

- **Tic-Tac-Toe Game Programming**

- **Overview**

- In this assignment, you will be developing a text-based version of the classic Tic-Tac-Toe game using Python. The game will allow two players to play against each other, taking turns to mark their symbols (X and O) on a 3x3 grid. You'll write several functions to accomplish these tasks.

- **Function 1: `initializeBoard()` - 3 pts**

- Write a function called `initializeBoard()` that doesn't take any arguments and returns a 3x3 list (2D list) representing the Tic-Tac-Toe board. Each cell of the board should be initialized to an empty space.

- **Function 2: `displayBoard(board)` - 3 pts**

- Write a function called `displayBoard()` that takes a 3x3 list `board` as its argument and prints the board in a readable format, showing the current state of the game. The function should return `None`.

- **Function 3: `makeMove(board, player, row, col)` - 4 pts**

- Write a function called `makeMove()` that takes the board, the current player ('X' or 'O'), and the row and column indices of the move as arguments. The function should update the board with the player's symbol at the specified position if the position is valid and not already occupied. The function should return `True` if the move is successful and `False` otherwise.

- **Function 4: `checkWin(board)` - 4 pts**

- Write a function called `checkWin()` that takes the board as an argument and returns the symbol of the winning player ('X' or 'O') if there is a winner. The function should return `None` if there is no winner yet.

- **Function 5: `checkDraw(board)` - 3 pts**

- Write a function called `checkDraw()` that takes the board as an argument and returns `True` if the game is a draw (i.e., the board is full and there is no winner) and `False` otherwise.

- **Function 6: `switchPlayer(current_player)` - 3 pts**

- Write a function called `switchPlayer()` that takes the current player ('X' or 'O') as an argument and returns the other player.

- **Function 7: `playTicTacToe()` - 5 pts**

- Write a function called `playTicTacToe()` that runs the main loop for the Tic-Tac-Toe game.

- **Steps:**

- a. **Setup:** Print a welcome message and initialize the board using `initializeBoard()`. b. **Game Loop:** Create a while-loop that continues until there is a winner or the game is a draw. c. **Display Board:** Use `displayBoard()` to show the current state of the board. d. **Player Move:** Prompt the current player to enter the row

and column indices for their move. Use `makeMove()` to update the board. If the move is invalid, prompt the player to enter a valid move. e. **Check Win/Draw:** Use `checkWin()` to check if there is a winner and `checkDraw()` to check if the game is a draw. If there is a winner, print a congratulatory message. If the game is a draw, print a draw message. f. **Switch Player:** Use `switchPlayer()` to switch to the other player for the next turn. g. **Exit:** If there is a winner or the game is a draw, end the loop and print a game over message.

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