

Software Development, 2020-2021

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Lab session 4-6: Minesweeper

Goal

The goal of this lab sessions is to learn how to use **inheritance and dynamic method binding** in a more complex application.

Rules of the game

The object of the game is to locate all the mines on a board with squares, as quickly as possible. The game is won when all the squares that are not mines are clicked open. During the game a timer and the number of mines left can be shown on the display (you do not have to implement the timer).



What happens when a player (left-)clicks on a square:

- when the square contains a mine, the game is over (lost) and all mines are shown; the first click on a board never hits a mine (if there is a mine on that position, you can move it to another location first, f.i. upper-left corner of the board ior you can use a more intelligent algorithm)
- when the square contains no mine, the square opens and shows a number (0 is not shown; this is seen as an “empty square”) indicating the number of mines in the adjacent eight (or less) squares; if the number is 0 or the square is empty, all squares touching this square are opened too (and so on)

What happens when a player right-clicks on a square:

- if the square shows no flag, a flag appears over the square (this is an intent to mark a square as a mine) and the number of mines left is decremented in the display
- if the square shows a flag (so you execute a second right-click), the flag will be removed and the number of mines left is incremented in the display

You can make the size of the board and the number of mines variable.

Some examples of the number of mines on a board:

- Beginner board: 10 mines on an 8-by-8 board
- Intermediate board: 40 mines on a 16-by-16 board
- Expert board: 99 mines on a 16-by-30 board

More information can be found on the Minesweeper Community website:

<http://www.minesweeper.info/>.

Assignment

Develop and implement the body of the Minesweeper game. A user interface can be attached later, but it is not the main goal of this exercise.