Guardicore

Game of Life

The Game of Life is a zero-player game, meaning that its evolution is determined by its initial state, requiring no further input.

Rules

The universe of the Game of Life is an infinite grid (∞✖∞) of square cells each of which is in one of two possible states, alive or dead. Every cell interacts with its eight neighbours. At each step in time, the following transitions occur:

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

At the end of each step all cells change their state at once (will never be gradual).

Assignment

Write a program that given an input of cells state, will generate the next stage in the Game of Life. All structures in the game are undefined and feel free to use or implement anything you think will be needed to accomplish this task.

Evaluation

The task will be evaluated by the following order of parameters:

1. Correctness
2. Efficiency (time complexity big O notation)
3. Code Quality, Design & Readability

Good Luck!