



AN-NAJAH NATIONAL UNIVERSITY

FACULTY OF ENGINEERING  
AND INFORMATION TECHNOLOGY

COMPUTER ENGINEERING DEPARTMENT

**Software Graduation Project:  
Spectrum Speak**

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# Acknowledgment

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We also thank everyone else who supported and encouraged us, sticking by us through good times and bad. We offer this report and project with sincere gratitude, as a testament to the teamwork and assistance received.

## Dedication

We are sincerely grateful to everyone who helped make this work possible, no matter how small the contribution. To our loved ones, friends, and those whose quest for knowledge inspired us on our path.

## **DISCLAIMER**

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## Abstract

Autism spectrum disorder (ASD) is a multifaceted neurodevelopmental condition that profoundly affects individuals' social interactions, communication, and behavior. With the increasing prevalence of autism, there is a growing demand for digital solutions to assist parents and caregivers in navigating this complex journey. In the realm of autism-related applications, existing offerings have made notable progress, but they often focus on addressing specific aspects of support. Noteworthy examples include applications like the "Autism Speaks Autism Response Team (ART) App," "Autism Tracker Pro," and "Proloquo2Go," each excelling in their respective niches. This research project aims to build upon these foundations by introducing a unified mobile and web application designed to cater to the comprehensive needs of parents and caregivers during the early stages of autism diagnosis and rehabilitation. The application encompasses a diagnostic module to aid parents in assessing their child's potential position on the autism spectrum, while emphasizing the importance of consulting specialists for a formal diagnosis. Post-diagnosis, the platform offers access to a wide array of specialized resources, including rehabilitation centers, audio and speech therapists, and psychiatrists, all tailored to the child's assessed position on the spectrum. Going beyond existing solutions, it facilitates the integration of autistic children into inclusive educational environments by connecting parents with shadow teachers who provide personalized support within mainstream schools. What sets "InclusiVate" apart from existing applications is its recognition of the significance of a comprehensive, user-centric solution that integrates diagnostic assistance, access to specialized care, and a supportive community. By amalgamating these elements, our goal is to provide a more holistic and user-friendly tool for parents and caregivers, ultimately enhancing early intervention, improving the quality of life for families affected by autism, and fostering inclusivity in education. We firmly believe that this research project will make a substantial contribution to the digital support ecosystem for individuals and families grappling with autism.

# 1. Introduction

In the realm of autism support, where people with autism spectrum disorders must contend with a wide range of complex issues, there is a critical need for creative solutions that address the particular requirements of families, experts, and shadow teachers. In light of this, the origins of Spectrum Speak can be traced back to real-world experiences rather than theoretical abstractions.

A personal connection—someone in our immediate social circles with autism spectrum—is what drives us. After observing the daily challenges faced by people with autism, their families, and the committed professionals who work to support them, we were inspired to set out on a journey to provide practical solutions and bridge gaps.

The idea behind Spectrum Speak originated from the real challenges that families encountered when trying to get specialized care and shadow teachers while living under the occupation of Israel and having to deal with money issues. We realized that logistical obstacles frequently block the way to support, which led us to develop a comprehensive solution that not only makes communication easier but also breaks down the barriers that have been impeding progress.

Beyond just a website and mobile app, Spectrum Speak is an example of the strength of understanding and empathy. The challenges encountered by people with autism and their families became a driving force propelling us towards creating a platform that eases the burden of finding suitable specialists and shadow teachers, thereby unlocking new opportunities for growth and opening up new avenues for development.

This report delves into the complexities of Spectrum Speak, examining its features, functionalities, and the underlying philosophy of improving the quality of life for individuals with autism. From the cutting-edge chatbot, Spectrum Bot, which answers questions and provides advice, to the usefulness of enabling communication between parents, experts, and shadow teachers, Spectrum Speak is proof of the revolutionary potential of technology in the field of autism support.

We invite you to embark on a journey with us as we explore the many facets of Spectrum Speak, driven by our shared experiences, empathy, and a never-ending desire to have a positive impact. Our goal with Spectrum Speak is to empower families, professionals, and shadow teachers to build stronger bonds and foster an environment that is more accepting and supportive of people on the autism spectrum, in addition to addressing the current issues.

