C++ MINI PROJECT REPORT

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Course: B.Tech CSE
Subject: C++ Programming
Mini Project: Tic-Tac-Toe Game

Project Title: Implementation of Tic-Tac-Toe Game Using C++

Introduction :

Tic-Tac-Toe is a classic two-player strategy game played on a 3×3 grid. The objective of the game is to align three identical symbols (X or O) in a row, column, or diagonal before the opponent does.

This project implements the Tic-Tac-Toe game using C++ programming language in a console-based environment. The purpose of this project is to apply fundamental programming concepts such as arrays, loops, conditional statements, and logical decision-making to create a fully functional interactive game.

Objectives:

- <u>To understand and implement 2D arrays</u>

- <u>To apply conditional statements for decision making</u>

- <u>To implement game logic using loops</u>

- <u>To validate user input</u>

- <u>To detect win and draw conditions</u>

🛠 Technologies Used :

- <u>Programming Language: C++</u>

- <u>Platform: Console / Terminal</u>

- <u>Compiler: g++</u>

🧩 Project Description :

The Tic-Tac-Toe board is represented using a 3×3 character array. Initially, the board positions are filled with numbers from 1 to 9. Players take turns entering a number corresponding to the position where they want to place their symbol.
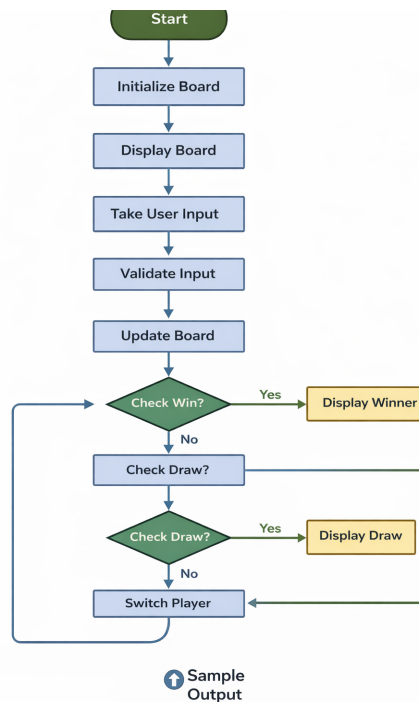
After each move, the program:

- Updates the board

- Checks all rows

- Checks all columns

- Checks both diagonals

- Declares a winner if conditions match

- Declares a draw if all 9 moves are completed

The game continues until a player wins or the match ends in a draw. The final board is displayed along with the result.

🧠 Algorithm :

1. Initialize a 3×3 board with numbers 1–9
2. Set the first player as 'X'

3. Repeat until the game ends:

   ○ Display the board

   ○ Take user input

   ○ Validate the move

   ○ Update the board

   ○ Check win conditions

   ○ Check draw condition

   ○ Switch player

4. Display the final result

🌐 Project Links :

GitHub Repository:

Future Enhancements :

- Add Replay Option

- Add Scoreboard

- Add Single Player Mode (AI)

- Improve User Interface

- Convert into GUI version

Conclusion

The Tic-Tac-Toe game was successfully implemented using C++. This project helped in understanding core programming concepts such as arrays, loops, and conditional logic.

The project demonstrates logical thinking and practical implementation of game development using C++ programming.