Noughts and Crosses
"Tic Tac Toe" Application

Project Description

- Implementation of the "Tic Tac Toe" game.

- **Features Implemented:**

    1. Display grid and play game

    2. Keeping score

    3. Reset game

    4. One-player mode and two-player mode

    5. Name, symbol, and turn choice

    6. Return to home

    7. Sound effects

    8. Portrait and Landscape (Slides 5, 7, 11)

Tic Tac Toe

- The game starts with an empty 3 by 3 square grid.

- The game is played between 2 players.

- Each player chooses a symbol and choose who will go first.

- The first player to get 3 of the symbols in a row (up, down, across, or diagonally) is the winner.

- If all 9 squares are full, and no player has 3 symbols in a row, then the games ands in a tie.
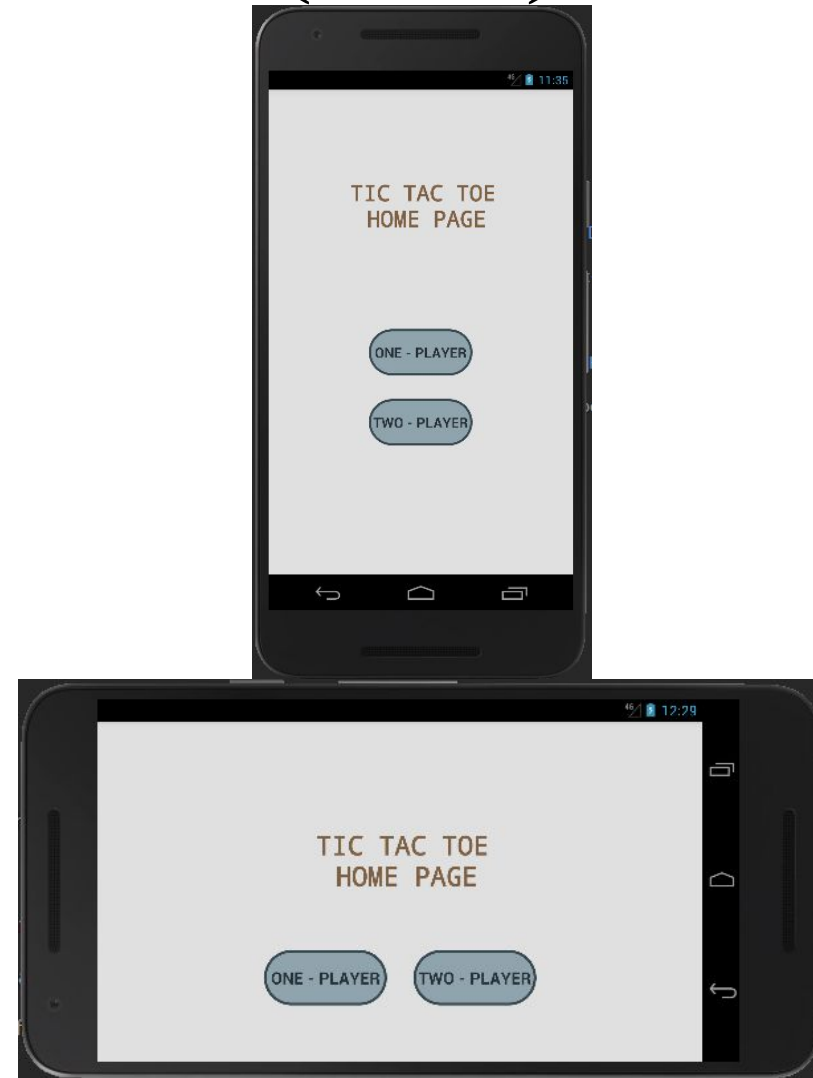
Application's API