## **2. Constraints and Earlier Coursework**

### **2.1 Constraints**

In the developmental journey of Spectrum Speak, we faced and overcame numerous challenges, each was a special issue that necessitated careful study and creativity to solve. Two noteworthy constraints were encountered:

#### **2.1.1 Difficulty in Information Gathering**

One of the main challenges arises from the difficulty of collecting comprehensive information, especially in cities with limited autism centers. To address this, we have taken several aspects. Collaborating with the Al-Najah Center was a valuable source of information and insights. By consulting the parents of some autistic children, we gained valuable insights into their needs and challenges. Consulting specialists who have experience with autistic children added an important piece of information.

#### **2.1.2 Seamless Work Transfer Between Team Members**

The challenge of ensuring a seamless transfer of work between team members, especially in the context of a mobile app and website development, prompted the adoption of effective tools. GitHub has become the perfect solution. This allowed team members to contribute and review code changes, ensuring a cohesive and well-coordinated development process.

## **2.2 Earlier coursework**

### **2.2.1 Object Oriented Programming**

This course teaches Object Oriented Programming in Java, We use the same principles in Dart, even though we don't use Java. (We use Flutter Language Programming)

### **2.2.2 Database Design**

This course is very important because most mobile and web applications use databases Therefore, database design was crucial to the project. In a database course using MySQL, also in this project, we use MySQL database.

### **2.2.3 Software Engineering**

This course was an important reason why this project worked, in Software Engineering we learned how to deal with GitHub and how to write clean code.

### **2.2.4 Critical Thinking and Research Skills**

We studied how to research and write reports in a course Critical Thinking and Research Skills. That was the reason why we were able to write this report.

## **3. Literature Review**

It is crucial to have knowledge about autism and education technology, and how they are integrated with mobile applications. Understanding the current landscape is critical to putting Spectrum Speak in a wider context and identifying its unique contributions in this area.

### **3.1 Autism Spectrum Disorder (ASD)**

Research on autism spectrum disorder has expanded significantly in recent years. Reflecting the amount of difficulties and challenges faced by individuals and their families, we emphasize the importance of entering technology specifically to support and take into account their specific needs.

### **3.2 Learning Remotely**

After the COVID-19 pandemic, remote learning has experienced a significant increase and expansion worldwide. However, in Palestine, under the constraints of occupation and the challenges imposed, such as the closure of roads and barriers, our access to education and resources is constantly limited. Despite the challenges, the idea of providing basic support for children with autism is becoming more prominent. Ensuring that they have the help, consultations, and courses needed remotely from experts and centers has become crucial. This concept becomes even more important as we overcome the obstacles imposed by the occupation.

## 4. Methodology

### 4.1 Tools, Methods and Programming Languages

#### 4.1.1 Tools



Figure 4.1: Android Studio

Integrated Development Environment (IDE) for Android app development, providing a feature-rich environment for designing and coding.



Figure 4.2: IntelliJ IDEA

IDE is used for back-end development, offering powerful tools and features for Java-based application development, and we use it to show and run the Node JS code.



Figure 4.3: GitHub

Web-based platform for version control and collaboration using Git. Facilitates seamless collaboration among team members.



Figure 4.4: Firebase

A platform for mobile and web app development, providing tools like authentication, real-time database, and cloud functions, we used it in Chatting and Notifications.



Figure 4.5: XAMPP with MySQL

XAMPP is a free, open-source cross-platform web server solution stack, and MySQL is used as the relational database management system (RDBMS).



Figure 4.6: Postman

API development and testing tool, simplifying the process of creating and managing APIs for efficient communication between different components, and we used it to test Node JS code.

Figure 4.7: ZegoCloud



 ZegoCloud is a cloud-based platform designed for seamless data storage and collaboration. It provides a secure and efficient environment for managing and sharing information among users(We use it for video calls).

Figure 4.8: Open API

 OpenAI is an artificial intelligence research laboratory committed to advancing digital intelligence safely. It pioneers cutting-edge AI technologies and actively contributes to the global AI research community. (We use it in Spectrum Bot)

#### 4.1.2 Programming Language

Mobile applications and web pages were developed using a combination of programming languages:

##### 4.1.2.1 Back end



Figure 4.9: Node JS

For the back end, we chose Node JS as a programming language. which is a Java Script language that assists server-side development.

