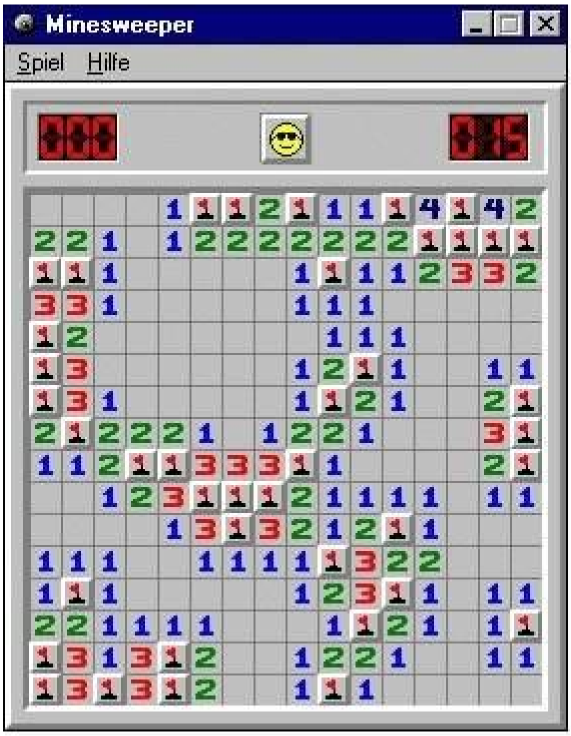
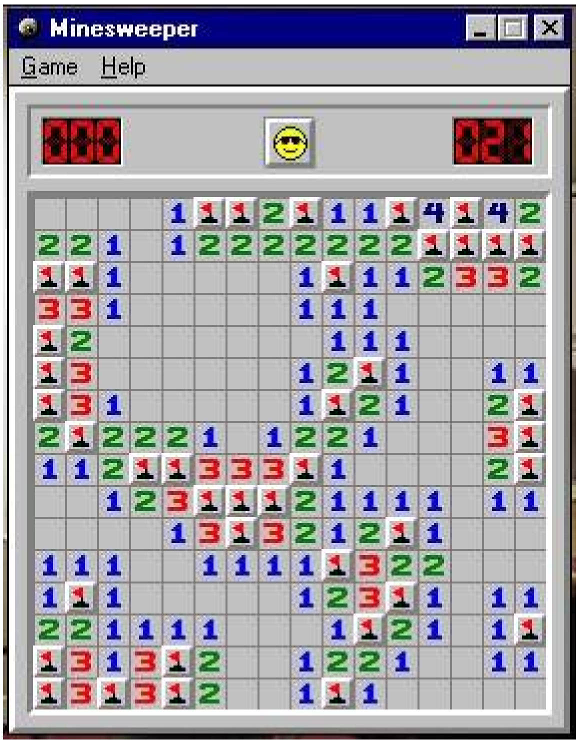
Random Games?

Are minesweeper games really randomly chosen? A recent furore has erupted due to the fact that 4 different people have acheived their records on the same board! In addition, Marc Shouten got a different board twice himself: once on video. Discussion at bottom of this page.

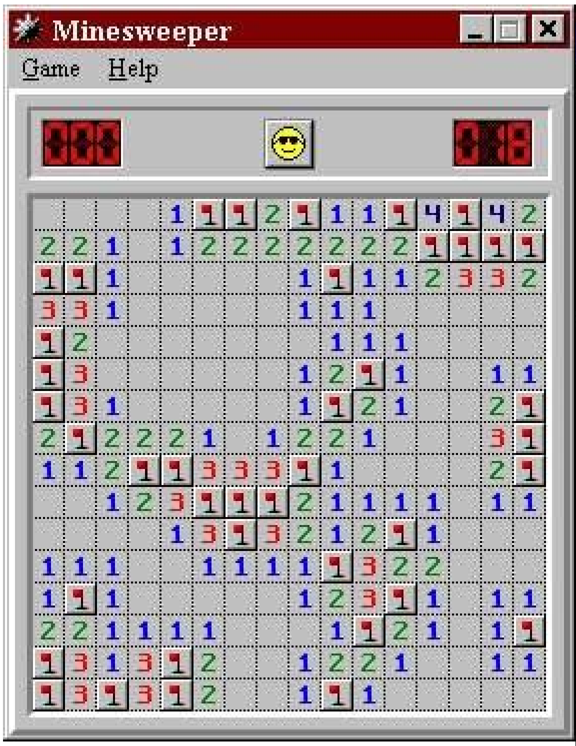
Here are the five identical games, with scores ranging from 12 to 34 seconds. Marc's games are farther down.

