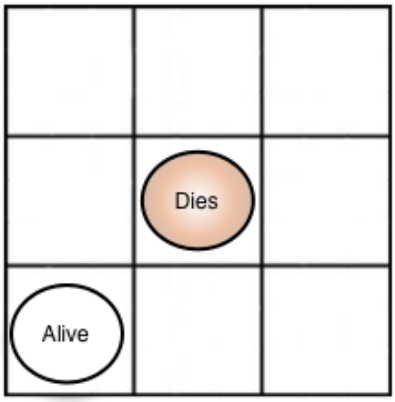
The Game of Life

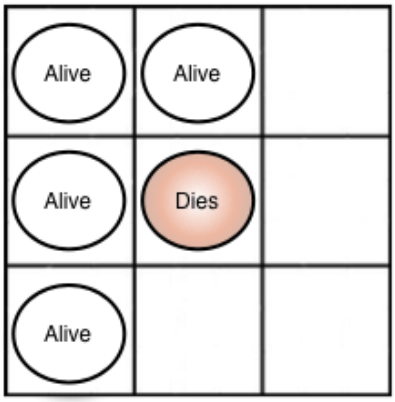
Life is played on a grid of square cells--like a chess board but extending infinitely in every direction. A cell can be ***live*** or ***dead***. A live cell is shown by coloring its square. A dead cell is shown by leaving the square empty. Each cell in the grid has a neighborhood consisting of the eight cells in every direction including diagonals.

To apply one step of the rules, we count the number of live neighbors for each cell. What happens next depends on this number.

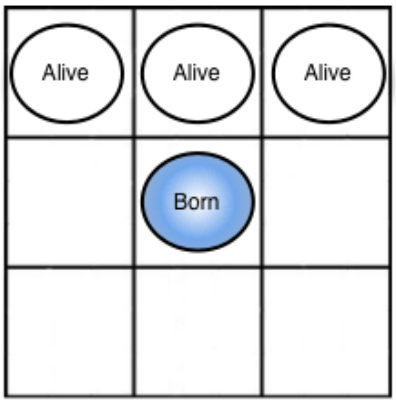
1. Any live cell with fewer than two live neighbors dies, as if by isolation.



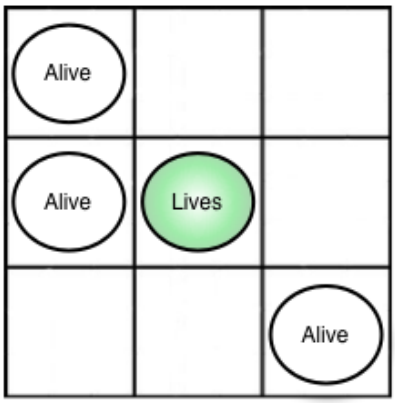
2. Any live cell with more than three live neighbors dies, as if by overcrowding.



3. Any dead cell with exactly three live neighbors becomes a live cell, as if by reproduction.



4. Any live cell with two or three live neighbors lives on to the next generation.



Note: The number of live neighbors is always based on the cells ***before*** the rule was applied. In other words, we must first find all of the cells that change before changing any of them

Example:

Day 1

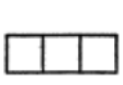
		0	0	0	0	0	
	0	1	2	3	2	1	0
	0	1	1	2	1	1	0
	0	1	2	3	2	1	0
		0	0	0	0	0	

Day 2

				1			
			3	2	3		
				1			

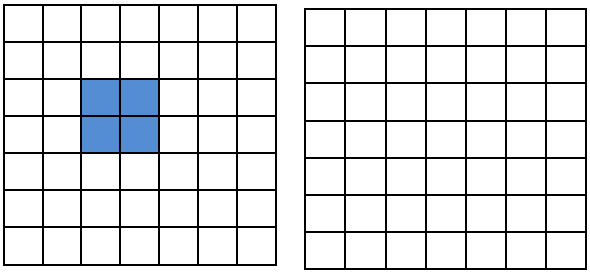
Day 3

			1	2	1		

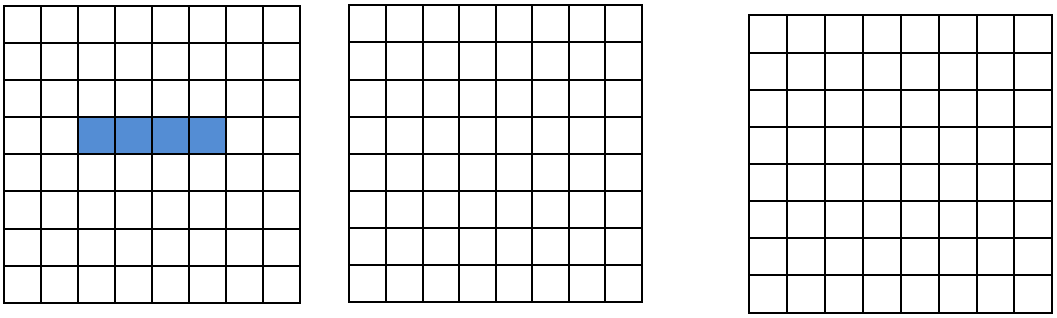
Problem 1: Work out what happens to the two trominoes.  and 

