

Instructor Name: **TikTak Toe Game**

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**Mobile Development**

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**Introduction**

The TikTak Toe game is a popular and simple game played between two players. The objective of the game is for players to place their symbols (X or O) in a 3x3 grid in such a way that their symbols form a straight line horizontally, vertically, or diagonally. This game is developed using Android Studio with Java as the programming language. This project not only helps in understanding the basic concepts of game development but also serves as good practice for Android application development.

The TikTak Toe game, also known as Noughts and Crosses or Xs and Os, is a classic and straightforward game that is widely known and played around the world. It is a two-player game where players take turns marking the spaces in a 3x3 grid with their respective symbols, 'X' and 'O'. The primary goal is to be the first player to get three of their marks in a row, either horizontally, vertically, or diagonally. This game has been developed using Android Studio, leveraging Java for the backend logic and XML for the frontend design. The development of this project is an excellent exercise for beginners and intermediates in Android development, offering hands-on experience in creating a fully functional mobile application.

**Scope**

The scope of this project includes:

* Developing a functional TikTak Toe game using Android Studio.
* Implementing game logic using the Java programming language.
* Designing a user-friendly interface suitable for users of all age groups.
* Ensuring the game allows players to take their turns easily and automatically displays the winner.
* Development Environment: Utilizing Android Studio as the integrated development environment (IDE) to create the application.
* Programming Language: Implementing game logic and functionality using Java, a versatile and widely-used programming language.
* User Interface: Designing a clean and intuitive user interface (UI) using XML, ensuring ease of use and a pleasant user experience.
* Game Mechanics: Implementing core game mechanics that handle player turns, win conditions, draw conditions, and game reset functionality.
* Testing and Debugging: Thoroughly testing the application to ensure it runs smoothly without any bugs or crashes.

**Features**

1**. Simple User Interface**

The user interface of the TikTak Toe game is designed to be straightforward and user-friendly. It consists of a 3x3 grid of buttons where players can tap to place their 'X' or 'O'. The interface includes:

* Grid Layout: A visually appealing grid layout where each cell is represented by a button.
* Turn Indicator: A display showing which player's turn it is.
* Winner Display: A text view that announces the winner or declares a draw at the end of the game.
* Reset Button: A button to reset the game, clearing the grid and starting a new game.



2. **Two Player Mode**

This game is played between two players. The first player uses 'X' and the second player uses 'O'. Players take turns alternately until one player’s symbol appears in three consecutive cells.

* Player Symbols: The first player uses 'X' and the second player uses 'O'.
* Turn Management: The game ensures that players take turns sequentially and no player can make two moves in a row.



3**. Game Logic**

The game logic is implemented using the Java programming language. Various conditions are checked, such as:

Horizontal win condition

Vertical win condition

Diagonal win condition

* Draw condition (when the grid is full and there is no winner)
* Win Conditions: The game checks for three consecutive marks horizontally, vertically, or diagonally.
* Draw Condition: The game detects if the grid is full without any player winning, resulting in a draw.
* Input Validation: Ensuring that players cannot place their mark in an already occupied cell.

4**. Reset Functionality**

The game includes a reset button that clears the entire grid and restarts the game. This allows players to start a new game without restarting the application.

* Grid Clearing: All marks in the grid are cleared.
* Turn Reset: The game resets the turn indicator and allows the first player to start again.
* Game State: Resets all game variables to their initial state.

5**. Winning Message Display**

When a player wins, a winning message is displayed on the screen declaring the winner. If the game ends in a draw, an appropriate draw message is displayed.

At the end of the game, a message is displayed to inform players of the result:

* Winner Announcement: If a player wins, a message displays "Player X wins!" or "Player O wins!".
* Draw Announcement: If the game ends in a draw, a message displays "It's a draw!".



**Conclusion**

The TikTak Toe game project serves as an excellent introduction to Android development, combining both frontend and backend skills. By working on this project, developers can gain valuable experience in:

* Android Studio: Familiarity with the IDE, project structure, and tools.
* Java Programming: Writing efficient and effective code to handle game logic.
* UI/UX Design: Creating an intuitive and aesthetically pleasing user interface.
* Problem-Solving: Debugging and testing the application to ensure it meets all functional requirements.
* Project Management: Managing a software project from conception to completion.

This project not only provides a fun and engaging game but also serves as a foundational experience for aspiring Android developers.