#### 4.1.2.2 Front end

Figure 4.10: Flutter



We employed Dart language, especially the Flutter framework. Dart language is a language that focuses on designing user interfaces, while Flutter offers a range of widgets and tools that make the pages more interactive and beautiful.

#### 4.1.3 Database

In our project, we have used the MySQL database as an ideal solution for storing data since the project is full of relationships, and MySQL is a popular open-source relational database known for its reliability, ease of use, and scalability.

We create several tables in MySQL to fit different aspects of the application, that include:

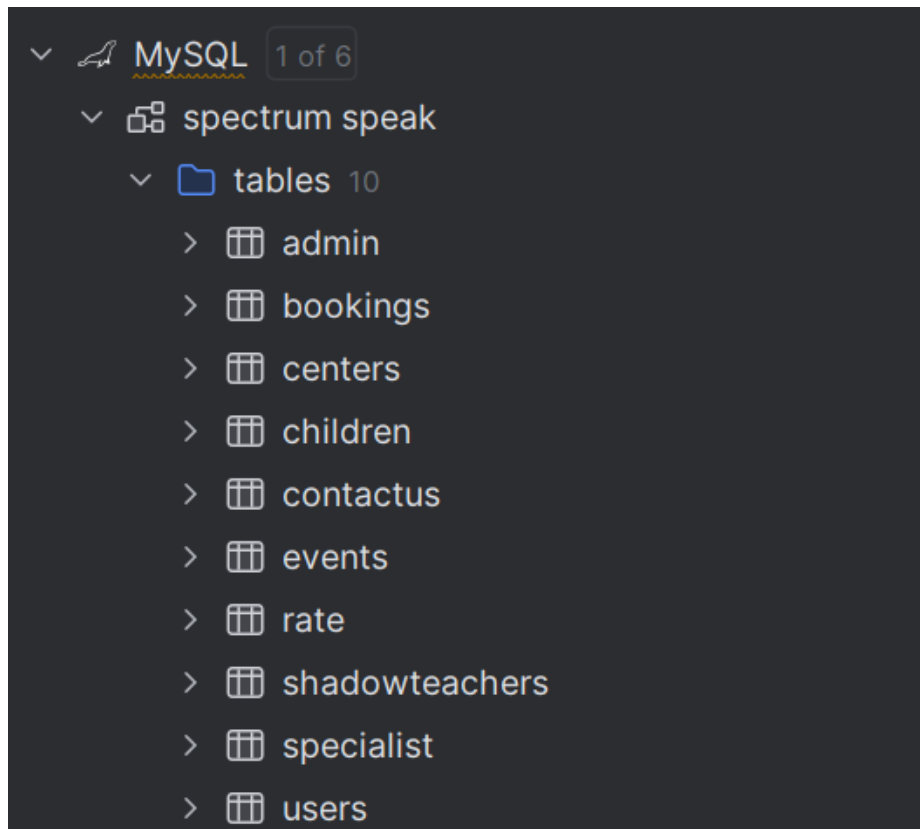


Figure 4.11: Spectrum Speak Database

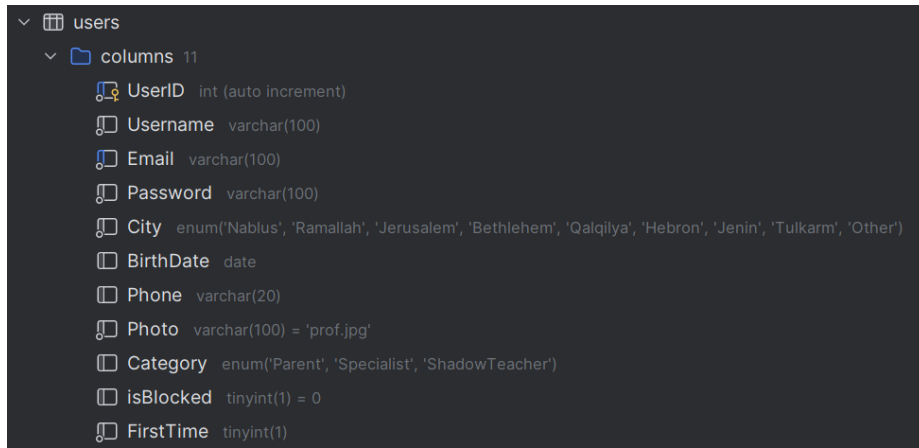


Figure 4.12: Users table

Users table to store the basic information related to the user.