- API 16: Android 4.1 (Jelly Bean)
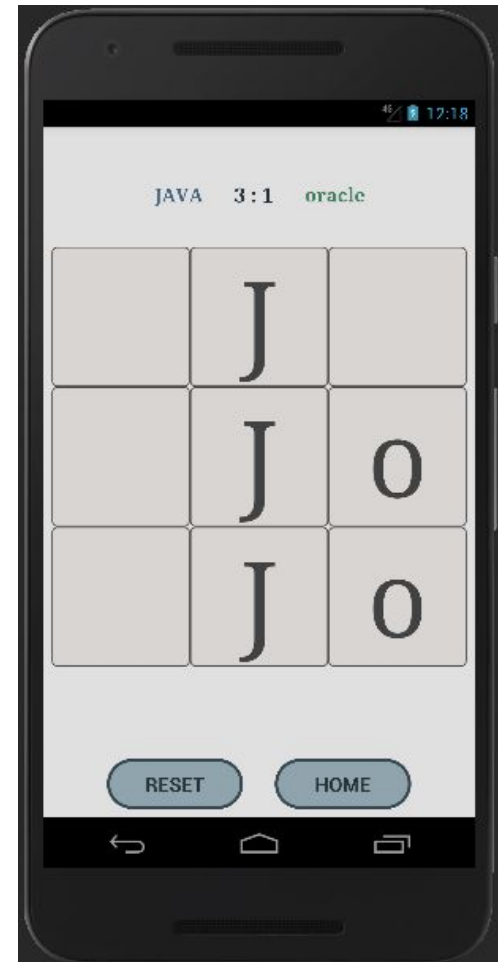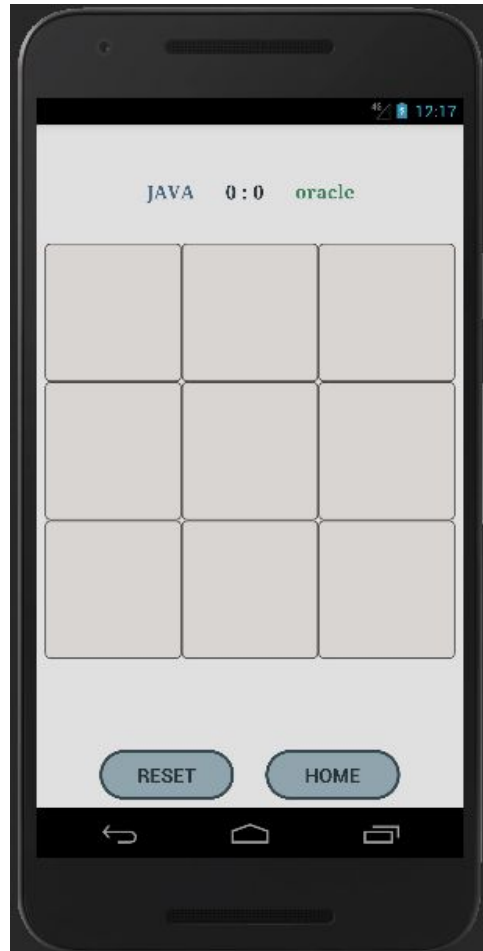- Application runs on 99.8% of devices.

Android 4.1 Jelly Bean
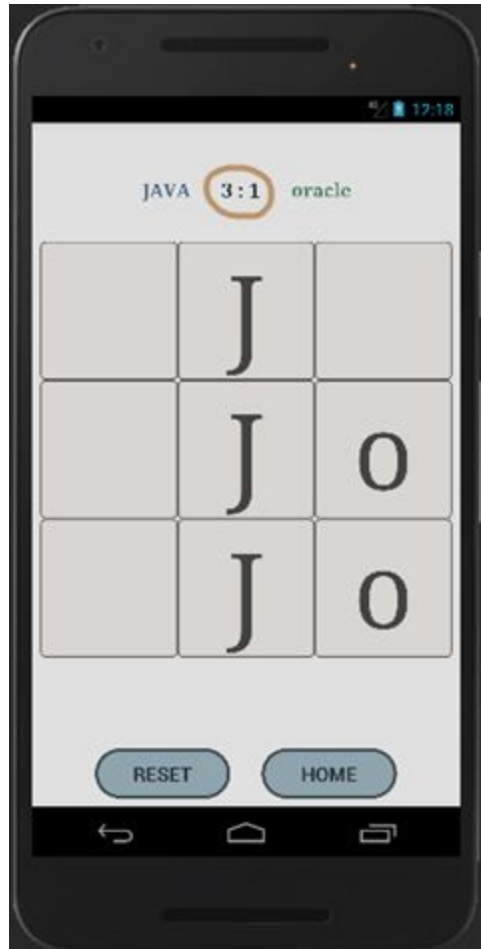
Android Virtual Device (AVD)