Problem 2: Work out what happens to the tetrominoes:

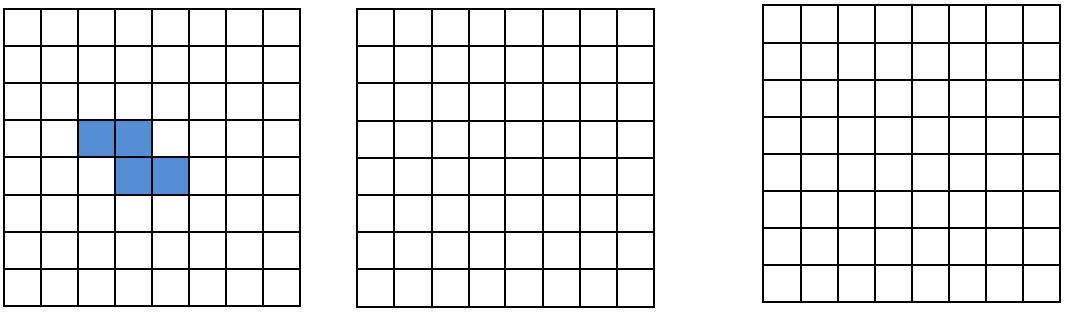
a) the square tetronimo



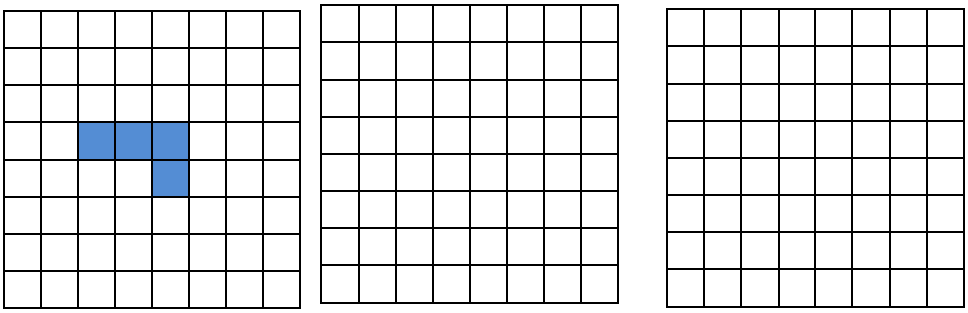
b) the straight tetromino,

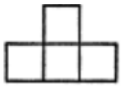


c) the S-tetromino,

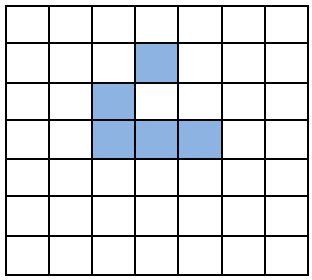
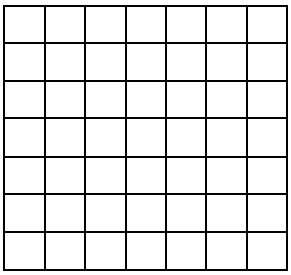
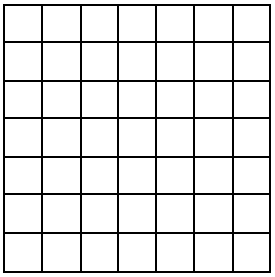
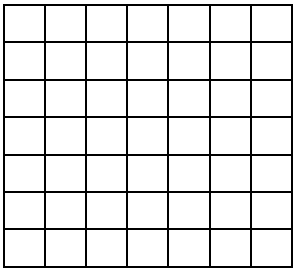
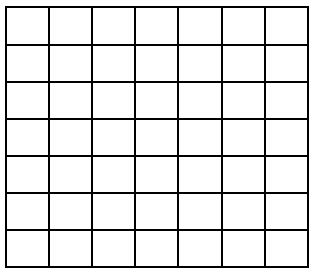
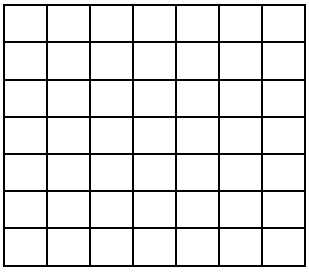


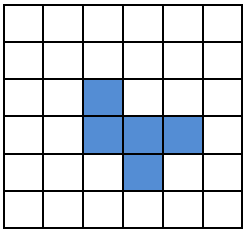
d) the L-tetronimo,



e) the T-tetromino 

Problem 3: What happens to

Problem 4: Work out what happens to  (F-pentomino). (Just kidding…)

http://www.math.com/students/wonders/life/life.html

http://www.bitstorm.org/gameoflife/