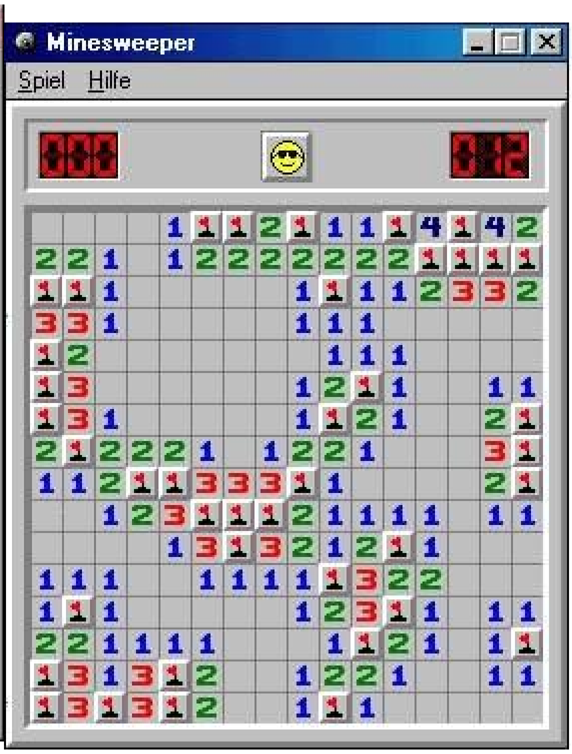
Gernot Stania 20/5/00 | Keith Romano --/8/00



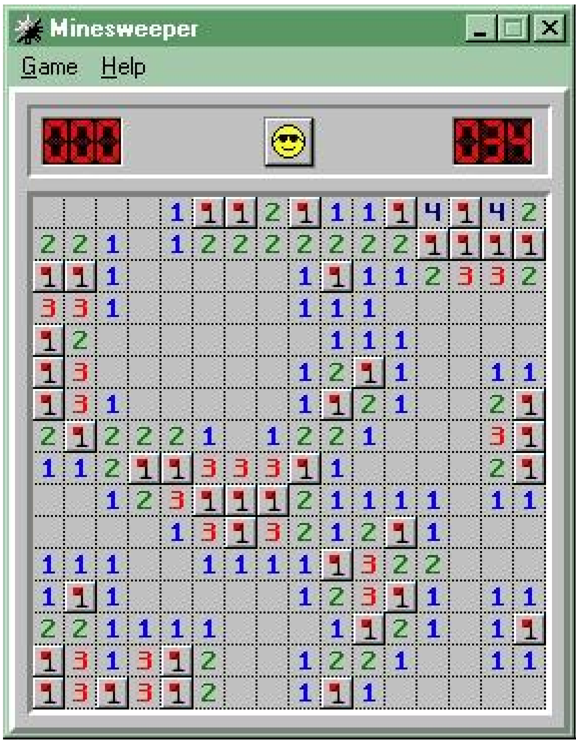


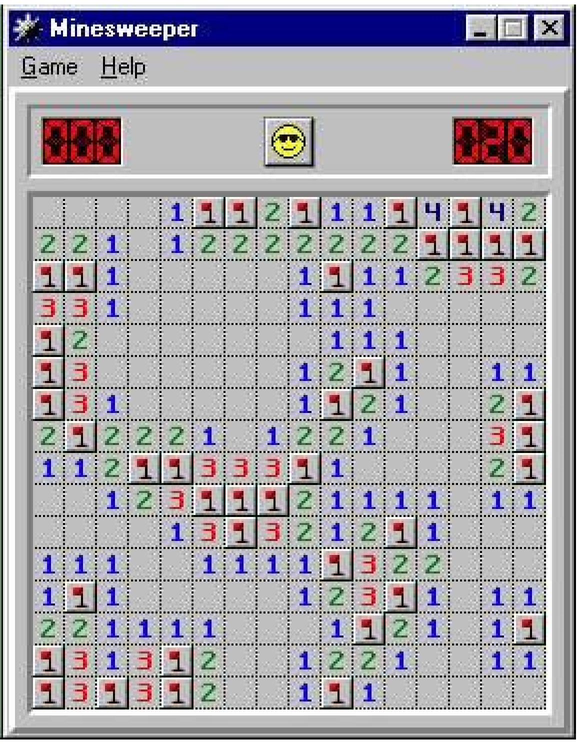
Damien Moore Mar 2000 | Gernot Stania Nov 2000