- Nexus 5X
- Screen size: 5.2"
- Screen resolution: 1080x1920
- Screen density: 420 dpi
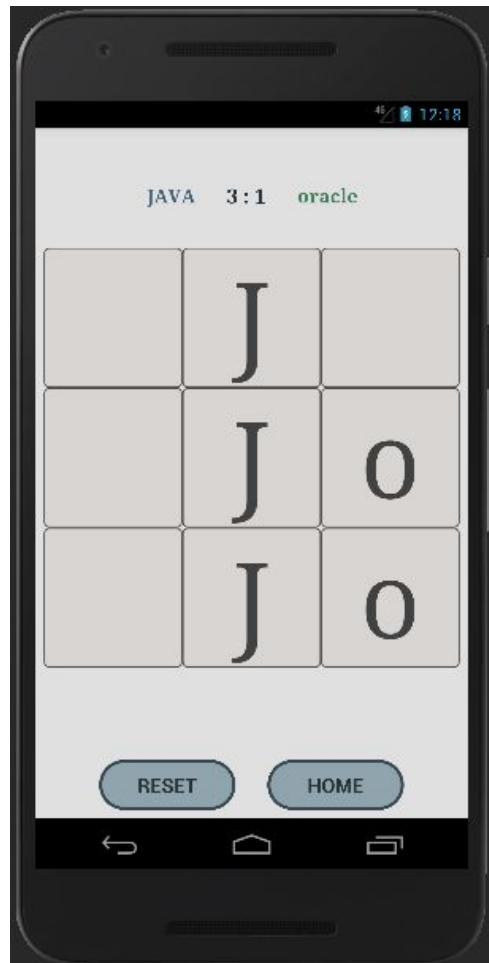- 20.36% of all phones in the United States of America

Feature 1: Display Grid and Play Game
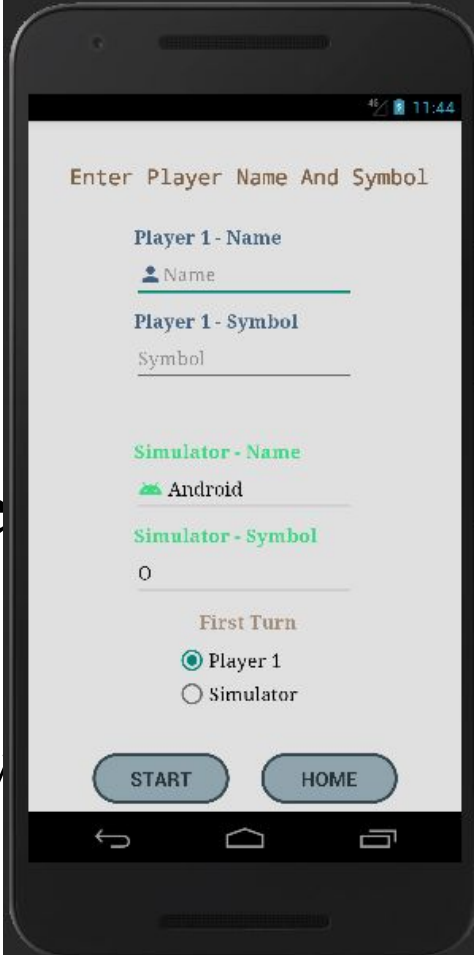
Feature 2: Keeping Score

Feature 3: Reset Game

Feature 4: One-Player Mode and Two-Player Mode

- In one-player mode the user plays against the simulator.

