Assignment 6

#include <stdio.h>

char board[3][3];

void initializeBoard() {

for (int i = 0; i < 3; i++)

for (int j = 0; j < 3; j++)

board[i][j] = ' ';

}

void displayBoard() {

printf(" %c | %c | %c\n", board[0][0], board[0][1], board[0][2]);

printf("---|---|---\n");

printf(" %c | %c | %c\n", board[1][0], board[1][1], board[1][2]);

printf("---|---|---\n");

printf(" %c | %c | %c\n", board[2][0], board[2][1], board[2][2]);

}

int checkWin() {

for (int i = 0; i < 3; i++) {

if (board[i][0] == board[i][1] && board[i][1] == board[i][2] && board[i][0] != ' ')

return 1;

if (board[0][i] == board[1][i] && board[1][i] == board[2][i] && board[0][i] != ' ')

return 1;

}

if (board[0][0] == board[1][1] && board[1][1] == board[2][2] && board[0][0] != ' ')

return 1;

if (board[0][2] == board[1][1] && board[1][1] == board[2][0] && board[0][2] != ' ')

return 1;

return 0;

}

int isBoardFull() {

for (int i = 0; i < 3; i++)

for (int j = 0; j < 3; j++)

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

return 0;

return 1;

}

int makeMove(int player) {

int row, col;

char mark = (player == 1) ? 'X' : 'O';

printf("Player %d (%c), enter row (1-3) and column (1-3): ", player, mark);

scanf("%d %d", &row, &col);

row--; col--;

if (row < 0 || row >= 3 || col < 0 || col >= 3 || board[row][col] != ' ') {

printf("Invalid move! Try again.\n");

return 0;

} else {

board[row][col] = mark;

return 1;

}

}

int main() {

int player = 1;

initializeBoard();

displayBoard();

while (1) {

if (makeMove(player)) {

displayBoard();

if (checkWin()) {

printf("Player %d wins!\n", player);

break;

} else if (isBoardFull()) {

printf("It's a draw!\n");

break;

}

player = (player == 1) ? 2 : 1;

}

}

return 0;

}