import java.util.Random;

import java.util.Scanner;

public class TicTacToe {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

char[][] board = {{' ', ' ', ' '},

{' ', ' ', ' '},

{' ', ' ', ' '}};

printBoard(board);

while (true) {

playerTurn(board, scanner);

if (isGameFinished(board)){

break;

}

printBoard(board);

computerTurn(board);

if (isGameFinished(board)){

break;

}

printBoard(board);

}

scanner.close();

}

private static boolean isGameFinished(char[][] board) {

if (hasContestantWon(board, 'X')) {

printBoard(board);

System.out.println("Player wins!");

return true;

}

if (hasContestantWon(board, 'O')) {

printBoard(board);

System.out.println("Computer wins!");

return true;

}

for (int i = 0; i < board.length; i++) {

for (int j = 0; j < board[i].length; j++) {

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

return false;

}

}

}

printBoard(board);

System.out.println("The game ended in a tie!");

return true;

}

private static boolean hasContestantWon(char[][] board, char symbol) {

if ((board[0][0] == symbol && board [0][1] == symbol && board [0][2] == symbol) ||

(board[1][0] == symbol && board [1][1] == symbol && board [1][2] == symbol) ||

(board[2][0] == symbol && board [2][1] == symbol && board [2][2] == symbol) ||

(board[0][0] == symbol && board [1][0] == symbol && board [2][0] == symbol) ||

(board[0][1] == symbol && board [1][1] == symbol && board [2][1] == symbol) ||

(board[0][2] == symbol && board [1][2] == symbol && board [2][2] == symbol) ||

(board[0][0] == symbol && board [1][1] == symbol && board [2][2] == symbol) ||

(board[0][2] == symbol && board [1][1] == symbol && board [2][0] == symbol) ) {

return true;

}

return false;

}

private static void computerTurn(char[][] board) {

Random rand = new Random();

int computerMove;

while (true) {

computerMove = rand.nextInt(9) + 1;

if (isValidMove(board, Integer.toString(computerMove))) {

break;

}

}

System.out.println("Computer chose " + computerMove);

placeMove(board, Integer.toString(computerMove), 'O');

}

private static boolean isValidMove (char[][] board, String position) {

switch(position) {

case "1":

return (board[0][0] == ' ');

case "2":

return (board[0][1] == ' ');

case "3":

return (board[0][2] == ' ');

case "4":

return (board[1][0] == ' ');

case "5":

return (board[1][1] == ' ');

case "6":

return (board[1][2] == ' ');

case "7":

return (board[2][0] == ' ');

case "8":

return (board[2][1] == ' ');

case "9":

return (board[2][2] == ' ');

default:

return false;

}

}

private static void playerTurn(char[][] board, Scanner scanner) {

String userInput;

while (true) {

System.out.println("Where would you like to play? (1-9)");

userInput = scanner.nextLine();

if (isValidMove(board, userInput)){

break;

} else {

System.out.println(userInput + " is not a valid move.");

}

}

placeMove(board, userInput, 'X');

}

private static void placeMove(char[][] board, String position, char symbol) {

switch(position) {

case "1":

board[0][0] = symbol;

break;

case "2":

board[0][1] = symbol;

break;

case "3":

board[0][2] = symbol;

break;

case "4":

board[1][0] = symbol;

break;

case "5":

board[1][1] = symbol;

break;

case "6":

board[1][2] = symbol;

break;

case "7":

board[2][0] = symbol;

break;

case "8":

board[2][1] = symbol;

break;

case "9":

board[2][2] = symbol;

break;

default:

System.out.println(":(");

}

}

private static void printBoard(char[][] board) {

System.out.println(board[0][0] + "|" + board[0][1] + "|" + board[0][2] );

System.out.println("-+-+-");

System.out.println(board[1][0] + "|" + board[1][1] + "|" + board[1][2] );

System.out.println("-+-+-");

System.out.println(board[2][0] + "|" + board[2][1] + "|" + board[2][2] );

}

}