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REPORT [Tiny Minds] Flutter Application

Version[Final Version]



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Abstract

In the contemporary digital era, educational applications have become an integral part of early childhood education, offering an engaging and interactive approach to learning. This application has been meticulously designed to assist children in learning the correct pronunciation of the English language for basic concepts such as letters, numbers, colors, shapes, and animals.

By leveraging visually appealing graphics and simple explanations, the application maintains an attractive and user-friendly interface for children. Additionally, it includes an interactive game where children can match words with their corresponding images, reinforcing their learning through play.

Most importantly, this application does not require any login or account creation, ensuring seamless and immediate access for its young users.

Contents

Chapter 1 : Introduction.....	3
1.1 Introduction	3
1.2 Problem Definition	3
1.3 Project Objectives	4
1.4 Project Scope	4
Chapter 2 : System Analysis	5
2.1 Requirements Elicitation	5
2.2 Functional Requirements	5
2.3 Non-Functional Requirements	6
2.4 Requirements Specifications	7
2.4.1 Use Case Diagram	7
2.4.2 Tables Description of use case	8
2.5 Development Methodology	9
Chapter 3 : System Design.....	10
3.1 User Interface Design	10
Chapter 4 : Conclusion and Future Work	14
4.1 Conclusion	14
4.2 Goals Achieved	14
4.3 Limitations and Future Work	14
References:	15

Chapter 1 : Introduction

1.1 Introduction

Early childhood is a critical period for language acquisition and cognitive development. During these formative years, children are highly receptive to new information, making it the perfect time to introduce foundational language skills. In response to this need, our application aims to provide a comprehensive yet engaging learning experience for young children.

The app focuses on teaching correct English pronunciation of essential vocabulary, including letters, numbers, colors, and shapes and Animals. By combining auditory and visual stimuli, the app enhances the learning process, making it more effective and enjoyable.

The application is designed with simplicity and usability in mind, ensuring that even the youngest users can navigate it without difficulty. The consistent use of colors and attractive graphics helps to maintain the child's interest and make learning a delightful experience. Moreover, the inclusion of an interactive game adds an element of fun, encouraging children to apply what they have learned in a playful context. This holistic approach not only facilitates learning but also fosters a positive attitude towards education from an early age.

1.2 Problem Definition

Many existing educational applications are either too complex for young children or require cumbersome login processes.

Additionally, there is a lack of engaging and visually appealing tools specifically designed to teach pronunciation to young learners. Therefore, there is a need to develop an application that meets these needs, combining simplicity and educational attractiveness.

1.3 Project Objectives

- Develop an easy-to-use application with simple and attractive interfaces.
- Teach correct English pronunciation of letters, numbers, colors, shapes, and animals.
- Include interactive content and educational games to keep children engaged.
- Eliminate the need for login or account creation to simplify access.

1.4 Project Scope

The project focuses on creating an application for children aged 3-7 years, covering the basics of English pronunciation.

The application will feature interactive lessons and simple categorization games, ensuring the content is both educational and entertaining. The application will be available on various smart devices such as mobile phones and tablets.

Chapter 2 : System Analysis

2.1 Requirements Elicitation

- Observations of children's interactions with similar educational tools.
- Analysis of existing educational applications to identify strengths and weaknesses.

2.2 Functional Requirements

1. Browsing and Navigation:

- Users should be able to browse through different categories (letters, numbers, colors, shapes, animals) via the application interface.
- Users should be able to easily navigate between these categories.

2. Interacting with Educational Content:

- Users should be able to tap on any item within the categories to hear the correct pronunciation of that item.
- Users should be able to view illustrative graphics associated with each item.

3. Playing Interactive Games:

- allows users to match words with their corresponding images. The game presents the user with a word, either displayed on the screen, and they must then select the correct image that represents that word from a set of options.

4. Direct Access to Content:

- Users should be able to use the application without needing to create an account or log in.
- Users should be able to start learning immediately upon opening the application.

