

JAVA Implementation of Conway's Game of Life

The Game of Life (GoL) isn't exactly a game, but what we call a cellular automaton. It means that an amount of cells are following precise rules, for example, what are the conditions to live, or die, or reproduce, thus creating an environment where cells follow a society and can evolve in a very strange and interesting bacteria-like way.

The game consists of a two dimension table of Boolean (true/false values) with a chosen size. Each cell can be alive (1/true) or dead (0/false) ;

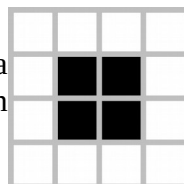
There are actually 4 rules along with that :

- Any living cell with fewer than two living neighbors dies, as if by under-population.
- Any living cell with two or three living neighbors lives on to the next generation.
- Any living cell with more than three living neighbors dies, as if by over-population.
- Any dead cell with exactly three living neighbors becomes a living cell, as if by reproduction.

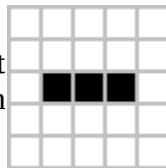
It is to be known that the « world » of the GoL is round (sorry for you, flat-earth theorists), meaning that if a moving structure is going through the leftmost boundary of the map, it will reappear at the rightmost one. Same for bottom and top.

I actually talked about a certain « moving structure » ; Indeed, there are known structures that are commonly known as « patterns ». It means that some groups of cells may organize themselves so that they move in patterns.

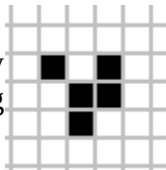
This thing, for example, is known as a square, or « block » ; it's a stable pattern that can only die if a moving structure hit it.



This is a blinker. At first it seems bland, but it actually turns around its center each generation. It is also stable.



This is a glider, it moves diagonally forever...well, until it encounters something else.



There are MANY other patterns, with an indefinite complexity. Actually, still to this day, scientists and mathematicians are searching for them. I suggest you to check them out on the Internet.

The GoL is also Turing Complete ; it means that –in theory– we can program anything we want, just as a language such as C or Java. Yeah, you read it right, we can code with GoL...but of course it's super duper hardcore. Though, some people managed to implement the GoL...in the GoL !

There are other cellular automata, such as the Ants of Langton, but the GoL is a good introduction to this domain.

I suggest you to read the README.md and check out those videos :

French : <https://www.youtube.com/watch?v=S-W0NX97DB0>

English : <https://www.youtube.com/watch?v=R9Plq-D1gEk>

This website and its wiki references ALL known structures :

www.conwaylife.com

www.conwaylife.com/wiki