

Cell Life Simulation

Consider a rectangular grid of dimensions $M \times N$. The initial configuration of cell life will be provided as an input file. Cell life should be simulated for the next 100 generations.

A generation of cell life passes to the next generation by adhering to the following rules:

1. A cell having four or more neighbors will die due to overpopulation.
2. A cell having exactly two or three neighbors will survive the next step.
3. A cell having one or zero neighbors will die due to under population.
4. A dead cell with exactly three neighbors will get a life.

Problem Constraints:

Each cell can only access its neighboring cells (at most 8). Ignore the simulation outside the grid dimensions.

Input Format:

The first line of the input specifies two integers separated by a space - M, N . The next M rows contain N characters each. '-' (ASCII 45) indicates a dead cell, whereas '*' (ASCII 42) indicates a live cell. The dimensions will not exceed 1000×1000 size.

Input:

3 5

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--*--
--*--
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Output: (where // -> comments)

At step=1: // Cell at (1,3), (3,3) die (Rule 3.). Cell at (2,3) lives (Rule 2.). New cells come up at (2,2), (2,4) (Rule 4.)

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At step=2: // The configuration is reverted back to the initial configuration.

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.... // For the next 98 steps, the configuration keeps alternating.