CMSC21 Lab Exercise 17 – Conway's Game of Life

In Life, a board represents the world, and each cell represents inhabitants of that world. A cell is either alive or dead. In the next generation, cells either live or die according to the following rules:

Survival: A live cell remains living if it has either two or three live neighbours. (Each cell has eight neighbours.)

Loneliness: A live cell dies if it has fewer than two live neighbours.

Crowding: A live cell dies if it has more than three live neighbours.

Birth: A dead cell becomes a live cell if it has exactly three live neighbours.

https://en.wikipedia.org/wiki/Conway%27s_Game_of_Life

Implement Life using a 20x20 2-dimensional array.

Create a function that displays N generations of a board, given a board with a starting configuration.

Call that function given at least 4 sample initial configurations:

https://en.wikipedia.org/wiki/Conway%27s_Game_of_Life#Examples_of_patterns

Hints:

Maintain a separate 2D array called nextGeneration, and set each cell in that board to be alive or dead depending on the number of that cell's live neighbors. Remember: cells have 8 neighbors, except for those on the edge of the board (5 neighbors), and those on the corners (3 neighbors). (Hmm, counting the number of live neighbors given a board sounds like a separate function.)

After setting the value of all cells in nextGeneration, copy that array into the original (sounds like a separate function!)

The display the original array with the next generation values (sounds like a separate function!)

Repeat this for N number of generations!