

Could not connect to the reCAPTCHA service. Please check your internet connection and reload to get a reCAPTCHA challenge.

```
import math

# Initialize empty Tic-Tac-Toe board
board = [[" " for _ in range(3)] for _ in range(3)]

# 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 any moves are left
def is_moves_left(board):
    return any(" " in row for row in board)

# Function to evaluate the board
def evaluate(board):
    for i in range(3):
        # Check rows and columns
        if board[i][0] == board[i][1] == board[i][2] != " ":
            return 10 if board[i][0] == "O" else -10
        if board[0][i] == board[1][i] == board[2][i] != " ":
            return 10 if board[0][i] == "O" else -10

    # Check diagonals
    if board[0][0] == board[1][1] == board[2][2] != " ":
        return 10 if board[0][0] == "O" else -10
    if board[0][2] == board[1][1] == board[2][0] != " ":
        return 10 if board[0][2] == "O" else -10

    return 0 # No winner yet

# Minimax function with Alpha-Beta Pruning
def minimax(board, depth, is_max, alpha, beta):
    score = evaluate(board)

    # Base cases: AI wins, Player wins, or Draw
    if score == 10:
        return score - depth # Favor quicker wins
    if score == -10:
        return score + depth # Favor delaying losses
    if not is_moves_left(board):
        return 0 # Draw

    if is_max: # AI's turn (Maximizing)
        best = -math.inf
        for i in range(3):
            for j in range(3):
                if board[i][j] == " ":
```

```

        board[i][j] = "O"
        best = max(best, minimax(board, depth + 1, False, alpha, beta))
        board[i][j] = " " # Undo move
        alpha = max(alpha, best)
        if beta <= alpha:
            break # Prune
    return best
else: # Human's turn (Minimizing)
    best = math.inf
    for i in range(3):
        for j in range(3):
            if board[i][j] == " ":
                board[i][j] = "X"
                best = min(best, minimax(board, depth + 1, True, alpha, beta))
                board[i][j] = " " # Undo move
                beta = min(beta, best)
                if beta <= alpha:
                    break # Prune
    return best

# Function to find the best move for AI
def find_best_move(board):
    best_val = -math.inf
    best_move = (-1, -1)

    for i in range(3):
        for j in range(3):
            if board[i][j] == " ":
                board[i][j] = "O"
                move_val = minimax(board, 0, False, -math.inf, math.inf)
                board[i][j] = " " # Undo move

                if move_val > best_val:
                    best_val = move_val
                    best_move = (i, j)

    return best_move

# Main game loop
def play_game():
    print("Welcome to Tic-Tac-Toe! You are 'X', AI is 'O'.")
    print_board(board)

    while True:
        # Human player's move
        try:
            row, col = map(int, input("Enter row and column (0-2, space-separated): ").split())
            if board[row][col] != " ":
                print("Invalid move! Try again.")
                continue
            board[row][col] = "X"

```

```

except (ValueError, IndexError):
    print("Invalid input! Enter two numbers between 0 and 2.")
    continue

print_board(board)

if evaluate(board) == -10:
    print("Congratulations! You win! 🎉")
    break
if not is_moves_left(board):
    print("It's a draw! 🟡")
    break

# AI's move
print("AI is making a move...")
ai_move = find_best_move(board)
board[ai_move[0]][ai_move[1]] = "O"
print_board(board)

if evaluate(board) == 10:
    print("AI wins! Better luck next time. 🤖")
    break
if not is_moves_left(board):
    print("It's a draw! 🟡")
    break

# Start the game
play_game()

```

```

... Welcome to Tic-Tac-Toe! You are 'X', AI is 'O'.
| |
-----
| |
-----
| |
-----
X| |
-----
| |
-----
| |
-----
AI is making a move...
X| |
-----
|O|
-----
| |
-----
X|X|
-----
|O|

```

```
-----  
| |  
-----
```

AI is making a move...

X|X|O

```
-----  
|O|  
-----
```

```
-----  
| |  
-----
```

Enter row and column (0-2, space-separated):