!MASTMIND

Mastermind for RISC OS

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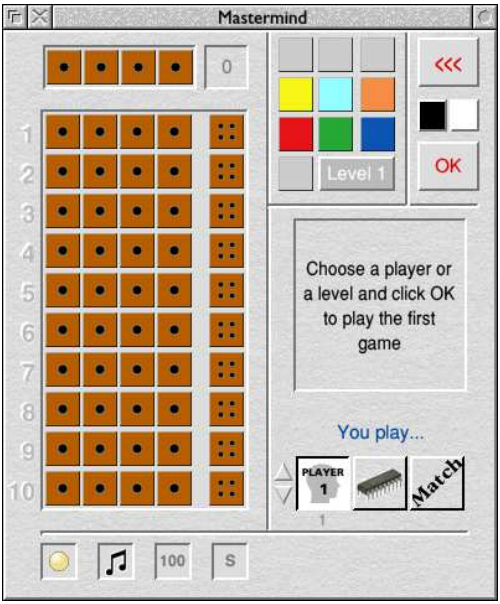

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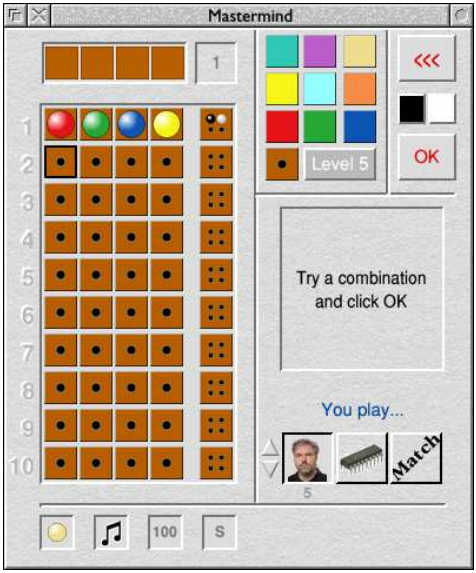
This manual assumes familiarity with the RISC OS system. For example, SELECT, MENU and ADJUST are the left-, middle and right button of the mouse.

*** MastMind supports the interactive help ***

Playing Mastermind

The purpose of the game is to find the hidden combination of 4 colours, in as little attempts as possible.



To start a game, click OK. The program will compose a combination, based upon the chosen level (see: Levels, page 3), and will hide it in the 'secret area' at the top left of the window.

You may now enter your first combination of 4 random colours (an empty hole counts as a colour too), by clicking on any of the square colours in the upper right corner.

The cursor (▣) shows where the next colour will be placed. Alternatively, you may use the mouse to click on any of the 4 holes to position the cursor there, and click on a colour.

Clicking <<< will subsequently undo your latest input.

When you're satisfied about your combination, click OK. The computer will provide feedback by means of black and white pegs: a black peg for each right colour in the right position, a white one for each right colour in a wrong position. If it doesn't show any pegs at all, then none of the colours is right.

The game is finished when you've found the combination, or when you failed to find it within 10 attempts, in which case you will be charged for 11 attempts.

The program will show the time you needed, as well as the number of attempts. Moreover, your average score, game time and level, as well as the date, will be saved automatically, unless a better achievement has been saved previously. In other words, MastMind will remember your highscore.

Levels

There are 5 levels, that can be accessed by clicking the `Level` button.

1: Combinations of 4 unique colours out of 6 (no empty hole), from a total of 360 different combinations.
2: Combinations of 4 unique colours out of 7 (empty hole included), from a total of 840 combinations.
3: Combinations of 4 random colours (duplicate colours are allowed) out of 6, from a total of 1296 combinations.
4: Combinations of 4 random colours out of 7, from a total of 2401 combinations. This is the original Mastermind level.
5: Combinations of 4 random colours out of 10, from a total of 10,000 combinations. This is considered the Expert level.

Players

MastMind will remember the score of 10 different players. You may choose a player by using the bumpers, or by subsequently clicking on the player icon. The number underneath the icon indicates the number of the player.

You may replace the default icons by your own, by dragging either a JPEG or a sprite to the MastMind window. The program will automatically scale the picture to fit in the icon. Remember however that sprites larger than 1 MB will not scale properly, and may loose their aspect ratio.

Let the computer solve mastermind

Making the computer solve mastermind was the actual reason for writing this program. Click on the computer icon ( ), and choose either level 4 or level 5. The computer won't play the restricted levels 1–3. Now enter a combination in the 'secret area', and click OK. The computer will then display its first attempt. Provide feedback by clicking the black and white colours (black for each right colour in the right position, white for each right colour in the wrong position).

