Graphics Project

Conway's Game of Life

Create a game with the following specifications using OpenGL library:

1. The game starts with a menu that has the title of the game, then two buttons as seen in figure 1.

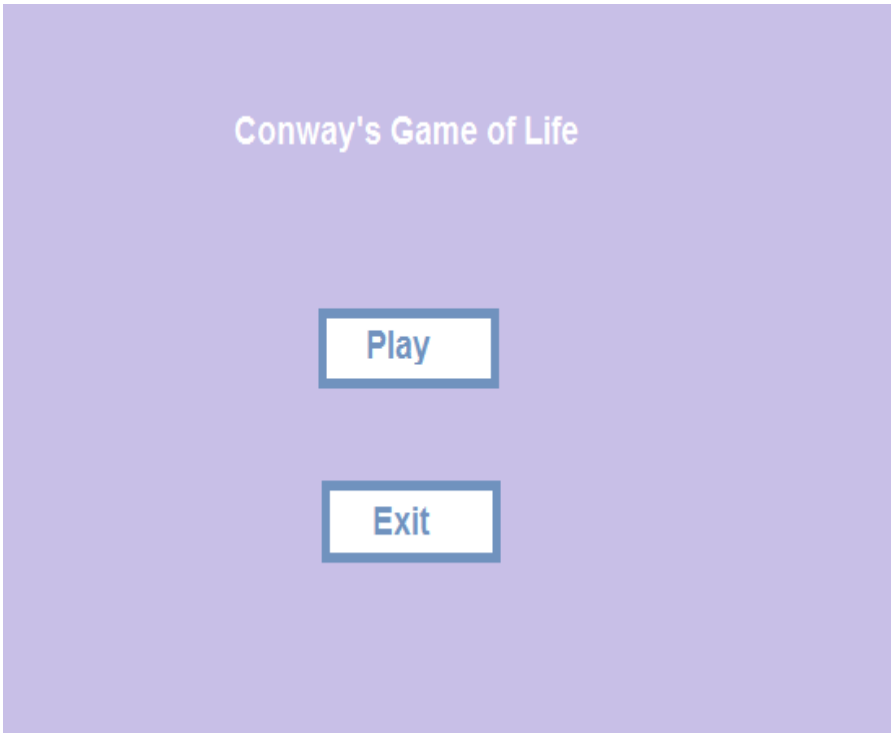

Figure 1 - Menu

2. The user selects the wanted button by pressing on it using the left button of the mouse.
3. If the Play button is selected from the menu the Conway's Game of Life starts, as seen in figure 2;
    a. the Conway's Game:
        i. The game takes place on a grid (the grid must be 50x50 squares at least)

ii. Each cell (square) in the grid can be in one of two possible states: Alive or Dead. A living state is indicated by a blue square; a dead state by a blank square.

iii. Each square is adjacent to eight others. These eight squares surrounding the square in question are referred to as its neighbors.

iv. Every simulation begins with a set of live cells. This is referred to as the initial population. (Technically, you could begin with all cells being dead, but that would make for a dull simulation.)

v. Then, the pattern evolves according to a certain set of rules. The set of rules determines what happens to each cell from one generation (configuration of live and dead cells) to the next.

vi. The rules:

Number of live neighbors	**State of cell in next generation**
0 or 1	Dead
2	Remains stable (If the cell is alive, it remains alive; if it is dead, it stays dead.)
3	Alive
4 or more	Dead

