

Alice and the Game of Life

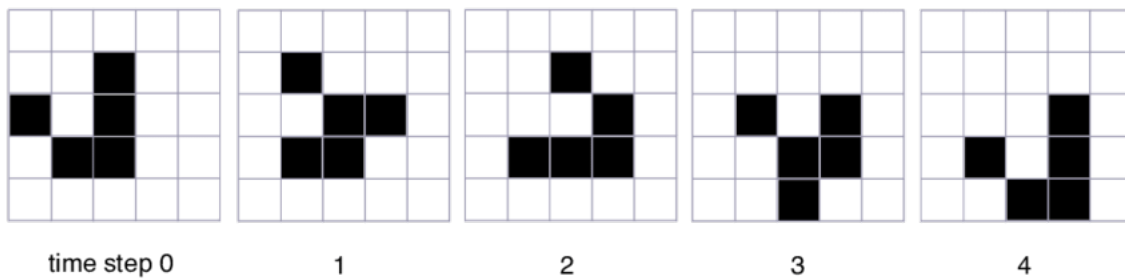
Problem ID: alicegameoflife

Alice, the Mathematician-in-training, is recently fascinated by Conway's Game of Life: evolution of the universe on a piece of paper!

The universe is modeled as an infinite grid of square cells, each of which can be in either "live" or "dead" states. Each cell has eight "neighbors": the horizontally, vertically, or diagonally adjacent cells. At each step in time, the universe evolves by applying the following rules to all the cells in parallel.

1. Any live cell with fewer than two live neighbors dies due to "underpopulation."
2. Any live cell with two or three live neighbors continues to live.
3. Any live cell with more than three live neighbors dies due to "overpopulation."
4. Any dead cell with exactly three live neighbors becomes a live cell, as if by "reproduction."

Despite these simple rules, it creates complex universes full of interesting patterns. One example, called a "glider" because it repeats itself while moving indefinitely, is shown below:



Alice is pondering upon the problem of whether a given initial state would eventually go into some loop and is asking you for help. Since Alice doesn't want you to spoil all the fun by solving the whole problem for her, your task is to output the next state of a cell, given the current states of its neighbors and itself.

Input

The input contains a single line containing 9 space-separated 0 or 1s. 0 represents the "dead" state, and 1 represents the "live" state. The first number represents the current state of the cell in question. The rest 8 numbers are the states of its upper-left, up, upper right, left, right, lower-left, down, and lower-right neighbors, in that order.

Output

Output a single line with either 0 or 1, denoting the cell's next state.

Sample Input 1	Sample Output 1
1 1 0 0 0 0 0 0 0	0
Sample Input 2	Sample Output 2
1 1 0 0 0 0 0 1 0	1
Sample Input 3	Sample Output 3
1 1 1 0 0 1 0 1 0	0
Sample Input 4	Sample Output 4
0 1 0 0 0 1 0 1 0	1