1. Tic Tac Toe App Documentation

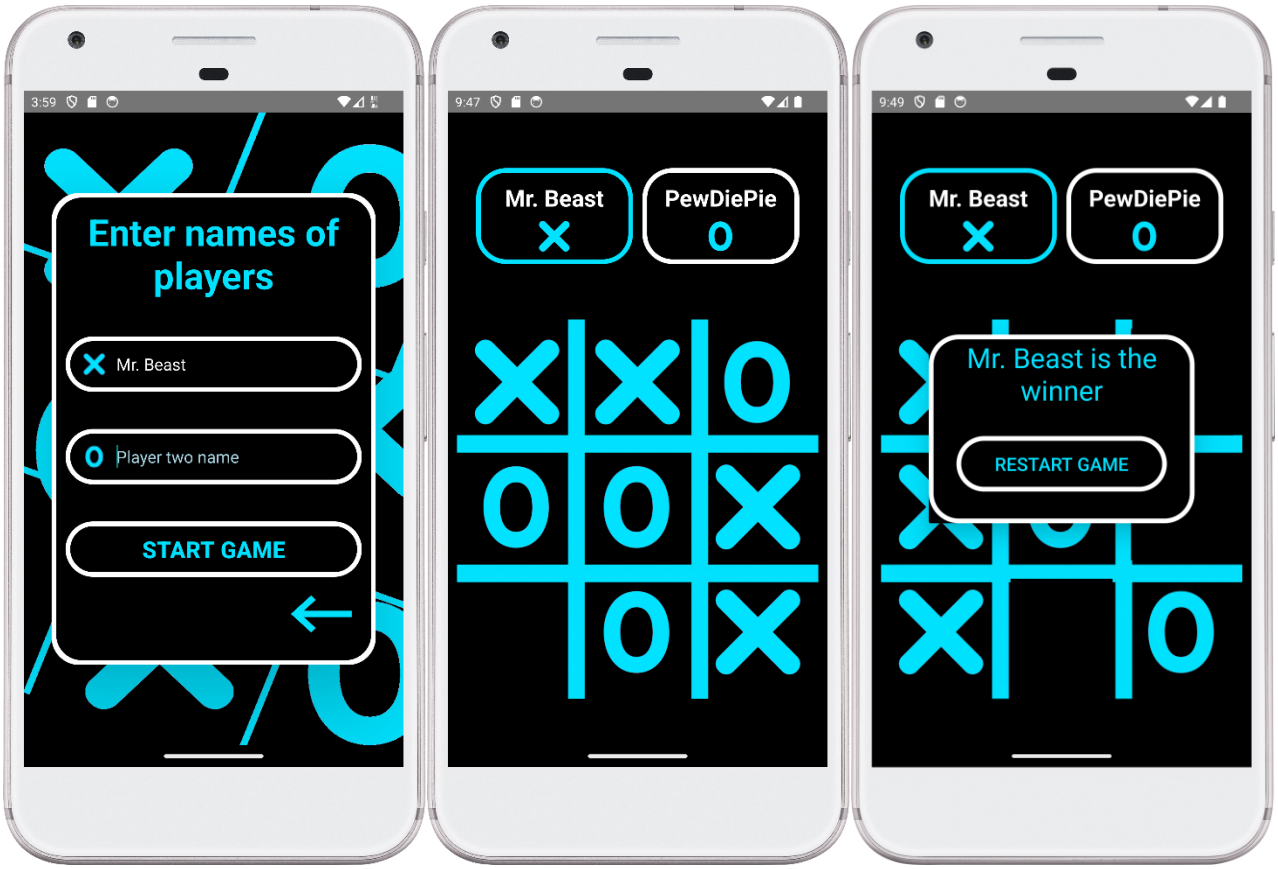
1.1. Introduction

The **Tic Tac Toe Android application** is a simple implementation of the classic Tic Tac Toe game. The game single player as well as two players taking turns to mark their symbols ('X' and 'O') on a 3x3 grid. The application utilizes Android's user interface components and is designed for an engaging user experience.

1.2. User Experience

The user interface is intuitive and user-friendly, providing a seamless experience for players. The main features of the application include:

- **Single Player or Multiplayer :** Initial screen asks if the user wants to play with friend or Bot.
- **Player Names:** Users can enter the names of Player X and Player O before starting the game.
- **Turn Indicator:** The app visually indicates which player's turn it is through background borders for 'X' and 'O'.
- **Game Grid:** The 3x3 grid is represented by clickable image views where players can make their moves.
- **Result Display:** After each move, the application checks for a winner or a draw and displays a result dialog accordingly.
- **Game Restart:** Players can restart the game at any time, resetting the grid and scores.


3:59
Enter names of players
Mr. Beast
Player two name
START GAME
9:47
Mr. Beast
X
PewDiePie
O
9:49
Mr. Beast
X
PewDiePie
O
Mr. Beast is the winner
RESTART GAME

1.3. Back-End Development

1.3.1. Game Logic

The back-end of the application handles the core game logic, ensuring a fair and accurate representation of the Tic Tac Toe game. Key methods include:

- **isCellEmpty(int position)**: Checks if a cell on the grid is empty.
- **setInput(ImageView image, int position)**: Sets the input ('X' or 'O') based on the player's turn and updates the grid.
- **displayWinner(String msg, String player)**: Displays a result dialog indicating the winner or a draw.
- **changeTurn(int next)**: Switches the turn between Player X and Player O, updating visual indicators.
- **result()**: Checks for a winning combination on the grid.
- **To implement the bot, random module was used**.

1.3.2. User Interface

The XML layout (**activity_main.xml**) defines the arrangement of UI components, and the binding is used to access and manipulate these components in the Java code.

1.3.3. Winner Dialog

The **Result** class is responsible for displaying a dialog with the game result, including the winner's name or a draw message.

1.4. Known Issues and Future Improvements

- **Known Issues:** Currently, there are no known issues.
- **Future Improvements:**
  - **Enhanced UI/UX:** Implement animations and transitions to enhance the overall user experience.
  - **Game Statistics:** Keep track of the number of wins for each player and display statistics.
  - **Difficulty Levels:** Introduce different difficulty levels for single-player mode with an AI opponent.
  - **Multiplayer Online:** Implement online multiplayer functionality for users to play with friends remotely.
  - **Customization**: Allow users to customize the game, such as choosing grid size or symbols.

By incorporating these improvements, the Tic Tac Toe application can become more feature-rich and appealing to a broader audience.