

Specification for Conway's Game of Life

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I. Overall Description

A menu-driven C program, which implements Conway's LIFE model. The rules are based on the rules on Wikipedia (https://en.wikipedia.org/wiki/Conway%27s_Game_of_Life).

The program used CLI for its user interface and comprises of 3 game modes:

1. Randomize Board.
2. Draw Board.
3. Load board from file.

The detailed description of each game mode can be found below.

II. Game Start

The game should greet the user with a Welcome Screen, at which the user can Press Enter to proceed to a menu to choose their game mode.

The menu will show 3 modes as described above. The user should input a number between 1 and 3 for the designated mode. Any number outside this range will lead the user into Mode 1.

III. Game Setup

Before Mode 1 and Mode 2 starts, the game will ask users to input the Height and Width of the board that the game will play its simulation on.

If the inputs are positive integers, the game generates the board and proceeds to its designated mode. Else, users are prompted to input the Height and Width again.

IV. Mode 1: Randomize Board

The game will generate a board of User-defined Height and Width. Each cell's value is randomized, then the board is stored for animation.

V. Mode 2: Draw Board

The User uses Arrow Keys to move around the generated board (In the game setup phase) and toggle the cell's state using Enter key.

After drawing the board, the user can press Escape to proceed to the animation of the board.

VI. Mode 3: Load the Board from file

The User input a filename that contains board data. If this file exists and is valid, the game loads it and generates a board based on it. Else, the User is prompted to enter the filename again.

VII. Animation of the Board

There are 2 modes of animation: Step-by-step and Continuous.


The default mode is Step-by-step. This mode can be toggled by pressing Arrow Right and it will render the Game of Life's board step-by-step.

The other mode is continuous. This mode can be toggled by pressing Arrow Down and it will render the Game of Life's board at a rate of 10 FPS.

Users can press Escape to escape the game and save the current stage of the game. After pressing Escape, they will have to enter a filename and the game would generate a save file of the current state of the board to the src folder.

VIII. Technical specification

Renders of game boards and screens are strictly restricted to ASCII characters and different colors alternation of them.

The board should be displayed using the  character. The boards are displayed with different colors of the characters and are composed of 3 components: Live Cell, Dead Cell and Border Cell. These components are rendered with different colors.

Except for the menu at the start and setup of the game, other inputs must be handled with econio such to simulate the real-time gaming experience (<https://github.com/czirkoszoltan/c-econio>). Colorings of outputs should also be handled with econio.

There should be a fake loading screen in between the phases of the game like game start and game setup to simulate the authenticity of the game. Everything would be boring if the games runs too fast, in other ways, we need to torture the users. Since the game runs with different screens, you must clear the current console screen before rendering the next one or the next stage of the game.