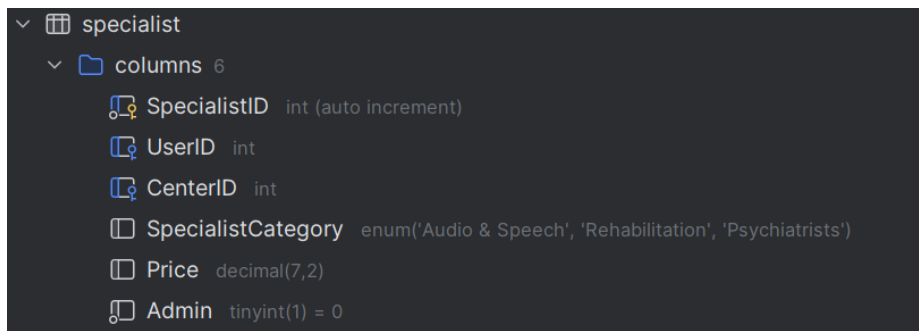


Figure 4.13: Specialist table

The specialist table contains additional information for users who belong to the Specialist category.

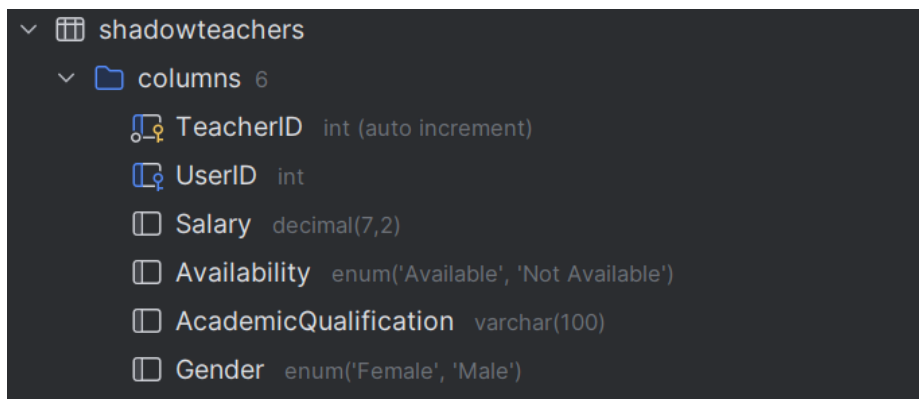


Figure 4.14: Shadow teacher table

The Shadow Teacher table contains additional information for users who belong to the Shadow Teacher category.

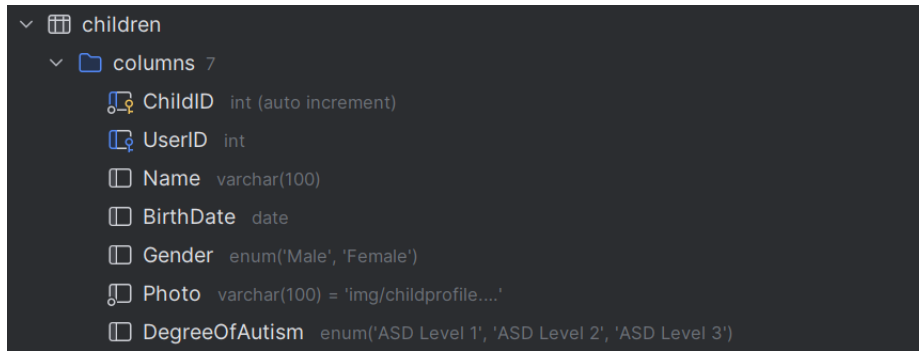


Figure 4.15: Children table

The Children's table contains all the information about each child, only Parent category users are allowed to add a child or many children.

