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Nadav Caine

MATHEMATIC-TAC-TOE

APX-10082 APX-20082

March 1982

User-Written Software for ATARI Home Computers

MATHEMATIC-TAC-TOE

by

Nadav Caine

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INTRODUCTION

OVERVIEW

MATHEMATIC-TAC-TOE is an educational variation of the traditional tic-tac-toe game designed to sharpen basic computational skills. Two players square off against each other, while the computer poses mathematical problems. A player chooses an unoccupied square on the nine-square grid, and the computer then poses a problem. If the player answers correctly, the computer places the player's symbol (X or O) on the square. The winner is the first to fill a row, column, or diagonal line with his or her symbol. The game is a draw if neither player fills all the squares in a row, column, or diagonal line.

MATHEMATIC-TAC-TOE features include (1) four kinds of problems--multiplication, division, addition, or subtraction; (2) 15 levels of difficulty for each kind of problem; and (3) 15 time limit levels for answering a problem. With so many variations, you never outgrow or outmaster MATHEMATIC-TAC-TOE.

REQUIRED ACCESSORIES

Cassette version
- 16K RAM
- ATARI 410 Program Recorder

Diskette version
- 24K RAM
- ATARI 810 Disk Drive

ATARI BASIC Language Cartridge

CONTACTING THE AUTHOR

Users wishing to contact the author about MATHEMATIC-TAC-TOE may call him at:

215/664-8720

GETTING STARTED

LOADING MATHEMATIC-TAC-TOE INTO COMPUTER MEMORY

1. Insert the ATARI BASIC Language Cartridge in the (Left Cartridge) slot of your computer.

2. <u>If you have the cassette version of MATHEMATIC-TAC-TOE:</u>

   a. Turn on your TV set.

   b. Turn on your computer and connect your program recorder to the computer and to a wall outlet.

   c. Slide the MATHEMATIC-TAC-TOE cassette into the program recorder's cassette holder and press REWIND on the recorder until the tape rewinds completely. Then press PLAY.

   d. Type CLOAD on your computer and then press the RETURN key two times. The tape will load into computer memory.

   e. After the tape finishes loading, the word READY will display on your TV screen. Type RUN and press the RETURN key. The first display screen will appear on your TV screen.

<u>If you have the diskette version of MATHEMATIC-TAC-TOE:</u>

   a. Turn on your disk drive.

   b. When the BUSY light goes out, open the disk drive door and insert the MATHEMATIC-TAC-TOE diskette with the label in the lower right-hand corner nearest to you. Close the door.

   c. Turn on your computer and TV set.

   d. When the READY prompt displays on your TV screen, type RUN "D:MATHTIC" and press the RETURN key. If you're using more than one disk drive, remember to follow the device initial (D) with the number of the drive containing the MATHEMATIC-TAC-TOE diskette (e.g., RUN "D2:MATHTIC" for disk drive two). The program will load into computer memory and start.

FIRST DISPLAY SCREEN

The title MATHEMATIC-TAC-TOE displays at the top of your TV screen for a few seconds, along with some sound effects, followed by the copyright message. Then the title disappears and the program draws the game grid: two horizontal lines and two vertical lines:

```
      :     :
      :     :
-----------------
      :     :
      :     :
-----------------
      :     :
      :     :
      :     :
```

Figure 1 Game Grid

CHOOSING YOUR OPTIONS

Before beginning to play, you answer five prompted questions about the kind of problem you want, the level of difficulty, the time limit, and your first names. Answer each question by typing in your response and pressing the RETURN key.

First, the computer asks you to type in each player's first name. The prompts are:

```
INPUT PLAYER ONE'S FIRST NAME

INPUT PLAYER TWO'S FIRST NAME
```

In response to each prompt, you may type a name as long as eight characters (and press the RETURN key).

Then the program asks you what kind of problem you want to work on. The prompt is:

```
Do you want to solve Multiplication,
Division, Addition, or Subtraction
problems (M/D/A/S)?
```

Type the first letter of your preferred problem and press the RETURN key. For example, type M and press the RETURN key to choose multiplication problems.

Next, the program asks you for your preferred level of difficulty. The prompt is:

```
        WHAT LEVEL OF DIFFICULTY?
1-EASIEST 15-HARDEST (5 is suggested.)
```

The program suggests level 5 for starters because this level poses problems most people are accustomed to answering. For example, level 5 contains multiplication problems up to about 12 x 12, the point to which most students memorize their times tables. You can use

this example as a reference point for choosing more or less difficult problems. Type your number and press the RETURN key.

Next, the computer asks you for a time limit for answering each problem. The prompt is:

```
WHAT TIME LIMIT LEVEL?
(1-Easiest 15-Hardest)
```

The time limt for level 1 is 35 1/2 seconds and for level 15 is 2 1/2 seconds. Type the number you want and press the RETURN key.

Then the computer displays each player's symbol (X and O) briefly at the bottom of the screen. Player one uses X's and player two uses O's.

