

## **Make5 for Windows**

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## **Shareware notices:**

This program is distributed as shareware. You may freely distribute this program without any charge.

A registration fee of \$5 dollars or more entitles you a valid registration number, which is required to activate the *undo* function. Each registered user has his/her unique private registration number, which can NOT be distributed without prior agreement from the author. Illegal distribution of any valid registration number is considered violation of the author's copyright.

To register, please send your registration fee, with a self addressed stamped envelop, to the author at the following address. Thank you for your support.

**Chih-Hung Hsieh, May, 1992.**

**PO Box 64016, Sunnyvale, CA 94088-4016**

## **Name of the game:**

**Make5** is an interesting game similar to **Tic-Tac-Toe**. It is called **Wu3-Zi3-Qi2** in Chinese and is very popular in the Far East. You might also find other names such as **5-in-a-row**, **Go-Moku**, or **Gobang** for this game.

I named it **Make5** because the goal of this game is to put five stones in a row.

## **Rules of the game:**

This is a two-player board game. Each player takes turns to place stones at empty intersections of lines. Once placed, a stone could no longer be moved or taken away from the board. The winner of the game is the one who first puts exactly 5 stones in a horizontal, vertical, or diagonal row.

Wmake5 can play with you, play with itself, or maintain and update the board as you play with your friend.

## **Strategies:**

The first player has absolute advantage, but there is no well-known winning strategy. The advantage of the first player decreases by each move. The second player should try to defend the first few moves to get to the even situation and then try to win the game.

In this game, you have to offend and defend. You should try to put stones at the positions which block your opponent's stones and/or connect your stones.

The most interesting part of this program is that it thinks while you are thinking. The faster you make a move, the less time you leave to the computer to think. Do not waste time on simple situations and do your thinking when waiting for your opponent's moves.

The problem of this program is that it never learns. Although it tries to randomize its moves, you can easily find out that it only looks ahead a certain number of moves even at the highest level.

## **Interfaces and options:**

This program provides four playing modes: (1) the computer plays with itself, (2) the computer moves first, (3) you move first, and (4) you play with another human player.

There are six search levels for the computer. A higher level number means that more nodes are searched in the game tree.

The interface and user options are simple and intuitive. You just need to choose the playing mode and computer's search level in the Game/New menu. The first move is always at the center point, so that the space will not run out shortly. The Game/Restart menu restarts the game with the previous configuration. You click the right or left mouse button to place stones. The cursor's color is always the next player's color.

The **undo** function can be used only when it's a human's turn and a valid registration number is provided in the Game/New or Game/Register dialog box.

This program keeps track of the time used by both players, but there is no time limit. When the board is nearly full of stones, the program will declare a draw game.

## Program history:

The basic playing algorithm was designed in 1984 as an A.I. term project, written in Pascal and running on Prime-750. The game was ported to Turbo Pascal and ran on PC in 1986. These Pascal programs are no longer maintained.

In 1991, it was translated to C and C++ with an X interface. This version, named **xmake5**, was published in **comp.sources.games/volume13**, together with a version to run with the Curses library on non-graphic terminals.

This new version for MS Windows has a strategy to achieve real time response. It includes a best-first game tree searching algorithm with a variant of alpha-beta cut. The program is written in Borland C++. It uses about 470K memory and a lot of CPU time. The author usually plays with it at level 5 on a 40MHz 386 and considers it a good player.