CSCI 220 Homework
Tic-tac-toe

Learning objectives:

- Use lists.
- Practice function development.
- Practice indefinite loops.
- Practice constructs developed until this point in the semester through a game of tic-tac-toe

Tic-tac-toe game functions

For this assignment you are asked to write a modular solution to the game of tic-tac-toe, `ticTacToe.py`. You should use the code that you developed in lab. Here are functions you will need.

`buildBoard () → list`

- A method to build the board. This method should create a list of the numbers 1 – 9 and return that list.

`displayBoard (list) → void`

- A void method to display the board. (See sample displays below.)

`isLegal (board, spot) → boolean`

- A Boolean method to determine if a spot is a legal spot on the board.

`fillSpot (board, spot, char) → void`

- A void method to fill a spot on the board. This method will need to have the board, the position to be filled and the character to place in that position. Make sure that the spot is legal using the function above before you fill the spot.

`isGameWon (board) → boolean`

- A Boolean method to determine if the game has been won.

`isGameOver (board, numPlays) → boolean`

- A Boolean method to determine if the game is over. This should call the previously mentioned method plus check to make sure there are more plays allowed on the board.

Additionally, you must write a void function:

`playGame ()`

- A method to play the game of tic-tac-toe using a graphical interface. The graphical interface should include a 9x9 grid that allows for clicks within each section. Allow the user to click in a cell in the grid to add an "X" or an "O" depending on the click number. The first click should be an "X; the second an

"O"; the third an "X"; etc. until the game is over. Have a click in a given location modify the board list as is appropriate using your `fillSpot()`. Once the game is over, display an appropriate message in the window indicating which player wins or whether there was a tie. Create Yes/No buttons that give the user the option to play again. Using the author's `setCoords()` method from the `GraphWin` class might help you easily create a tic-tac-toe board. Your `playGame()` method should execute all of the functions written above.

Documentation and Style:
You are expected to appropriately document and format your program. This means at minimum inserting header information (file name, your name, program description, certification of authenticity), using meaningful variable names where appropriate, and using a consistent indentation style. You do not have to print an introductory message since this is not typically done in graphics-oriented programs. I also expect to see appropriate comments briefly explaining related code segments and each function. All policies are in effect for this assignment.

Submission:
Submit your completed ticTacToe.py file.

Upload the file (don't forget to submit).