero. When zero is reached, that player's game is ended and the final score is calculated. A player is free to end the game before time has run out. Giving more experienced players less time is an excellent way of handicapping a match.

If the original time selection is made equal to zero then the timer will run forwards instead of backwards. The game's elapsed time is continuously displayed for the player's information, but no time limit is placed on the game.

START AND SELECT

The start key can be used at any time to restart the game. The select key can be used to go to the options menu.

HIDING THE CRYSTALS

In one player games the crystals are automatically hidden in the slab. In two player games each player hides the other's crystals. While player two is not looking player one moves the cursor (x) on the slab, hiding two's crystals. When the trigger is pressed a crystal will be placed on the slab. To remove a crystal, place the cursor over it and press the trigger. When finished, move the cursor to one of the corners and press the trigger. This will hide the crystals. Now player two hides player one's crystals.

FIRING RAYS INTO THE SLAB

To receive clues you must fire rays into the slab. To fire a ray, move the cursor to any edge of the slab (not a corner). The cursor should have changed into a yellow arrow pointing towards the slab. Pressing the trigger will fire a ray into the slab from that point. After the ray has been fired a marker will be placed under the cursor. This marker will be a solid red square if the ray was absorbed; a solid yellow square if the ray was reflected; or a shape with a matching shape placed elsewhere on the edge of the slab to show the ray's entrance and exit. Your score is up dated each time a ray is fired into the slab. A ray cannot be fired from a location that already has a clue. Shooting a ray results in the end of that turn. In two player games the players take turns shooting rays. The player's slabs are switched between turns.

PLACING MARKERS

There are two kinds of markers which can be placed in the work area. One type is the crystal marker. Crystal markers will help you keep track of possible crystal locations. Pressing the trigger while the cursor is on an empty space in the work area will place a crystal marker in that space. Pressing the trigger while the cursor is on a crystal marker will remove it. Markers may be moved around during the course of the game in order to accomodate newly received clues.

The second type of marker is a no-crystal marker. It is used to mark locations which have a low probability of having a crystal in them. It is often helpfull to use a process of elimination in order to find all of the crystals. To place a no-crystal marker press the trigger and hold it. Now pull the joystick towards you. The cursor will turn red indicating you are in the draw marker mode. A no crystal marker will be placed where ever you move in this mode. To leave the no crystal mode release the trigger. By pressing the trigger and pressing forward on the joystick you will enter an erase mode. In this mode the cursor erases no crystal markers.

FIRING RAYS INTO THE WORK AREA

Rays may be fired into the work area as well as the slab. Rays in the work area trace a visible path on the screen. This path is affected by the markers you have placed in the work area not the crystals in the slab. A ray in the work area does not count as a turn and does not affect your score.

In order to shoot a ray into the work area, move the cursor to the edge of the box and keep the joystick pushed towards that edge. You should see a red arrow pointing towards the work area and hear a low humming noise. Now press and release the trigger and a ray will be fired into the work area from that point. Pressing and holding the trigger will freeze the ray at any point in the work area for closer examination. As many rays may be fired into the work area on a turn as you like.

Rays in the work area help you to visualize how a ray would move through the slab if the crystals were in the same configuration as the markers are in. Though they give no clues as to the whereabouts of the crystals, they can help you see if your markers match the clues you have already received.

ENDING THE GAME

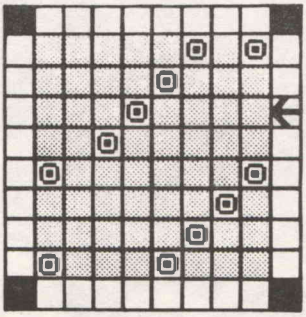
When you think your crystal markers match the locations of the crystals, move the cursor to a corner and press the trigger. Incorrectly placed crystal markers will turn red and have a slash through them. Any unmarked crystals will appear and also have a slash through them. Your score is now increased by five for each incorrect marker and your final score is displayed.

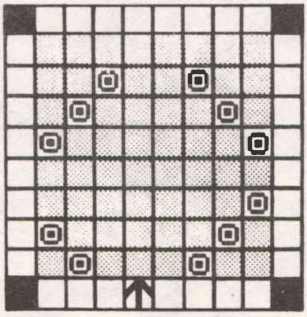
The game is now over, but you may still investigate the correct answer. The cursor will now move only on the edges of the slab and will fire rays into the work area only. These rays are affected by the actual crystals. They will completely ignore misplaced markers. It is at this time that you can discover how you arrived at the marker placement that you did, why it may be different from the actual crystal positions and what you could have done to better place the markers.

To end the game move the cursor to a corner and press the trigger. In a one player game the game will start over at this point. After one player finishes in a two player game the other continues to play until finished. Both players scores and the number of shots each took is then displayed. Press the trigger to start the game over.

EXPERIMENTING WITH RAYS

Properly placed crystal markers can cause rays in the work area to form elaborate patterns. Start a one player game with any number of crystals. Now arrange markers in the work area so that a ray in the work area will make a pattern. Try the patterns shown and make up some of your own. Experiment.





CONTACTING THE AUTHOR

Users wishing to contact the author about CRYSTAL MINE may write him at:

John W. Felton
657 Happy Valley Rd.
Pleasanton, Ca. 94566

WARRANTY INFORMATION

New Age Software warrants to the original purchaser that this New Age Software Diskette shall be free from any defects in materials or workmanship for a period of 90 days from the original date of purchase. Any diskette found to be defective during this 90 day period will be replaced free of charge upon return to New Age Software. All New Age Software programs are distributed on an "as is" basis, without warranty of any kind. No other warranty expressed or implied is made by New Age Software or the program author.