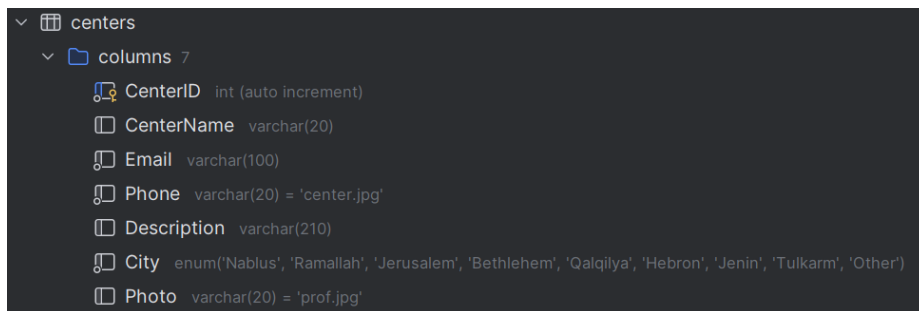


Figure 4.16: Center table

The Center table contains all the information about centers. The specialist from the category Rehabilitation shall enter the necessary information for the Center and shall be the Admin of this center.

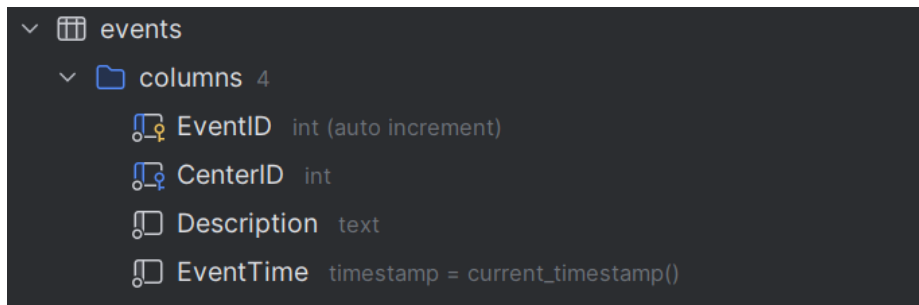


Figure 4.17: Event table

To store the information of the center events.

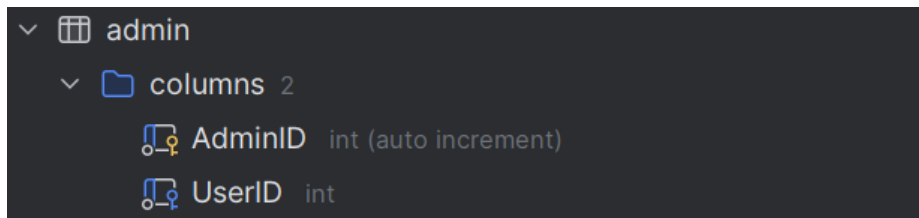


Figure 4.18: Admin table

The admin of the application has more features than any other user.

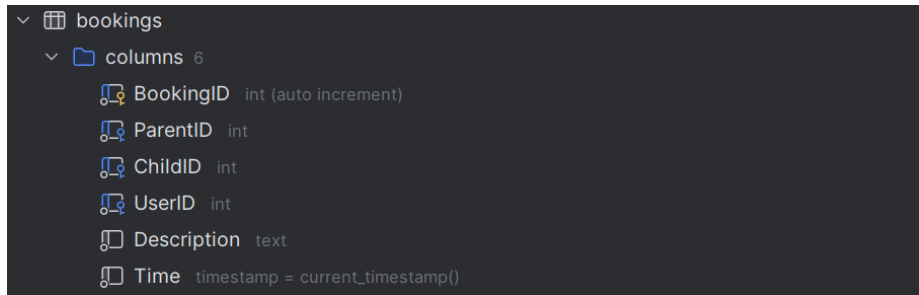


Figure 4.19: Booking table

Parents can book time for any child they have, with any specialist they want, and specialists can accept or reject.

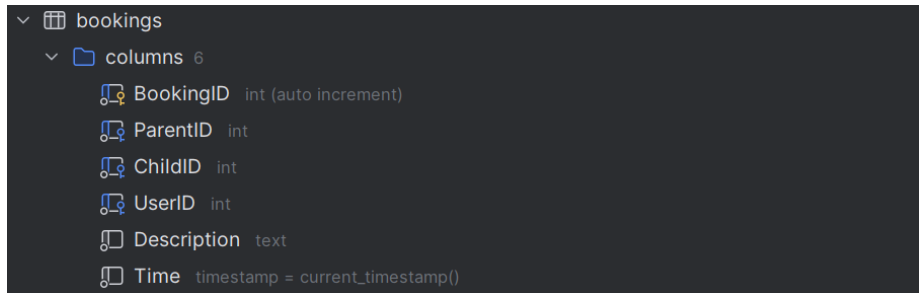


Figure 4.20: Booking table

Parents can book time for any child they have, with any specialist they want, and specialists can accept or reject.

