Project 4: Tic-Tac-Toe

Using Python, students will create a Tic-Tac-Toe game. This project has two parts

1. Designing the game so that two users can play Tic-Tac-Toe against one another.
2. Creating a Tic-Tac-Toe checker which will check the board to see if Xs or Os have won the game.

Overview

Tic-Tac-Toe is a game in which one player draws X's and another player draws O's inside a set of nine squares and each player tries to be the first to fill a row, column, or diagonal of squares with either X's or O's. We will be writing an interactive Tic-Tac-Toe program. At the end of each turn the computer will check to see if X's have won the game or if the O's have won the game.

Behavior

- The program will prompt the user to enter their name and their opponents name.
- Whoever enters their name first will be playing as X's, and the other player will be O's.
- The players will take turns inputting the row and column they would like to place their mark.
- If that spot is already taken the program will ask for the spot again.
- At the end of each player's turn the program will
    - check if that player has won.
    - print the updated game board.
- If there are no more spots open and nobody has won the game, the program will print `Tie game!`.

Implementation Details

- Use variables to store the user names for personalized prompts.
- Create a game board represented as a list of lists, size 3 by 3. ***Note: This is a change from our earlier implementations of Tic-Tac-Toe. Why do you think this might be better?***
- Check for a winner horizontally, vertically, and on both diagonals.
- Cannot allow a user to overwrite a spot on the board.

Grading

Scheme/Rubric

Functional Correctness (Behavior)	
Program prompts user for name	2
Program marks board where user requested	5
Program prints a readable board after user's turn	5
Program won't overwrite value on board	5
Program reports who won or if there was a tie	15
Program ends after win, loss, or tie	3

Functional Correctness (Behavior)	
Sub total	35
Technical Correctness	
Correct use of game loop	5
Correctly indexes into lists of lists to store board	5
Correctly check board for mark	5
Check for winners on all three horizontals and verticals	20
Checks for winners on both diagonals	10
Sub total	45
Total	80