http://www.nickgentry.com/

Algoritmos e Estruturas de Dados

Disciplina 301477

Programa de Pós-graduação em Computação Aplicada

Prof. Alexandre Zaghetto
http://alexandre.zaghetto.com
zaghetto@unb.br

Universidade de Brasília
Instituto de Ciências Exatas
Departamento de Ciência da Computação

Pratica de Laboratório 05
Matrizes

1. Matrizes

Problema 1: *The Game of Life*, invented by John Conway in 1970, is an example of a zero-player "game" known as a cellular automaton. The game consists of a two-dimensional world extending infinitely in all directions, divided into "cells." Each cell is either "dead" or "alive" at a given "generation." The game consists of a set of rules that describe how the cells evolve from generation to generation. These rules calculate the state of a cell in the next generation as a function of the states of its neighboring cells in the current generation. In a 2-D world, a cell's neighbors are those 8 cells vertically, horizontally, or diagonally adjacent to that cell. At each step in time, the following transitions occur:

1. Matrizes

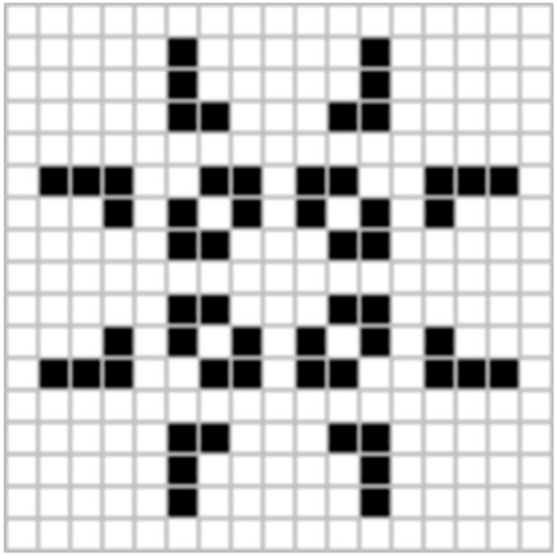
I. Any live cell with fewer than two live neighbors dies, as if caused by under-population.
II. Any live cell with two or three live neighbors lives on the next generation.
III. Any live cell with more than three live neighbors dies, as if by overcrowding.
IV. Any dead cell with exactly three live neighbors becomes a live cell, as if by reproduction.

In this lab, we will implement Conway's Game of Life, with the minor restriction that our 2-D world is finite. The neighbors of a cell on the edge of the world that would be beyond the edge are assumed dead. You can read more about Conway's Game of Life on Wikipedia at http://en.wikipedia.org/wiki/Conway%27s_Game_of_Life.

Este problema foi adaptado do curso *6.087: Practical Programming in C* promovido pelo Massachusetts Institute of Technology (MIT) , Department of Electrical Engineering and Computer Science.

1. Matrizes

Declare uma matriz, definida conforme a ilustração abaixo, que representa a geração inicial do autômato.



Escreva um programa que implementa o jogo da vida e mostra o estado de cada geração utilizando as funções da PlayCB (http://playapc.zaghetto.com/).