



**AN-NAJAH NATIONAL UNIVERSITY**

**FACULTY OF ENGINEERING AND INFORMATION  
TECHNOLOGY**

**Computer Engineering Department**

# **Mommy Bridge**

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**A report submitted in partial fulfillment of the requirements for Bachelor degree  
in Computer Engineering - Software Project**

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# **DISCLAIMER STATEMENT**

This report was written by students Masa Masri and Rahaf Nasrallah at the Computer Engineering Department, Faculty of Engineering, An-Najah National University. It has not been altered or corrected, other than editorial corrections, as a result of assessment and it may contain language as well as content errors. The views expressed in it together with any outcomes and recommendations are solely those of the students. An-Najah National University accepts no responsibility or liability for the consequences of this report being used for a purpose other than the purpose for which it was commissioned.

# Acknowledgement

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Furthermore, we are grateful to our families and friends who stood by us during the demanding phases of this project.

We also want to thank the teachers from Al-Khutwa Al-Sagheera and moms we've asked that helped us construct games that would be suitable for kids of the age range we aimed for.

Lastly, we express our profound appreciation to the open-source community, whose vast array of tools, libraries, and resources greatly contributed to the development process.

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# **Abstract**

This project introduces an app designed to enhance communication and connection between nursery schools, parents, and teachers. The app provides real-time updates and secure messaging, allowing parents to stay informed about their child's activities and well-being during school hours. Additionally, it offers features such as meal tracking, incident reporting, administrative functions, and a fun educational games section for children to engage in friendly competition. The aim is to improve parental involvement, streamline administrative tasks, and foster smoother communication between parents and teachers.

# Chapter 1: Introduction

Some nursery schools rely on notebooks to write what the kids ate, the amount of it and naps intervals, the parent sees the notebook after picking up their child, but this is unreliable since it doesn't provide real time connection with parents.

This app lets parents enroll their kids, and get daily secure messages showing them how and what their children are doing at school. Teacher to parent communication is more vital than ever. From naps and snacks, to magic moments or what happened when they tripped over in the garden and bumped their knee, parents have to always be a part of their child's journey. As parents nowadays spend more time away from their kids.

This project covers aspects like chatting, a feed to show kids activities, naps intervals, incidents and whom children are involved in, meal times and types, administration of the nursery school, registering kids and monitoring installments.

We hope this project can also make a difference on the administrative side of things,

The head of these schools can access information and reports and deal with what their job entails in an easier, more practical way.

We also hope that through this project the communication between the parents and teachers will be smoother, this can be very helpful especially for working moms.

Also, we developed a fun and educational games section and quizzes where children can compete for high scores. They earn points and aim to see their picture on the top leaderboard. This motivates them to play more and by that they learn more, and allows teachers and parents to track their progress effectively.

This project can be a great step for the nursery school management and connection in our country.

## Chapter 2: Constraints

While working on our project, we faced many constraints and difficulties that affected on time and consumed part of it. For example, supporting multiple languages introduces complexities in terms of localization, including text translation, UI adjustments, and cultural considerations. These challenges may impact the development timeline and require careful planning and coordination.

The app should be user-friendly, intuitive, and easy to navigate for both parents and nursery school staff. Designing a user interface that is visually appealing, engaging, and suitable for users of different age groups, including children and adults, presents a significant challenge.

Developing interactive and educational games that engage children and facilitate their learning requires careful consideration of age-appropriate content, game mechanics, kids friendly voices, and tracking systems to monitor children's progress effectively. Implementing a reliable scoring and leaderboard system is essential to motivate children and enhance their learning experience.

# Chapter 3: Literature Review

In recent years, there has been an increasing recognition of the limitations associated with traditional communication methods used by nursery schools to keep parents informed about their children's activities and progress. The reliance on notebooks, where teachers manually record information about meals, naps, and incidents, has proven to be unreliable due to the lack of real-time connection with parents. Parents typically have to wait until the end of the day to receive updates, which often results in delayed and fragmented communication.

To address these challenges, mobile applications have emerged as a promising solution to bridge the communication gap between nursery schools and parents. Research has shown that mobile apps designed specifically for nursery schools enable parents to enroll their children and receive daily secure messages about their activities, providing them with real-time updates and insights into their child's experiences at school. This instantaneous communication is especially vital in today's fast-paced world, where parents spend more time away from their children due to work commitments.

Effective teacher-to-parent communication is essential for fostering a strong partnership between educators and parents. Mobile applications facilitate this connection by enabling teachers to share important details with parents, ranging from

routine activities such as naps and snacks to significant moments like accidents or incidents that occurred during the day. By actively involving parents in their child's journey, these apps contribute to a more comprehensive and collaborative approach to early childhood education.

In addition to improving communication, mobile applications offer a wide range of features that enhance the overall nursery school experience. For example, this project aims to incorporate chat functionality, allowing parents and teachers to engage in direct conversations and address specific concerns or questions.

Moreover, a feed displaying children's activities, including naps, intervals, incidents, and the individuals involved, keeps parents well-informed and actively engaged in their child's daily life at school. Meal times and types can also be easily communicated through the app, ensuring parents are aware of their child's dietary intake.

On the administrative side, implementing a mobile application for nursery schools can streamline various administrative processes. The app enables the easy registration of children, simplifies monitoring of installment payments, and provides the head of the school with access to crucial information and reports. This simplification enhances efficiency and effectiveness in managing the nursery school, allowing administrators to focus on their core responsibilities.

Furthermore, this project introduces an innovative element by incorporating a fun and educational games section. By providing

interactive games and quizzes, children are motivated to play more and learn in the process. Tracking their progress through scoring and leaderboard systems enables teachers and parents to monitor and evaluate their educational development effectively.

Overall, the integration of mobile applications in nursery schools holds significant potential to revolutionize communication, improve parental involvement, and enhance administrative processes. By enabling real-time updates, facilitating direct communication, and incorporating educational elements, these apps contribute to a more comprehensive and engaging learning environment for children, as well as provide convenience and peace of mind for parents and teachers alike. The positive impact of such applications on nursery school management and parent-teacher connection has the potential to be substantial, ultimately benefiting early childhood education nationwide.

# Chapter 4: Implementation

## Development Languages

The mobile application was developed using the Flutter framework, which allowed for cross-platform compatibility and efficient development.

The website was developed using the ReactJS Library which was used to create a single page application. This approach makes the application more user-friendly and easier to navigate, as users can see the entire application at once.

The backend of the project was built using Node.js, a JavaScript runtime environment that enables server-side development. Node.js offers scalability and flexibility, making it suitable for handling concurrent connections and managing data processing tasks.

## Packages and Libraries

Several key packages and libraries were utilized throughout the development process to enhance the functionality and performance of the application:

- `cupertino_icons: ^1.0.2`: This package provides the Cupertino icons, which are the icons used to style app design.
- `google_fonts: ^2.0.0`: This package allows the integration of custom Google Fonts into the app, providing a wide range of font options for text styling.

- provider: ^6.0.5: Provider is a state management package that facilitates the implementation of the Provider design pattern, allowing efficient data sharing and management across the app.
- image\_picker: ^0.8.6+4: This package enables the selection and retrieval of images from the device's gallery or camera for use within the app.
- shared\_preferences: ^2.0.18: This package provides a simple key-value storage mechanism for storing and retrieving small amounts of persistent data, used to save the localization selected and the token of the user to implement sessions.
- flutter\_datetime\_picker: ^1.5.1: Flutter\_datetime\_picker offers date and time picker dialogs, facilitating the selection and handling of date and time values, so the family can see their children's activities at specific date or event.
- introduction\_screen: ^3.1.4: This package helps in creating a user-friendly introduction or onboarding screen for the app, allowing users to become familiar with its nature.
- easy\_localization: ^3.0.1: Easy\_localization simplifies the process of implementing multi-language support within the app, enabling easy localization and translation management.
- firebase\_core: ^2.4.1: Firebase\_core is the core package required for integrating Firebase services into the app, providing essential functionality and configuration.
- firebase\_auth: ^4.2.5: Firebase\_auth offers user authentication features, enabling secure user login and registration using Firebase Authentication.
- cloud\_firestore: ^4.3.1: Cloud\_firestore provides access to the Cloud Firestore database, allowing efficient storage, retrieval, and querying of structured data.
- firebase\_messaging: ^14.4.0: Firebase\_messaging enables push notification functionality, allowing the app to receive and handle notifications sent from Firebase Cloud Messaging.

- `simple_animations`: ^3.1.0: This package offers a set of simple animations that can be easily integrated into the app's user interface, enhancing visual appeal and interactivity.
- `audioplayers`: ^0.19.1: `Audioplayers` provides audio playback capabilities, allowing the app to play audio files.
- `speech_to_text`: ^6.1.1: This package offers speech recognition functionality, enabling the conversion of spoken words into written text.
- `screenshot`: ^1.3.0: `Screenshot` allows capturing screenshots of the app's user interface programmatically, so as to save the children's drawings.
- `flutter_colorpicker`: ^1.0.3: `Flutter_colorpicker` provides a color picker widget for selecting colors to draw in.
- `charts_flutter`: ^0.12.0: `Charts_flutter` enables the integration of interactive charts and graphs into the app, facilitating data visualization, to show which games are played more.
- `http`: ^0.13.5: `Http` is a package for making HTTP requests, allowing the app to communicate with web servers and retrieve data.
- `jwt_decoder`: ^2.0.1: `Jwt_decoder` provides functionality to decode JSON Web Tokens (JWT), allowing the app to verify and extract information from JWTs.
- `react-router-dom`: A routing library for React applications, allowing for easy navigation and URL handling.
- `bootstrap`: A popular CSS framework that provides a collection of pre-styled components and a responsive grid system for rapid web development.
- `nivo`: A feature-rich data visualization library for React that offers a wide range of customizable charts, graphs, and visual elements.
- `material UI`: A comprehensive React UI framework that implements Google's Material Design principles, providing ready-to-use components and a cohesive design system for building modern and visually appealing user interfaces.

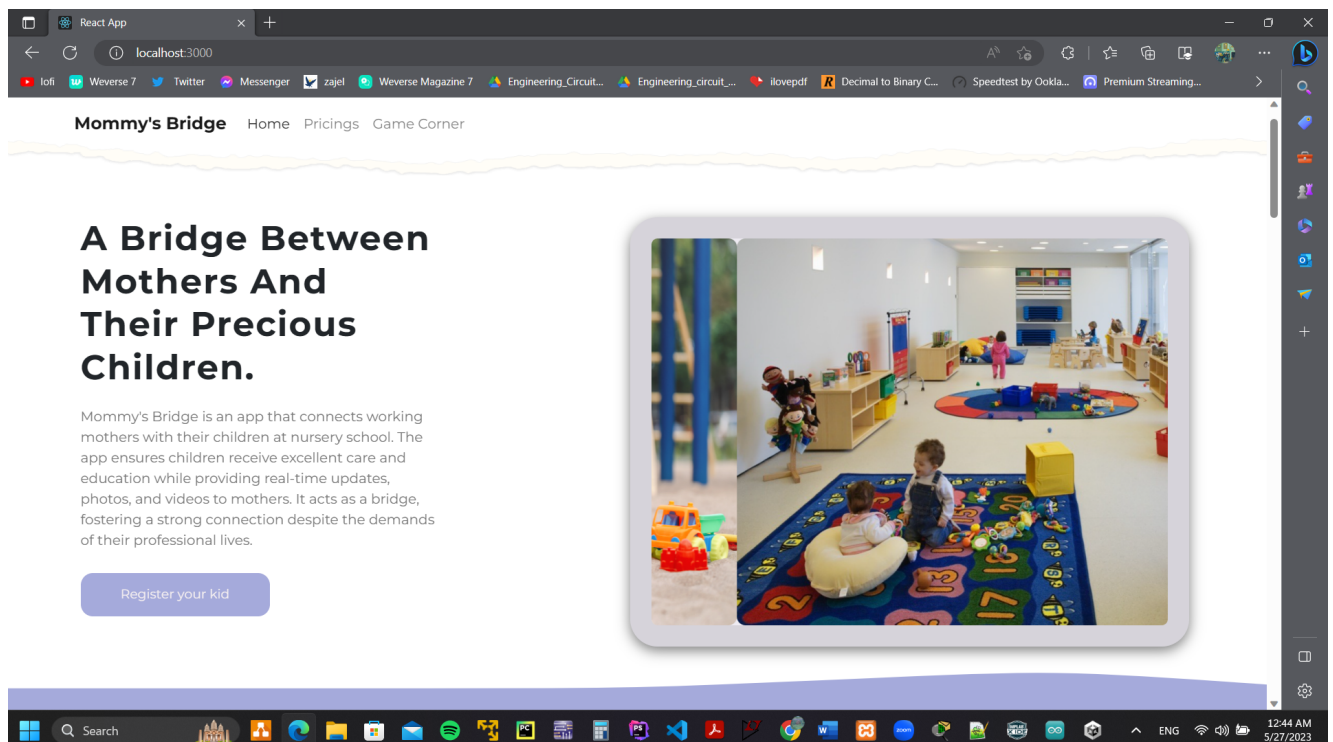
- formik: A form library for React that simplifies form management, validation, and handling of form submission, offering an intuitive and developer-friendly approach to form development.
- fullcalendar : A customizable JavaScript calendar library that allows to create interactive and visually appealing event calendars with features like drag-and-drop, event resizing, and various views (month, week, day).

# Chapter 5: Methodology

## • Landing Website:

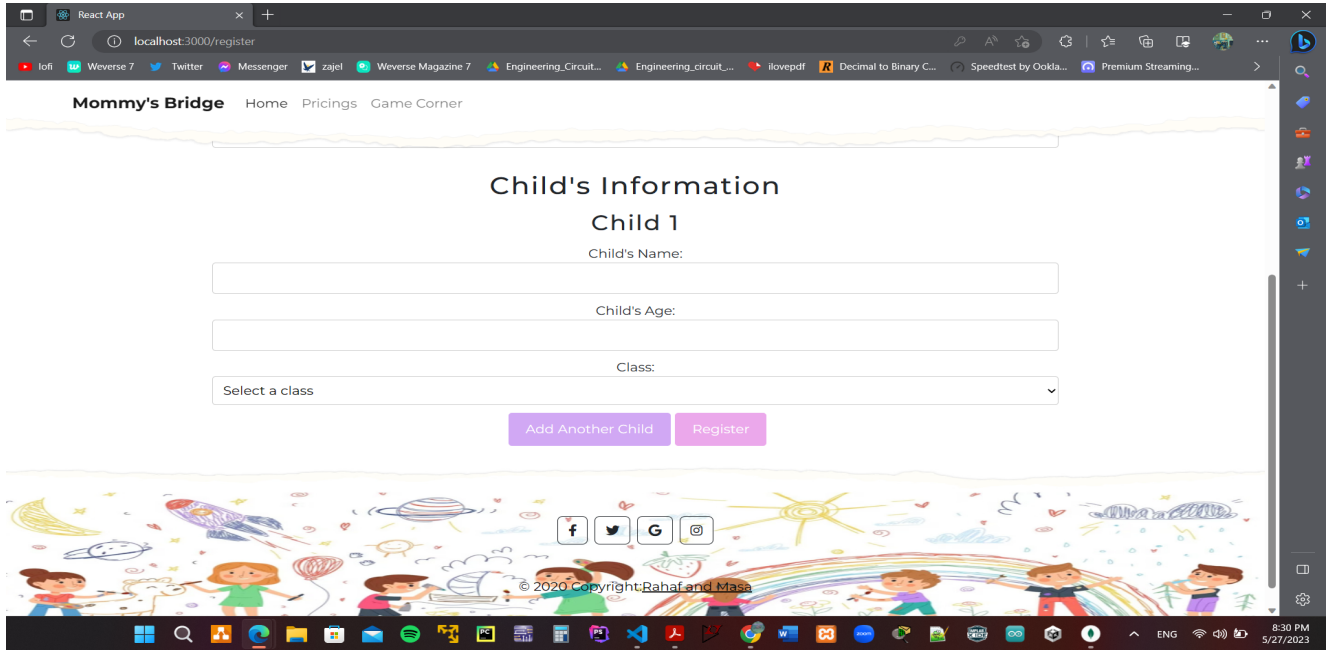
The landing page serves as an introduction to nursery school and its services.

When you first enter the page an introductory paragraph with a photo slider of the school is shown to give the moms a better idea of the school.

