LAB-1

TIC-TAC-TOE

CODE:-

```
def create_board():
    return [["-" for _ in range(3)] for _ in range(3)]

def display_board(board):
    for row in board:
        print(row)

def is_valid_move(board, row, col):
    return 0 <= row < 3 and 0 <= col < 3 and board[row][col] == "-"

def has_won(board, player):

    for i in range(3):
        if all(board[i][j] == player for j in range(3)) or \
           all(board[j][i] == player for j in range(3)):
            return True

    if all(board[i][i] == player for i in range(3)) or \
       all(board[i][2 - i] == player for i in range(3)):
        return True
    return False

def is_board_full(board):
    return all(cell != "-" for row in board for cell in row)

def tic_tac_toe():
    board = create_board()
    current_player = "X"
    move_count = 0

    while True:
        display_board(board)
        print(f"Enter position to place {current_player}:")

        try:
            row = int(input())
            col = int(input())
        except ValueError:
            print("Please enter valid integers for row and column.")
            continue
```

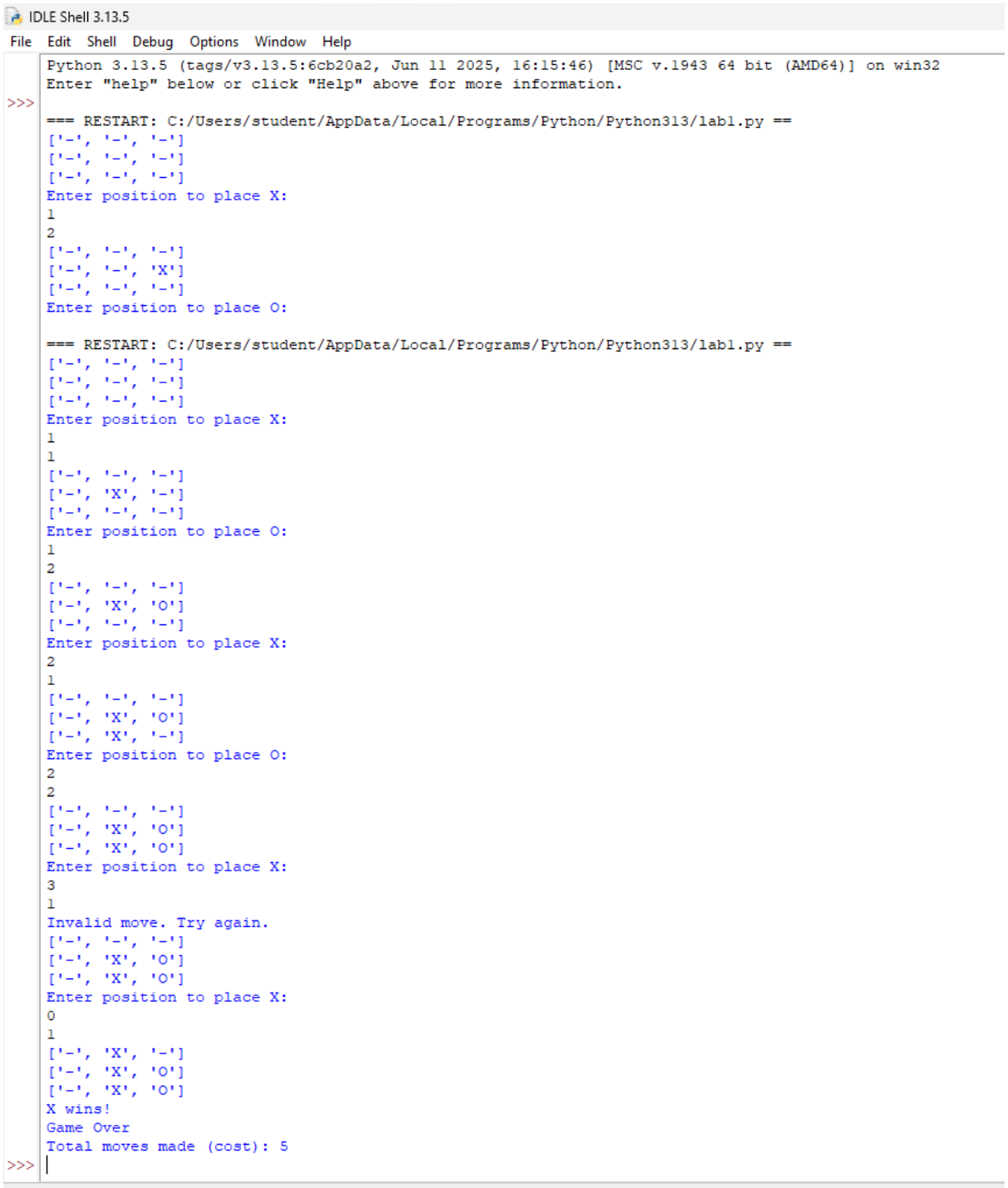
```
        if is_valid_move(board, row, col):
            board[row][col] = current_player
            move_count += 1

            if has_won(board, current_player):
                display_board(board)
                print(f"{current_player} wins!")
                print("Game Over")
                print(f"Total moves made (cost): {move_count}")
                break
            elif is_board_full(board):
                display_board(board)
                print("It's a draw!")
                print("Game Over")
                print(f"Total moves made (cost): {move_count}")
                break


            current_player = "O" if current_player == "X" else "X"
        else:
            print("Invalid move. Try again.")

if __name__ == "__main__":
    tic_tac_toe()
```

OUTPUT:-


IDLE Shell 3.13.5
File Edit Shell Debug Options Window Help
Python 3.13.5 (tags/v3.13.5:6cb20a2, Jun 11 2025, 16:15:46) [MSC v.1943 64 bit (AMD64)] on win32
Enter "help" below or click "Help" above for more information.
>>>
=== RESTART: C:/Users/student/AppData/Local/Programs/Python/Python313/lab1.py ==
['-', '-', '-']
['-', '-', '-']
['-', '-', '-']
Enter position to place X:
1
2
['-', '-', '-']
['-', '-', 'X']
['-', '-', '-']
Enter position to place O:
=== RESTART: C:/Users/student/AppData/Local/Programs/Python/Python313/lab1.py ==
['-', '-', '-']
['-', '-', '-']
['-', '-', '-']
Enter position to place X:
1
1
['-', '-', '-']
['-', 'X', '-']
['-', '-', '-']
Enter position to place O:
1
2
['-', '-', '-']
['-', 'X', 'O']
['-', '-', '-']
Enter position to place X:
2
1
['-', '-', '-']
['-', 'X', 'O']
['-', 'X', '-']
Enter position to place O:
2
2
['-', '-', '-']
['-', 'X', 'O']
['-', 'X', 'O']
Enter position to place X:
3
1
Invalid move. Try again.
['-', '-', '-']
['-', 'X', 'O']
['-', 'X', 'O']
Enter position to place X:
0
1
['-', 'X', '-']
['-', 'X', 'O']
['-', 'X', 'O']
X wins!
Game Over
Total moves made (cost): 5
>>>