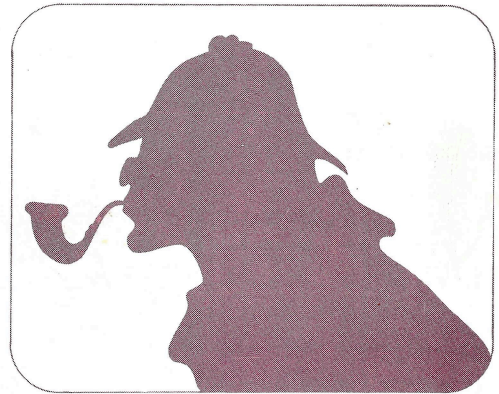


Welcome to the all-new world of Aladdin.



MASTERMIND

Mastermind

by Robert J. Davis

A laddin Automation's Mastermind is a game of logic in which the computer selects a secret code and the Player attempts to discover the code using the clues supplied by the computer.

The code consists of from 2 to 5 colors selected from the seven colors Red, Pink, Orange, Yellow, Green, Blue, and Violet. To make the game even more challenging, the same color is allowed to appear more than once. In fact, the secret code might even consist of all the same color. The Player's task is to determine not only the colors which make up the code, but their correct positions within the code as well.

How to Load

Loading the program requires no special effort. Simply place the program tape in your tape recorder (making certain that it is completely rewound), place the tape recorder in the "playback" mode, type "LOAD," and press

the RETURN key. The program has been properly loaded when the second "beep" is heard and the flashing cursor reappears. If an error occurs in loading refer to page 7 of your APPLE II REFERENCE MANUAL—JANUARY 1978.

How to Run

After the program has been successfully loaded, type "RUN" and depress the RETURN key to begin execution. The title Block is displayed first and will remain displayed until the SPACE BAR is pressed.

At the beginning of the program the seven colors used in the game are displayed on the screen. This is a good time to adjust the color on your monitor should any adjustment be necessary. (Don't spend a whole lot of time trying to make Red look red, it's really magenta.)

The statement

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SELECT SKILL LEVEL (2-5)
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appears at the bottom of the screen beneath the seven color bars. Skill level, as explained earlier, refers to the number of colors in the secret code. If you are not familiar with the game of MASTERMIND then you should probably start with a skill level of 2, since understanding the clues

takes some practice. If you already know how to play the game, or you have a lot of self-confidence, or you're the kind who likes to jump right in with both feet, then go ahead and give 5 a try. The worst that can happen is a bruised ego. Pressing the RETURN key is *not* necessary when entering the skill level. As soon as one of the valid keys (2-5) is pressed the screen will blank out and the game board and clue board will be displayed.

On the left half of the screen is the game board with room for ten rows of guesses. Below the game board is the secret code (hidden, of course). On the right half of the screen is the clue board and beneath the clue board are the seven colors and their respective codes. At the bottom of the screen is the prompt

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ENTER n COLORS FOR ROW r . . . ?
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followed by the flashing cursor. In the above prompt, "n" will be replaced by the skill level chosen earlier and "r" will be replaced by the row number of the current guess. Remember, you only have ten guesses—use them wisely. All that remains now is to enter your first guess, which for a skill level of 3 might be something like "BOV" for a guess of BLUE—ORANGE—VIOLET. After pressing the RETURN

key the colors will immediately be displayed on the game board and the clues, if any, will be displayed on the clue board. At the bottom of the screen is the prompt requesting another guess.

The game ends when either the secret code has been guessed, or ten incorrect guesses have been made. In either case, however, the secret code will then be revealed and you will be asked for another game with the prompt

WOULD YOU LIKE TO TRY IT AGAIN?

If you wish to play another game then press the "Y" key and the results of the game just completed and the prompt requesting skill level for the next game will be displayed. If you do not wish to play again, press the "N" key, and your final results will be displayed and the game will end. As with entering the skill level, pressing the RETURN key is *not* necessary. The computer responds immediately to either the "Y" key or the "N" key being pressed.

Skill Level

The Player is asked to input a skill level at the beginning of each game. The skill level is a number from 2 to 5 which corresponds to the number of colors to be selected for the secret code. A skill level of 2, for example, would result in a

secret code containing two colors, a 3 would result in a three color secret code, and so on.

The Guess

The Player's guess is entered as a string of characters formed from the first letters of the colors chosen, in the order desired. The guess GREEN—BLUE—RED—ORANGE, for instance, would be entered as "GBRO." The seven possible colors are RED (R), PINK (P), ORANGE (O), YELLOW (Y), GREEN (G), BLUE (B), and VIOLET (V).

The Clues

There are three possible clues given as a result of each guess.

1. A BLACK square will be displayed for each color in the guess which matches a color in the secret code in both color *and* position.
2. A WHITE square will be displayed for each color in the guess which matches a color in the secret code, but is *not* in the correct position.
3. Nothing at all will be displayed for each color in the guess which does not match a color in the secret code.

For example, if the secret code is RBYG and the Player's guess is VBYY then the clues displayed will be a BLACK square for correctly guessing the position of the color Blue,

another BLACK square for correctly guessing the position of the color Yellow (the first "Y" in the guess), and nothing at all for guessing the color Violet, since Violet is not one of the colors in the secret code.

Note that the positions of the BLACK and WHITE clue squares have no relation at all to the positions of the colors in either the guess or the secret code. BLACK squares are always displayed first (assuming that any are earned) followed by WHITE squares. Also, remember that once a color in the code has been awarded a clue, either BLACK or WHITE, its function in determining further clues has ended.

