Future Intern as Python Development

Task 3

Task: Tic Tac Toe Game

Develop a program that enables two players to play a game of tic tac toe. The program will display a 3x3 grid and allow players to take turns entering their moves. It will check for a win or a draw after each move and announce the result. The game will continue until there is a winner or the grid is full. Players can restart the game or exit after each round.

Solution:

```python
def print_board(board):
    print(f"{board[0]} | {board[1]} | {board[2]}")
    print("--+---+--")
    print(f"{board[3]} | {board[4]} | {board[5]}")
    print("--+---+--")
    print(f"{board[6]} | {board[7]} | {board[8]}")

def check_win(board, player):
    win_conditions = [
        [0, 1, 2], [3, 4, 5], [6, 7, 8],   # Rows
        [0, 3, 6], [1, 4, 7], [2, 5, 8],   # Columns
        [0, 4, 8], [2, 4, 6]               # Diagonals
    ]
    for condition in win_conditions:
        if all(board[i] == player for i in condition):
            return True
    return False

def check_draw(board):
    return all(spot in ['X', 'O'] for spot in board)
```

```python
def tic_tac_toe():
    while True:
        board = [str(i) for i in range(1, 10)]
        current_player = 'X'
        game_over = False

        print("Welcome to Tic Tac Toe!")
        print_board(board)

        while not game_over:
            move = input(f"Player {current_player}, enter your move (1-9): ")
            if not move.isdigit() or not (1 <= int(move) <= 9) or board[int(move) - 1] in ['X', 'O']:
                print("Invalid move. Please try again.")
                continue

            board[int(move) - 1] = current_player
            print_board(board)

            if check_win(board, current_player):
                print(f"Player {current_player} wins!")
                game_over = True
            elif check_draw(board):
                print("It's a draw!")
                game_over = True
            else:
                current_player = 'O' if current_player == 'X' else 'X'
```

```python
        play_again = input("Do you want to play again? (yes/no): ").lower()
        if play_again != 'yes':
            print("Thanks for playing! Goodbye!")
            break

tic_tac_toe()
```

```
Welcome to Tic Tac Toe!
1 | 2 | 3
--+---+--
4 | 5 | 6
--+---+--
7 | 8 | 9
Player X, enter your move (1-9): 5
1 | 2 | 3
--+---+--
4 | X | 6
--+---+--
7 | 8 | 9
Player 0, enter your move (1-9): 7
1 | 2 | 3
--+---+--
4 | X | 6
--+---+--
0 | 8 | 9
Player X, enter your move (1-9): 1
X | 2 | 3
--+---+--
4 | X | 6
--+---+--
0 | 8 | 9
```

```
Player 0, enter your move (1-9): 9
X | 2 | 3
--+---+--
4 | X | 6
--+---+--
0 | 8 | 0
Player X, enter your move (1-9): 8
X | 2 | 3
--+---+--
4 | X | 6
--+---+--
0 | X | 0
Player 0, enter your move (1-9): 6
X | 2 | 3
--+---+--
4 | X | 0
--+---+--
0 | X | 0
Player X, enter your move (1-9): 2
X | X | 3
--+---+--
4 | X | 0
--+---+--
0 | X | 0
Player X wins!
Do you want to play again? (yes/no): no
Thanks for playing! Goodbye!
```