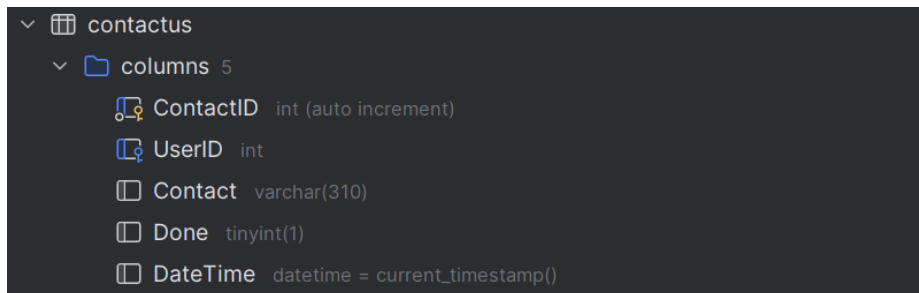


Figure 4.21: Contact Us table

Any user can send a text to the admin and the admin can show it and take the necessary action.

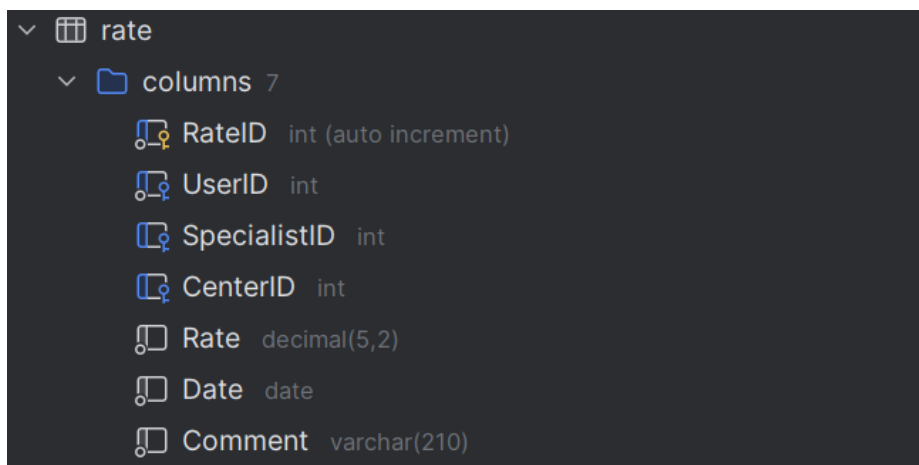


Figure 4.22: Rate table

This table is for users' assessments for each specialist or center.

## 4.2 System Features Implementation

The Spectrum Speak app allows you a special unique experience as it has many features with amazing designs and is structured in a way that enables the user to get the highest degree of efficiency. The available features include:

### 4.2.1 Mobile application

#### 4.2.1.1 Welcome Page

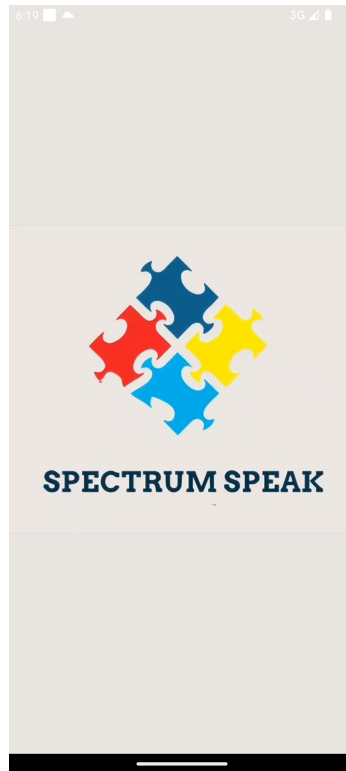


Figure 4.23: welcome Page

#### 4.2.1.2 Sign-Up

2:10 92%

**SPECTRUM SPEAK**

### Sign Up

Email Address  
ramzikhaliil2001@gmail.com

Name  
Ramzi Khalil

Phone Number  
0599886676

Birth Date  
1992-09-09

Password  
Ramez2001@

Confirm Password  
Ramez2001@

Password must contain the following  
\*A lowercase letter  
\*An uppercase letter  
\*A number  
\*Minimum 8 characters

