Assignment 6

#include <stdio.h>

#define SIZE 3

// Function prototypes

void printBoard(char board[SIZE][SIZE]);

int checkWinner(char board[SIZE][SIZE]);

void makeMove(char board[SIZE][SIZE], int player);

int main() {

char board[SIZE][SIZE] = {{'1', '2', '3'}, {'4', '5', '6'}, {'7', '8', '9'}};

int player = 1, winner = 0, moves = 0;

printf("Welcome to Tic Tac Toe!\n");

while (winner == 0 && moves < SIZE \* SIZE) {

printBoard(board);

makeMove(board, player);

winner = checkWinner(board);

player = (player % 2) + 1; // Switch player

moves++;

}

printBoard(board);

if (winner) {

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

} else {

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

}

return 0;

}

void printBoard(char board[SIZE][SIZE]) {

printf("\n");

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

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

printf(" %c ", board[i][j]);

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

}

printf("\n");

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

}

printf("\n");

}

void makeMove(char board[SIZE][SIZE], int player) {

int choice;

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

while (1) {

printf("Player %d, enter your move (1-9): ", player);

scanf("%d", &choice);

if (choice >= 1 && choice <= 9) {

int row = (choice - 1) / SIZE;

int col = (choice - 1) % SIZE;

if (board[row][col] != 'X' && board[row][col] != 'O') {

board[row][col] = mark;

break;

} else {

printf("Invalid move! Cell already taken.\n");

}

} else {

printf("Invalid choice! Please select a number between 1 and 9.\n");

}

}

}

int checkWinner(char board[SIZE][SIZE]) {

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

if (board[i][0] == board[i][1] && board[i][1] == board[i][2]) return (board[i][0] == 'X') ? 1 : 2;

if (board[0][i] == board[1][i] && board[1][i] == board[2][i]) return (board[0][i] == 'X') ? 1 : 2;

}

if (board[0][0] == board[1][1] && board[1][1] == board[2][2]) return (board[0][0] == 'X') ? 1 : 2;

if (board[0][2] == board[1][1] && board[1][1] == board[2][0]) return (board[0][2] == 'X') ? 1 : 2;

return 0;

}