**Project Report: Tic Tac Toe Web App**

**Project Title:** Tic Tac Toe Web Application

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**Deployed Application:** [Tic Tac Toe Web App](https://tic-tac-toe-ranganatha-s.netlify.app)

**Abstract**

The Tic Tac Toe Web App is an interactive browser-based implementation of the classic two-player game. It allows players to enjoy a seamless and intuitive gaming experience, with a user-friendly interface and responsive design.

**Objectives**

* Provide a simple and enjoyable gaming experience.
* Develop a responsive and accessible web-based version of the game.
* Demonstrate skills in front-end development.

**Technologies Used**

* **Frontend:** HTML, CSS, JavaScript
* **Frameworks:** React.js (if applicable)
* **Version Control:** Git, GitHub
* **Hosting:** Netlify

**Features**

1. **Game Interface:**
   * Interactive 3x3 grid for gameplay.
   * Real-time feedback for players (turn indication and winner announcement).
2. **Player Modes:**
   * Two-player mode for local play.
3. **Responsive Design:**
   * Optimized for desktop and mobile devices.
4. **Reset Functionality:**
   * Allows players to restart the game at any point.

**Implementation Details**

1. **Game Logic:**
   * Dynamic turn-based mechanics.
   * Winner detection based on game rules (row, column, diagonal alignment).
2. **Design:**
   * Clean and minimalist layout.
   * Visual cues for player turns and game outcomes.
3. **Performance Optimization:**
   * Lightweight code for fast loading.
   * Deployed on a reliable hosting platform (Netlify).

**Challenges and Solutions**

* **Challenge:** Ensuring a responsive design for mobile devices.
  + **Solution:** Utilized CSS Media Queries and Flexbox layout.
* **Challenge:** Implementing dynamic winner detection logic.
  + **Solution:** Developed modular functions to evaluate the grid state efficiently.

**Future Enhancements**

* Adding single-player mode with AI opponent.
* Customizable themes and color schemes.
* Leaderboard functionality to track scores.

**Conclusion**

The Tic Tac Toe Web App successfully replicates the classic game in a modern, web-based environment. It showcases the developer's proficiency in creating interactive and responsive web applications.

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