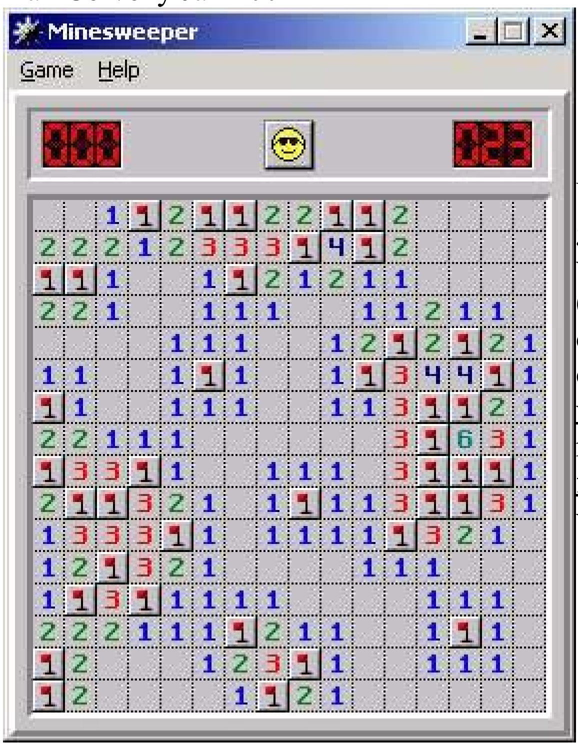
Carlos Valencia Jan 2001 | Brandon Curtis Feb 16 2001





Another same game example:

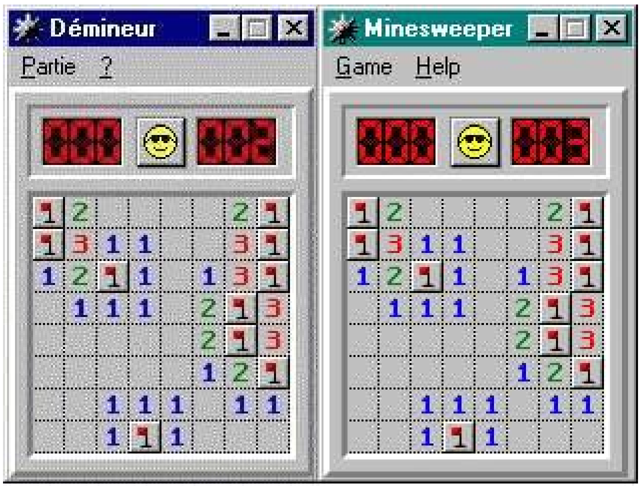
Dan Cerveny Jan 2001



Watch the same game but with 21 on video. Only 65 KB. (If you haven't downloaded camtasia from the video page, then you need this 190 KB file and open it to view the video.)

Another example:

Pascal Guelis 2000 Matt Bonzek Feb 16, 2001



Lasse Nyholm was the first to notice that Gernot Stania's 15s board was identical to my (Damien Moore's) at the time 18s board, except of course for the fact that Gernot's was a German version while mine was Win3.1. Then Keith Romano showed up with a 21s game on the Win95 version. Now, Gernot again had that board with his new record. All boards are identical. See [above](#).

Now, what are the chances of this happening if the games are chosen randomly? I am indebted to Uri Avni of Israel for the math. (He's on the record lists). First the statistics, then an explanation of the math.

The number of possible beginner boards is **151,473,214,816,** intermediate **105 with 47 zeros** after it, and expert **56 with 104 zeros** after it.What are the chances that the same game would be encountered even if all 6,000,000,000 people played all day? Fractional at best.

As Uri mentions, "Computers use a pseudo random algorithm in order to generate randomness; pseudo random is not a pure "random" , and could explain why some boards seems to be more common than expected. Another fact to be noticed is that the first square we click can never be a mine. This hurts the assumption of pure randomness."

Here's the math:

The number of different possibilities of choosing K objects out of N objects is known as (N above K) or N! / [K! * (N - K)!] where '!' sign means factorial, K! = K*(K-1)*(K-2)*...*1. It is the number of different possibilities in choosing K lottery numbers out of N possible numbers, or the number of possibilities of placing 10 mines in a board of 64 squares.

The number of possible beginner boards is: 64!/(10! * 54!) = 1.51e+11 or **151,473,214,816**.
The number of possible intermediate boards: 16*16 = 256 squares, 40 mines 256!/(40!*216!) = **1.05e+47**
The number of possible expert boards: 16*30 = 480 squares, 99 mines 480!/(99!*381!) = **5.6e+104**

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