Mengnadeng

Tic-Tac-Toe

date:2022.10.12

In [*]:
```
# Function to print Tic Tac Toe
def print_tic_tac_toe(values):
    print("\n")
    print("\t     |     |")
    print("\t  {}  |  {}  |  {}".format(values[0], values[1], values[2]))
    print('\t_____|_____|_____')

    print("\t     |     |")
    print("\t  {}  |  {}  |  {}".format(values[3], values[4], values[5]))
    print('\t_____|_____|_____')

    print("\t     |     |")

    print("\t  {}  |  {}  |  {}".format(values[6], values[7], values[8]))
    print("\t     |     |")
    print("\n")


# Function to print the score-board
def print_scoreboard(score_board):
    print("\t--------------------------------")
    print("\t              SCOREBOARD       ")
    print("\t--------------------------------")

    players = list(score_board.keys())
    print("\t   ", players[0], "\t    ", score_board[players[0]])
    print("\t   ", players[1], "\t    ", score_board[players[1]])

    print("\t--------------------------------\n")

# Function to check if any player has won
def check_win(player_pos, cur_player):

    # All possible winning combinations
    soln = [[1, 2, 3], [4, 5, 6], [7, 8, 9], [1, 4, 7], [2, 5, 8], [3, 6, 9], [1, 5, 9]

    # Loop to check if any winning combination is satisfied
    for x in soln:
        if all(y in player_pos[cur_player] for y in x):

            # Return True if any winning combination satisfies
            return True
    # Return False if no combination is satisfied
    return False

# Function to check if the game is drawn
def check_draw(player_pos):
    if len(player_pos['X']) + len(player_pos['O']) == 9:
        return True
    return False

# Function for a single game of Tic Tac Toe
def single_game(cur_player):

    # Represents the Tic Tac Toe
```

```
    values = [' ' for x in range(9)]

    # Stores the positions occupied by X and O
    player_pos = {'X':[], 'O':[]}

    # Game Loop for a single game of Tic Tac Toe
    while True:
        print_tic_tac_toe(values)

        # Try exception block for MOVE input
        try:
            print("Player ", cur_player, " turn. Which box? : ", end="")
            move = int(input())
        except ValueError:
            print("Wrong Input!!! Try Again")
            continue

        # Sanity check for MOVE inout
        if move < 1 or move > 9:
            print("Wrong Input!!! Try Again")
            continue

        # Check if the box is not occupied already
        if values[move-1] != ' ':
            print("Place already filled. Try again!!")
            continue

        # Update game information

        # Updating grid status
        values[move-1] = cur_player

        # Updating player positions
        player_pos[cur_player].append(move)

        # Function call for checking win
        if check_win(player_pos, cur_player):
            print_tic_tac_toe(values)
            print("Player ", cur_player, " has won the game!!")
            print("\n")
            return cur_player

        # Function call for checking draw game
        if check_draw(player_pos):
            print_tic_tac_toe(values)
            print("Game Drawn")
            print("\n")
            return 'D'

        # Switch player moves
        if cur_player == 'X':
            cur_player = 'O'
        else:
            cur_player = 'X'

if __name__ == "__main__":
```

```
print("Player 1")
player1 = input("Enter the name : ")
print("\n")

print("Player 2")
player2 = input("Enter the name : ")
print("\n")

# Stores the player who chooses X and O
cur_player = player1

# Stores the choice of players
player_choice = {'X' : "", 'O' : ""}

# Stores the options
options = ['X', 'O']

# Stores the scoreboard
score_board = {player1: 0, player2: 0}
print_scoreboard(score_board)

# Game Loop for a series of Tic Tac Toe
# The loop runs until the players quit
while True:

    # Player choice Menu
    print("Turn to choose for", cur_player)
    print("Enter 1 for X")
    print("Enter 2 for O")
    print("Enter 3 to Quit")

    # Try exception for CHOICE input
    try:
        choice = int(input())
    except ValueError:
        print("Wrong Input!!! Try Again\n")
        continue

    # Conditions for player choice
    if choice == 1:
        player_choice['X'] = cur_player
        if cur_player == player1:
            player_choice['O'] = player2
        else:
            player_choice['O'] = player1

    elif choice == 2:
        player_choice['O'] = cur_player
        if cur_player == player1:
            player_choice['X'] = player2
        else:
            player_choice['X'] = player1

    elif choice == 3:
        print("Final Scores")
```

```
            print_scoreboard(score_board)
            break

        else:
            print("Wrong Choice!!!! Try Again\n")

        # Stores the winner in a single game of Tic Tac Toe
        winner = single_game(options[choice-1])

        # Edits the scoreboard according to the winner
        if winner != 'D' :
            player_won = player_choice[winner]
            score_board[player_won] = score_board[player_won] + 1

        print_scoreboard(score_board)
        # Switch player who chooses X or O
        if cur_player == player1:
            cur_player = player2
        else:
            cur_player = player1
```

```
Player 1
Enter the name : white


Player 2
Enter the name : black


        ------------------------------
                  SCOREBOARD
        ------------------------------
            white           0
            black           0
        ------------------------------


Turn to choose for white
Enter 1 for X
Enter 2 for O
Enter 3 to Quit
1
```

In [ ]: