PROJECT-2

TIC-TAC TOE GAME

CODE:-

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#include <stdio.h>

// Function to initialize the game board
void initializeBoard(char board[3][3]) {
    for (int i = 0; i < 3; i++) {
        for (int j = 0; j < 3; j++) {
            board[i][j] = ' ';
        }
    }
}

// Function to display the game board
void displayBoard(char board[3][3]) {
    printf("\n");
    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]);
    printf("\n");
}

// Function to check if a player has won
int checkWin(char board[3][3], char player) {
    for (int i = 0; i < 3; i++) {
        if ((board[i][0] == player && board[i][1] == player && board[i][2] == player) ||
            (board[0][i] == player && board[1][i] == player && board[2][i] == player)) {
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            return 1; // Player has won
        }
    }

    if ((board[0][0] == player && board[1][1] == player && board[2][2] == player) ||
        (board[0][2] == player && board[1][1] == player && board[2][0] == player)) {
        return 1; // Player has won
    }

    return 0; // No winner yet
}

int main() {
    char board[3][3];
    char currentPlayer = 'X';
    int row, col;
    int moves = 0;

    initializeBoard(board);

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

    while (1) {
        displayBoard(board);

        printf("Player %c, enter row (0, 1, 2) and column (0, 1, 2) separated by space: ", currentPlayer);
        scanf("%d %d", &row, &col);

        if (row < 0 || row > 2 || col < 0 || col > 2 || board[row][col] != ' ') {
            printf("Invalid move. Try again.\n");
            continue;
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        }

        board[row][col] = currentPlayer;
        moves++;

        if (checkWin(board, currentPlayer)) {
            displayBoard(board);
            printf("Player %c wins!\n", currentPlayer);
            break;
        } else if (moves == 9) {
            displayBoard(board);
            printf("It's a draw!\n");
            break;
        }

        // Switch to the other player
        currentPlayer = (currentPlayer == 'X') ? 'O' : 'X';
    }

    return 0;
}
```

OUTPUT:-