REPORT

LAB 04

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GitHub link: https://github.com/dangnha/Mobile-Multiplatform/tree/master/Lab4/magic_8_ball

1. Introduction

- Purpose of the Lab Report:
  - The purpose of the above program is to create a simple dice rolling app using Flutter. It displays two dice images on the screen, and when a user taps on either die, both dice faces are randomly changed, simulating the act of rolling dice.
- Background Information on the Mobile App:
  - Programming Language: The app is written in Dart, the programming language used for Flutter app development.
  - Framework: Flutter, an open-source UI software development kit created by Google, is used to develop the app. It enables building natively compiled applications for mobile, web, and desktop from a single codebase.

2. Objectives

- Objectives of the Lab:
  - Create a simple dice rolling app using Flutter.
  - Simulate Dice Rolling: Implement functionality to simulate the act of rolling dice when a user interacts with the app.
  - Randomize Dice Faces: Generate random numbers to represent the faces of the dice each time a user taps on them.
  - Update UI Dynamically: Use Flutter's state management to update the UI dynamically whenever the dice faces change as a result of user interaction.

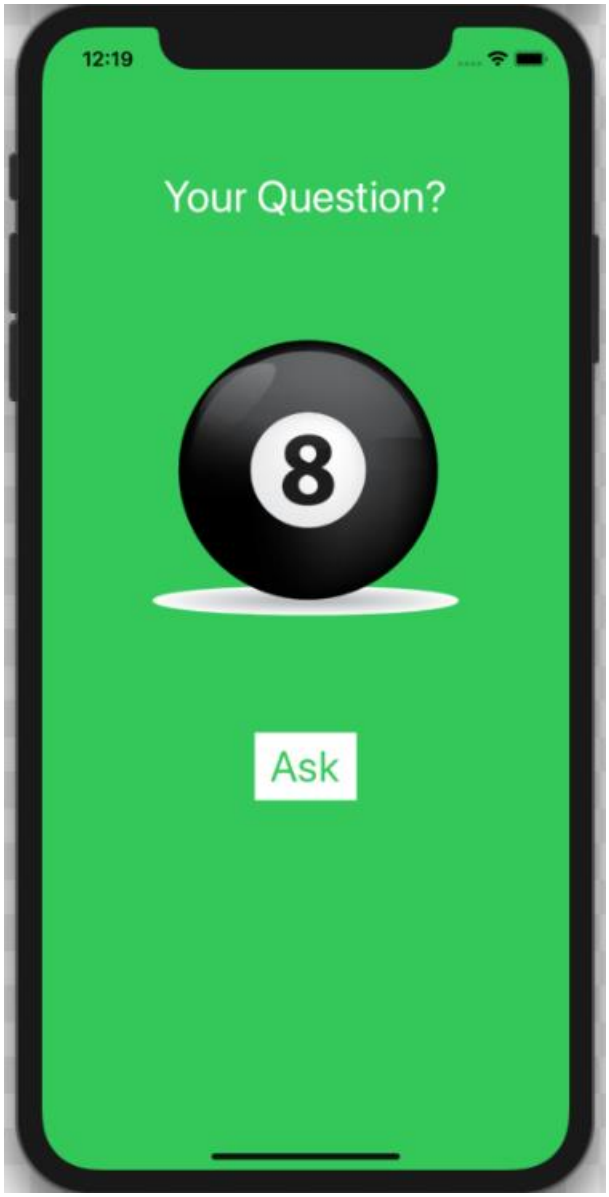
3. Methodology

- Methodology Used in the Lab:
  - UI Design: Designed the user interface using Flutter's widget-based approach, including MaterialApp, Scaffold, AppBar, and Image widgets.
  - State Management: Utilized StatefulWidget to manage the state of the application, enabling dynamic UI updates using the setState() method.
  - Randomization: Used Dart's Random class to generate random numbers representing the faces of the dice.

    - User Interaction: Facilitated user interaction through TextButton widgets with onPressed() callbacks.
    - Feedback Mechanism: Provided visual feedback by updating the dice images with the newly randomized faces upon user interaction.
- App Development Process:
    - Set up the Flutter development environment.
    - Initialized a new Flutter project.
    - Designed the UI layout using Flutter widgets.
    - Implemented state management with StatefulWidget.
    - Implemented dice rolling logic.

4. Results

- Lab Outcomes:
    - Created a simple dice rolling app using Flutter, displaying two dice images.
    - Both dice faces are randomly changed when a user taps on either die, simulating the act of rolling dice.
- Screenshots:

- 

5. Discussion

- Results Analysis:
  - Functionality: Successfully achieved the primary objective of simulating dice rolling.
  - User Experience: Provided a simple and intuitive user experience with clear feedback, enhancing engagement.
  - Randomization: Utilized Dart's Random class effectively for realistic dice rolling results.

  Strengths and Weaknesses of Cross-Platform Mobile App Development:
- Strengths:
  - Code Reusability: Saves time and effort by reusing code across multiple platforms.

    - Consistent User Experience: Ensures consistent app behavior across different platforms.
- Weaknesses:
    - Dependency on Frameworks: Challenges may arise due to framework limitations or compatibility issues with platform updates.

6. Conclusion

- Main Findings:
    - State Management: Enables real-time UI updates based on changes in the app's state.
    - Randomization: Enhances the authenticity of the dice rolling simulation.
    - User Experience: Provides a simple and engaging user experience.
- Recommendations for Future Work:
    - Add sound effects, customizable dice features, and animations to enhance the app.
    - Support localization for broader accessibility.
    - Implement a settings menu for user customization.