The Score

The score for each game is based on both the skill level chosen for the game and the number of guesses required to determine the secret code and is calculated using the following formula

$$\text{SCORE} = (11 - N) * S * 2$$

where N is the number of guesses made and S is the skill level chosen for the game. Table 1 gives the scores for all combinations of guesses (N) and skill levels (S).

Table 1

Guesses (N)	Skill Level (S)			
	2	3	4	5
1	40	60	80	100
2	36	54	72	90
3	32	48	64	80
4	28	42	56	70
5	24	36	48	60
6	20	30	40	50
7	16	24	32	40
8	12	18	24	30
9	8	12	16	20
10	4	6	8	10

As you can see, the higher scores can only be attained by playing at higher skill levels. However, the higher skill levels usually require more guesses, resulting in lower scores. But then nobody said this was going to be easy!

After each game the results will be displayed, giving the following information.

1. The SCORE for the game just completed.
 2. The AVERAGE SCORE of all games played during the current session.
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3. The score for the HIGH GAME of the session.
 4. The number of GAMES WON during the session.
 5. The number of GAMES LOST during the session.

Note: Typing "RUN" resets all of the above results to zero. Therefore, if a game should be interrupted (as would be the case if the RESET key were accidentally pressed), then the results of all previous games will be lost when the game is restarted. Sorry!

Messages

Several messages are generated by the program. Some of the messages require a response from the Player while others are for information only. The following is a list of the messages, their meanings, and the expected response, if any.

1. MASTERMIND USES THESE 7 COLORS—No response necessary. The seven colors used in the game will be displayed on the screen.

2. SELECT SKILL LEVEL (2-5) . . .—This message is generated at the beginning of each game. The skill level entered sets the number of colors which will be used in the secret code. Skill levels from 2 to 5 are the only valid responses. It is *not* necessary to press the RETURN key. The

program will continue as soon as one of the valid keys (2, 3, 4, or 5) has been pressed.

3. ENTER n COLORS FOR ROW r . . . —This message is generated to prompt the Player to enter the character string representing a guess. Only the letters R, P, O, Y, G, B, and V are valid. Any other letter will produce an error message (message #4). The "n" is the skill level selected in response to message #2, and "r" is the row number of the current guess. Only the first n characters are accepted. For example, if n=3 and the character string "YOGR" is entered, only the colors Yellow, Orange, and Green will be displayed. It is necessary to press the RETURN key when entering the character string. This allows the Player to change his mind about a guess. Simply backspace and reenter the new guess prior to pressing RETURN.

4. *** ERROR: 'aaaaa' IS INVALID.—This message appears whenever an invalid guess is entered. The bad input is reproduced in 'aaaaa.' Wait for message #3 to reappear, then reenter your guess.

5. CONGRATULATIONS!—Congratulations, you guessed the secret code. No response necessary.

6. WOULD YOU LIKE TO TRY IT AGAIN?—This message appears either as a result of having correctly guessed the secret code, or as a result of having made ten incorrect

guesses. A "Y" response will cause the results to be displayed and produce the skill level prompt. A response of "N" will produce the final game results for the current session of play and terminate the game. Pressing the RETURN key is *not* necessary.

Strategy

Mastermind is a game of logical deduction requiring the Player to use all the clues given for previous guesses to narrow in on the correct solution. Many different strategies can be successfully applied and each Player will develop his own as he gains experience. Eventually, even skill level 5 can be MASTERED by an advanced Player. The challenge then becomes to guess the secret code in the fewest guesses possible, or to win the most number of successive games.

Mastermind can provide hours of entertainment while at the same time training the mind to process information in a logical manner.

Quick Reference

Skill Level

The skill level is a number from 2 to 5 which corresponds to the number of colors in the secret code. It is *not* necessary to press the RETURN key when entering the skill level.

Colors

The seven colors used in the game are

1. Hed (actually magenta)
2. Pink
3. Orange
4. Yellow
5. Green
6. Blue
7. Violet

The Guess

Ten guesses are allowed in each game. Each guess is entered as a string of characters formed from the first letters of the colors chosen for the guess. It is necessary to press the RETURN key after entering a guess.

The Clues

There are three possible clues for each guess.

1. BLACK indicates a correct color in the correct position.
2. WHITE indicates a correct color, but in an incorrect position.
3. "Nothing" indicates an incorrect guess.

Note: BLACK clues will always be displayed before WHITE clues. The position of the clues has *NO* relation to the positions of the colors in either the guess or the secret code.

Conclusion

We at ALADDIN AUTOMATION hope that you enjoy using this Personal Program[®] as much as we have enjoyed creating it. The personal computer promises to open a whole new world of recreation, education, and home applications never before known, and ALADDIN plans to be right out front with the programs necessary to help make the personal computer an integral part of your life. We are continually designing new and exciting programs with you, your family, and your home in mind. Try some of our other programs,

AND GET READY
TO MAKE YOUR OWN MAGIC!



A Note From Aladdin...

Aladdin Personal Programs® are produced on high quality magnetic cassette tapes using professional tape duplication methods. However, since magnetic tape oxide is not always perfectly uniform (and as such data drop-out may occur) we have included several copies of the program on each side of the tape. You will probably never experience any difficulties loading the first copy on either side, but if you do, try one of the other copies. If you cannot load *any* of the copies then you should look for hardware problems.

**And Get Ready
to Make Your Own Magic.**