Tic-Tac-Toe Game Project Report

Project Title: Tic-Tac-Toe Game using C Language

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Course: B.Tech, 2nd Semester

Specialization: Artificial Intelligence and Machine Learning (AIML)

Introduction:

This project is a simple command-line based Tic-Tac-Toe game written in the C programming language. It is designed for two players and uses basic programming constructs such as loops, arrays, conditionals, and functions.

Objective:

The main objective of this project is to strengthen the understanding of C programming fundamentals by developing an interactive and logical game - Tic-Tac-Toe.

Project Code:

```
#include <stdio.h>
#include <stdlib.h>

char square[10] = { '0','1','2','3','4','5','6','7','8','9' };
int checkWin();
void drawBoard();

int main() {
    int player = 1, i, choice;
```

```
    char mark;

    do {
        player = (player % 2) ? 1 : 2;
        mark = (player == 1) ? 'X' : 'O';
        drawBoard();
        printf("Player %d (%c), enter the choice (1-9): ", player, mark);
        scanf("%d", &choice);

        if (choice < 1 || choice > 9) {
            printf("Invalid number! Choose between 1 - 9.\n");
            player--;
            continue;
        }

        if (square[choice] == choice + '0')
            square[choice] = mark;
        else {
            printf("Invalid move! Try again.\n");
            player--;
        }

        i = checkWin();
        player++;
    } while (i == -1);

    drawBoard();
    if (i == 1)
        printf("==> Player %d won\n", --player);
    else
        printf("==> Game draw\n");

    return 0;
}

int checkWin() {
    if (square[1]==square[2] && square[2]==square[3]) return 1;
    else if (square[4]==square[5] && square[5]==square[6]) return 1;
    else if (square[7]==square[8] && square[8]==square[9]) return 1;
    else if (square[1]==square[4] && square[4]==square[7]) return 1;
    else if (square[2]==square[5] && square[5]==square[8]) return 1;
    else if (square[3]==square[6] && square[6]==square[9]) return 1;
    else if (square[1]==square[5] && square[5]==square[9]) return 1;
    else if (square[3]==square[5] && square[5]==square[7]) return 1;
    else if (square[1]!='1' && square[2]!='2' && square[3]!='3' &&
             square[4]!='4' && square[5]!='5' && square[6]!='6' &&
             square[7]!='7' && square[8]!='8' && square[9]!='9')
        return 0;
    else return -1;
}

void drawBoard() {
    system("cls");
    printf("\nTic Tac Toe\n");
```

```
    printf("Player 1 (X)  -  Player 2 (O)\n\n");

    printf("     |     |     \n");
    printf("  %c  |  %c  |  %c  \n", square[1], square[2], square[3]);
    printf("----------------------\n");
    printf("  %c  |  %c  |  %c  \n", square[4], square[5], square[6]);
    printf("----------------------\n");
    printf("  %c  |  %c  |  %c  \n", square[7], square[8], square[9]);
    printf("     |     |     \n");
}
```

What I Learned:

- How to use basic C functions and loops.

- How to use arrays to store and update board data.

- How to implement logic to check winning conditions.

Sources Used:

1. My programming knowledge from college coursework.

2. Help and explanations from ChatGPT.

3. Tutorials from YouTube.

Conclusion:

This project helped me understand the logical flow in programming and improved my hands-on skills with C. It was a great learning experience that also helped me in understanding game logic and user interaction in a terminal environment.