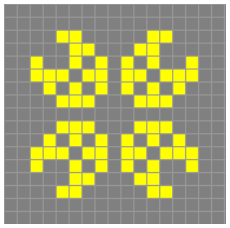
De La Salle University
CSC504C
Machine Project Milestones

Game of Life



The Game of Life is a cellular automaton devised by the British mathematician John Horton Conway in 1970. It is the best-known example of a cellular automaton.

The "game" is a zero-player game, meaning that its evolution is determined by its initial state, needing no input from human players. One interacts with the Game of Life by creating an initial configuration and observing how it evolves.

Rules in the game of life

For a space that is 'populated':

Each cell with one or no neighbors dies, as if by loneliness.
Each cell with four or more neighbors dies, as if by overpopulation.
Each cell with two or three neighbors survives.

For a space that is 'empty' or 'unpopulated'

Each cell with three neighbors becomes populated.

<u>Milestone 1</u>

Implement the Cell class. The class is responsible for representing a single cell in the game of life. The following are the states that it has to keep track of and its responsibilities

- Keeps track of its state (dead or alive)
- Keeps track of its neighbors
- Identifies if it will live or die in the next iteration given knowledge of its neighbors

<u>Milestone 2</u>

Implement the CellWorld class. This class is responsible for keeping track of the world where all cells reside. The following are the state that it has to keep track of and its responsibilities

- Keeps track of all cells existing in the world
- When the CellWorld is created, the number of rows and columns in the world are provided and a Cell is placed in each location in the world.
- The state of a specific Cell in the world can be set.
- The CellWorld can be asked to take a single step of iteration which will inform all cells of their neighbors and update their states causing them to either live or die.

Milestone 3

Start the CellWorld and initialize it to any initial configuration. Create a window that will contain the graphical representation of the CellWorld. Create a button that will allow a single step of iteration and update the graphical representation of the world. The user should be able to repetitively click on the button to see the iteration of the CellWorld.

Milestone 4

Modify the graphical window such that a Start and Stop buttons will allow the starting and stopping of the iteration in the CellWorld instead of continuously clicking on the single step button.

Create a Load button which will allow the user to load a configuration from a text file instead of the default configuration of the CellWorld.

Bonus Milestones

- Allow the user to graphically create the initial configuration of the CellWorld.
- Allow the user to graphically modify the configuration of the CellWorld.
- Allow the user to specify the size of the CellWorld.
- Provide background music