5. Receiving Encouragement:

- Users should be motivated by positive messages and visual reinforcements.

6. View Settings:

- Users should be able to read about the application, share it, and communicate with us.

2.3 Non-Functional Requirements

1. Usability:

- The interface should be simple and intuitive, designed specifically for children aged 3-7. The navigation should be straightforward, allowing children to interact with the app independently.
- Consistent use of color schemes and attractive graphics is essential to keep children engaged. The design should be visually appealing while avoiding overstimulation.

2. Accessibility:

- The application should be easily accessible, with no need for login or account creation. This feature ensures that children can start using the app immediately without any barriers.

3. Performance:

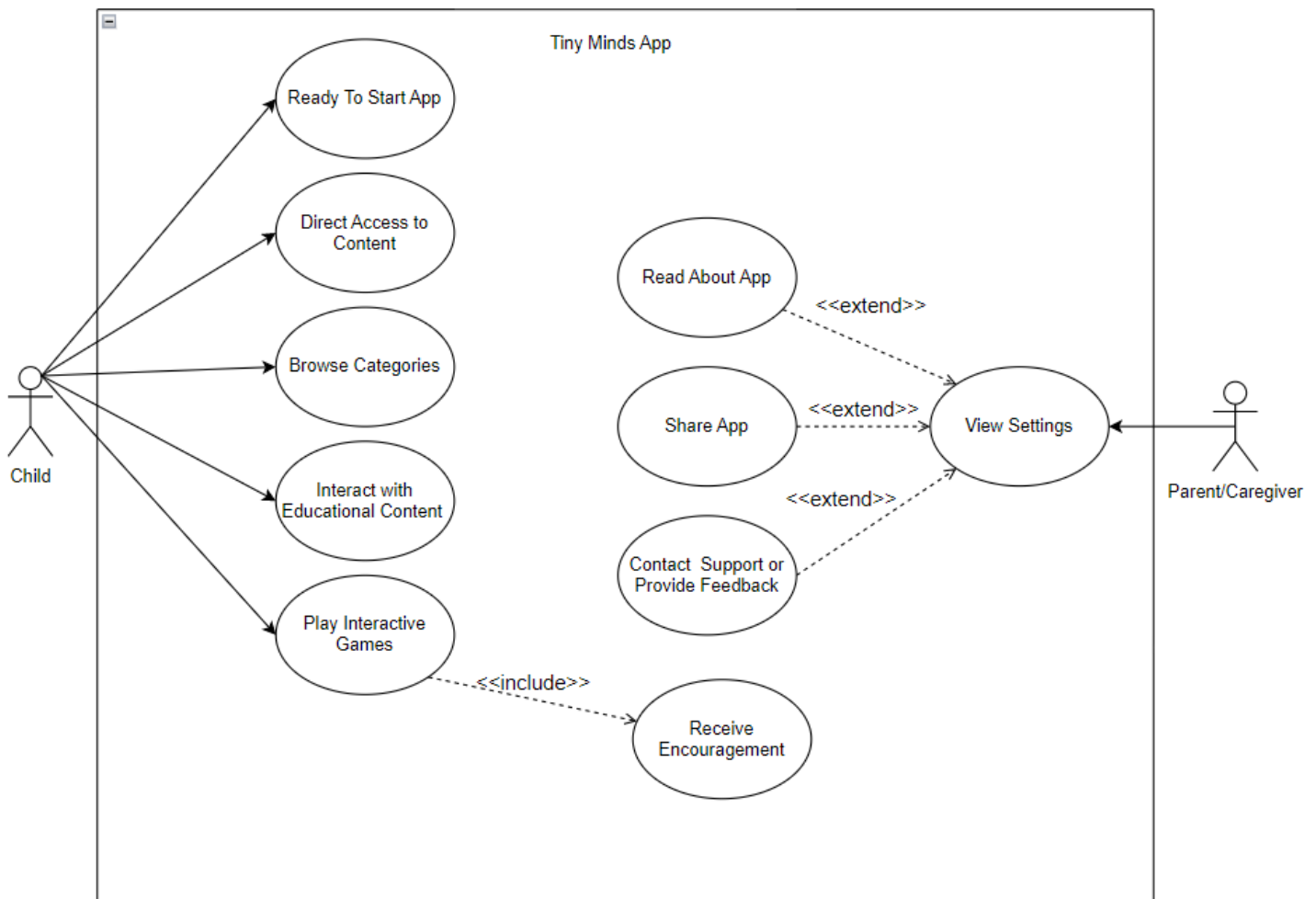
- The application must load quickly and run smoothly on various devices, including tablets and smartphones. This ensures a seamless user experience and prevents frustration caused by slow performance or technical issues.

