#include <iostream>

using namespace std;

const int SIZE = 3;

char board[SIZE][SIZE];

char currentPlayer = 'X';

void initializeBoard() {

for (int i = 0; i < SIZE; ++i)

for (int j = 0; j < SIZE; ++j)

board[i][j] = ' ';

}

void printBoard() {

cout << "\n";

for (int i = 0; i < SIZE; ++i) {

cout << " ";

for (int j = 0; j < SIZE; ++j) {

cout << board[i][j];

if (j < SIZE - 1) cout << " | ";

}

cout << "\n";

if (i < SIZE - 1) cout << "---+---+---\n";

}

cout << "\n";

}

bool placeMark(int row, int col) {

if (row >= 0 && row < SIZE && col >= 0 && col < SIZE && board[row][col] == ' ') {

board[row][col] = currentPlayer;

return true;

}

return false;

}

bool checkWin() {

for (int i = 0; i < SIZE; ++i) {

if ((board[i][0] == currentPlayer &&

board[i][1] == currentPlayer &&

board[i][2] == currentPlayer) ||

(board[0][i] == currentPlayer &&

board[1][i] == currentPlayer &&

board[2][i] == currentPlayer))

return true;

}

if ((board[0][0] == currentPlayer &&

board[1][1] == currentPlayer &&

board[2][2] == currentPlayer) ||

(board[0][2] == currentPlayer &&

board[1][1] == currentPlayer &&

board[2][0] == currentPlayer))

return true;

return false;

}

bool isDraw() {

for (int i = 0; i < SIZE; ++i)

for (int j = 0; j < SIZE; ++j)

if (board[i][j] == ' ')

return false;

return true;

}

void switchPlayer() {

currentPlayer = (currentPlayer == 'X') ? 'O' : 'X';

}

int main() {

int row, col;

initializeBoard();

cout << " Tic-Tac-Toe (3x3 Matrix)\n";

printBoard();

while (true) {

cout << "Player " << currentPlayer << " enter your move (row and column: 0, 1, or 2): ";

cin >> row >> col;

if (!placeMark(row, col)) {

cout << " Invalid move! Try again.\n";

continue;

}

printBoard();

if (checkWin()) {

cout << "Player " << currentPlayer << " wins!\n";

break;

}

if (isDraw()) {

cout << " It's a draw!\n";

break;

}

switchPlayer();

}

return 0;

}