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Task Description:

design and implement a Tic-Tac-Toe game in Python using Object-Oriented Programming (OOP) concepts.

The game should allow the player to choose whether to play with a friend (human vs human) or against the computer (human vs computer).

Requirements:

1. Core Classes:

   - Player

     - Attributes: name, symbol (X or O).

     - Methods: make\_move(board).

   - HumanPlayer (inherits from Player)

     - Implements make\_move() by asking the user for input.

   - ComputerPlayer (inherits from Player)

     - Implements make\_move() by choosing a move automatically (random or simple strategy).

   - Board

     - Attributes: 3x3 grid.

     - Methods: display(), update(position, symbol), check\_winner(), is\_full().

   - Game

     - Attributes: players, board, current\_turn.

     - Methods: play(), switch\_turns().

2. OOP Concepts to Use:

   - Encapsulation: Keep the board grid private, only modify it using methods.

   - Inheritance: HumanPlayer and ComputerPlayer inherit from Player.

   - Polymorphism: make\_move() behaves differently depending on the type of player.

   - Special Methods: Implement \_\_str\_\_() for board display formatting.

3. Game Flow:

   - The program starts by asking:

     Do you want to play with a friend (1) or vs computer (2)?

   - If option 1 → two human players enter their names.

   - If option 2 → one human player enters their name, and the opponent is the computer.

   - Players take turns placing X or O on the grid.

   - After each move, the board is displayed.

   - The game checks if a player has won or if the board is full (draw).

   - Print the winner or “It’s a draw!” at the end.

Deliverables:

- A single Python script (tic\_tac\_toe.py).

- The game must run from the terminal using:

  python tic\_tac\_toe.py

- Code should be clean, well-structured, and commented.

- Every student must attach Code and screenshots of the game in BOTH modes (one with a friend and one against the computer) and place them inside a lab4 folder.

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