You will probably experience that validating an attempt is prone to making mistakes. If you made one indeed, the program will be unable to solve the game, but will show you where you made the mistake.

Alternatively, rather than providing the feedback yourself, you may click OK with ADJUST (right mouse button), which will force the program to validate its own attempt, thus avoiding mistakes.

However, if you don't trust the program, you may leave the secret area blank, and store the combination in your memory. Feedback should then be entered very carefully. Rest assured however, that the program doesn't cheat…

The numbers in the bottom right corner will show how many combinations were checked by the program.

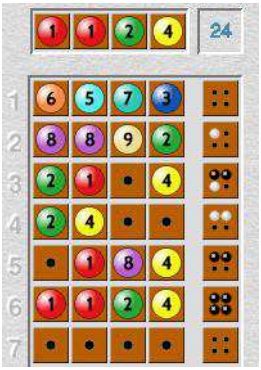
Playing a match

Playing a match is a matter of first playing a number of games yourself, and then click the `Match` button (Match). The program will then subsequently solve the same combinations that you played before. You only have to click OK after each game.

After having solved all combinations, the program will decide who won the match, based upon the average score. As the computer usually solves the game in fractions of a second, time will not be taken into account.

If you don't want to play a number of games first, you may also click on the '`100`' icon, which will generate 100 random games, based upon the chosen level, that can be played by the computer in Match mode directly.

Playing with numbers, rather than with colours



If you wish to play with numbers using the keyboard, then it's just a matter of exactly that: type the numbers on your keyboard. The familiar colours will still appear, but now provided with their specific number.

A click on OK is duplicated by the Return key, while the Backspace key duplicates the ‹‹‹ icon.

Using the keyboard is often far easier and quicker than selecting colours with the mouse. However, if you want to move the cursor to a different position, you will still need the mouse.

Four extra options

MastMind provides four extra options that may vary in clearness and usefulness.

The first option ( ) is a simple toggle between playing with colours, or playing with numbers ( ). Remember that typing the numbers on your keyboard will automatically switch to numbered colours.

The quavers ( ) will undoubtedly be self-explanatory: clicking this icon will toggle between sound and no sound ( ). Especially when the computer is playing a match of 100 games, this button will prove its value…

The 100 icon has been mentioned before (see: Playing a match, page 4). Clicking on it will produce 100 random combinations, either on level 4 or on level 5, after which they can be played by the computer in Match mode.

The S icon at last, is the least clear and probably the most useless option of the four, and I actually only added it for historical reasons (see below). Anyhow, when the computer tries to solve a combination, it will systematically scan all possible combinations – and only displays one when it doesn't contradict with previous attempts. Therefore, all possible combinations are stored in an array, that gets heavily shaken up before every new game. This is the systematic (S) approach, as opposed to the random (R) approach, when the computer only tries random combinations – see next.

(History…)

My first version of a program that could solve mastermind, was written around 40 years ago, on a Casio PB-100. It had a stunning 1.5 KB of memory (expansion included!), reason why it only could solve combinations of 3 numbers out of 4, and why it only could try random combinations. Even then it took many minutes before it finally displayed the solution.

Languages

Two languages are available, English and Dutch, that can be chosen from the iconbar menu. MastMind will remember your choice.

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NAQ's *

Can I add other languages to the program myself?

Yes. Open the directory `<MastMind$Dir>.Resources.Languages` and copy the English text file under a suitable name, e.g. `Deutsch`. Now translate every text after the colons. You will probably have to fiddle a bit with spaces or hard spaces to produce acceptable lay-outs. Month names should preferably consist of 3 characters only. About the `date` tag: this controls the notation of the date in the high score. For example: `d m y` gives 1 Jan 2022, while `m d,y` gives Jan 1, 2022.

Can I remove an individual highscore?

Yes. Select the player of your choice and click MENU (middle mouse button). Clicking `Remove highscore` will reset the score.
If you want to reset all scores, you may want to delete the highscore file manually (`<Choices$Dir>.MastMind.HighScore`), rather than removing all individual highscores one by one.

How do I get rid of those two ugly player icons (Nº 5 and Nº 10)?

Just drag a JPEG or a sprite of your choice over the MastMind window, when one of those icons is selected. The new bitmap will be scaled and saved automatically.

Are combinations of 5 colours also possible?

Not in the current version, and probably neither in any future version, unless there's a significant demand.

What are the keyboard equivalents for the black and white pegs?

'*' for black, and '+' for white.

o–o–o–o

* Never Asked Questions