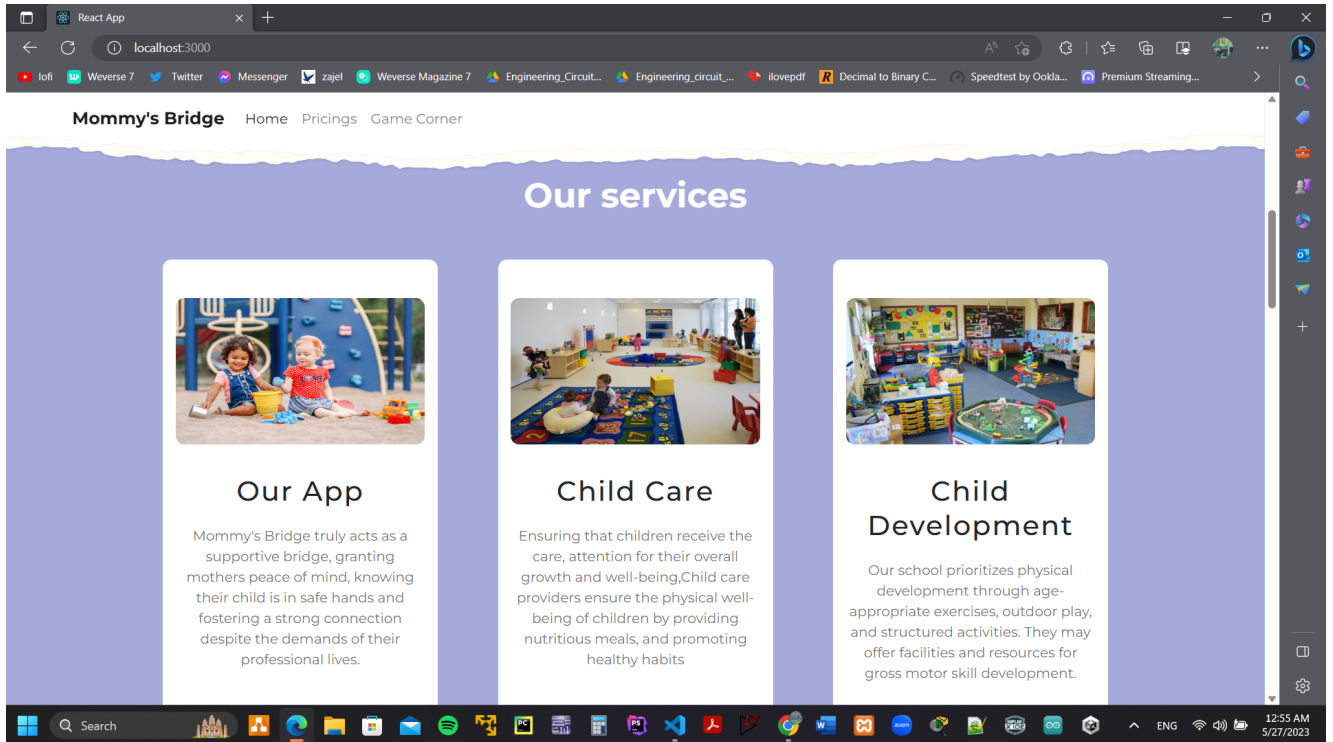


The mother can register here and add her children to the classes that are currently available based on the age of her children

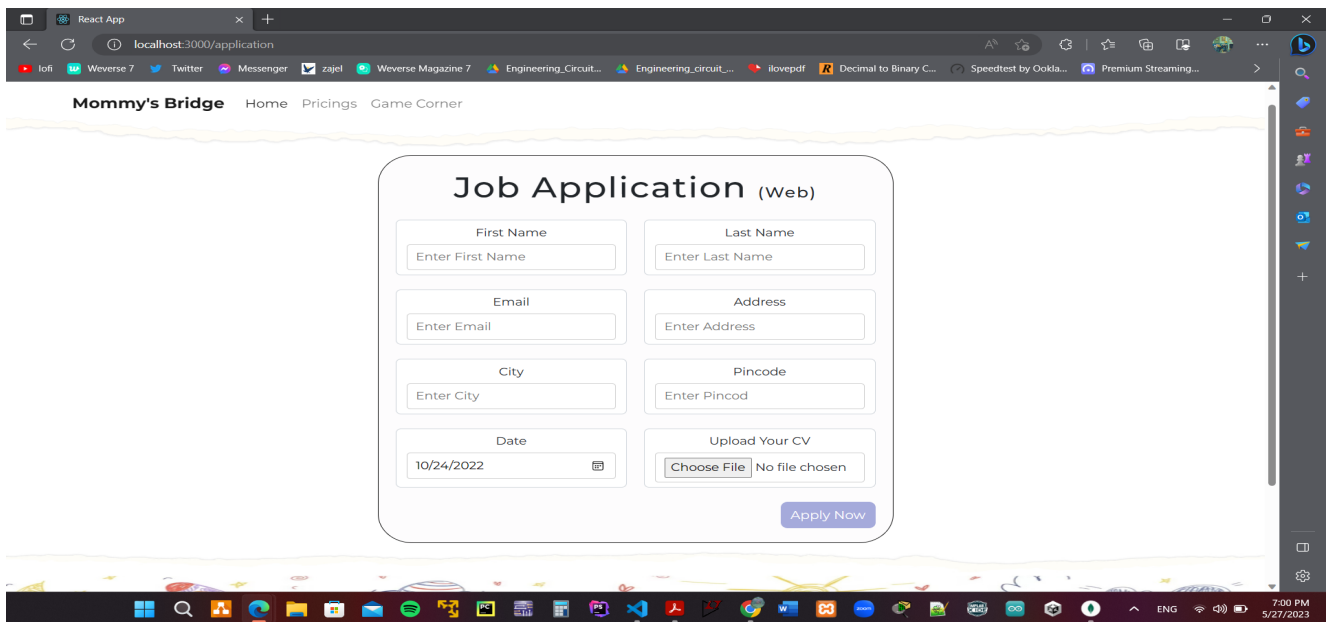
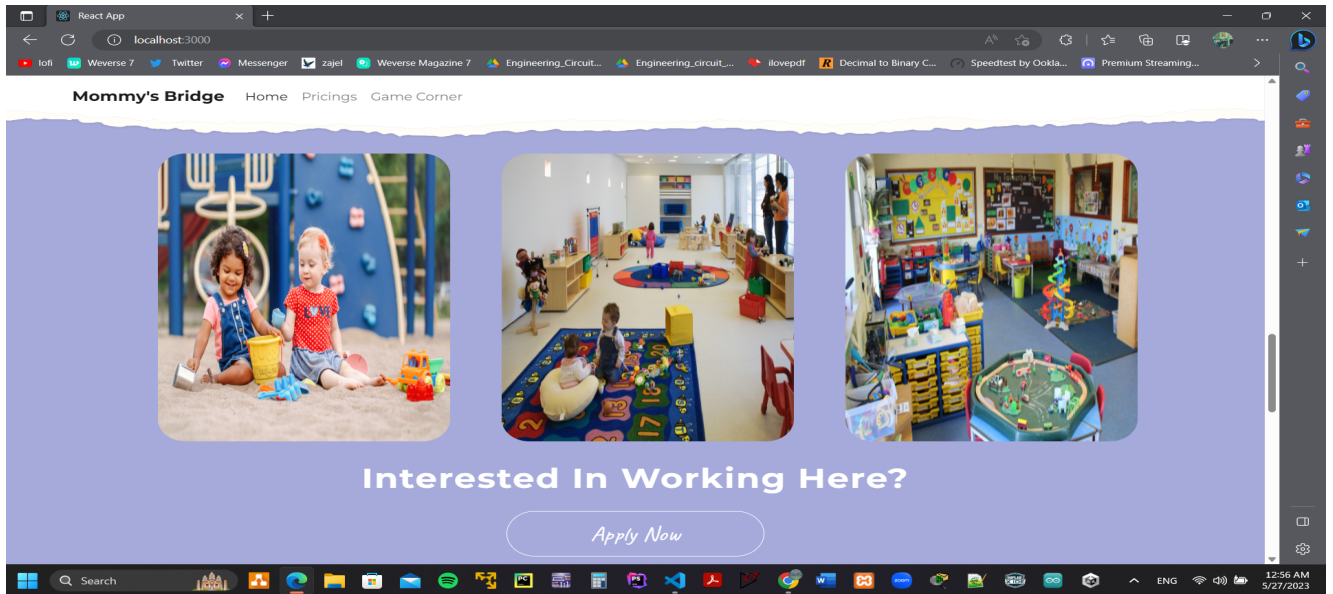
The screenshot shows a web browser window with the URL `localhost:3000/register`. The page title is "Mommy's Bridge" and the navigation menu includes "Home", "Pricings", and "Game Corner". The main content area is titled "Mother's Information" and contains four input fields: "Full Name:", "Email:", "Phone Number:", and "Password:". Below this is a section titled "Child's Information" with a sub-heading "Child 1" and a single input field for "Child's Name:". The browser's taskbar at the bottom shows various application icons and the system clock indicating 8:29 PM on 5/27/2023.



As you scroll down the services the school provides are demonstrated as cards.

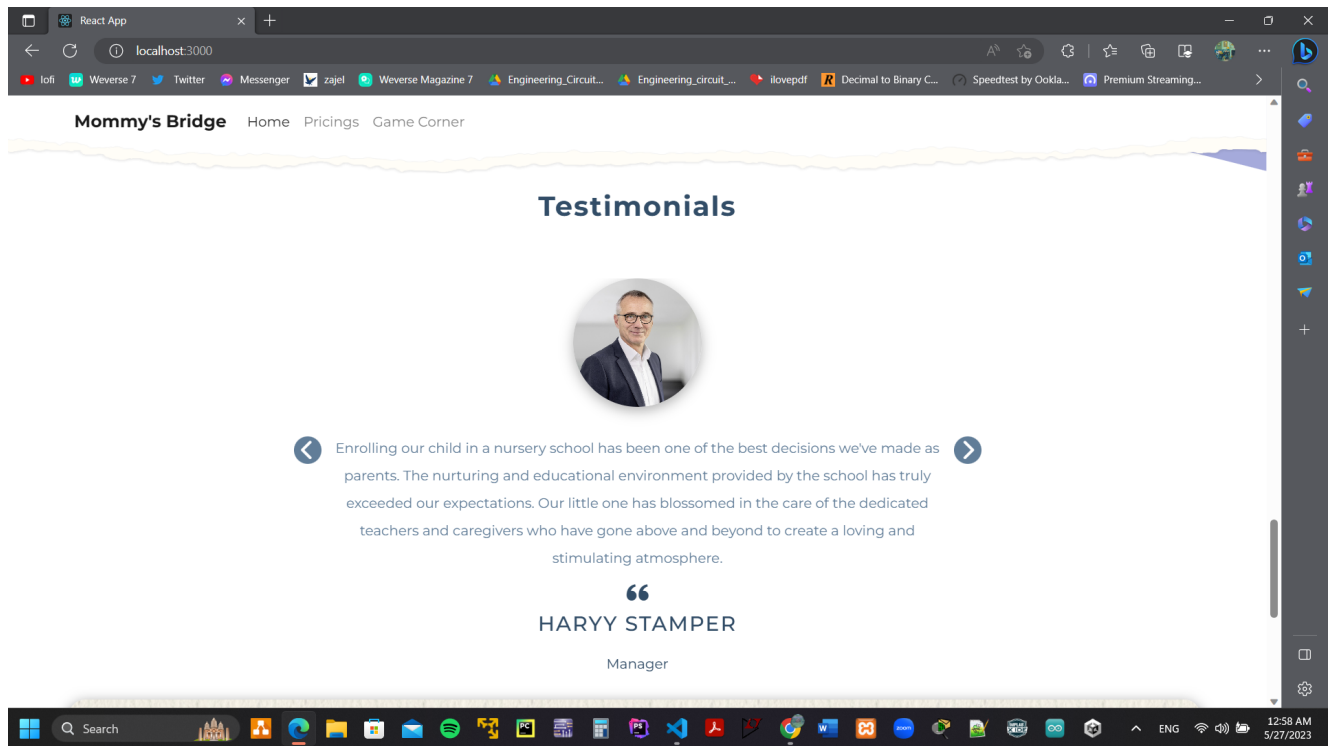


After that there is a section for people who'd like to apply for a job.

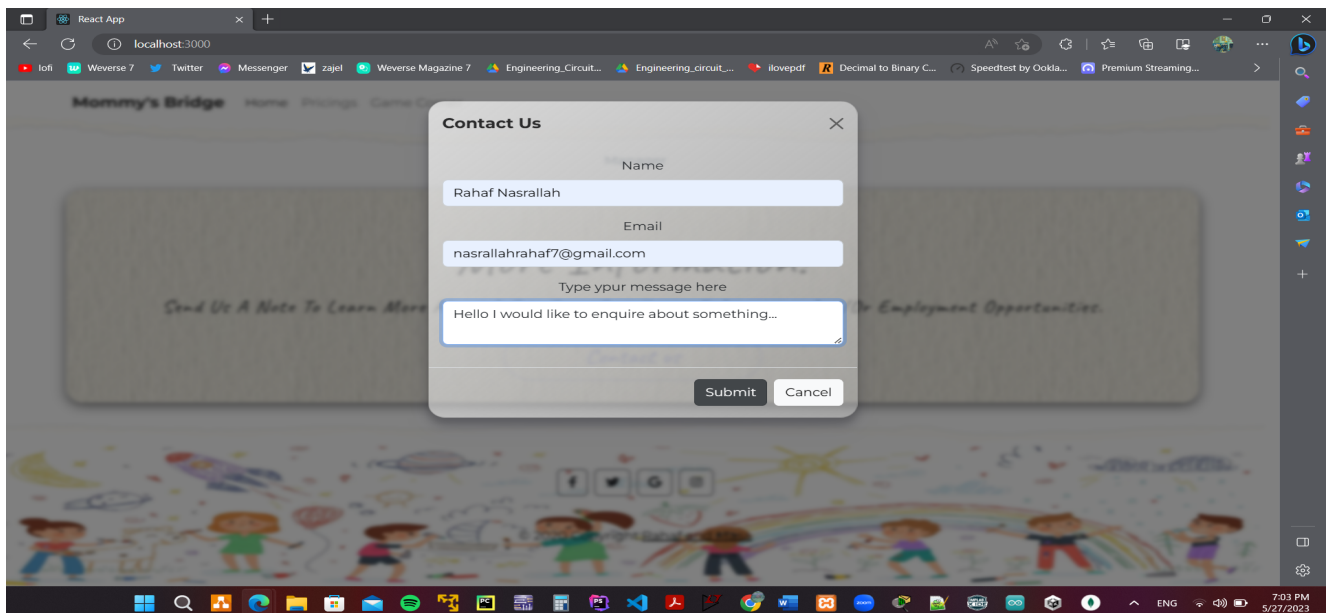
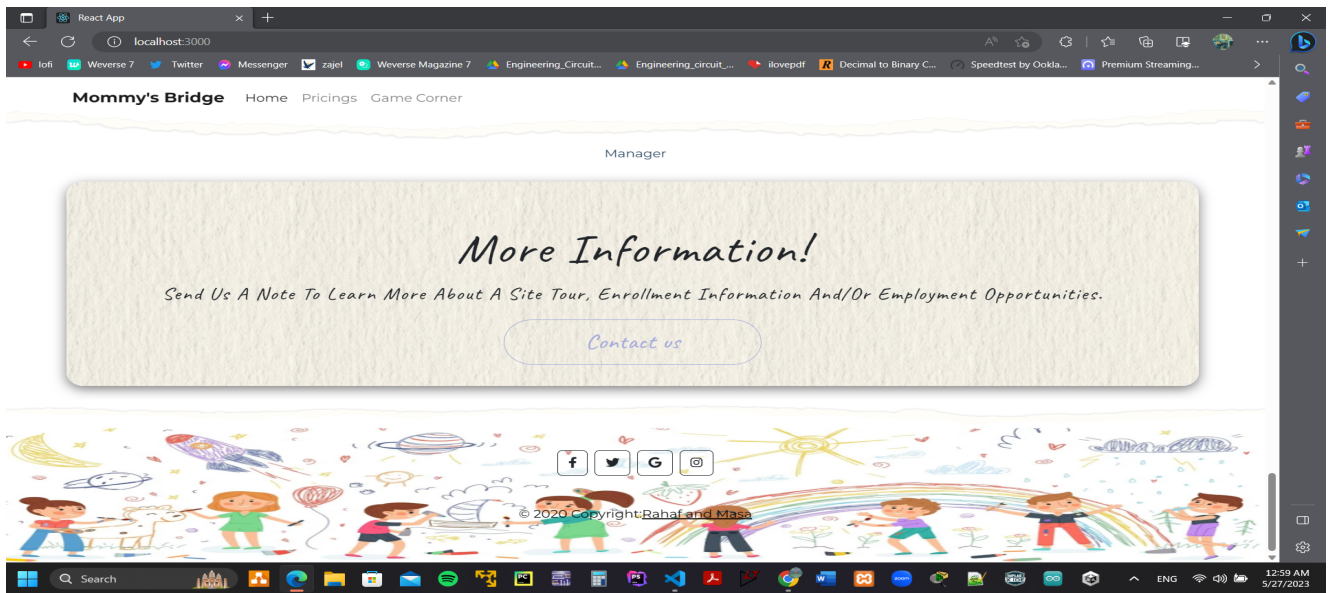


Above is the application form.

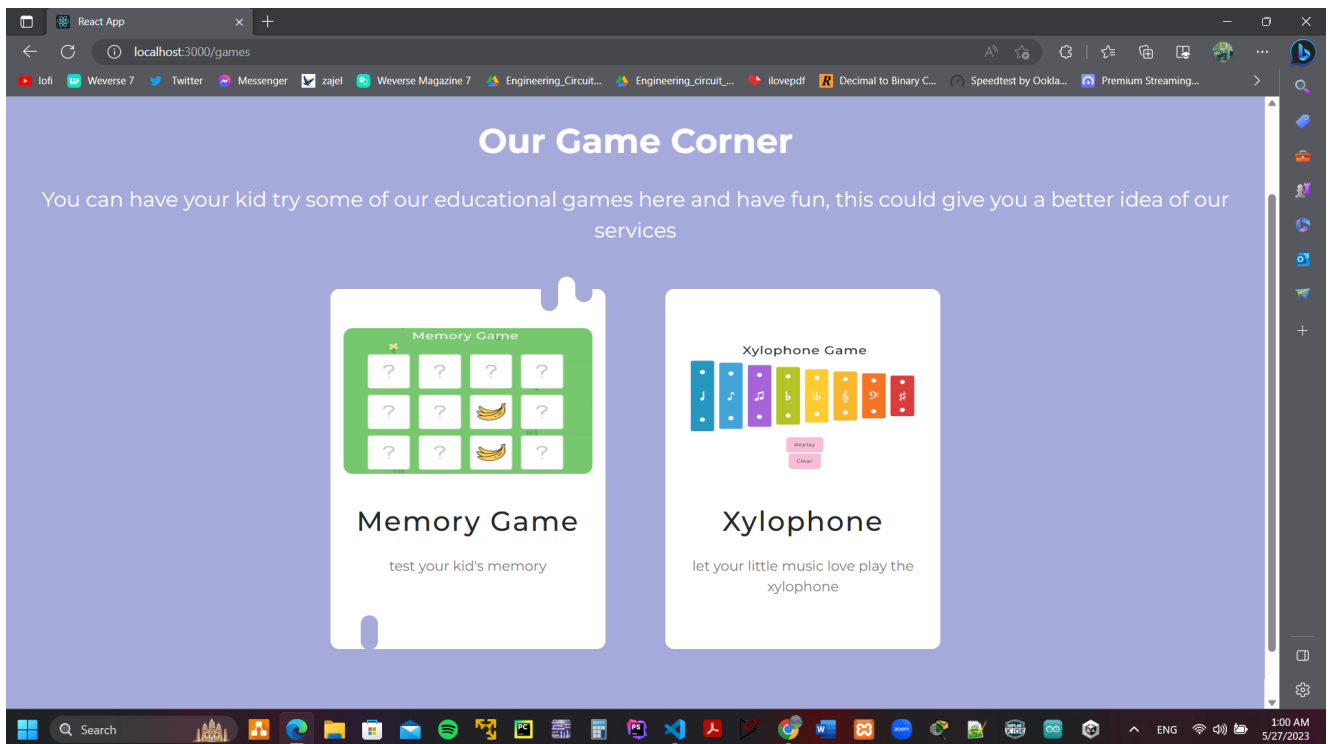
Then we have a testimonial section that demonstrates the parents that have entrusted their children with the school, and their opinions on it.