4. Security:

- The app should be safe for children, free from inappropriate content, advertisements, or any other elements that could negatively impact the child's experience. Ensuring a secure environment is paramount to maintaining the trust of parents and caregivers.

2.4 Requirements Specifications

2.4.1 Use Case Diagram



(Figure 3.1: Use Case)

2.4.2 Tables Description of use case

Use Case Name:	Ready to Start
Triggering Event:	The user opens the app and reaches the home screen.
Brief Description:	This use case requires the user to press the "Ready" button to begin using the app.
Participating Actor:	Child
Precondition:	The app is open, and the child is on the home screen.
Flow of Events:	<ol style="list-style-type: none">1. The user opens the app.2. The app displays a "Ready" button on the home screen.3. The user presses the "Ready" button.4. The app enables access to the educational content.
Postcondition:	The user can start browsing categories and interacting with content.
Exception Condition:	No exceptions are expected for this use case.

(Table 3.2: Description of use case 'Ready to Start')

Use Case Name:	Receive Encouragement
Triggering Event:	The user match items correctly
Brief Description:	This use case provides positive messages
Participating Actor:	Child
Precondition:	The user playing interactive game.
Flow of Events:	<ol style="list-style-type: none">1. The user match an item correctly.2. The app displays a positive message (e.g., "Great job!") or a visual effect (e.g., hey five).
Postcondition:	The user feels encouraged to continue learning.
Exception Condition:	No exceptions are expected for this use case.

(Table 3.3: Description of use case 'Receive Encouragement')

2.5 Development Methodology

The Agile methodology is used in projects where requirements are expected to evolve and change. Therefore, it can be said that Agile is suitable for projects with a dynamic scope, flexible budget, and adaptable schedule, making it very suitable for this project.

Agile is an iterative and incremental methodology used in the project development process. In this methodology, the project is divided into small, manageable units called sprints, each delivering a potentially shippable product increment. It is most useful when the project team is experienced in working collaboratively and adapting to changing requirements.

The Agile methodology has many advantages as follows:

1. **Flexibility and Adaptability:** Agile allows for changes in requirements even late in the development process, ensuring the product remains aligned with end-user needs.
2. **Continuous Feedback and Improvement:** Frequent feedback from stakeholders and end-users helps to refine and improve the product continuously.
3. **Enhanced Collaboration:** Regular communication and collaboration among team members and stakeholders enhance project understanding and commitment.
4. **Early and Predictable Delivery:** By breaking the project into sprints, Agile ensures that deliverables are provided early and consistently.
5. **Risk Management:** Agile's iterative approach helps to identify and mitigate risks early in the project lifecycle.

