

## Assignment 3

This assignment must be solved in Python 3.

### Problem 3.1 *Board Class*

Points: 1

Write a class for a Tic Tac Toe board. It should have

- a constructor that
  - creates an attribute `fields` (as a list of lists as before)
  - initializes all fields to be empty
  - creates an attribute `current` storing the current player (an integer that is 1 or 2)
  - initializes the current player to be 1
- a method `getField` that takes two integers (column and row) and returns the value of that field (0, 1, or 2)
- a method `getCurrentPlayer` that takes no arguments and returns `current`
- a method `__str__` that returns a string representing the board (similar to Assignment 1.1 but return a string, don't printit)

### Problem 3.2 *Making moves*

Points: 1

Add the following methods to the class from Problem 1:

- a method `makeMove` that takes two integers (row and column) and
  - makes a move in that field for the current player
  - switches the value of `current` to the other player
- a method `isOver` that returns `True` if the game is over. (A game is over if a player has won or all fields are filled.)
- a method `getResult` that returns the current result: 1 or 2 if a player has won, 0 otherwise

### Problem 3.3 *Game Class*

Points: 1

Turn your program from 1.3 into a class `Game` as follows:

- the constructor
  - takes two arguments — the names of the players — and stores them in attributes
  - creates an instance of `Board` and stores it in an attribute
- a method `run` that plays the game
  - It should print the board, ask players for their moves, and check for a winner as in 1.3.

- Moves should be recorded by calling the `makeMove` method of the `board`.
  - Checking for a winner should happen by calling the `isOver` and `getResult` methods of the `board`.
  - It should return the result of the game: 1 or 2 if there is a winner, 0 for a draw.
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You have to submit your solutions via *Grader* at <https://grader.eecs.jacobs-university.de>

**Unless mentioned otherwise, all problems are due  
Tuesday, February 23th, 18:00 h**

After the deadline it will not be possible to submit solutions. It is useless to send solutions then by mail because they will not be accepted.