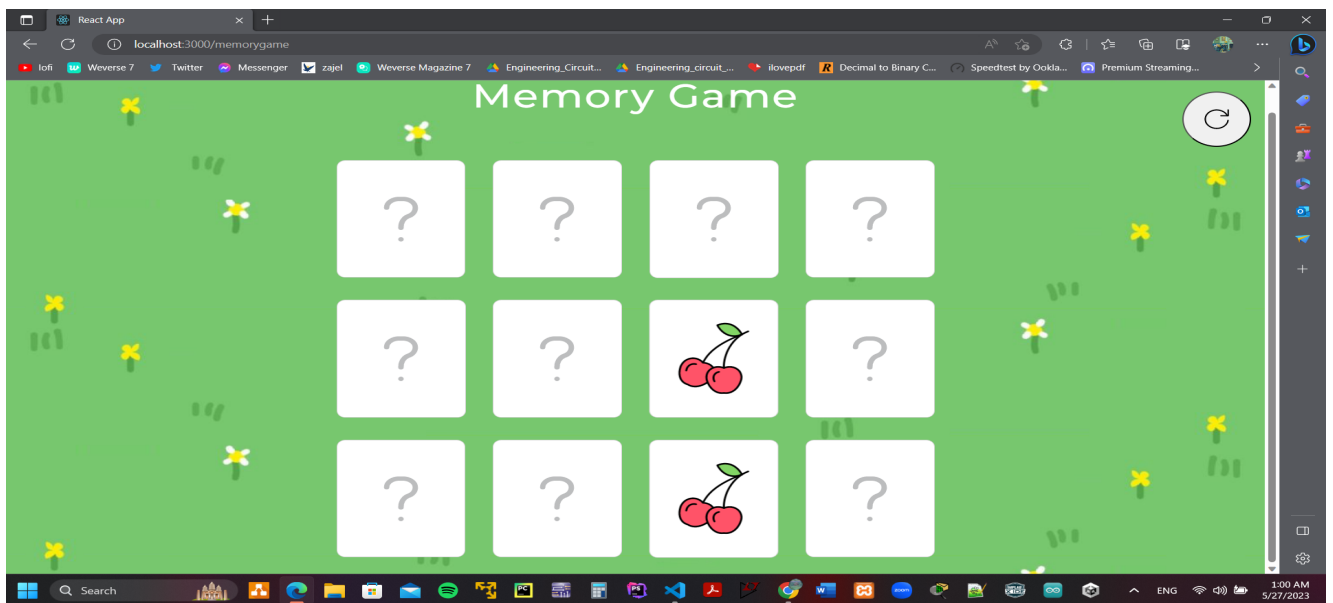
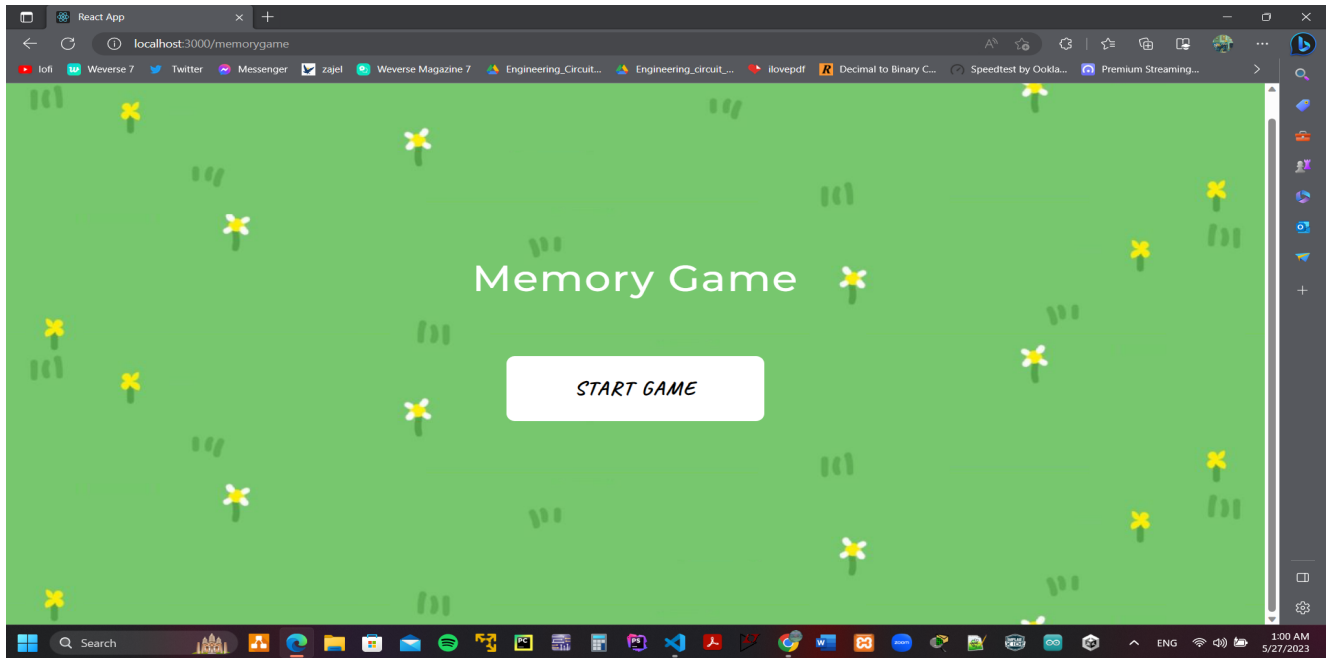
Lastly there is the footer that includes a button for anyone that would like to contact the school, as well as our social media accounts for any visitor to check them out.



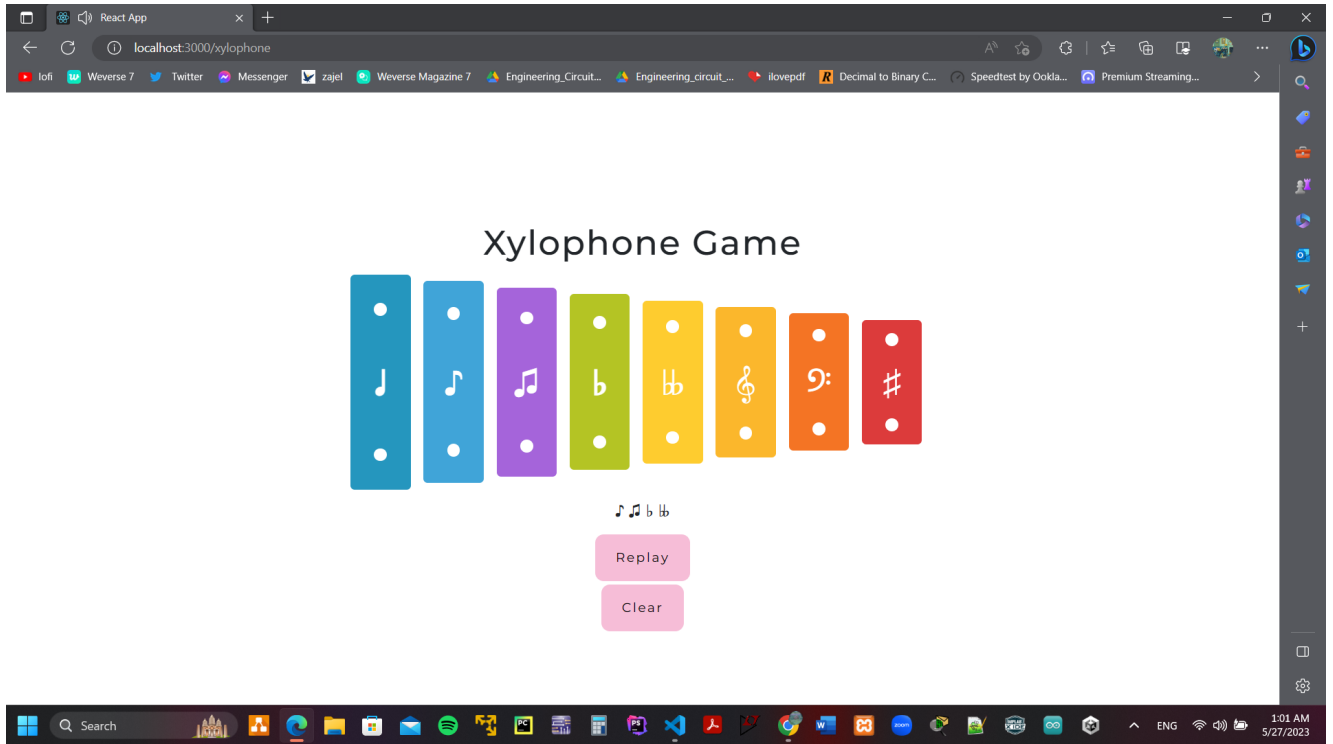
We have a game corner that serves as a sneak peak to the activities that the children will be doing while in the school's care, here any mom can let her kid enjoy these games.



We have a memory game, that can be played by matching the same fruit's cards together

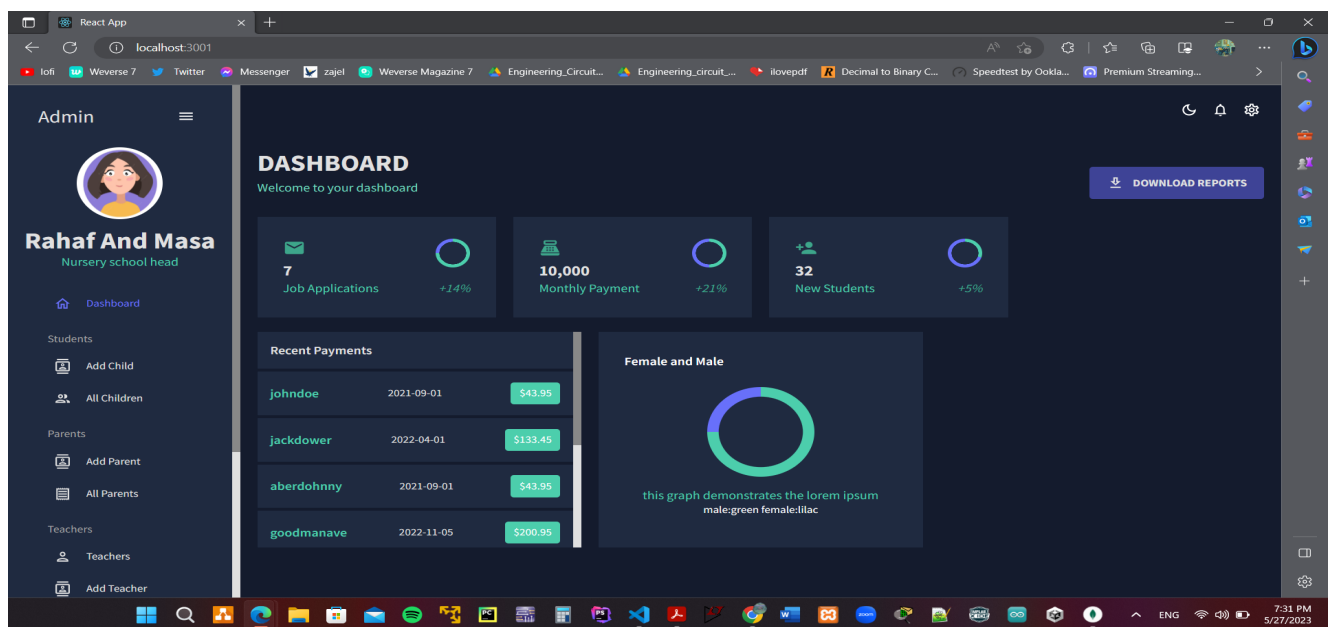
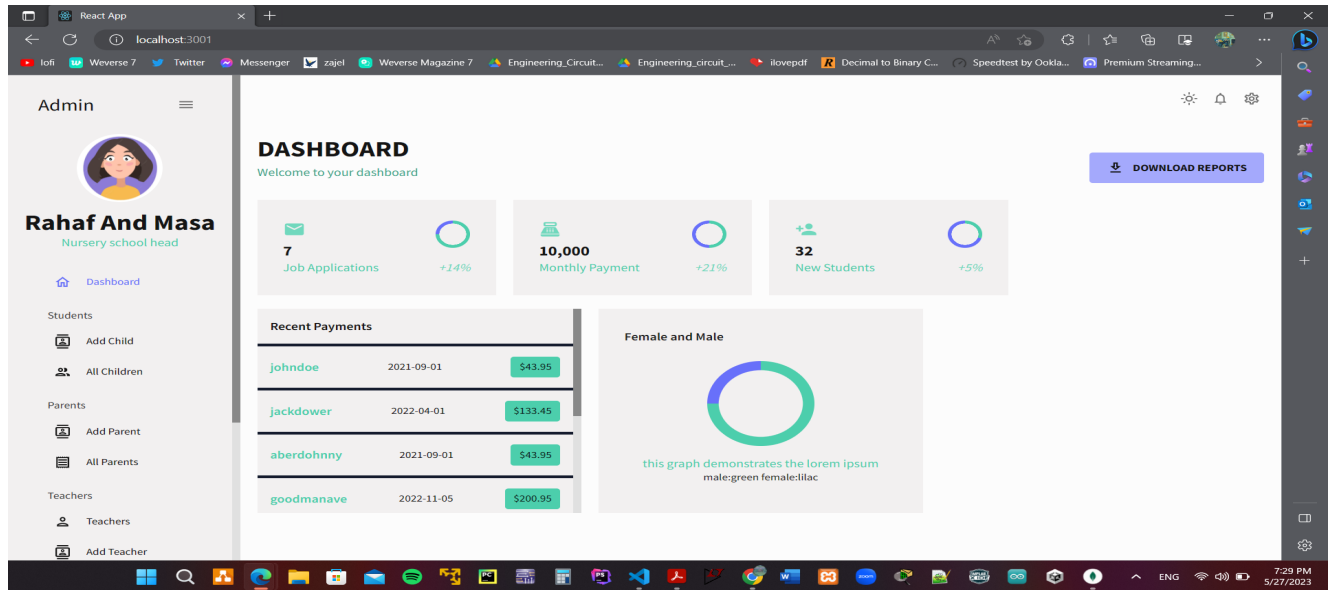


A Xylophone game that the kids can play and enjoy the sounds of music.



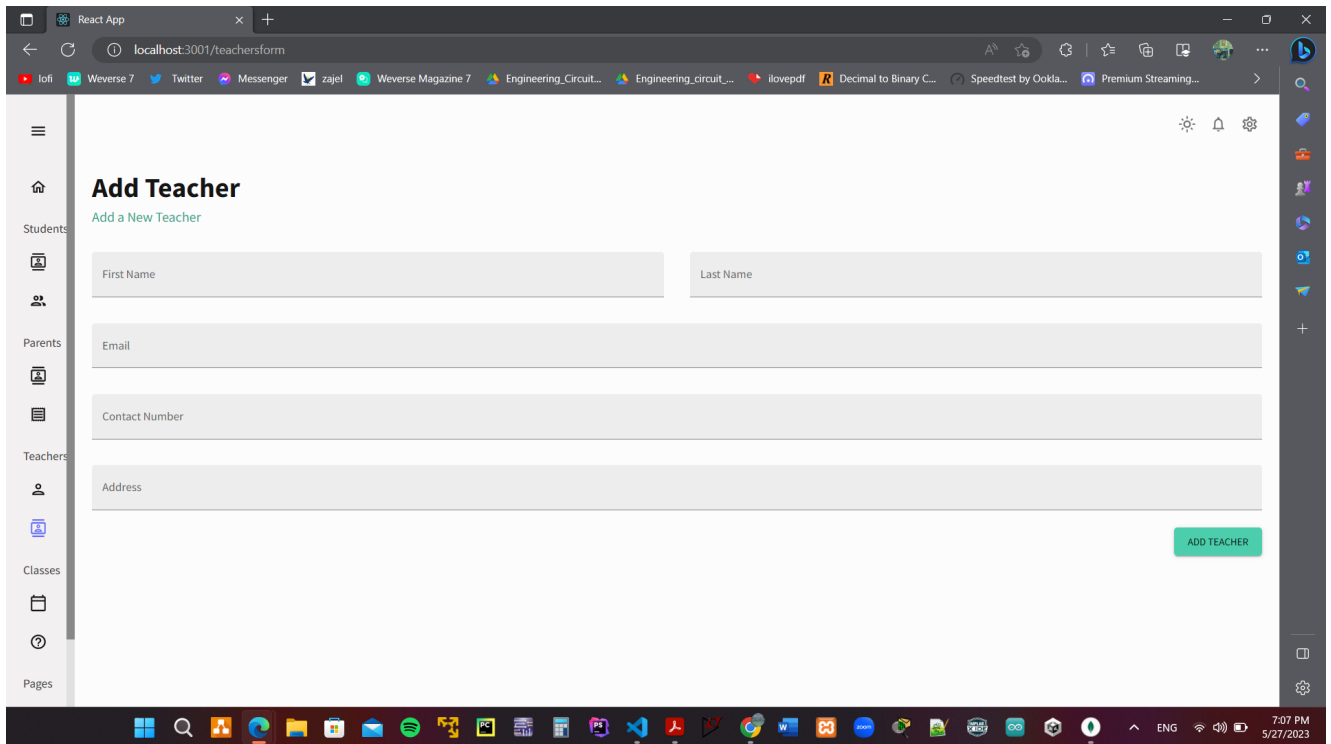
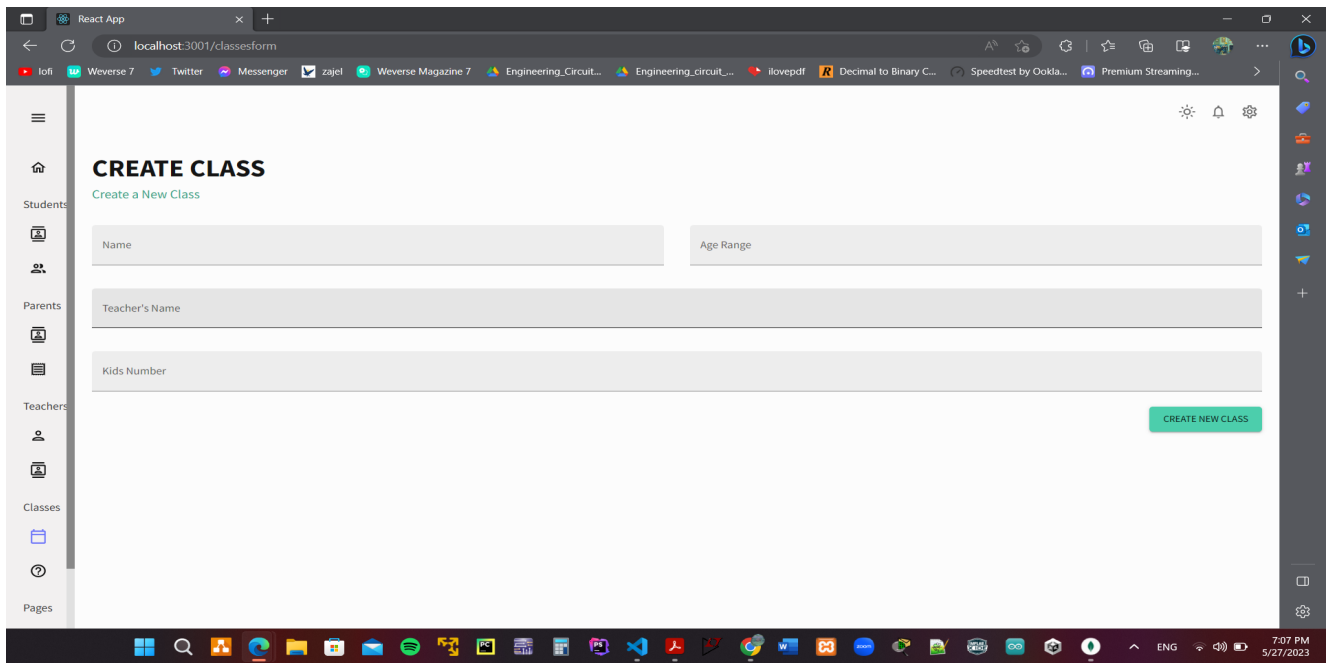
# ● Admin Page:

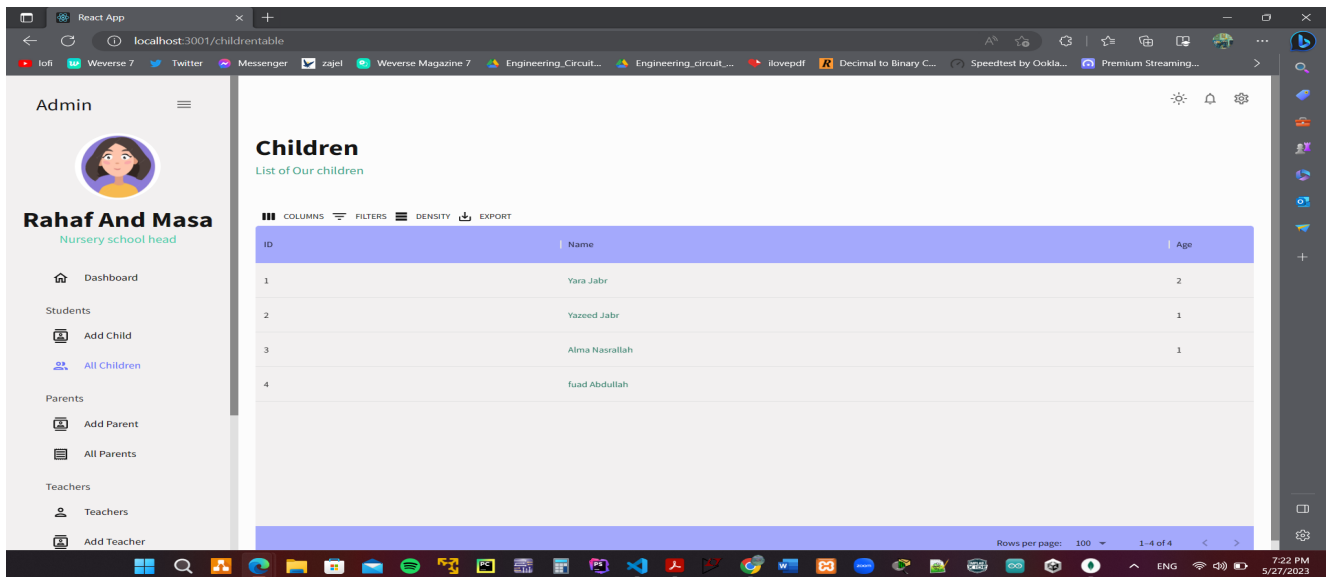
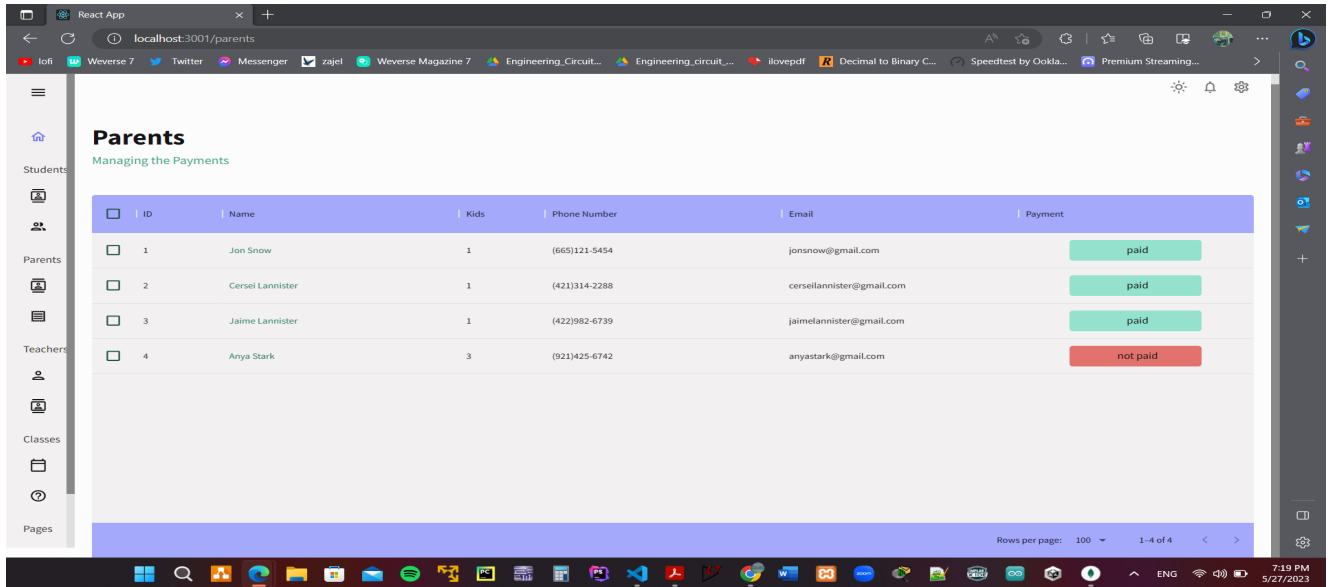
The administration page starts with a dash board that shows recent payments and recent enrollments to the school.



The admin can change the theme to either light or dark.

The admin can create classes and add teachers to the system.

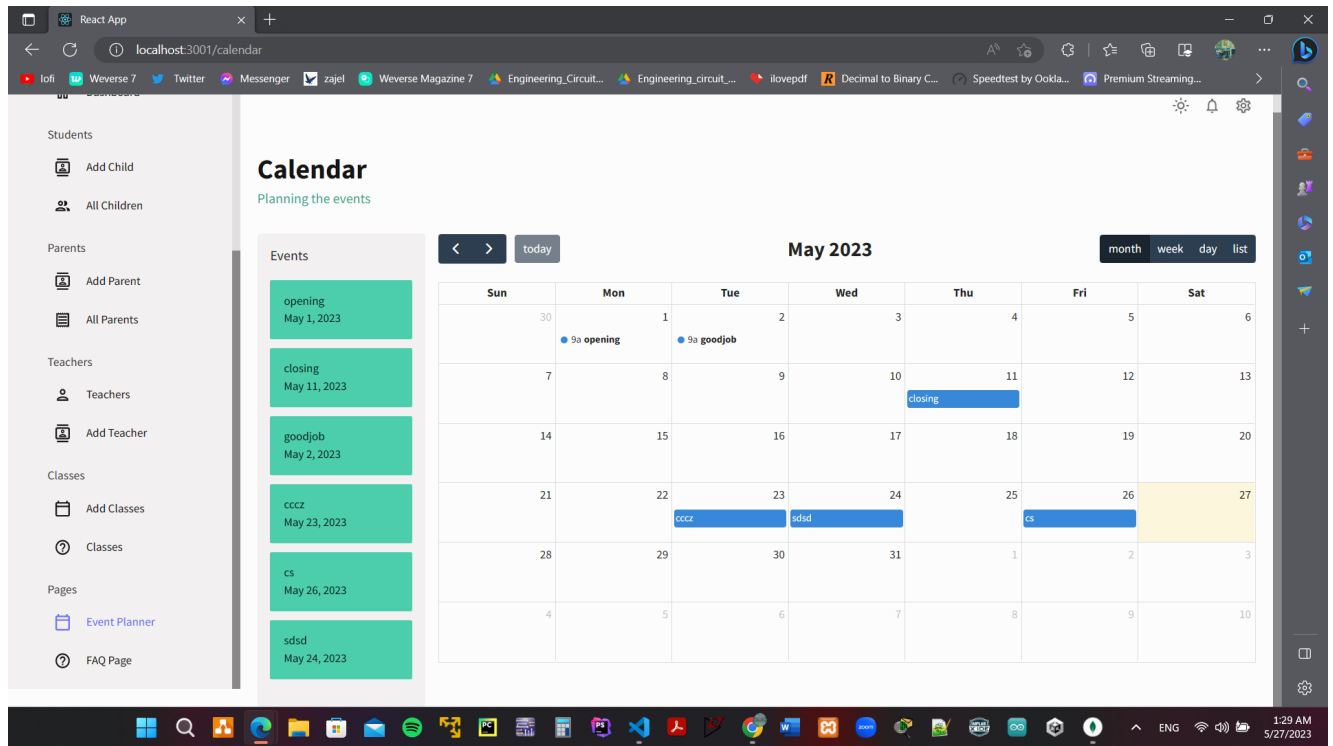




The admin can also view tables that contain the parents and show their payment status, as well as tables for children, teachers and classes.

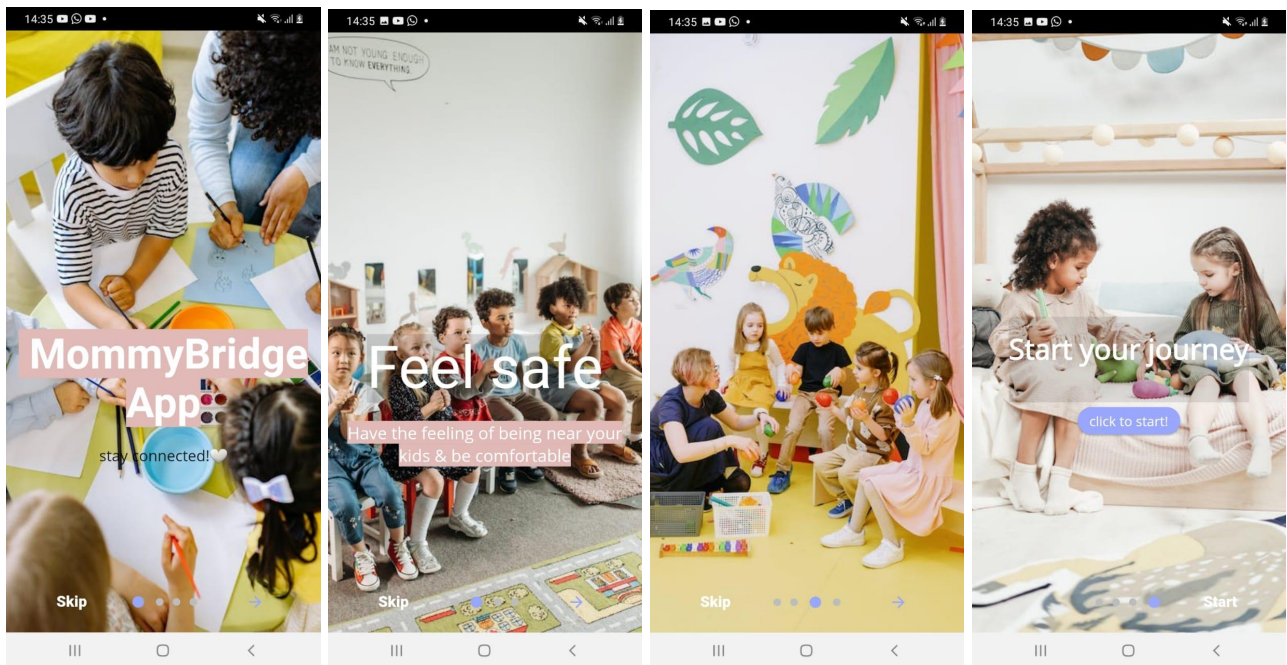
The tables can be filtered and printed whenever.

In this calendar the administration can plan the upcoming events in the school

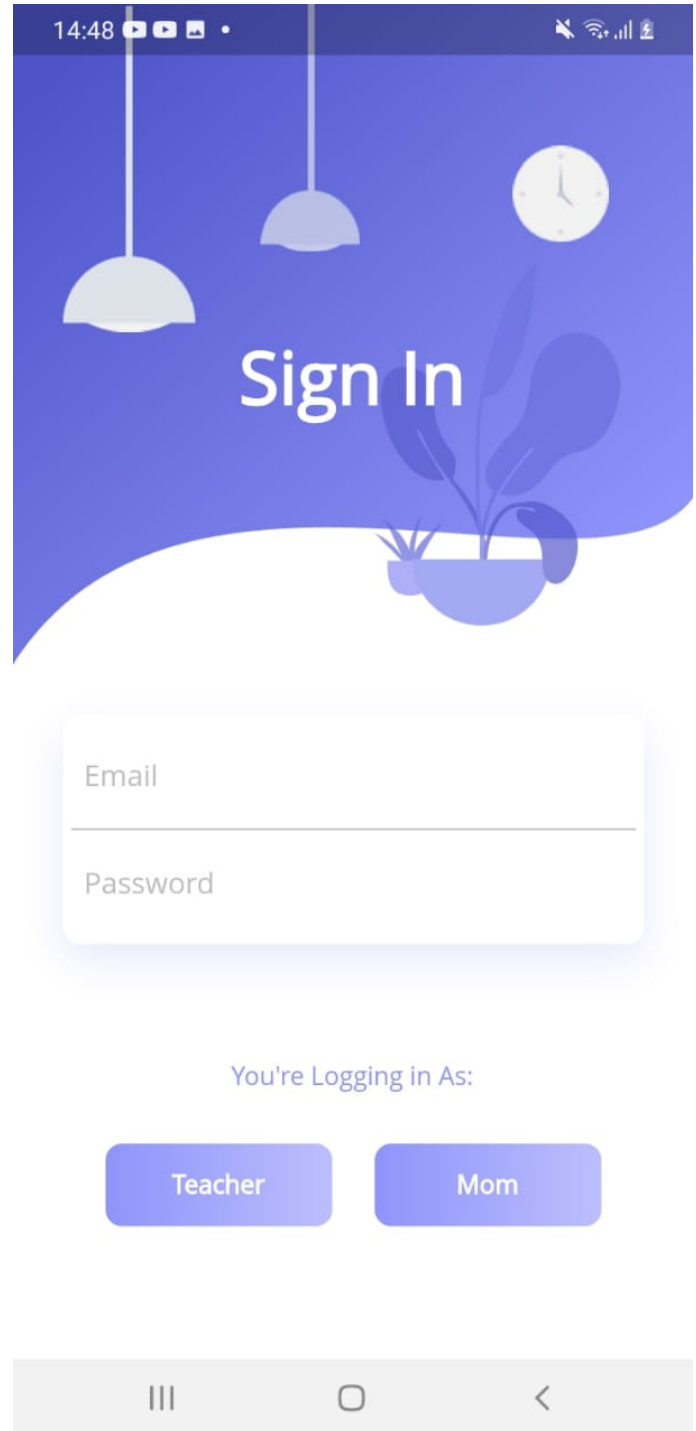


## ● Mobile application:

First, and for the first time running this app, it starts with beautiful and colorful photos of happy kids photos at the nursery school, with sentences to give moms the feeling of comfort, using onboarding-introduction screen package.