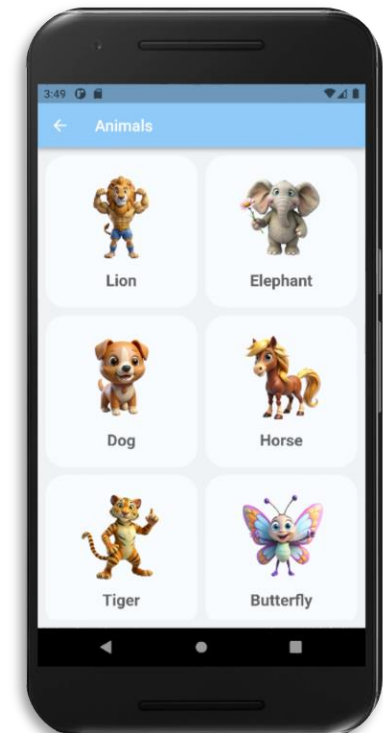
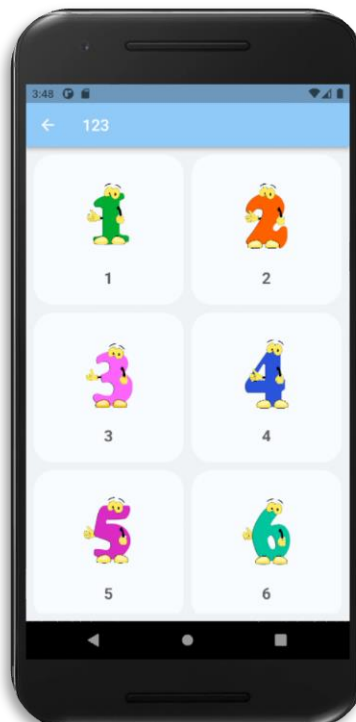
The disadvantages of Agile methodology:

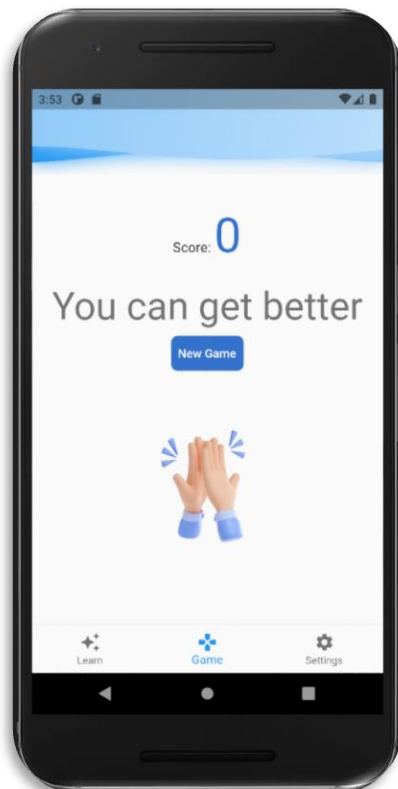
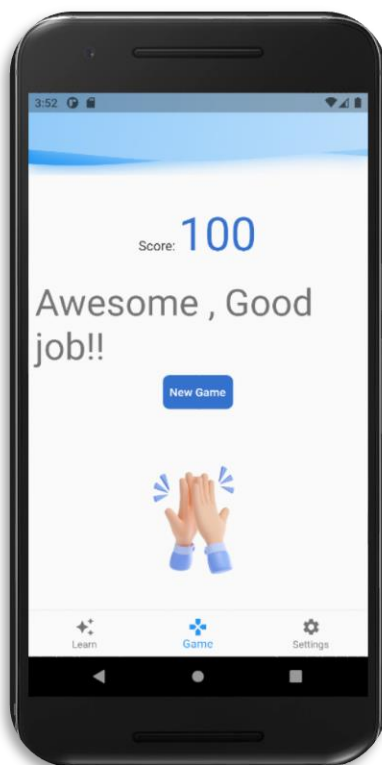
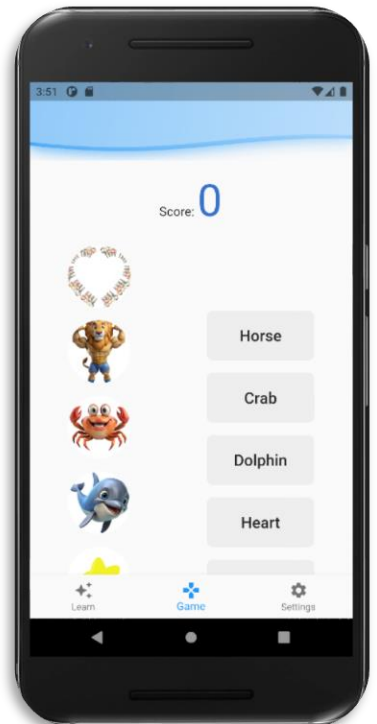
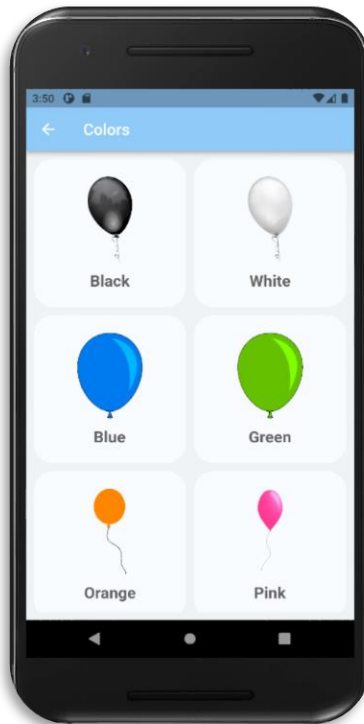
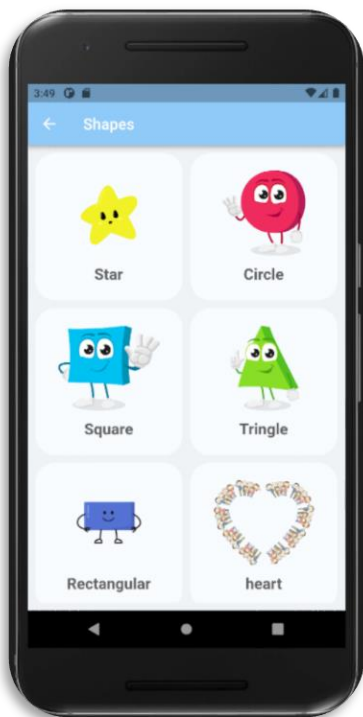
1. **Requires Experience:** Agile requires an experienced team proficient in working collaboratively and managing iterative processes.
2. **Potential for Scope Creep:** Without careful management, the flexibility of Agile can lead to uncontrolled changes in scope.
3. **High Stakeholder Involvement:** Agile requires significant time and involvement from stakeholders, which can be challenging to maintain.
4. **Less Predictability:** Due to its iterative nature, Agile can be less predictable in terms of timelines and final costs compared to linear methodologies.

