

# Tic Tac Toe

Below is the design documentation for the app.

## Design Process

The design of the Tic Tac Toe app will be a minimalist design and separate activities will be used to present all of the features available to the user. This will be done by creating separate layouts.

The logo and icon will be made in Microsoft Paint, and a consistent colour scheme will be used throughout. The landscape layouts will utilise the extra width of the screen, as the height will now be much less.

A consistent font family and size will be used throughout as well as padding and margin between objects.

## Classes

Here is a list of the classes to be used in the Tic Tac Toe Android App:

**Main Activity** – This class is required, to deal with the game activity, and will managing the layout of that activity. It will be responsible for displaying the users moves in game grid.

**Game Class** – This activity class is required to manage the instance of each game that takes place in the Main Activity. A new instance of this class will be created each time the user wants to play a new game. This class will hold methods for determining where the computer will make its move (depending on difficulty selected).

**Home Screen** – This class is required so that the home screen layout responds to user input. This class will allow the user to proceed to the other activities available in on the app.

**Splash Screen** – This activity class is required manage the splash screen activity. It will be responsible for reading the Users file and creating an array list to store all of the users in it. It will interact with a User Class to do this. User preferences will be retrieved in this class also.

**User Class** – This class is required so that the user array list can be stored and accessed at any time by other classes. It will also store values of User preferences in this class.

**Users Class** – This sub class of User Class will contain variables which will allow the user to store data for each instance of a User. It will contain set and get methods to manipulate the variables in this class.

**Login Screen** – This activity class is required so that the user is able to login (which will allow them to record their game stats). This class will compare details entered in to the activity with credentials stored in the User Class arraylist.

**Register Screen** – This activity class is required so that the user can create an account (to record game stats). This class will need to compare the existing credentials in the User Class arraylist with the credentials in the activity to ensure there are no duplicate accounts.

**Stats Screen** – This activity class is required so that the stats for the currently logged in user can be displayed from the User Class arraylist. The user will be able to reset their stats back to 0 also. This class won't be accessible if the user isn't logged in.

**Settings screen** – This activity class is required so that the user can set preferences for the app. These preferences will include game difficulty, game grid theme and whether the user plays first or second for each new game.

## **Review of the App**

Here is the documentation for the App that was actually created.

### **Features of the App**

Here is a list of features that the Tic Tac Toe App includes:

- A splash screen, with an animated game logo, which when clicked takes the user to the home screen.
- A home screen which allows the users to view instructions for the game (by clicking "i" icon). The user can navigate to the login screen, game screen, stats screen (if the user is logged in) and settings screen.
- A game screen which allows the user to play a game of Tic Tac Toe on a 3 by 3 grid, with a difficulty of Medium, Hard and Impossible (makes game unbeatable). If the user is logged in, the number of wins, losses and games played for the respective difficulties are added to the user's record. An animation and use of colour is used to indicate if the user has won, lost or drawn. Sound is also used to indicate if the user has won, lost or drawn. The user can click on a new game button to start a new game.
- A login screen which allows the user to login to an existing account which is stored in an arraylist. A button to go to the register screen is also included in this screen.
- A register screen which allows the user to create a new account and store it in the arraylist and write it to a User's file.
- A stats screen which allows the user to view the games played, won, drawn and lost for each difficulty for their account. The user can reset their stats and update their record in the array list and Users file.
- A settings screen which allows Users to set preferences such as game difficulty, game grid colour theme, and player turn.
- All of the activities can be viewed in portrait and landscape mode.
- User records can be written to and read from a User's file.
- User preferences can be stored using shared preferences.
- To go back to the previous screen, the device's back button is used and re-creates the previous app.

## **Non-Working Features**

Here is a list of the non-working features in the App:

- The tap sound on the game screen doesn't always work. The sound won't play after a few taps. This could be due to the fact that the sound hasn't finished playing when the sound is prompted to be played again. This is only an issue on API 19 (or earlier APIs) and works on later APIs.
- When the screen layout for the game screen changes to a different orientation, the game grid resets itself. This could be due to the fact that the layout is being recreated when the orientation changes, and the game grid is programmed to be reset when the layout is created.

## **Bibliography**

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