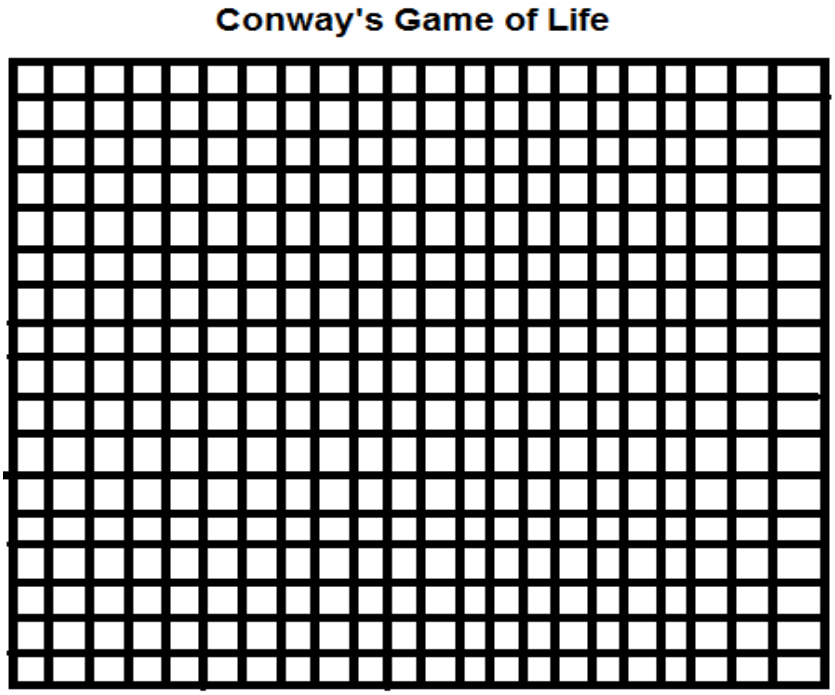

Figure 2 - Gameplay

b. The game starts by selecting the initial alive cells using the mouse; the alive states will be in blue, the dead ones will remain white, as seen in figure 3.

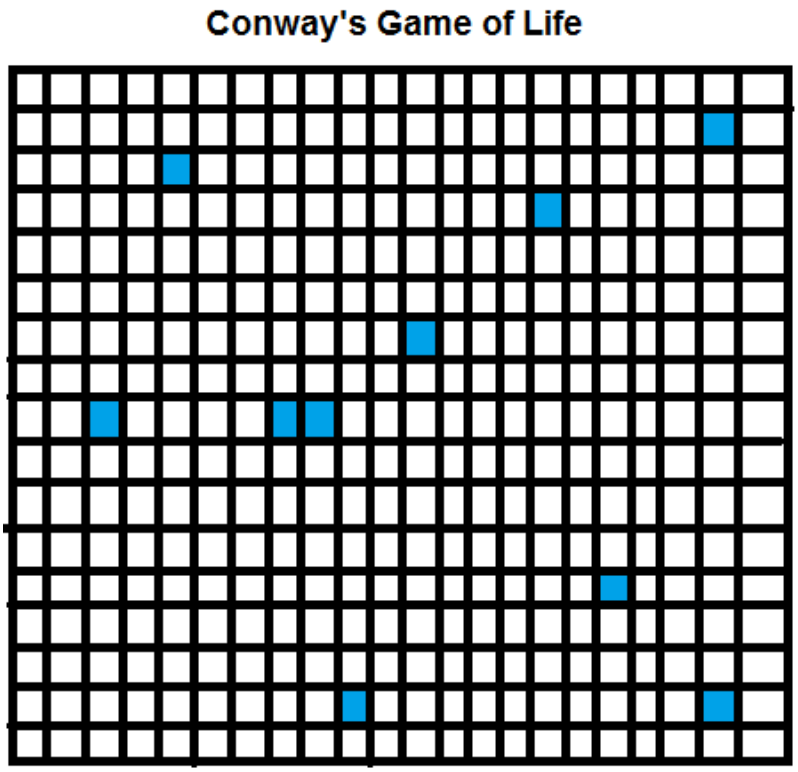

Figure 3 - The game after selecting the initial alive cells

c. The user then presses the right arrow from the keyboard to see the next generation. The user can press the right arrow key any number of times, with each press the next generation is shown.

d. Bonus: The user presses the left arrow from the keyboard to see the previous generations. The user can press the left arrow key any number of times, with each press the previous generation is shown.

e. If the user presses the F1 button, the game restarts from the beginning, but if the user presses the F2 button, the menu is opened.

4. If the QUIT button is selected from the menu, the game should be closed.

For more information about Conway's Game of Life:
https://home.adelphi.edu/~stemkoski/mathematrix/life.html