Programming Technology
Assignment 2

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Task: 6

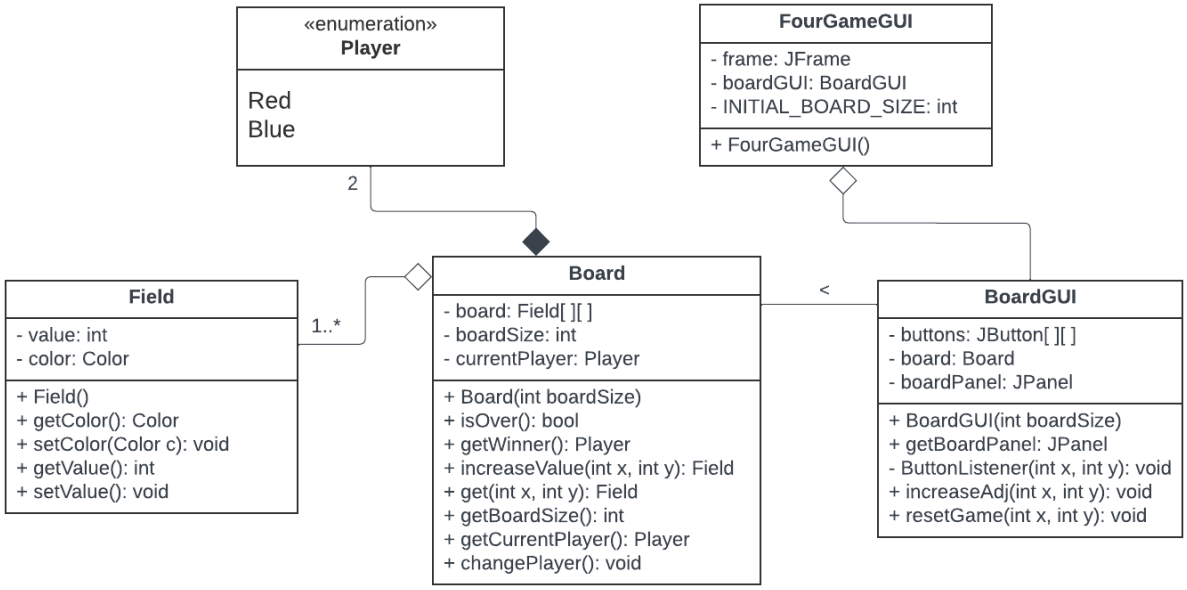
Description:

This two-player game is played on a board consisting of n x n fields, where each field contains a value between 0 and 4. Initially, all the fields contain the value of 0. If a player chooses a field, then the value of the field and its neighbors are incremented by one (if the value is less than 4). The player's score represents how many fields he makes to have the value of 4. If a value of a field reaches 4, then the field is colorized with the color of the actual player (red or blue). The game ends when all fields have the value of 4. The player having the higher score wins. Implement this game, and let the board size be selectable (3x3, 5x5, 7x7). The game should recognize if it has ended, and it has to show in a message box which player won. After this, a new game should be started automatically.

Description of classes and methods:

- FourGame: the main class where the game is called
- FourGameGIU: menu window that gives us options to choose which board size we want to play and if we want to exit the game
- BoardGUI: game window where the visual representation of the game happens
    - ButtonListener(int x, int y): this function is the one responsible for keeping track of clicks on buttons changing their values, colors and showing final message
    - increaseAdj(int x, int y): this function takes the clicked field parameters and increases the values of its neighbors, sets their colors if needed
    - resetGame(): resets the whole game
- Board: this class initializes the board, keeps track of the players
    - isOver(): checks if all of the fields equal 4 to finish the game
    - getWinner(): returns the Player who has more fields
    - increaseValue(int x, int y): returns the Field with increased value
    - changePlayer(): changes the current player in every step
- Field: this class represents a field on the board. It has value and color
- Player: enum which represents two players: Blue and Red

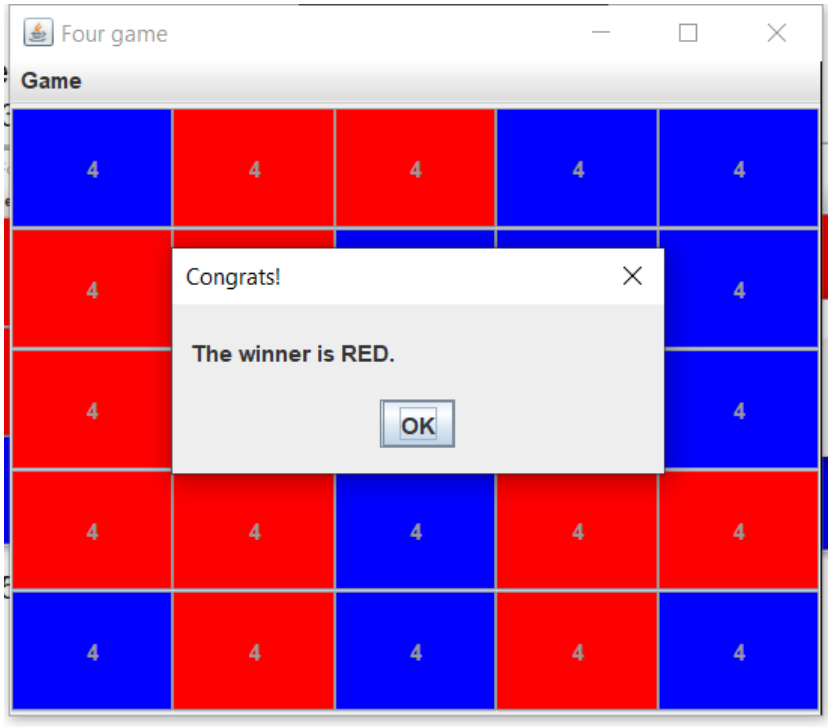
UML diagram:

