

Gebze Institute of Technology
Department of Computer Engineering
CSE 241/501
Object Oriented Programming
Fall 2014
Homework # 4
Due date Oct 27th 2014

In this homework, you will write your game of life program in C++ using object oriented techniques.

First, write a class named **Cell** to represent a game of life cell. The class **Cell** will hold the X and Y positions of the cell (both int values). This class will also include all necessary setters/getters, constructors etc.

Next, write a class named **GameOfLife** to represent and play the game. The class **GameOfLife** will hold a vector of **Cell** objects to represent the living cells. In other words, this class will have **vector<Cell> livingCells;** in its private section.

The class **GameOfLife** will also have the following features and functions

- There is no limit for the board. Your game will dynamically expand and shrink as needed. This is easy in your case because you are not keeping a two dimensional board of cells as you data.
- The class will have functions to read and write from files. You will decide on the file format.
- The class will have functions to return the current width and height of the board
- The class will have a function that displays the current board on the screen
- The class will have a function named play that plays the game for a single time step
- The class will have a static function that returns the number of living cells in all the games. Be careful here because there could be more than one game active at the same time.
- The class will have a function that takes another object **GameOfLife** as parameter and joins the living cells of the other game into this game.
- Any other functions (public or private) needed.

Write your main function to test both classes. Make at least 5 objects of class **GameOfLife** and play the games at the same time. Choose game configurations to show how your game board expands.

You will use all the object oriented techniques that we learned in the class including **const**, **static**, **inline** keywords.

Notes:

- Read about vectors in C++ at the end of chapter 7 in your book. Your vector should be one dimensional and you may use any vector members functions in your code.
- Do not use any C++ features that we did not learn during the lectures.

