Intro to Computer Science - Homework

Minesweeper

Minesweeper is a popular game on Windows. You can try playing the game under: `http://minesweeperonline.com/`. The target of the game is to guess where the mines are located within a board. The game is played as follows:
The player is given a square board of tiles (N x N). All tiles are hidden and their values are not shown. A tile can contain one of the following values: a mine, blank, or a number that indicates how many mines are in the neighborhood (8 neighbors) of the tile.

The player then is given the chance to choose a tile (row and column position). Depending on what is under that chosen tile, three outcomes exists:

- there is a mine, the game is lost.
- it is a tile number, so that tile is uncovered (showing the number to the player). The game continues.
- it is a blank tile, then all adjacent tiles that are blank or the ones that have numbers are revealed. I.e., all blank tiles in the neighborhood are uncovered until a boundary is reached or a number is reached along the path. Then the game continues.

The game is won only when all tiles (except the ones with the mines) are uncovered.

1 Your task

Your task is to implement the game using Classes and Processing.

- create a Tile class. A Tile class has the following attributes: the tile row, the tile column, a tile value, the tile status (hidden or uncovered), and the corresponding image.
- create a Minesweeper class that creates a board that is N x N and has M mines that are randomly distributed within the board
- create the main logic of the game: the user can click on a tile and reveal its content, opening the empty tiles, checking for game win, etc.

Remember: Now that we are using classes, you don't need to create a 2D list (list of lists) and your board can simply be a flat 1D list. This is because the row and column values of each tile are stored within the tile object.

2 Further reading

`https://www.quora.com/How-do-I-play-Minesweeper`
`http://minesweeper.info/`

3 Grading scheme

Functionality	Points (total 20)
Properly creating classes	4
Properly creating board	2
Allow expanding the board and # of mines	2
Randomly distributing mines	2
Displaying correct numbers around mines	2
Properly uncovering tiles using recursion	4
Checking for win/lose conditions	2
Adding meaningful comments to the code	2