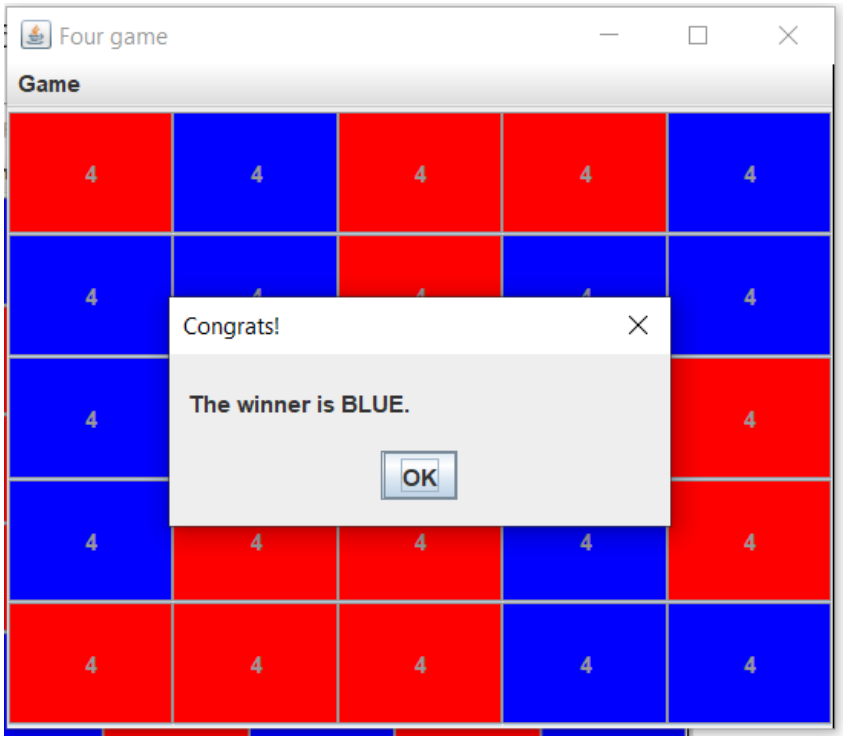


Test cases:

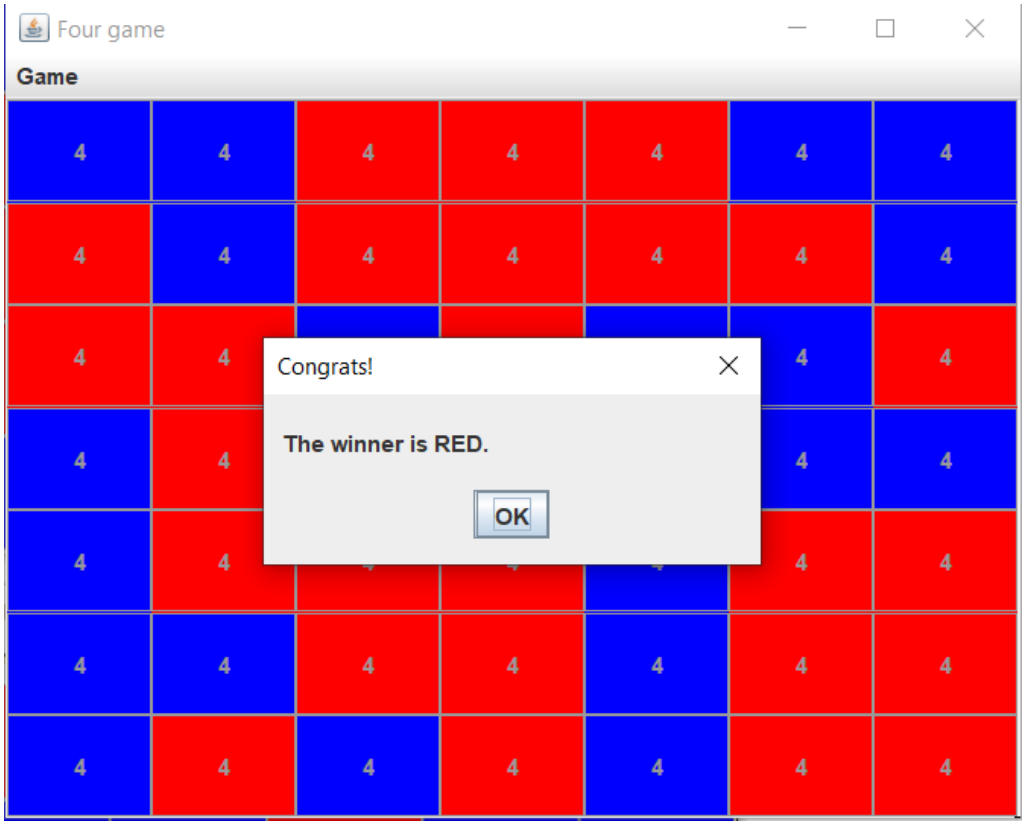
1. 3 x 3

2. 5 x 5


Four game
Game
Congrats!
The winner is RED.
OK


Four game
Game
Congrats!
The winner is BLUE.
OK

3. 7 x 7


Four game
Game
Congrats!
The winner is RED.
OK


Four game
Game
Congrats!
The winner is BLUE.
OK