

```

import math

# Display the Tic Tac Toe board
def print_board(board):
    print()
    print(board[0] + " | " + board[1] + " | " + board[2])
    print("--+---+--")
    print(board[3] + " | " + board[4] + " | " + board[5])
    print("--+---+--")
    print(board[6] + " | " + board[7] + " | " + board[8])
    print()

# Check if a player has won
def check_winner(board, player):
    win_combinations = [
        [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 combo in win_combinations:
        if all(board[i] == player for i in combo):
            return True
    return False

# Check if the board is full
def is_full(board):
    return all(cell != ' ' for cell in board)

# Minimax algorithm
def minimax(board, depth, is_maximizing):
    # Base cases
    if check_winner(board, 'O'):
        return 1
    if check_winner(board, 'X'):
        return -1
    if is_full(board):
        return 0

    if is_maximizing: # Computer's turn
        best_score = -math.inf
        for i in range(9):
            if board[i] == ' ':
                board[i] = 'O'
                score = minimax(board, depth + 1, False)

```

```

        board[i] = ' '
        best_score = max(score, best_score)
    return best_score
else: # Player's turn
    best_score = math.inf
    for i in range(9):
        if board[i] == ' ':
            board[i] = 'X'
            score = minimax(board, depth + 1, True)
            board[i] = ' '
            best_score = min(score, best_score)
    return best_score

```

Find best move for the computer

```

def best_move(board):
    best_score = -math.inf
    move = None
    for i in range(9):
        if board[i] == ' ':
            board[i] = 'O'
            score = minimax(board, 0, False)
            board[i] = ' '
            if score > best_score:
                best_score = score
                move = i
    return move

```

Main game function

```

def tic_tac_toe_minimax():
    board = [' ']*9
    print("Welcome to Tic Tac Toe (You = X, Computer = O)")
    print_board(board)

    while True:
        # Player move
        player_move = int(input("Enter your move (1-9): ")) - 1
        if board[player_move] != ' ':
            print("Invalid move! Try again.")
            continue
        board[player_move] = 'X'

```

```
print_board(board)
if check_winner(board, 'X'):
    print("🏆 You win!")
    break
if is_full(board):
    print("It's a draw!")
    break

# Computer move
print("Computer is thinking...")
move = best_move(board)
board[move] = 'O'
print_board(board)

if check_winner(board, 'O'):
    print("🖥️ Computer wins!")
    break
if is_full(board):
    print("It's a draw!")
    break
```

```
# Run the game
tic_tac_toe_minimax()
```

Welcome to Tic Tac Toe (You = X, Computer = O)

```
| | |
--+---+--
| | |
--+---+--
| | |
```

Enter your move (1-9): 1

```
X | | |
--+---+--
| | |
--+---+--
| | |
```

Computer is thinking...

```
X | | |
--+---+--
| O |
--+---+--
| | |
```

Enter your move (1-9): 2

```
X | X |
--+---+--
| O |
--+---+--
| | |
```

Computer is thinking...

```
X | X | O
--+---+--
| O |
--+---+--
| | |
```

Enter your move (1-9): 7

X		X		O
--	+	---	+	--
			O	
--	+	---	+	--
X				

Computer is thinking...

X		X		O
--	+	---	+	--
O		O		
--	+	---	+	--
X				

Enter your move (1-9): 6

X		X		O
--	+	---	+	--
O		O		X
--	+	---	+	--
X				

Computer is thinking...

X		X		O
--	+	---	+	--
O		O		X
--	+	---	+	--
X		O		

Enter your move (1-9): 9

X		X		O
--	+	---	+	--
O		O		X
--	+	---	+	--
X		O		X

It's a draw!