- The simulator uses a random number generator to generate the right place.

- In two-player mode the game is played manually by two users.

Feature 5: Name, Symbol, and Turn Choice

- Players are allowed to choose any name and symbol they want as long as they satisfy the two conditions:

  1. Name must not exceed 10 characters.

  2. Symbol must be a single character from the English alphabet.

- Regex is used to perform this validation of input.

Name, Symbol, and Turn Choice…
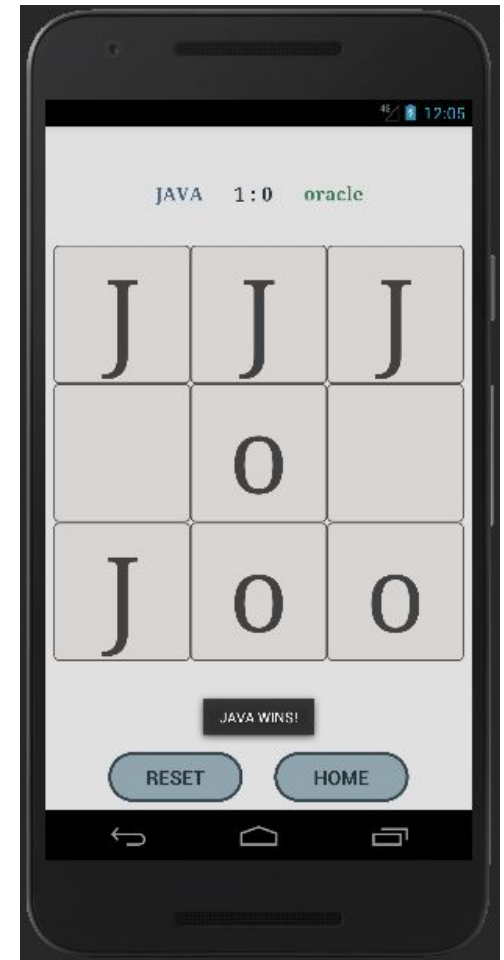
Feature 6: Return to Home

Feature 7: Sound Effects

- Applause sound when a player wins.
- Pencil writing sound when drawing symbols.

Data Structure

- This application uses a Two-Dimensional Array to represent the grid.

- The Two-Dimensional Array consists of 3 rows and 3 columns.

- This is a total of 9 array elements.

- Each array element represents 1 position in the grid.

- Each position in the grid is a button with an onClick event.

Data Structure…

- The application also uses 2 One-Dimensional Arrays to pass data from one activity to another.

- The first One-Dimensional Arrays stores the names of the players

- The second One-Dimensional Array stores the symbols of the players.

Permissions Required

- This application does not require any permissions from the user.

- Even if data is needed to be saved to keep history of the scores as it was mentioned in the third bullet point of slide 14, the SharedPreferences API and the File API available from API 1 can be used and they do not require any permission to store application related data internally.

Challenges

- Learning the features and methods of Android Studio.

- Designing the "look-and-feel" of the application.

- Constructing the grid.

- Passing data from one activity to another.

- Loading sound files in the onCreate method.

- Landscape orientation.