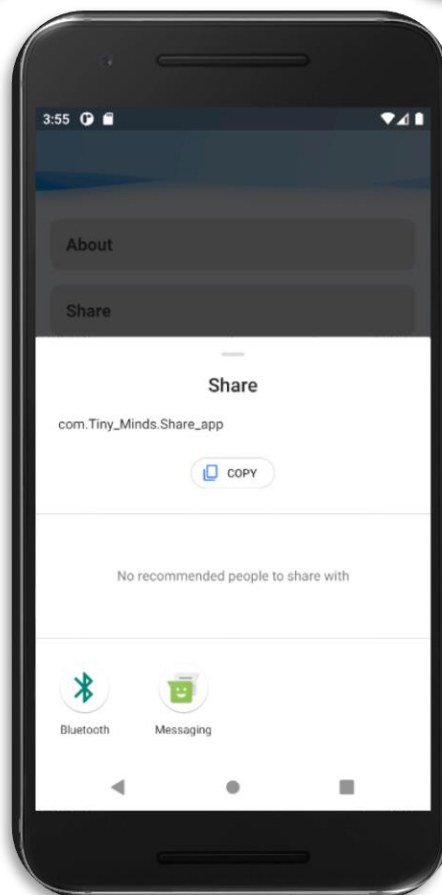
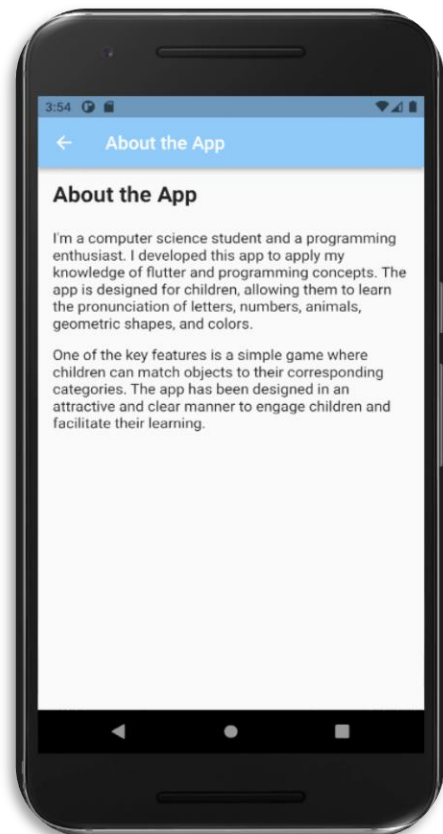
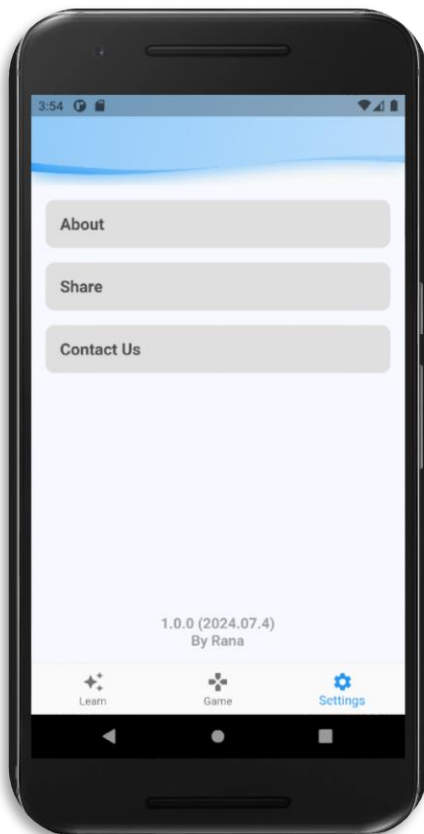
In conclusion, Agile is a suitable methodology for this project due to its flexibility, ability to handle changing requirements, and focus on continuous improvement and customer satisfaction.