Nablus

**Choose Category**

Parent

Specialist

Shadow Teacher

**Sign Up**

OR

[Do you have an account? Log in](#)

Figure 4.24: Sign-Up Page

The Basic information for the user can be entered on this page4.24 to start creating a new account in the Spectrum Speak application. After pressing the "Sign Up" button he saves the information in the Spectrum Speak database and Firebase authentication generates a unique ID that is used to identify the user and save the necessary information on Firebase.

In the next step, you can verify the account Spectrum Speak sends numbers to your email then the user enters the number on the page ?? and you can skip it put the user As the alert indicates 4.26, it is responsible for that.

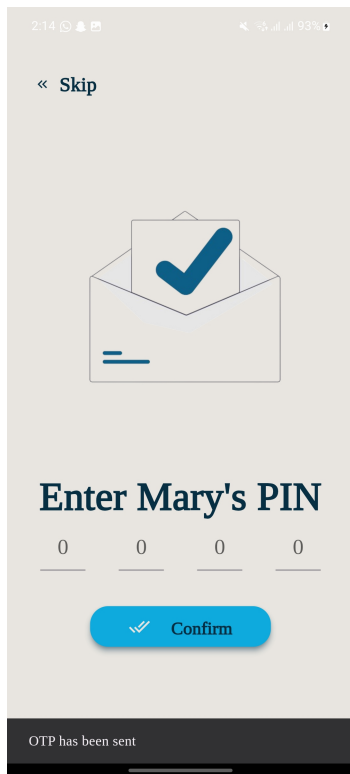


Figure 4.25: Verify Page

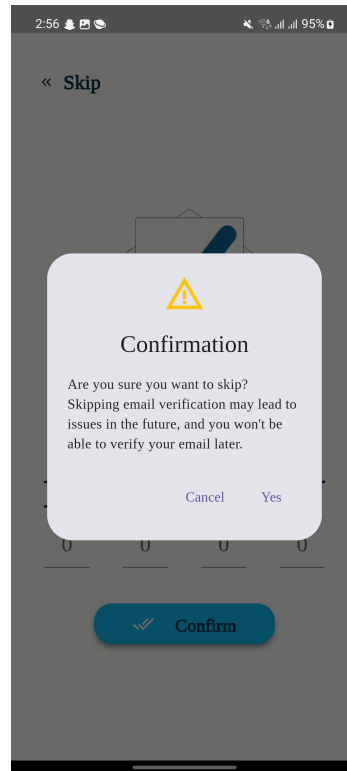


Figure 4.26: Alert for Sign-Up Page

When you enter the basic information on 4.24 it is important to choose the category from this category (Parent, Specialist, Shadow Teacher), and depending on the option, you either go to the page 4.27 if you are Specialist or go to the page 4.28 if you are Shadow Teacher or go to 4.29 if you are Parent.

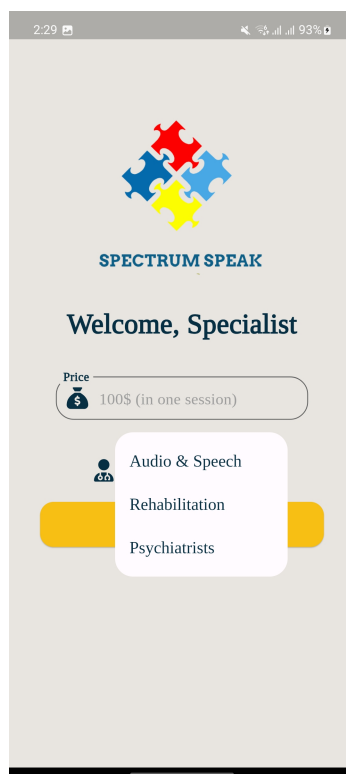


Figure 4.27: Specialist Sign-Up Page

On this page 4.27, the user Specialist continues to Sign up.