What Was Learned

- Extremely good planning and designing is needed before writing the first line of code.
- Concrete experience and understanding of Android Studio.
- Construct .xml files in the drawable folder for designing.
- Create styles for the custom stylish toasts.
- Add sound effects in an application.
- Add animations between activities. As the video shows the activities (screens) slide from left to right.
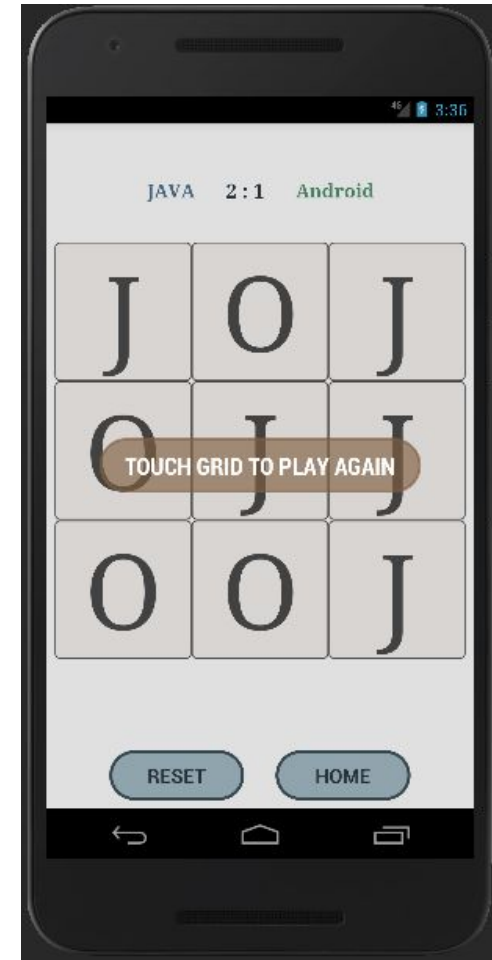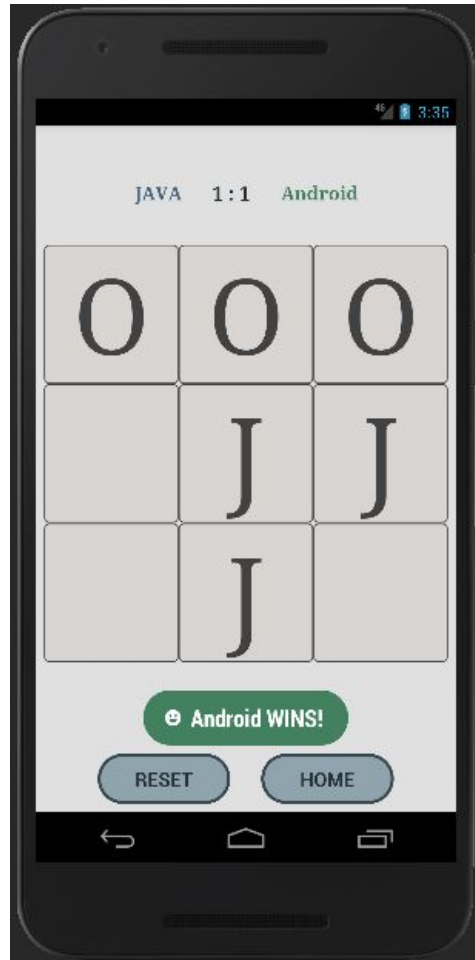- Change icon of an application.
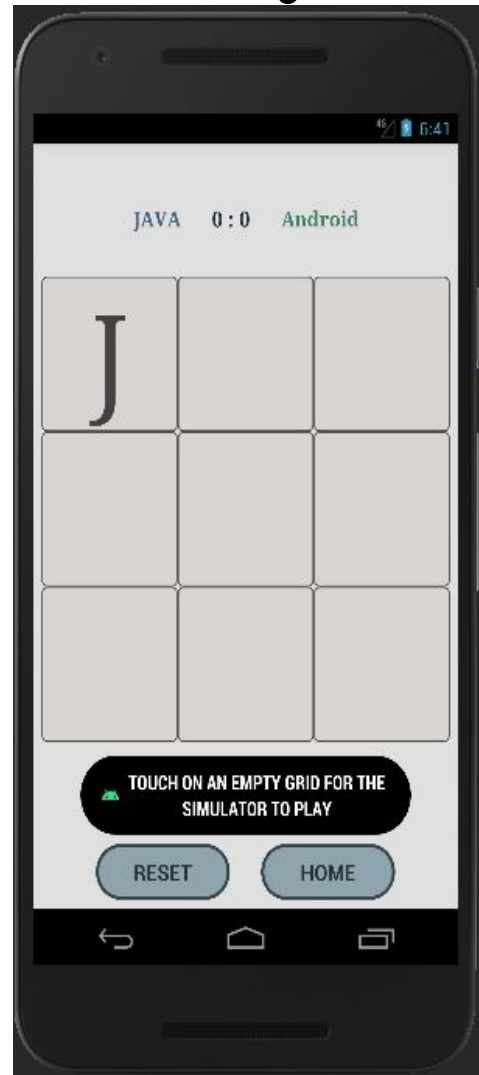
Application Icon
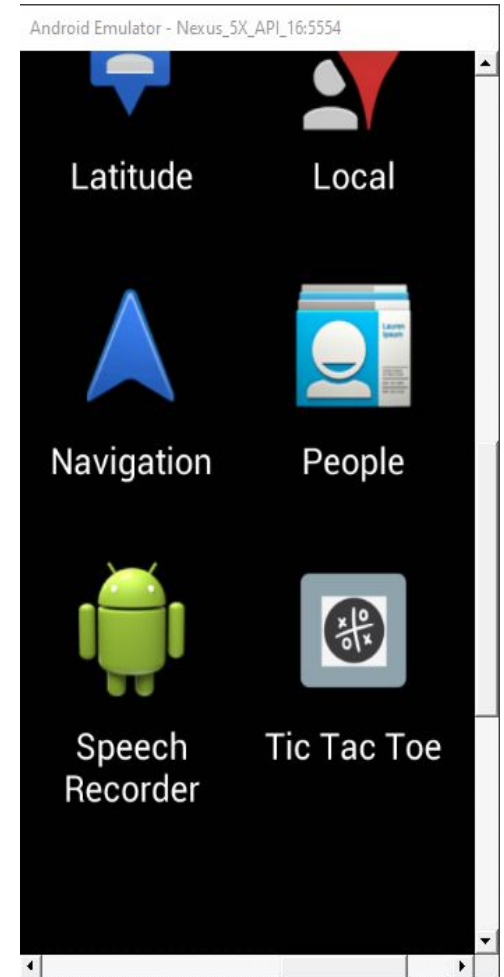
Custom and Stylish Toasts
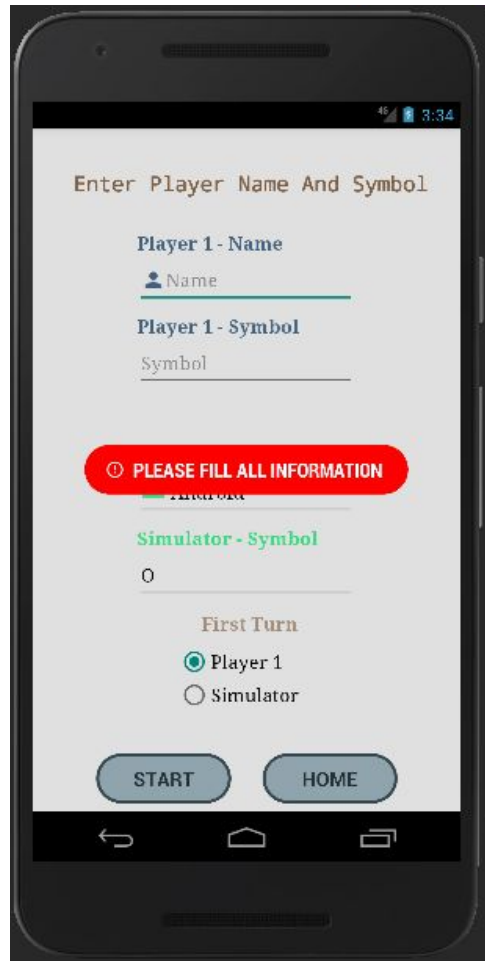
Custom and Stylish Toasts…

Custom and Stylish Toasts…

QUESTIONS