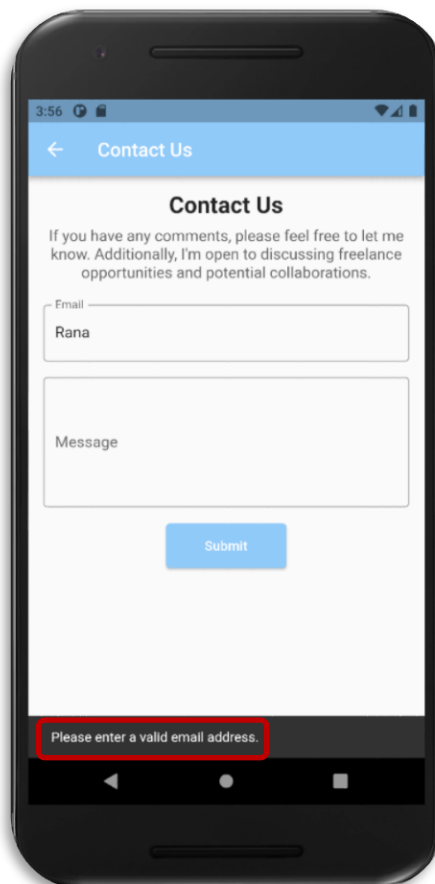
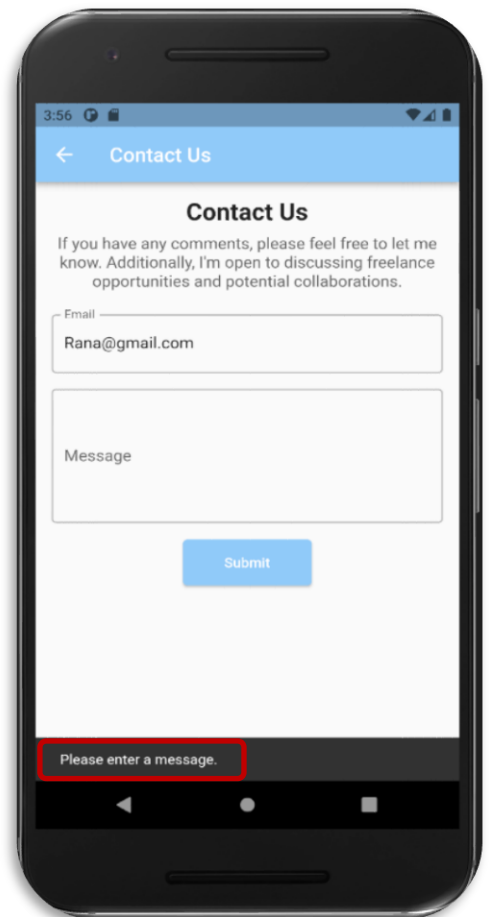
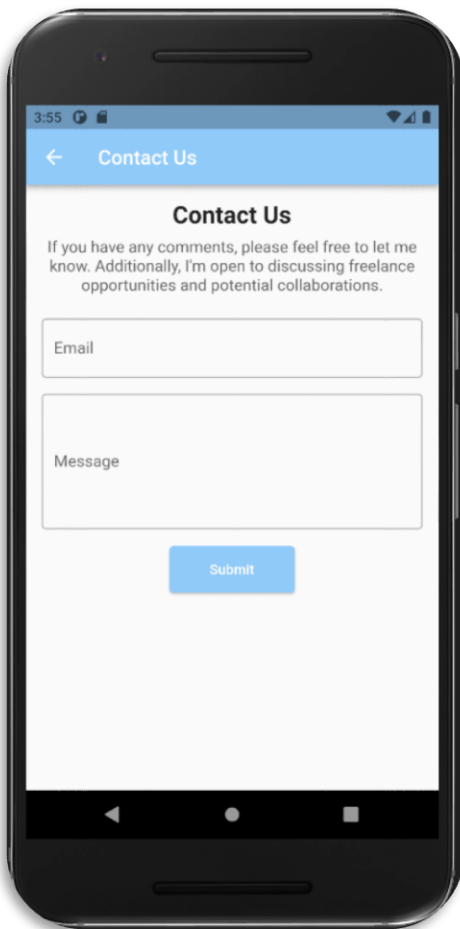
Chapter 3 : System Design

3.1 User Interface Design









Chapter 4 : Conclusion and Future Work

4.1 Conclusion

The educational application described offers a compelling and interactive approach to teaching young children the fundamentals of the English language. By leveraging visually engaging graphics, simple explanations, and an interactive game component, the app creates an immersive learning environment that caters to the needs and preferences of its target audience - early childhood learners.

4.2 Goals Achieved

- Provides an intuitive and user-friendly interface that attracts and engages young children
- Covers key concepts such as letters, numbers, colors, shapes, and animals through clear, concise instruction
- Reinforces learning through an interactive game that allows children to match words with their corresponding images
- Enables immediate and seamless access without the need for login or account creation

4.3 Limitations and Future Work

- The application's content is currently limited to basic vocabulary and concepts in English, and may benefit from expanding to include more advanced topics or multilingual support in the future.
- While the interactive game component is engaging, the scope of gameplay could be further expanded to include more challenging levels or additional game modes to sustain long-term user interest.
- Incorporating adaptive learning algorithms or personalized recommendations based on user performance could enhance the overall learning experience.

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