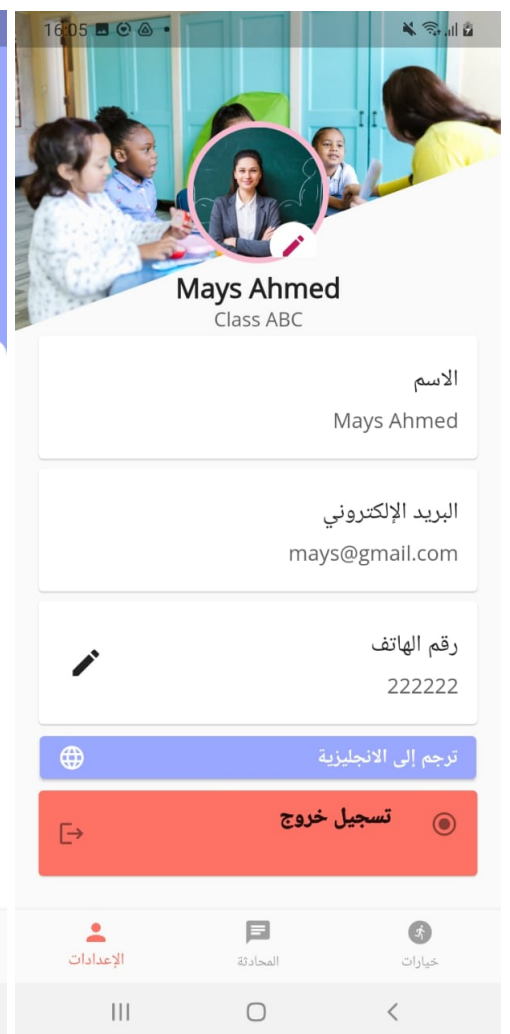
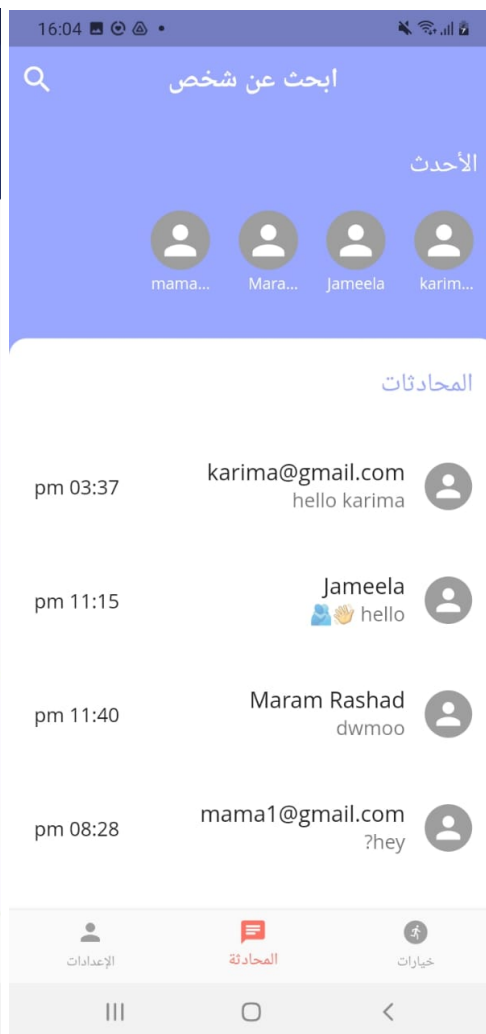
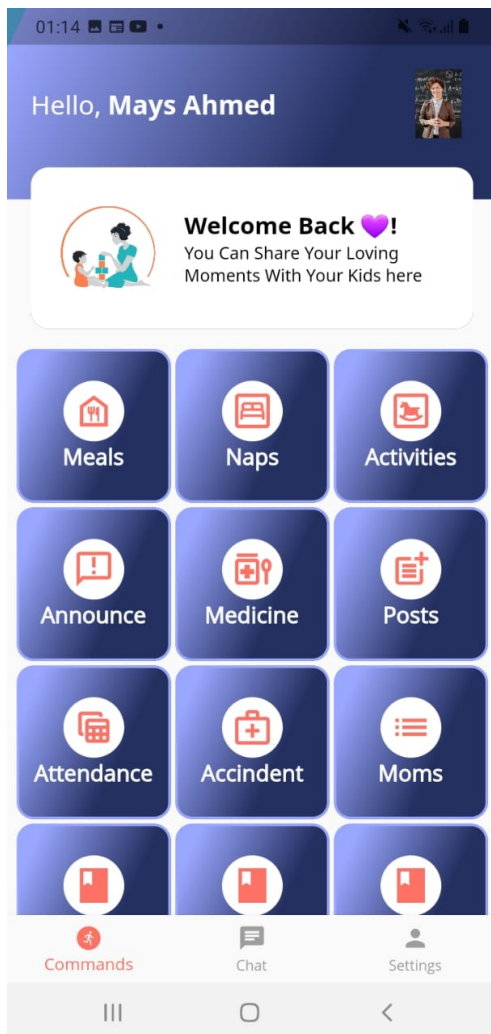
**Then, we have this animated Sign In screen for mom and teachers to sign in.**



# 1- logging in as Teacher

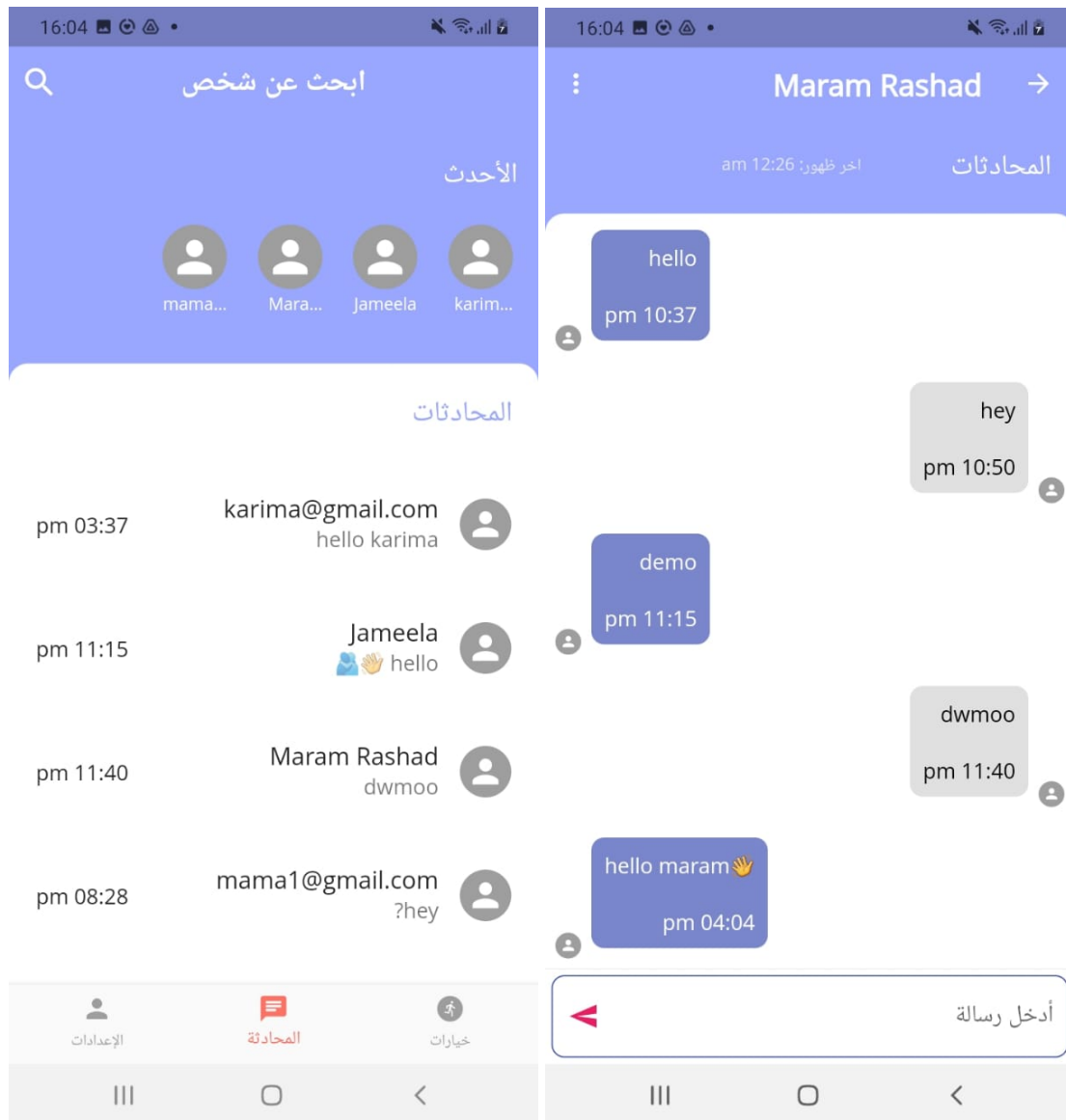
the bottom navbar navigates to three different pages

- the Profile page where a teacher can edit her personal details and profile photo,
- a chat section.
- commands to add and share activities.



## • The chat section

provides a chat search to reach any user at the platform easily, last seen time and shows recent users that you're most likely to talk to.



# ● Recording meals, naps and accidents

01:21

← Meals

Meal Name  Lunch

choose amount:

Yara Jabr  
 Full.  Half.  Quarter.  'Noth

Yazeed Jabr  
 Full.  Half.  Quarter.  'Noth

Alma Nasrallah  
 Full.  Half.  Quarter.  'Noth

fuad Abdullah  
 Full.  Half.  Quarter.  'Noth

01:21

← Naps

Nap started at:

Nap Ended at:

Yara Jabr

Yazeed Jabr

Alma Nasrallah

fuad Abdullah

03:35

← Record Accident/Incident

Accedent/Incident type:

Describe the accedent/incident and any first aid administered:

Choose affected children:

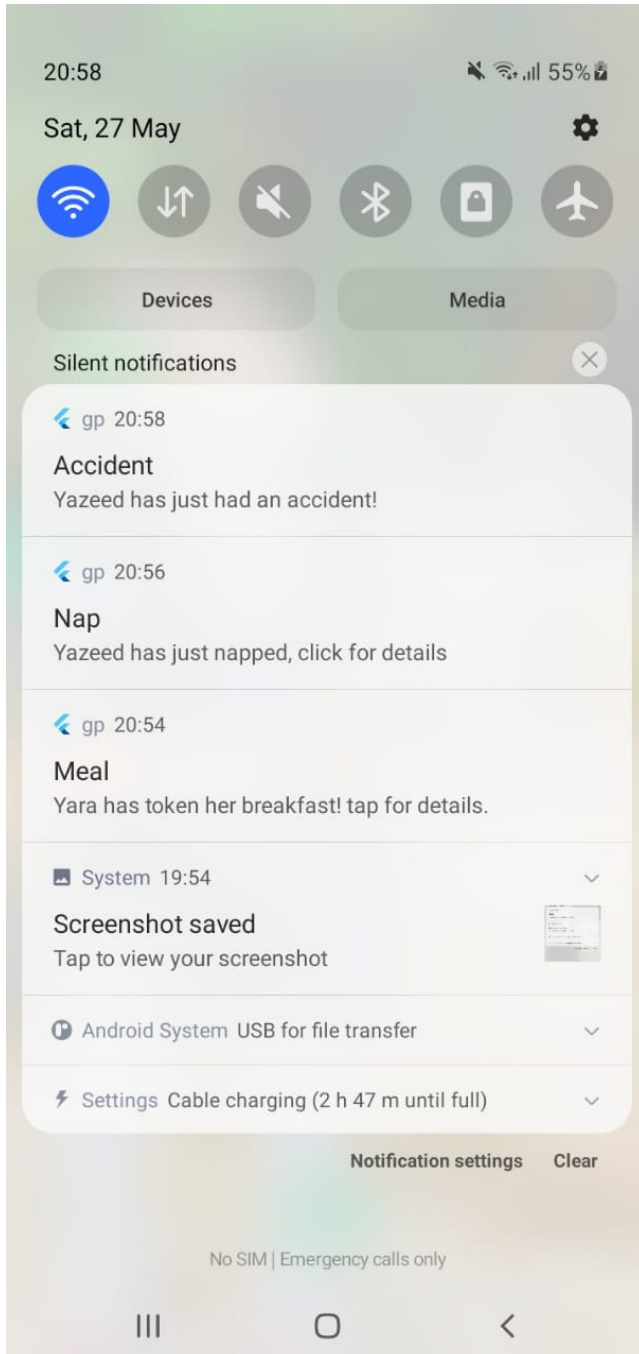
Yara Jabr

Yazeed Jabr

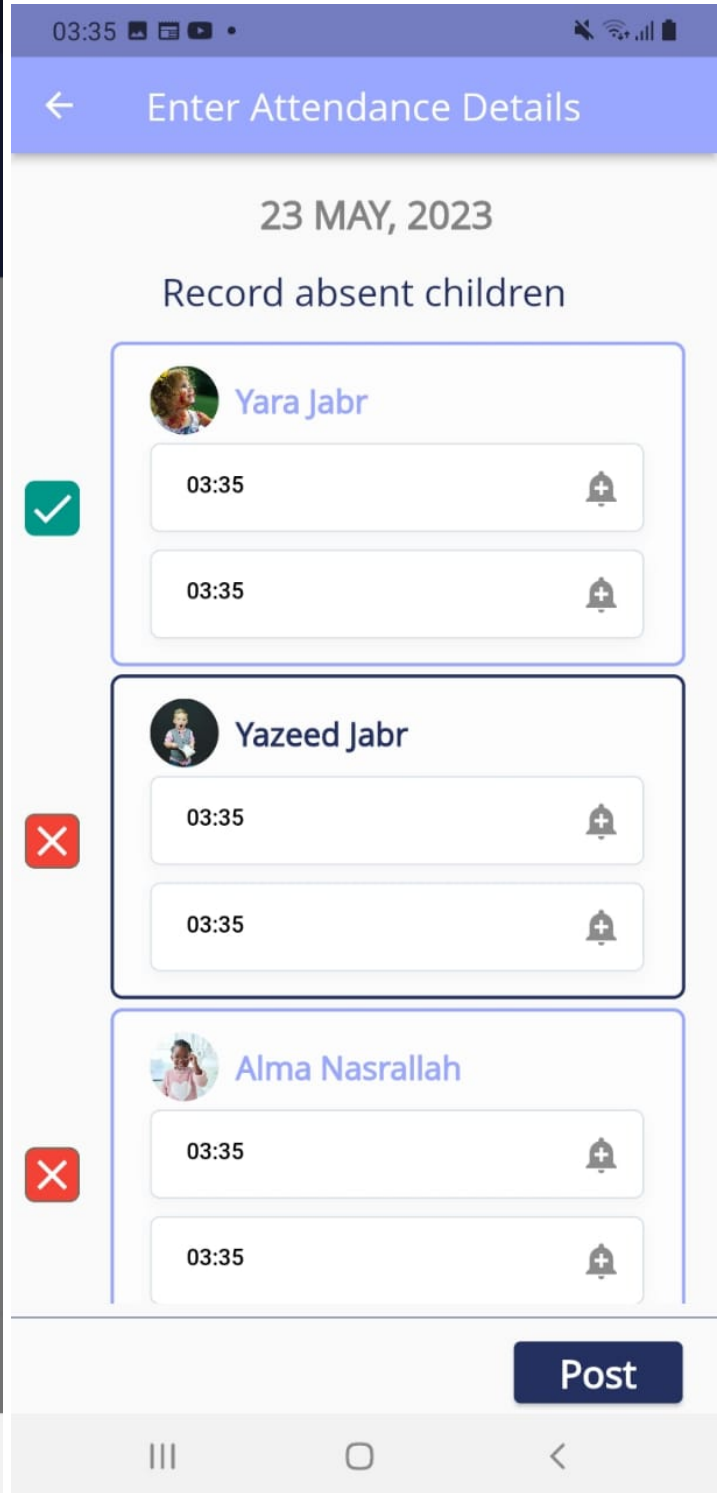
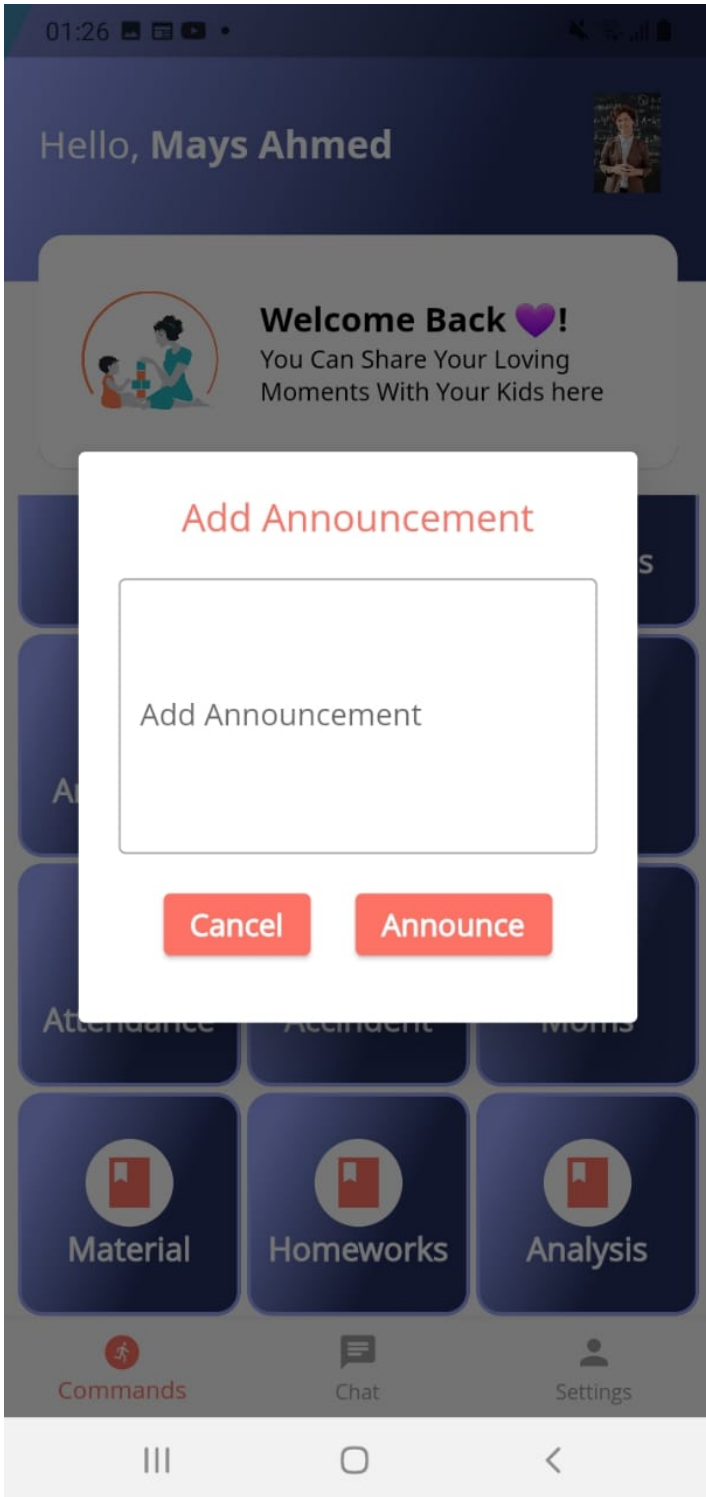
Alma Nasrallah

fuad Abdullah

- **After posting them, a notification to mom will be sent to mothers of children chosen.**



# ● Announcing, recording attendance



16:03

معلومات الدواء

**vantolin** يحتاج لأخذ Yara Jabr

1 عدد الأيام المتبقية:

2 عدد الجرعات لليوم:

هذا العلاج بدأ بتاريخ:

2023-05-22

ويجب أخذه لمدة: 3 days

توجيهات اضافية:

shake the inhaler before use

تم أخذه؟

**ventolin** يحتاج لأخذ Yazeed Jabr

هذا الدواء يُؤخذ بشكل يومي

2 عدد الجرعات لليوم:

هذا العلاج بدأ بتاريخ:

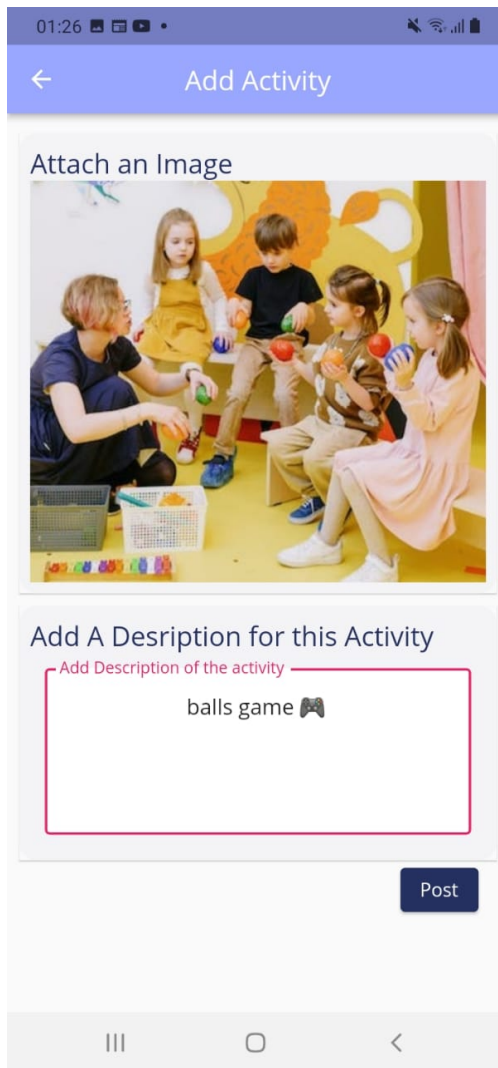
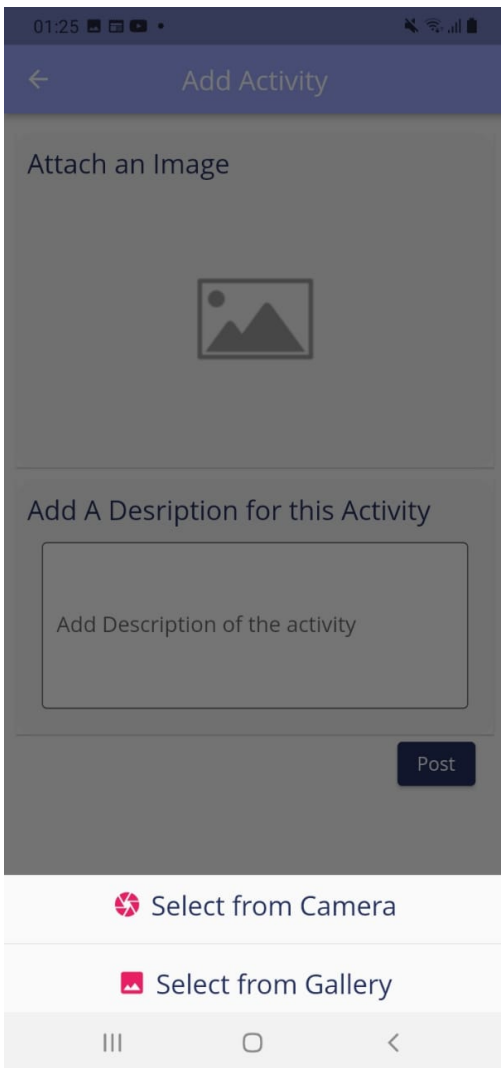
2023-05-22

● **Viewing class children’s medicine details, which added by their moms.**

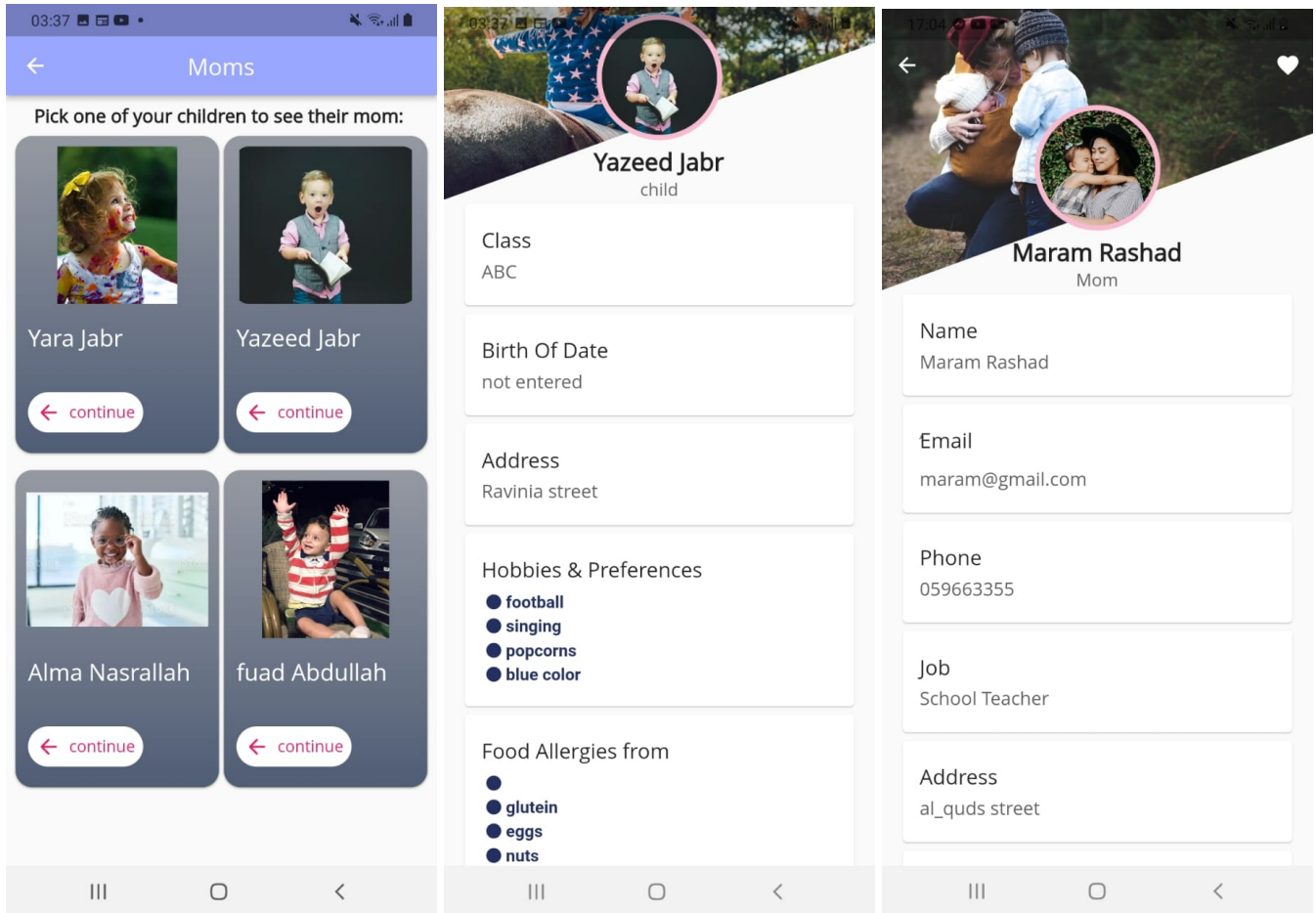
Some medicine types are daily, others are for a specific number of days. Mom enters the number of days that should this medicine be token, and the starting date is stored automatically as the date the details are entered at, by then, number of days left to take this medicine is automatically calculated for the

teacher.

- Posting an activity to be viewed with a date picker on Feed.



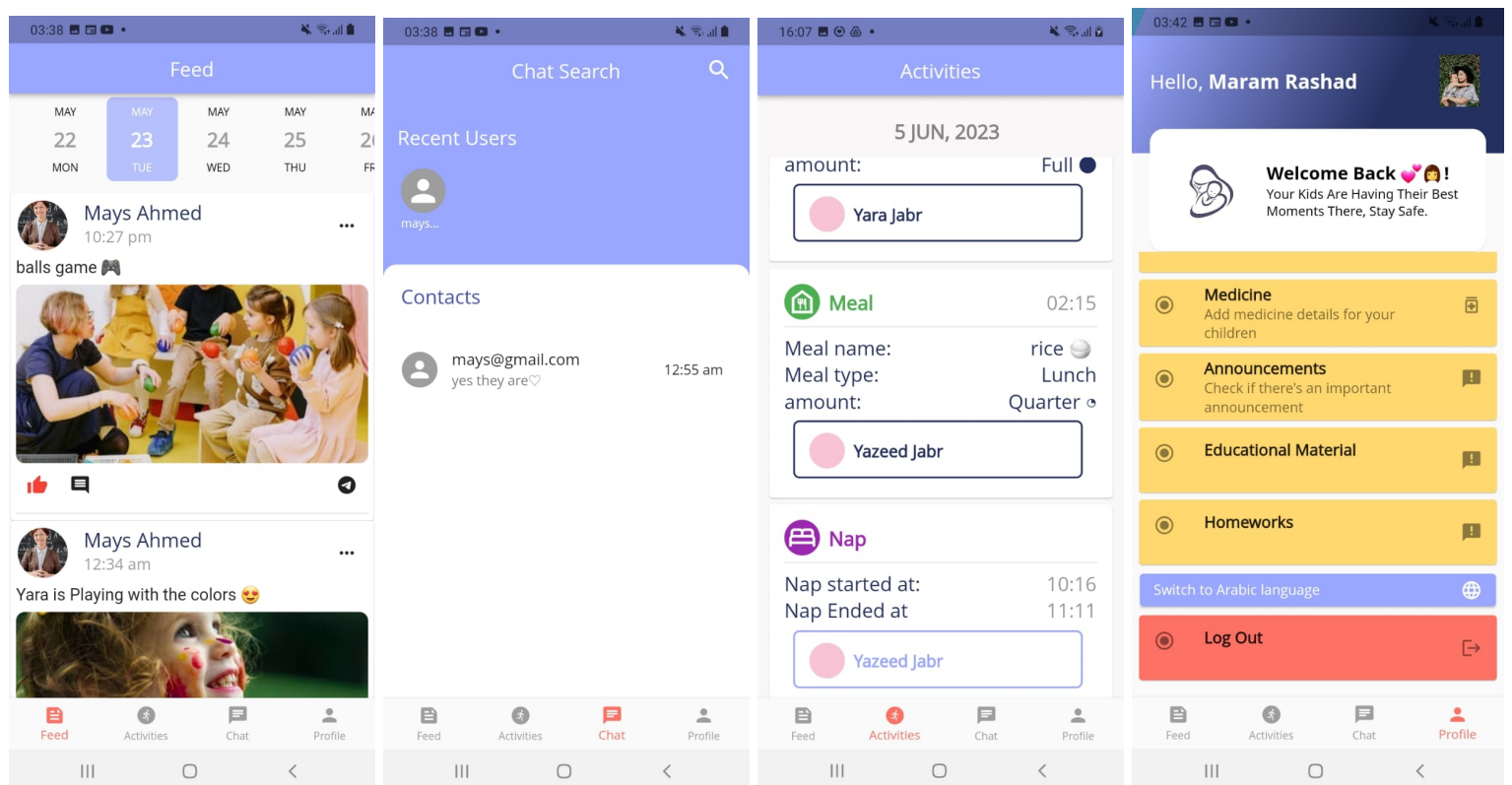
- every teacher would need to look at their class children's details and their mom's information, which is provided at mom's section:

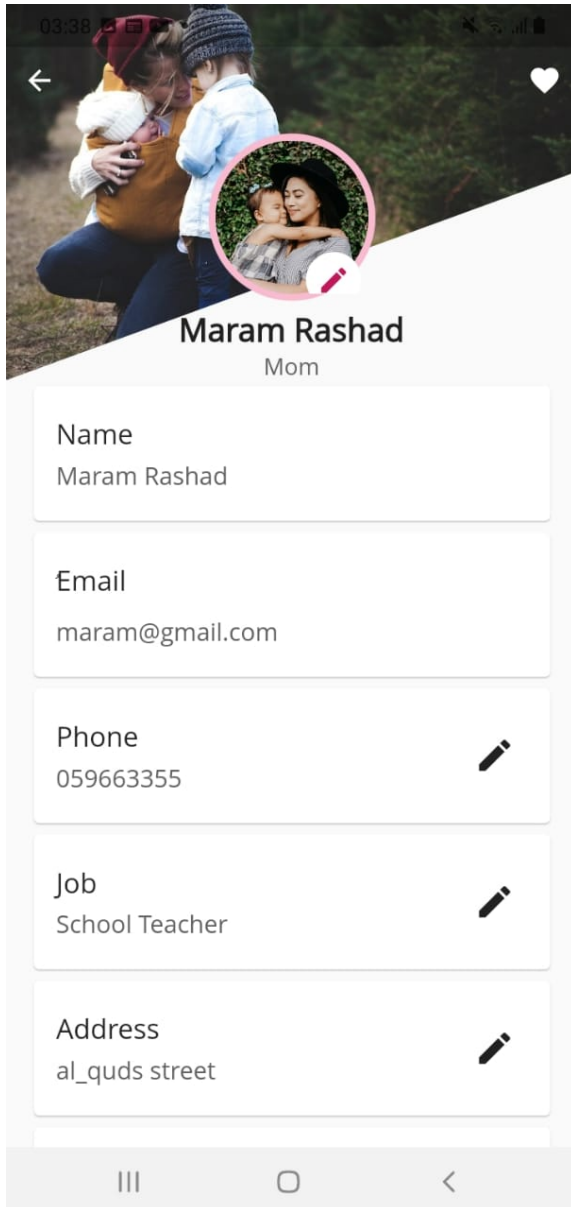


## 2- Logging in as Mom

the bottom navbar navigates to four different pages

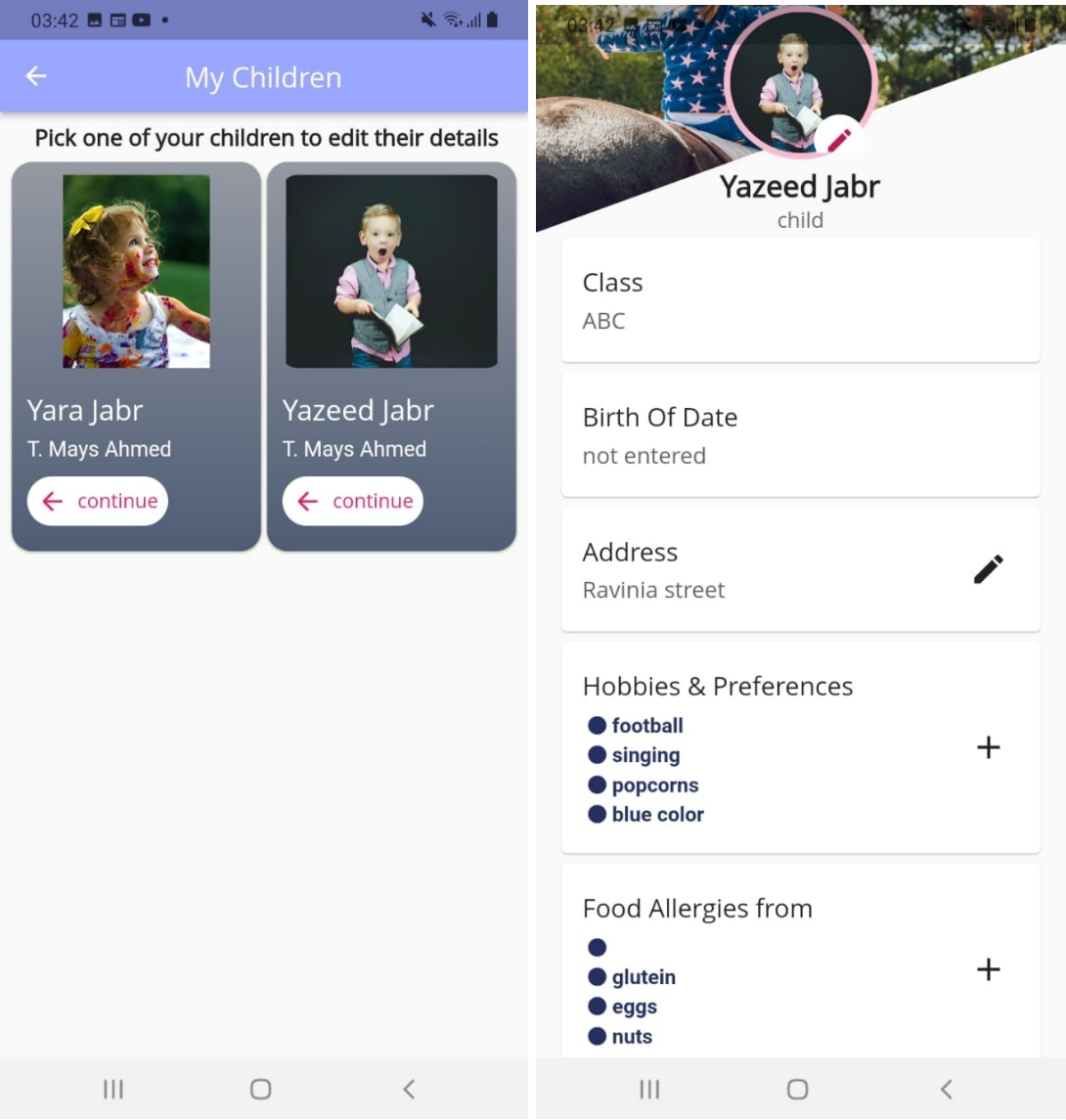
- the Feed page where a mom sees her children's activities on any specific day.
- a section to view naps, accidents and meals token.
- a chat section
- A page for multiple functionalities as editing personal information of her and her children, adding medicine, viewing announcements.

