

# Conway's Game of Life

Daria Lyubaeva  
Mikhail Kudimov

Higher School of Economics

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The universe of the famous automation is an infinite, two-dimensional orthogonal grid of square cells, each of which is in one of two possible states, alive or dead. Every cell interacts with its eight immediate neighbours, which are the cells that are horizontally, vertically, or diagonally adjacent. At each step in time, the following transitions occur:

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

# Main algorithm

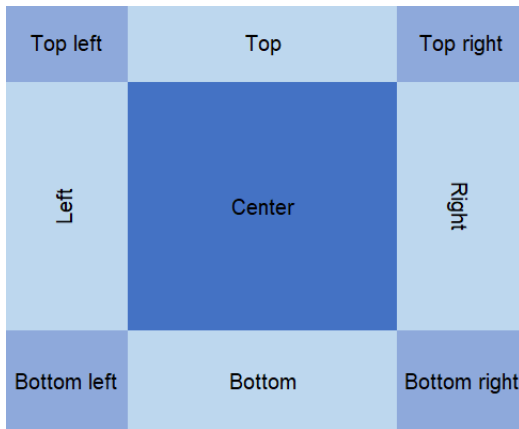


Figure: Reachability of cells for effective looping of the field

A custom control - derived from a button - was designed to imitate a cell. For these purposes, it has the following properties:

- X and Y coordinates (relating to its position on a given field, calculated on startup for a specific screen resolution): integers
- State: integer, either 0 or 1, for calculation purposes, changed on click

For pattern storage, a very simple form of lossless data compression was used: RLE (run-length encoding).

- Dead and living cells are represented by the characters 'b' and 'o' respectively
- End of line is encoded by the character '\$'
- The character '!' signifies the end of file
- Each character is preceded by a counter - the number of its *runs*. If the counter is 1, it may be omitted
- A string containing the dimensions of the rectangle a certain pattern it is fitted in and general info about this pattern is followed by its encoding

Thank you for your attention!