Title Page:

Lab Work XX

CSC103-Programming Fundamentals

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```
#include <stdio.h>

void print_board(char board[3][3]) {
    printf("\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");
}

int check_win(char board[3][3], char symbol) {
    for (int i = 0; i < 3; i++) {
        if (board[i][0] == symbol && board[i][1] == symbol && board[i][2] == symbol) {
            return 1;
        }
        if (board[0][i] == symbol && board[1][i] == symbol && board[2][i] == symbol) {
            return 1;
        }
    }
    if (board[0][0] == symbol && board[1][1] == symbol && board[2][2] == symbol) {
        return 1;
    }
    if (board[0][2] == symbol && board[1][1] == symbol && board[2][0] == symbol) {
        return 1;
    }
    return 0;
}

int main() {
    char board[3][3] = {
        {'1', '2', '3'},
        {'4', '5', '6'},
        {'7', '8', '9'}
    };
    int num_moves = 0;
    int row, col;
    char symbol = 'X';
    int game_over = 0;

    while (!game_over) {
        print_board(board);

        printf("Player %c's turn.\n", symbol);
        printf("Enter the row (1-3): ");
        scanf("%d", &row);
        printf("Enter the column (1-3): ");
        scanf("%d", &col);
```

```
        if (row < 1 || row > 3 || col < 1 || col > 3) {
            printf("Invalid move. Please enter a row and column between 1 and 3.\n");
            continue;
        }

        if (board[row-1][col-1] == 'X' || board[row-1][col-1] == 'O') {
            printf("Invalid move. That spot is already taken.\n");
            continue;
        }

        board[row-1][col-1] = symbol;
        num_moves++;

        if (check_win(board, symbol)) {
            print_board(board);
            printf("Player %c wins!\n", symbol);
            game_over = 1;
        } else if (num_moves == 9) {
            print_board(board);
            printf("It's a tie!\n");
            game_over = 1;
        }

        if (symbol == 'X') {
            symbol = 'O';
        } else {
            symbol = 'X';
        }
    }

    return 0;
}
```

```
 1 | 2 | 3
-----------
 4 | 5 | 6
-----------
 7 | 8 | 9

Player X's turn.
Enter the row (1-3): 1
Enter the column (1-3): 1

 X | 2 | 3
-----------
 4 | 5 | 6
-----------
 7 | 8 | 9

Player O's turn.
Enter the row (1-3): 1
Enter the column (1-3): 2

 X | O | 3
-----------
 4 | 5 | 6
-----------
 7 | 8 | 9

Player X's turn.
Enter the row (1-3): 2
Enter the column (1-3): 2
```

```
 X | O | 3
-----------
 4 | X | 6
-----------
 7 | 8 | 9

Player O's turn.
Enter the row (1-3): 3
Enter the column (1-3): 3

 X | O | 3
-----------
 4 | X | 6
-----------
 7 | 8 | O

Player X's turn.
Enter the row (1-3): 2
Enter the column (1-3): 1

 X | O | 3
-----------
 X | X | 6
-----------
 7 | 8 | O

Player O's turn.
Enter the row (1-3): 2
Enter the column (1-3): 3
```

```
 X | O | 3
-----------
 X | X | O
-----------
 7 | 8 | O

Player X's turn.
Enter the row (1-3): 3
Enter the column (1-3): 1

 X | O | 3
-----------
 X | X | O
-----------
 X | 8 | O

Player X wins!

Process returned 0 (0x0)   execution time : 103.490 s
Press any key to continue.
```