PLAYING MATHEMATIC-TAC-TOE

THE GAME GRID

After answering these five questions, the computer places a number in each square of the tic-tac-toe grid. It now looks approximately like this:

```
     :     :
  1  :  2  :  3
-------------------
     :     :
  4  :  5  :  6
-------------------
     :     :
  7  :  8  :  9
     :     :
```

Figure 2 Numbered Game Grid

TAKING A TURN

The object of the game is to place your symbol (X or O) on three consecutive squares before your opponent does. You can place them in a row, for example, in squares 1, 2, and 3. Figure 3 shows this completed row.

```
     :     :
  X  :  X  :  X
-------------------
     :     :
  4  :  5  :  6
-------------------
     :     :
  7  :  8  :  9
     :     :
```

Figure 3 Completed Row

Or, you can place them in a column, for example, in squares 2, 5, and 8. Or, you can place them diagonally, for example, in squares 3, 5, and 7.

The computer asks you, by name, what square you want. Type the <u>number</u> of the square you want to occupy and press the RETURN key. (Note. Don't try to be sneaky and type in the number of a square already having an X or O. If you try it or if you try typing a number other than 1 through 9, the computer will politely and persistently ask you to choose a legal square.)

After you choose your square, the computer displays a math problem in standard (school) form for you to solve. Depending on the time limit you chose, you have between 2 and 36 seconds to type your answer (and press the RETURN key). As you type in the answer, each

digit appears in its correct column, that is, lined up in the one's column, the ten's column, or the hundred's column. The computer recognizes only keys 0 through 9, RETURN, and DELETE/BACK S (which you can use to correct an answer prior to pressing the RETURN key). If you answer correctly, the message CORRECT! displays and the computer places your symbol in your chosen square. If you answer incorrectly, the message WRONG. displays and the square remains unchanged. If you don't answer within the time limit, a buzzer sounds and the message TIME'S UP! displays. After one of these responses, it's your opponent's turn.

If you think you get asked all the tough problems and your opponent gets all the easy ones, better luck next time. Your opponent might think just the reverse!

The first player to complete a line in any direction wins the round. The message CONGRATULATIONS! displays next to the player's name. If you and your opponent fill all the squares without either one completing a line, then the message "Sorry, it's a STALEMATE!" displays instead.

RESTARTING THE GAME AND PLAYING ANOTHER ROUND

Interrupting a game

If you want to interrupt a game and start over for any reason, press the SYSTEM RESET key, type RUN, and press the RETURN key. The program title will redisplay and you can re-enter your game options.

Playing another round

To play another round after completing one, press any key other than the SHIFT, CTRL, or BREAK keys. The program asks you "DO YOU WANT TO KEEP THE SAME NAMES? (Y/N)". Press the "Y" key to play again using the same player names; press the "N" key to enter new names in response to program prompts.

Then the program asks "WOULD YOU LIKE THE SAME SETUP? (Y/N)". The "setup" includes the arithmetic operation (addition, subtraction, multiplication, or division), the level of difficulty, and the time limit. Press the "Y" key to play again using the same setup; press the "N" key to enter new options in response to program prompts. The game grid then redisplays and you're ready to play another round.

PROBLEMS USING MATHEMATIC-TAC-TOE

You might accidentally type something the program won't accept. For example, you might accidentally press the BREAK key causing the program to stop at some points. If you do so, type POKE 752,1:CONT and press the RETURN key to continue or restart the game. (This statement prevents the distracting cursor from appearing when the program continues.)

COMMENTS FROM THE AUTHOR

The goal of MATHEMATIC-TAC-TOE is to drill and sharpen the math skills of individuals while having fun. It was originally intended for classroom use. (An earlier, less sophisticated version of my game was used successfully at my high school.) While talking one day to a parent about the program, she enthusiastically told me she'd love to buy the program for her kids. They'd play it for fun, she said, but she'd feel at ease knowing they were also learning something. So, whether you're using MATHEMATIC-TAC-TOE at home or in the classroom, have a good time!

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ATARI PROGRAM EXCHANGE

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1. Name and APX number of program _____

2. If you have problems using the program, please describe them here.

_____

_____

_____

3. What do you especially like about this program?

_____

_____

_____

4. What do you think the program's weaknesses are?

_____

_____

_____

5. How can the catalog description be more accurate and/or comprehensive?

_____

_____

6. On a scale of 1 to 10, 1 being "poor" and 10 being "excellent", please rate the following aspects of this program?

_____ Easy to use
_____ User-oriented (e.g., menus, prompts, clear language)
_____ Enjoyable
_____ Self-instructive
_____ Useful (non-game software)
_____ Imaginative graphics and sound

7. Describe any technical errors you found in the user instructions (please give page numbers).

8. What did you especially like about the user instructions?

9. What revisions or additions would improve these instructions?

10. On a scale of 1 to 10, 1 representing "poor" and 10 representing "excellent", how would you rate the user instructions and why?

11. Other comments about the software or user instructions:

STAMP

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