CSE 1043/CSE143/CSE1143 **Fall 2015**

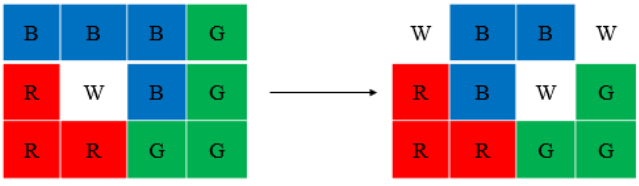
Programming Assignment #2 **Due to: December 13 Sunday 23:59**

In this programming assignment, you will design and implement a program to simulate a game called "Game of Life". The area of play is a two-dimensional surface divided into cells, each of which is in one of two possible states, alive or dead. Every cell interacts with its eight neighbors, which are the cells that are horizontally, vertically, or diagonally adjacent. There are four colors which are white (W), red (R), green (G), and blue (B).

The rules of the game is the following:

1. Game area is called as board and its size is *nxm* cells, where *n* are *m* are the number rows and columns, respectively.
2. Initially, all the life on board is randomly generated by putting four different colors. Note that white cells represent dead cell.
3. If a cell is a dead cell (white)
    a. If three or more of its neighbors are of the same color, the cell will take the color of the neighboring cells. If there are two or more such neighboring cells with same colors, then we inspect the number of cells in each of these groups. If the number of cells in each group is the same (e.g. 3 red 3 blue neighboring cells) then the cell will take white color.
    b. Otherwise, it stays white.
4. If a cell is an alive cell (red, green, or blue)
    a. If there are at least two cells of the same color as the center cell and no other neighbor cell's color (except white) is dominant (in number), then the cell survives.
    b. Otherwise, the cell becomes a dead cell (goes to white)
5. In each generation, modifications on the board are made simultaneously and at the end of the generation.

You should write a program that prompts the user for the row (n) and column (m) of board. The board can be drawn from *5 x 5* sized to *50 x 50* sized (e.g. 15x40 , 50 x 25). Each generation should be clearly seen. Whenever you press the enter, the new board is created. If the user presses any key except for enter, the program must prompt the user asking if he or she wants to quit the game. If the user enters an uppercase or lowercase 'y', the program will end, otherwise the program continues.



Here is a sample run:

```
Please enter the number of row: 3
Please enter the number of column: 4
| B | B | B | G |
| R | W | B | G |
| R | R | G | G |
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| W | B | B | W |
| R | B | W | G |
| R | R | G | G |
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```

Submission Instructions

Please zip and submit all your files using filename YournumberPro2.zip (150713852PRO2.zip) to cse1043@gmail.com. In the subject line of the email, please mention the project number, student number and your name (Project2, 150713852, Emrah Aktaş). Do not leave the subject line empty.

1. Java source code (NameSurname.java – Use this format)
2. Report that contains the detail of your algorithm, implementation and screenshot. (.pdf)

Notes:

1. Write a comment at the beginning of the program to explain the purpose of the program.

2. Write your name and student ID as a comment.

3. Include necessary comments to explain your actions.

4. Select meaningful names for your variables.

Warning: All types of plagiarism will result in zero grade from the homework. No late submission will be accepted.

Grading:

1. Check if the inputs are valid (out range of board size)(5 points)
2. Modify and print game board after each generation (60 points)
3. Controlling of game ended (10 points)
4. Report (15 points)
5. Comments (5 points)
6. Correct email format (5 points)