

Below is an example 4 x 4 grid containing three newborns, one adult, and one senior.

	1		
	1	3	
		1	
	2		

## Neighbors

The “neighbors” of a cell are the eight cells immediately surrounding it orthogonally or diagonally. For example, the senior in the example above has three neighbors, all of them newborns. The adult in the example above has only one neighbor, also a newborn.

Note that edge cells have only 5 potential neighbors, and corners have only 3.

## Ruleset

In each generation, compute the new value for the grid by the following rules:

Old Cell	Rule	New Cell	Comment
empty	Exactly 2 <u>adult</u> neighbors	1	Reproduction
	otherwise	empty	No change
1 (newborn)	$\geq 5$ total neighbors	empty	Overcrowding
	$\leq 1$ total neighbors	empty	Isolation
	otherwise	2	Growing up
2 (adult)	$\geq 3$ total neighbors	empty	Overcrowding
	Zero neighbors	empty	Isolation
	otherwise	3	Aging
3 (senior)	All conditions	empty	“Natural Causes”

## Generation Example

The diagram illustrates the transformation of a 5x5 grid from Generation 1 to Generation 2. The grid is divided into four quadrants by a central vertical line. The left half represents Generation 1, and the right half represents Generation 2. The values in the grid are as follows:

		1		
		1	1	
	2	2	1	
			1	

→

		2		
	1		2	
	3		2	
	1	1	2	

- Three newborns are born near the pair of adults at (1,2) and (2,2).
- One of the adults has 2 neighbors and ages. The other has 5 and dies of overcrowding.
- The newborn at (2,1) dies of overcrowding
- All the other newborns grow up to become adults.

### Question

If the following 10x10 grid is Generation 1, what is Generation 20? Provide your answer in any format you like so long as it's readable. Here is a link to a markdown file with copy/pastable initial data and test cases

[https://drive.google.com/file/d/1W3PJvXA-4n\\_J6zqQgoVi167thRzGpWL/view?usp=sharing](https://drive.google.com/file/d/1W3PJvXA-4n_J6zqQgoVi167thRzGpWL/view?usp=sharing)

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