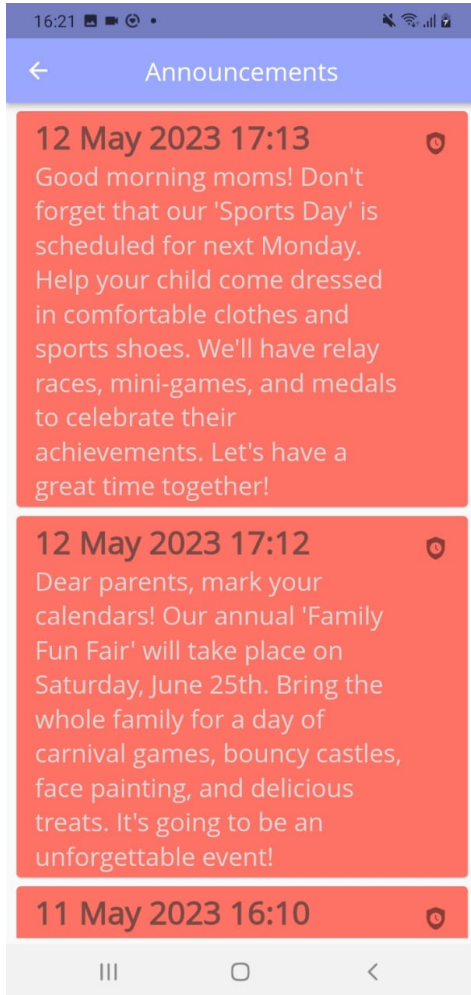




1- As mentioned in the teacher section, teachers can see mom's details, so in this section mom's can view and edit their connection and personal details.

And what is even more important, is to add her children’s details, hobbies and preferences and allergies, to ensure that the nursery staff have comprehensive information about each child. This information helps the staff in creating a safe and personalized environment for the child, understanding their interests and preferences, and taking necessary precautions regarding allergies or sensitivities.

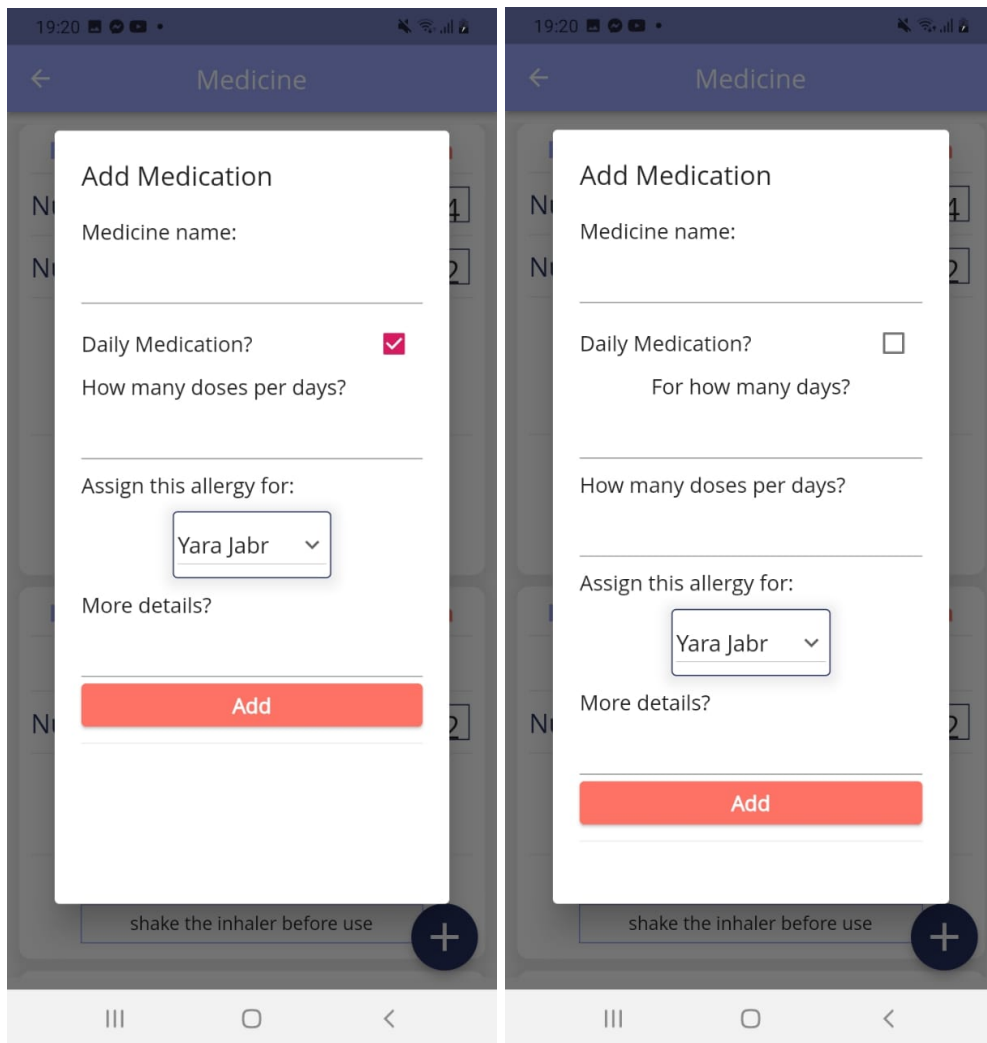




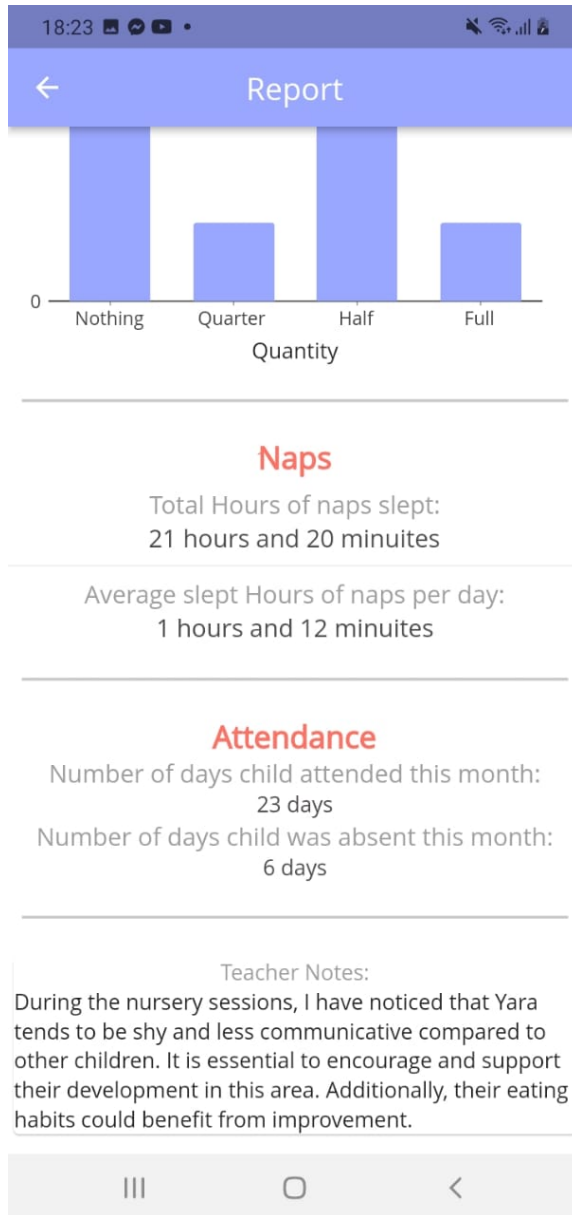
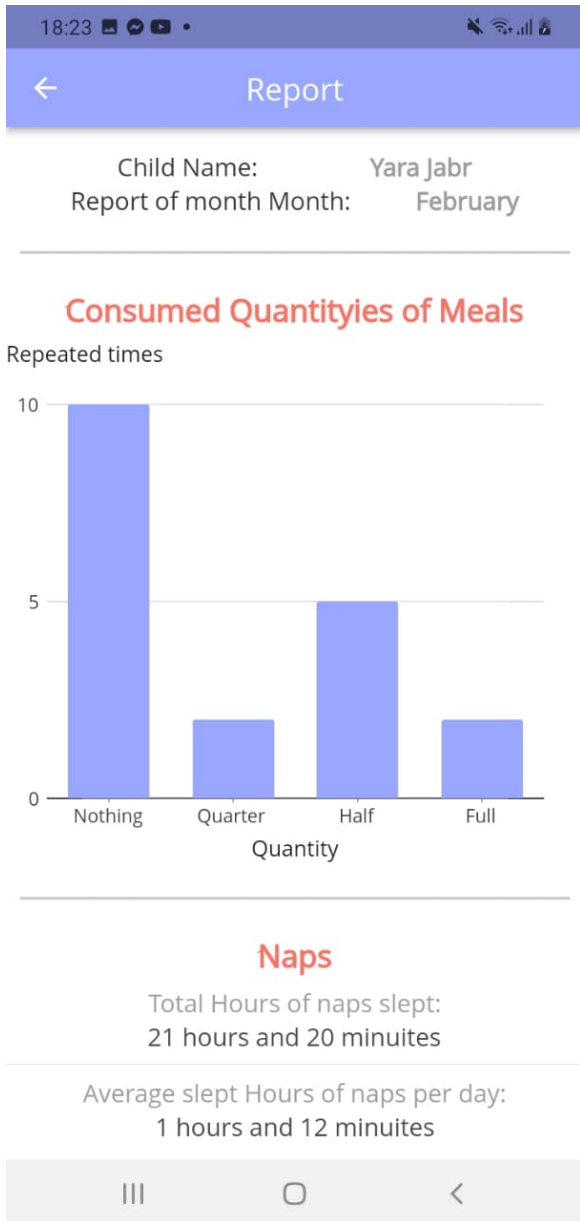
here, mom can see important announcements.

- **Adding Medicine prescription:**

can add medicine as two types, if its a daily medicine then the (for how many days) disappears, else it requires the number of days this medicine should be tokenized, and the app automatically would store the starting date and calculate days left to take this medicine for the teacher.



● Monthly Reports for Mom:

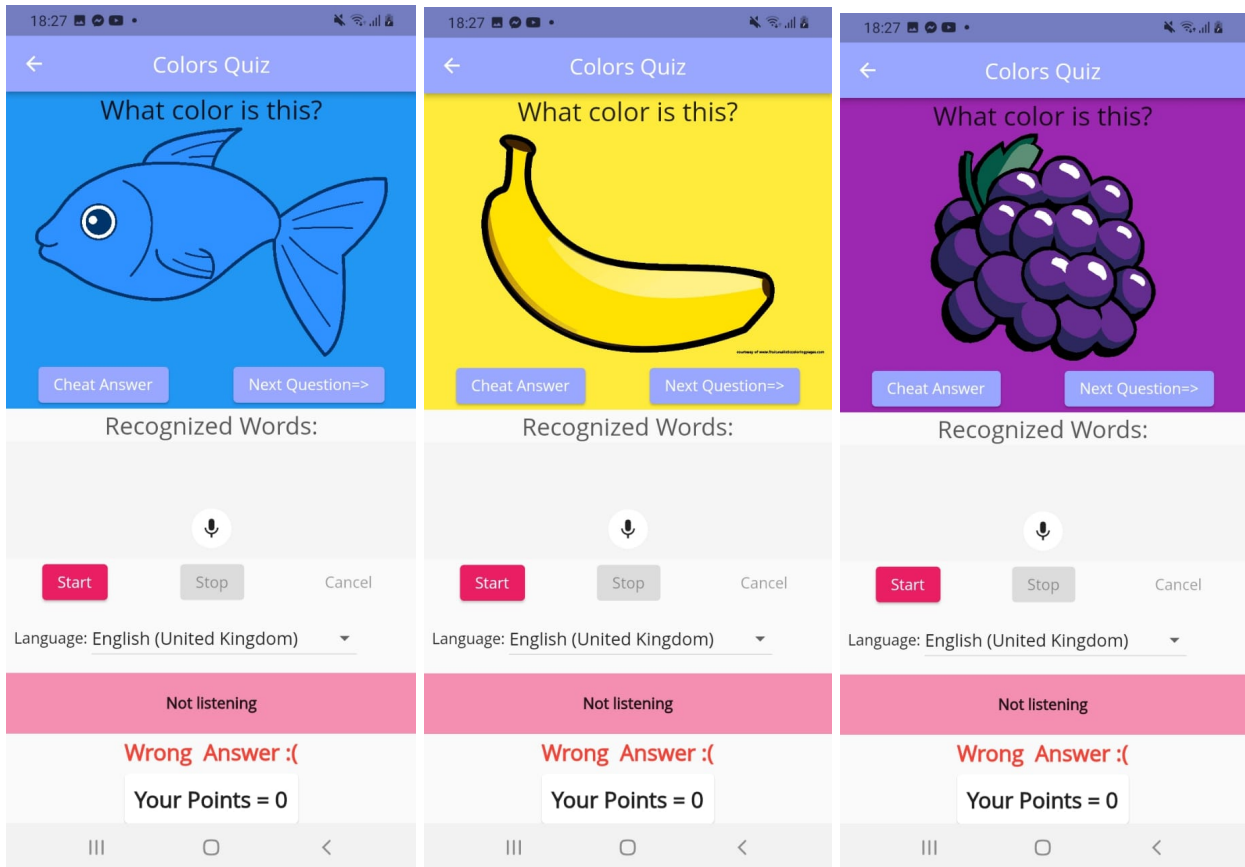


- Games & Quizzes Section:

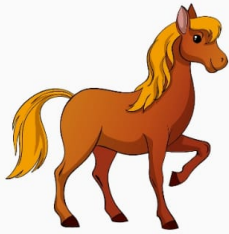
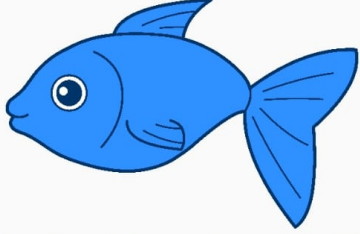

Colors, Shapes and animals quizzes require initializing the microphone and speaking, the app recognizes the spoken words and compares them to the right answer, then it plays sound "wrong answer" or "good Job", if the answer was true, "good Job" sound will be played and the other quiz will appear , also the points will increase, otherwise "Wrong Answer" sound will be played and the same quiz will be replayed for a child to try again, also the points/score will decrease by one.

There's also the cheat answer button which plays the right answer for the child to learn.

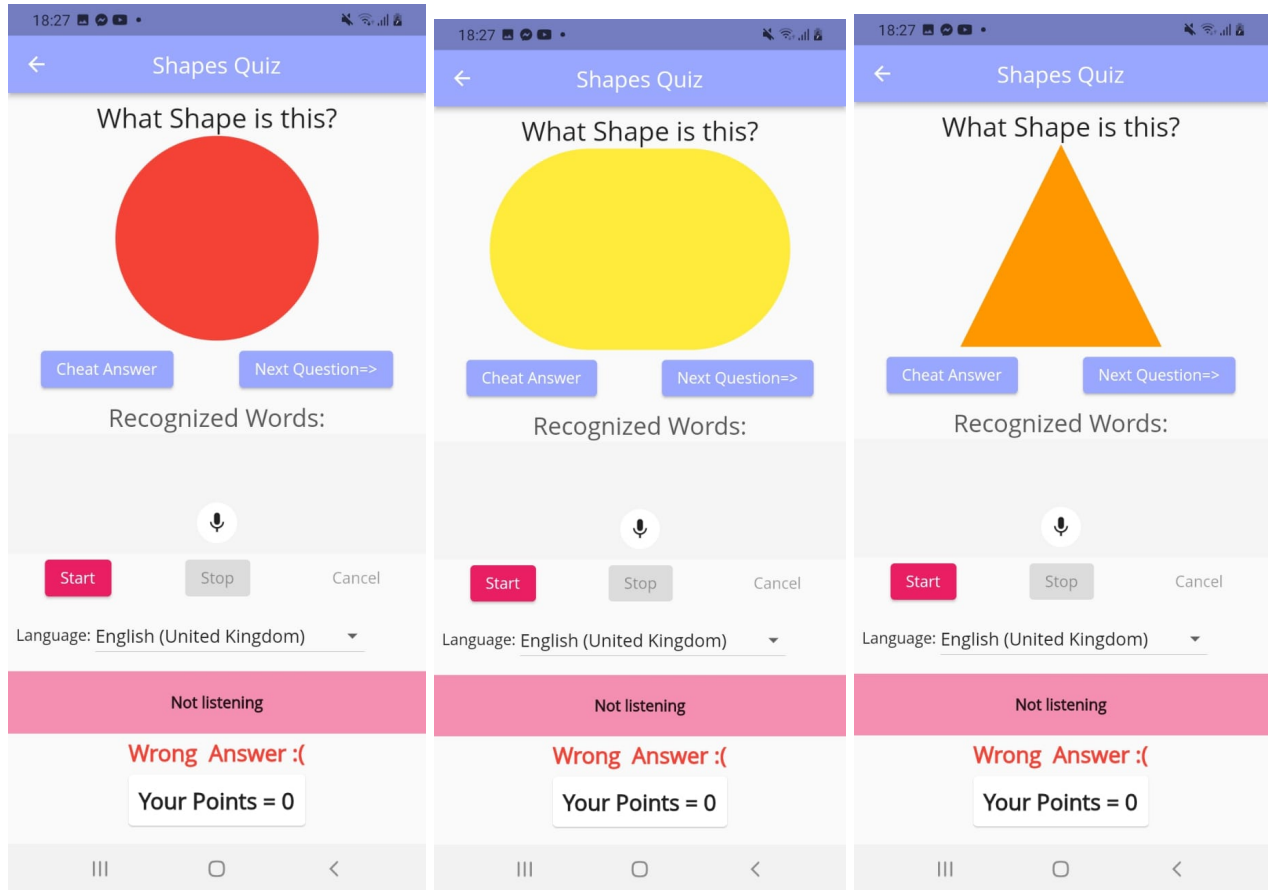
# 1- Colors Quiz



## 2- Animals Quiz

<p>18:28</p> <p>Animals Quiz</p> <p>What Animal is this?</p>  <p>Cheat Answer Next Question=&gt;</p> <p>Recognized Words:</p> <p>Not listening</p> <p>Wrong Answer :(</p> <p>Your Points = 1</p>	<p>18:28</p> <p>Animals Quiz</p> <p>What Animal is this?</p>  <p>Cheat Answer Next Question=&gt;</p> <p>Recognized Words:</p> <p>Not listening</p> <p>Wrong Answer :(</p> <p>Your Points = 1</p>	<p>18:28</p> <p>Animals Quiz</p> <p>What Animal is this?</p>  <p>Cheat Answer Next Question=&gt;</p> <p>Recognized Words:</p> <p>Not listening</p> <p>Wrong Answer :(</p> <p>Your Points = 1</p>
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### 3- Shapes Quiz:



