# TIC-TAC-TOE USING PYTHON

**SUPRATIM NAG-CSE-AIML/22/57**
**AI ASSIGNMENT**

**SOURCE CODE:**

```python
# Tic-Tac-Toe Game in Python

# Function to print the Tic-Tac-Toe board
def print_board(board):
    for row in board:
        print("|".join(row))
        print("-" * 5)

# Function to check if a player has won
def check_win(board, player):
    # Check rows, columns, and diagonals for a win
    for row in board:
        if all([cell == player for cell in row]):
            return True
    for col in range(3):
        if all([board[row][col] == player for row 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

# Function to check if the board is full (draw)
def check_draw(board):
    return all([cell != ' ' for row in board for cell in row])

# Function to play the Tic-Tac-Toe game
def play_game():
    # Initialize the board
    board = [[' ' for _ in range(3)] for _ in range(3)]
    current_player = 'X'  # X will start the game

    while True:
        print_board(board)
        row = int(input(f"Player {current_player}, enter the row (0, 1, 2): "))
        col = int(input(f"Player {current_player}, enter the column (0, 1, 2): "))

        # Check if the move is valid
        if board[row][col] == ' ':
            board[row][col] = current_player
        else:
            print("This position is already taken. Try again.")
            continue

        # Check for a win or a draw
        if check_win(board, current_player):
            print_board(board)
            print(f"Player {current_player} wins!")
            break
        elif check_draw(board):
            print_board(board)
            print("It's a draw!")
            break

        # Switch players
        current_player = 'O' if current_player == 'X' else 'X'

# Start the game
if __name__ == "__main__":
    play_game()
```

**OUTPUT:**

```
PS C:\Users\SUPRATIM NAG\OneDrive\Documents\AI>
  | |
  -----
  | |
  -----
  | |
  -----
Player X, enter the row (0, 1, 2):



Player X, enter the row (0, 1, 2): 0
Player X, enter the column (0, 1, 2): 1
  |X|
  -----
  | |
  -----
  | |
  -----
Player O, enter the row (0, 1, 2): █

Player O, enter the row (0, 1, 2): 1
Player O, enter the column (0, 1, 2): 2
  |X|
  -----
  | |O
  -----
  | |
  -----
Player X, enter the row (0, 1, 2): █
```

```
Player X, enter the row (0, 1, 2): 1
Player X, enter the column (0, 1, 2): 1
 |X|
-----
 |X|O
-----
 | |
-----
Player O, enter the row (0, 1, 2): █
Player O, enter the row (0, 1, 2): 0
Player O, enter the column (0, 1, 2): 2
 |X|O
-----
 |X|O
-----
 | |
-----
Player X, enter the row (0, 1, 2): █
Player X, enter the column (0, 1, 2): 2
This position is already taken. Try again.
 |X|O
-----
 |X|O
-----
 | |
-----
Player X, enter the row (0, 1, 2): 2
Player X, enter the column (0, 1, 2): 1
 |X|O
-----
 |X|O
-----
 |X|
-----
Player X wins!
PS C:\Users\SUPRATIM NAG\OneDrive\Documents\AI> █
```