# PROJECT REPORT

# TIC-TAC-TOE

CS186

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Front-End Engineering

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Pratham Garg (2110994808)

## Demo Link: https://heyy-prxthxm.github.io/tic-tac-toe/

## Project Overview:

The Tic-Tac-Toe Game is a simple web application that allows users to play the classic game of tic-tac-toe against each other. The game provides a user-friendly interface and interactive gameplay, enabling players to take turns marking spaces in a 3x3 grid. The application keeps track of scores, detects wins, draws, and provides an option to reset the game or start a new game.

## Project Goals:

The main objectives of this project were to create a functional and visually appealing Tic-Tac-Toe game that can be played on a web browser. The game should have the following characteristics:

- Interactive gameplay for two players.
- Clear display of the current scores for each player.
- Proper detection of game wins, draws, and the overall game state.
- User-friendly interface and intuitive design.
- Option to reset the current game or start a new one.
- Option to switch between dark and light mode for the interface.

## Features:

1. Interactive Gameplay: Players can take turns clicking on the grid to place their respective symbols (X or O) in the cells.
2. Score Tracking: The application keeps track of the scores for both players (X and O) and displays them on the interface.
3. Win Detection: The game checks for winning conditions after each move and declares the winner accordingly.
4. Draw Detection: If there is no winner and all cells are filled, the game declares a draw.
5. Reset Functionality: Players can reset the current game without affecting the overall scores.
6. New Game Option: Users can start a new game with a single click, resetting the scores and the game board.

7. Dark/Light Mode Toggle: Users can switch between dark and light mode for the interface to enhance the user experience.

## Technologies Used:

The project was implemented using the following technologies:

- React: A JavaScript library for building user interfaces, providing the structure and functionality for the frontend of the application.
- JavaScript (ES6+): The primary programming language used to create the game logic and implement the various functionalities.
- HTML & CSS: Used for creating the structure and styling the user interface components.
- useState React Hook: The useState hook is used to manage state variables in functional components. It allows components to declare state variables and update them.

## Future Enhancements:

While the current version of the Tic-Tac-Toe game is fully functional, there are several areas for potential improvement:

- AI Opponent: Implementing an AI opponent to enable single-player gameplay against the computer.
- Customization: Adding features to customize the game, such as allowing players to choose their symbols or grid size.
- Multiplayer Online Support: Integrating a multiplayer online mode to allow users to play against others over the internet.
- Improved UI/UX: Enhancing the user interface and experience with better animations, sound effects, and more engaging visuals.

## Conclusion:

The Tic-Tac-Toe game project successfully achieves its goal of providing an interactive and enjoyable gaming experience for users. By leveraging modern web development technologies, the project delivers a simple yet engaging game that can be played by anyone. With potential future enhancements, the

game could become even more feature-rich and appealing to a broader audience.