ASSIGNMENT 6

The working of tic tac toe game is same as traditional tic tac toe  
having following components:  
• Objective: To be the first to make a straight line with  
either ‘X’ or ‘O’.  
• Game Board: The board consists of a 3×3 matrix-like  
structure, having 9 small boxes.  
• The computer: Since it is a two-player game each player  
gets one chance alternatively. i.e.; first player1 than  
player2.  
• Moves: The computer starts the game with O. After that  
player makes moves alternatively.  
• Winning: You win by making your symbol in a row or  
diagonal or column. Also, as a part of strategy you need to  
block your opponent from forming a straight line while  
making of your own.

**CODE-**

#include <stdio.h>

char board[3][3];

void layout()

{printf("Tic Tac Toe Board\n");

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

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

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

if (j < 2) printf("|");

}

printf("\n");

if (i < 2) printf("\n");

}

printf("\n");

}

void initializeBoard() {

int count = 1;

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

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

board[i][j] = '0' + count; '9';

count++;

}

}

}

int check() \

{

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

if (board[i][0] == board[i][1] && board[i][1] == board[i][2]) return 1;

if (board[0][i] == board[1][i] && board[1][i] == board[2][i]) return 1;

}

if (board[0][0] == board[1][1] && board[1][1] == board[2][2]) return 1;

if (board[2][0] == board[1][1] && board[1][1] == board[0][2]) return 1;

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

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

if (board[i][j] != 'X' && board[i][j] != 'O') return -1;

}

}

return 0;

}

int move(int place, char mark) {

if (place < 1 || place > 9 || (mark != 'X' && mark != 'O')) {

printf("Invalid move!\n");

return 0;

}

int row = (place - 1) / 3;

int col = (place - 1) % 3;

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

printf("Position already taken!\n");

return 0;

}

board[row][col] = mark;

return 1;

}

int main() {

int place, value;

char player = 'X';

initializeBoard();

layout();

while (1) {

printf("Player %c, enter position (1-9): ", player);

scanf("%d", &place);

if (!move(place, player))

{

continue;

}

layout();

value = check();

if (value == 1) {

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

break;

} else if (value == 0) {

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

break;

}

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

}

return 0;

}

**OUTPUT-**

A screenshot of a computer program

Description automatically generatedA screenshot of a computer program

Description automatically generatedA screenshot of a computer program

Description automatically generated

A screen shot of a computer

Description automatically generated