## 4- Drag & Drop

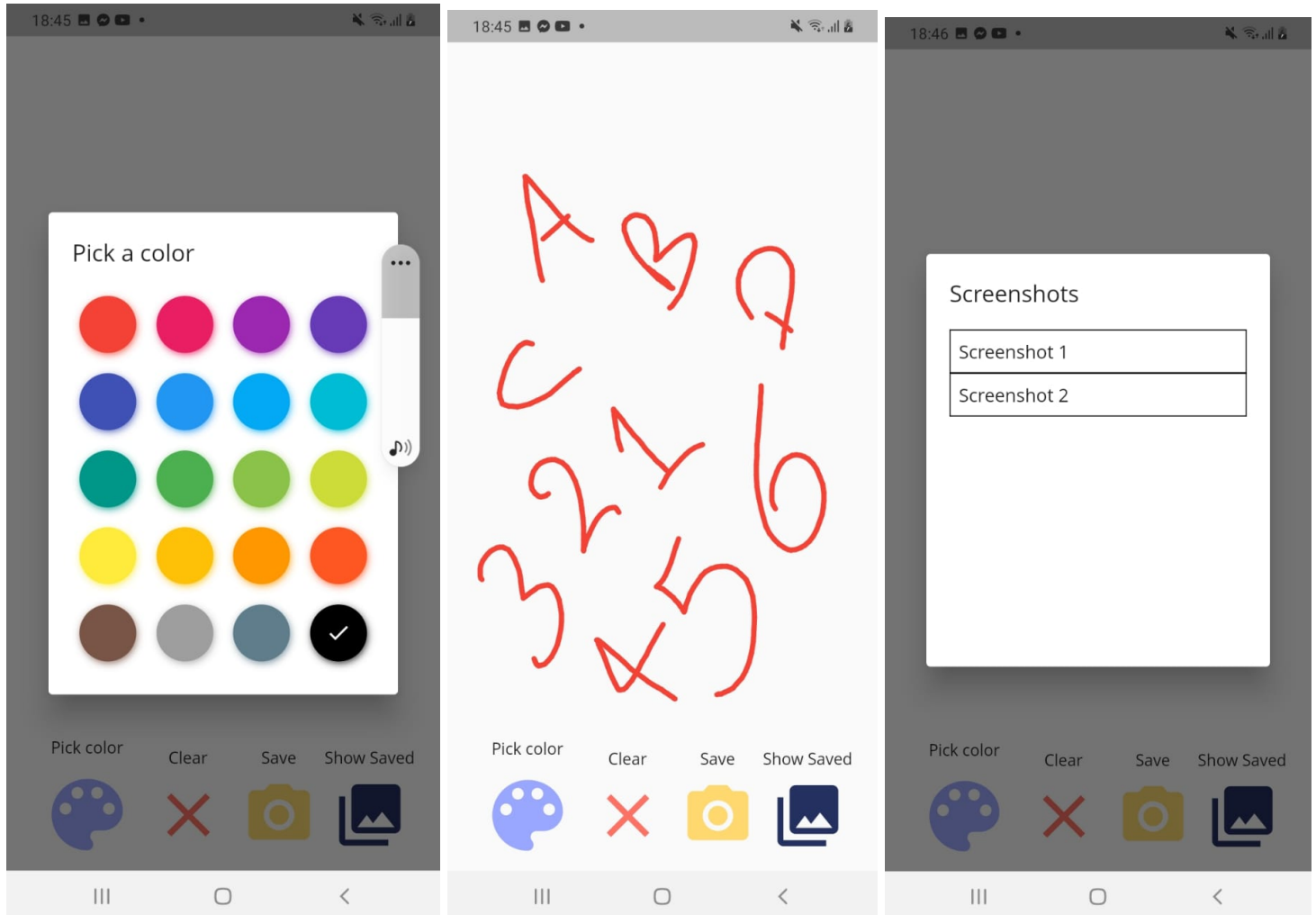
\*seasons-Clothes Matching Quiz

\*Animals Habitats Matching Quiz



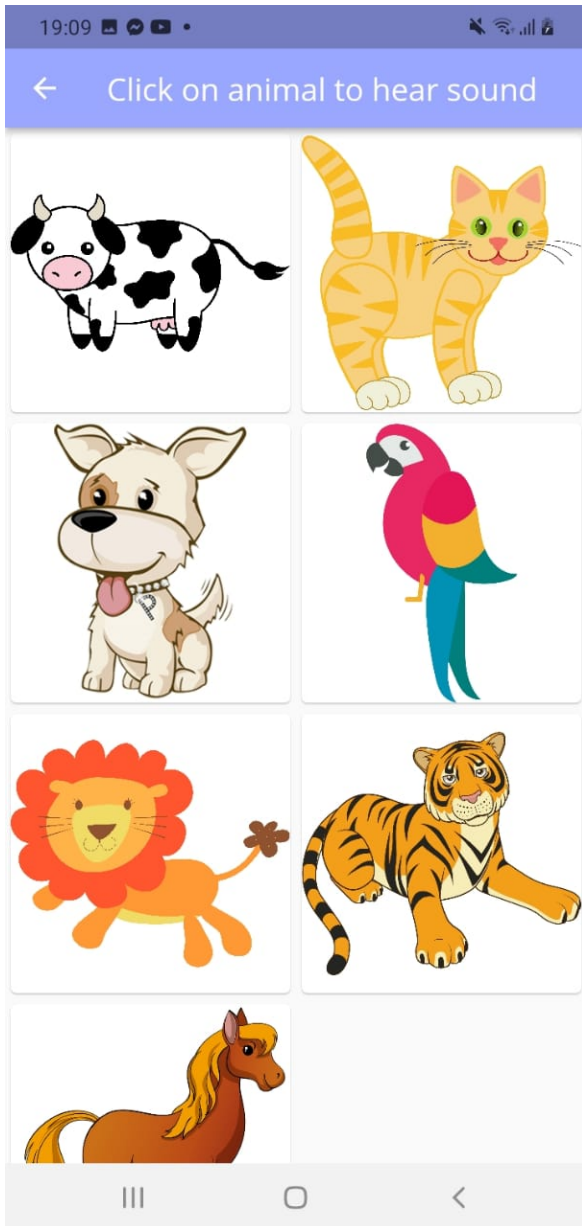
## 5- Drawing Game:

The child can draw with any color they like and also can clear the drawing and take a shot at it, and the drawing will be saved as photos.



## 6- Animals voices

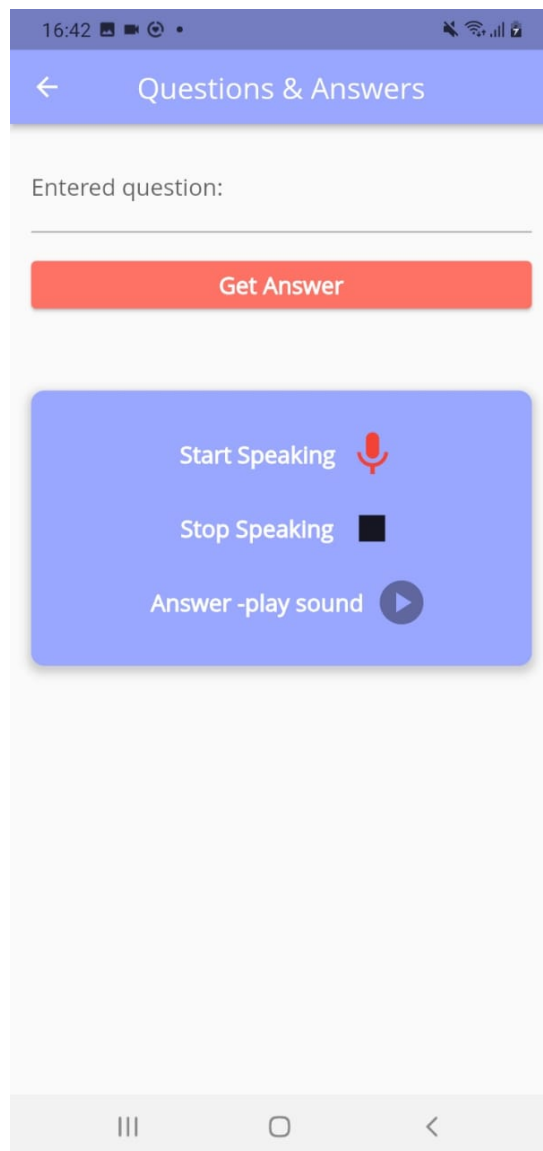
the app will play the sound of the animal clicked on.



## 7- Whats is and Who is

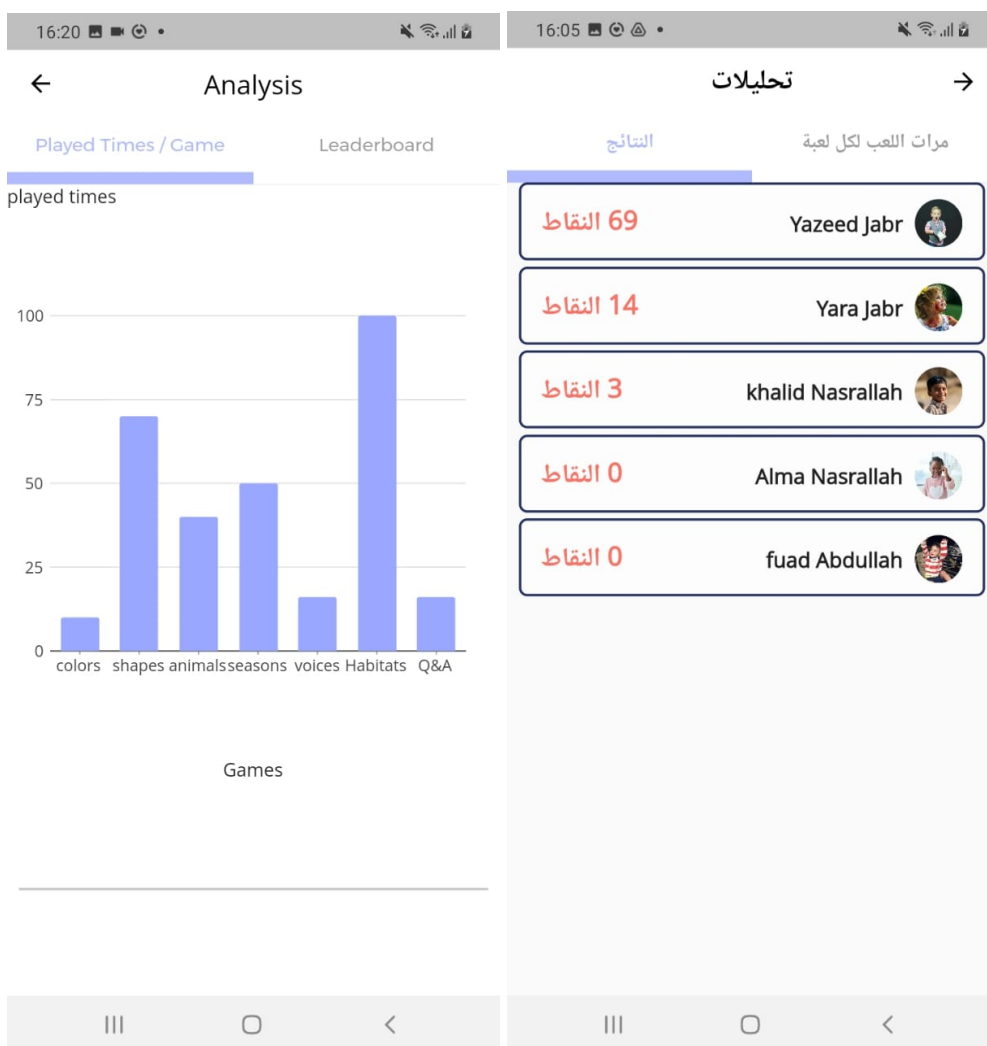
Since children have literally unlimited questions, this section helps them to ask by voice recognition, and answers them in voice such as if they're talking.

we used DuckDuckGo external api with options of source wikipedia for safe answers.



## ● Analysis of Games

Here we can see analysis to know which games do kids play more, to analyze their progress, and to enhance the spirit of competition among children through the leaderboard. so they can play more and learn more.



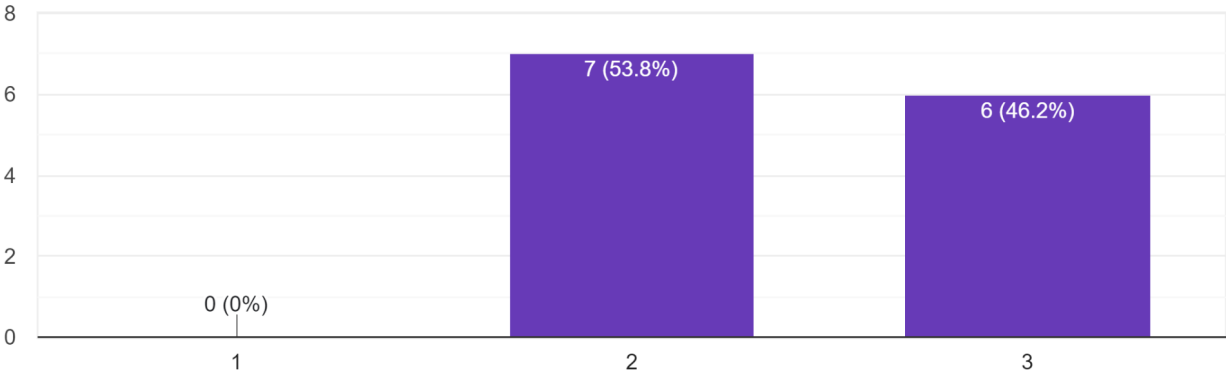
# Chapter 6 :Results and Analysis:

We asked working mothers around us some questions to know if they need the app and if it would be a good addition to their working life.

The first Question :

How frequently do you experience challenges in connecting with your child/children due to work commitments?

13 responses

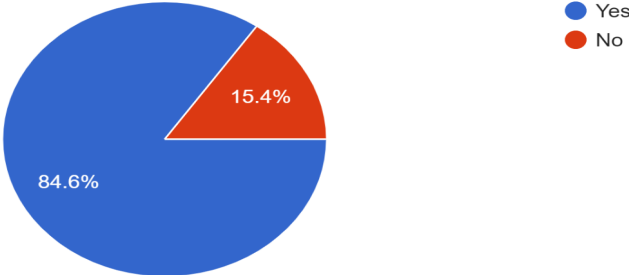


The answers show that there are challenges that the working moms face in connecting with their children.

The second question:

Would you be interested in using interactive games or activities within the app to engage with your child remotely?

13 responses

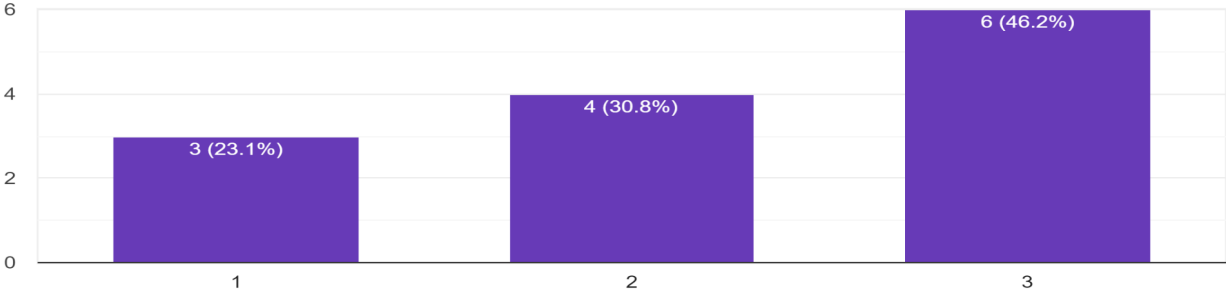


The answers show a clear majority wants this feature in the app.

The fourth question:

How important is it for you to have real-time updates and communication with your child through the app during the day?

13 responses

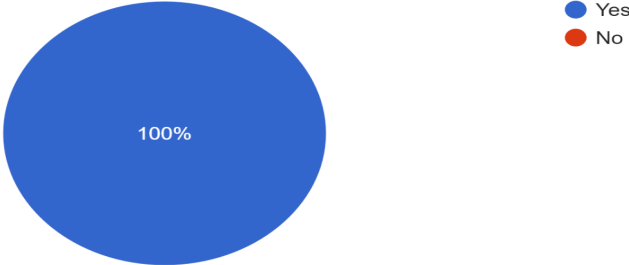


A majority agrees that having real-time updates on your child is important.

The fifth question:

Would you like an app like Mommy's Bridge to help improve your connection with your child/children while balancing your work responsibilities?

13 responses

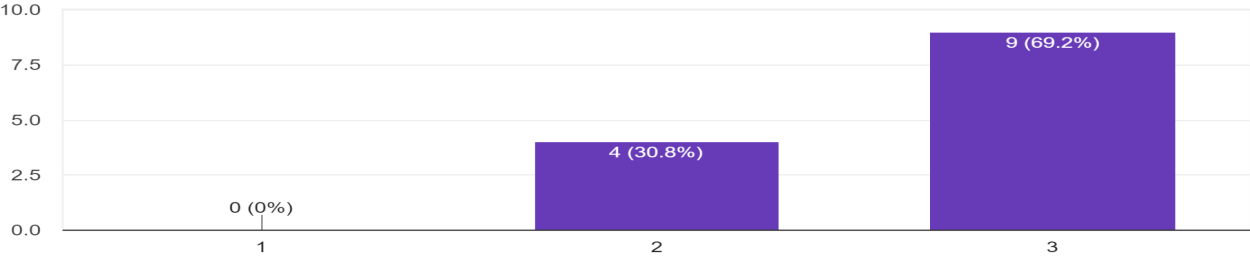


The responses show that the working moms would appreciate having an app like mommy's bridge that could connect them with their children.

The sixth question:

How likely would you be to recommend Mommy's Bridge to other working mothers based on your understanding of the app's concept and potential benefits?

13 responses



A majority of the responders would recommend the app to other working mothers.

Overall, the introduction of the app in nursery schools will have a positive impact on communication, parental involvement, administrative efficiency, and children's learning experience. This app has the potential to bring significant improvements to nursery school management and parent-teacher communication in the country.

## **Chapter 7 : Conclusion And Future Work**

In this project we designed an application that tries to build a bridge between the working mothers and their children, so that they can keep checking on them while working, and observe their development process in a more transparent way.

We tried to provide the necessary features for this purpose while also maintaining a good user interface.

Of course we hope to develop the project more, by adding more features like on demand live videos, add more games that can help develop different aspects of the children's minds and so on.

## Chapter 8 : References

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