

TIC-TAC-TOE

AIM

To implement tic-tac-toe using Python.

ALGORITHM

1. ``print_board(board)``: Prints the current state of the Tic Tac Toe board.
2. ``check_winner(board, player)``: Checks if the specified player has won the game.
3. ``is_board_full(board)``: Checks if the board is full (no empty spaces left).
4. ``play_tic_tac_toe()``: Main function to play the Tic Tac Toe game. It initializes the board, players, and then iteratively takes turns from players until a win or a tie occurs.

CODE

```
def print_board(board):
    for row in board:
        print(" | ".join(row))
        print("-" * 5)
def check_winner(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(all(cell != ' ' for cell in row) for row in board)
def play_tic_tac_toe():
    board = [[' ']*3 for _ in range(3)]
    players = ['X', 'O']
    current_player = players[0]
    while True:
        print_board(board)
        print(f'Player {current_player}'s turn")
        row, col = map(int, input("Enter row and column (0, 1, or 2) separated by space: ").split())
        if board[row][col] == ' ':
            board[row][col] = current_player
```

```

    if check_winner(board, current_player):
        print_board(board)
        print(f"Player {current_player} wins!")
        break
    if is_board_full(board):
        print_board(board)
        print("It's a tie!")
        break
    current_player = players[1] if current_player == players[0] else players[0]
else:
    print("Cell already taken. Try again.")

```

play_tic_tac_toe()

OUTPUT

```

Player X's turn
Enter row and column (0, 1, or 2) separated by space: 1 1
|  | 
-----
| X | 
-----
|  | 
-----
Player O's turn
Enter row and column (0, 1, or 2) separated by space: 2 1
|  | 
-----
| X | 
-----
| O | 
-----
Player X's turn
Enter row and column (0, 1, or 2) separated by space: 1 0
|  | 
-----
X | X | 
-----
| O | 
-----
Player O's turn
Enter row and column (0, 1, or 2) separated by space: 2 2
|  | 
-----
X | X | 
-----
| O | O 
-----
Player X's turn
Enter row and column (0, 1, or 2) separated by space: 1 2
|  | 
-----
X | X | X 
-----
| O | O 
-----
Player X wins!

```