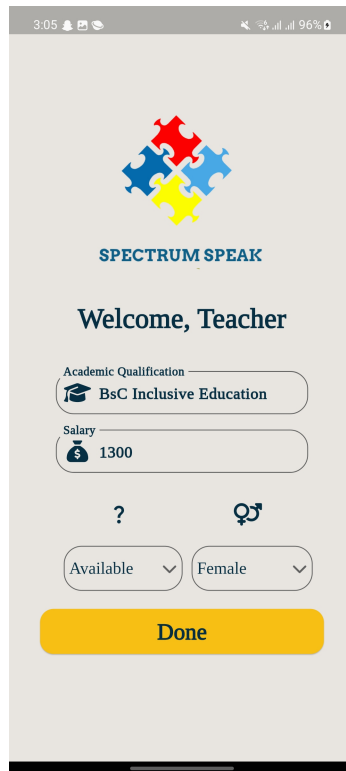


Figure 4.28: Shadow Teacher Sign-Up Page

On this page 4.28, the user Shadow Teacher continues to Sign up.

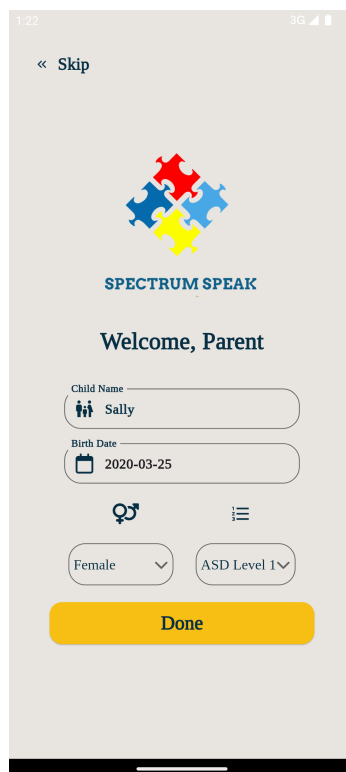


Figure 4.29: child Sign-Up Page

On this page 4.29, the user Parent can enter the information about one of the children or not. All users in the next step go to the page 4.30 to choose the beautiful user photo, also the user can

skip this page.

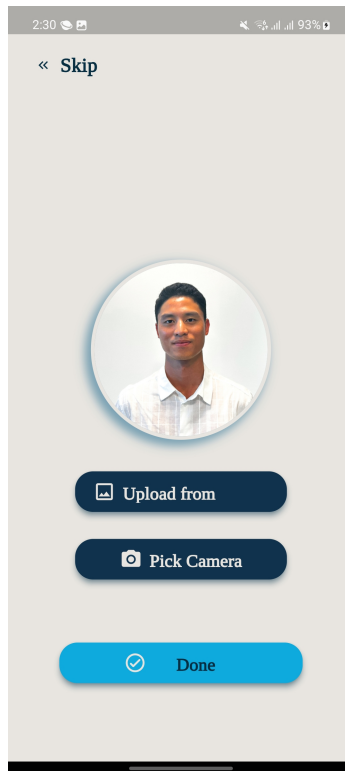


Figure 4.30: Upload Photo Page

#### 4.2.1.3 Login

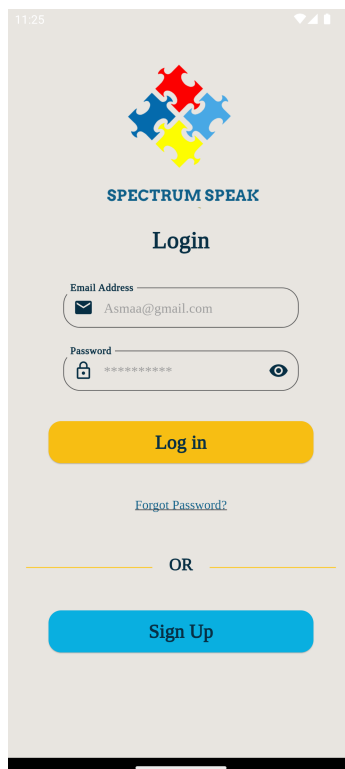


Figure 4.31: Login Page

The login page is the entry point of the application, the user enters the email and password then the user either accepts and goes to the main page 4.37

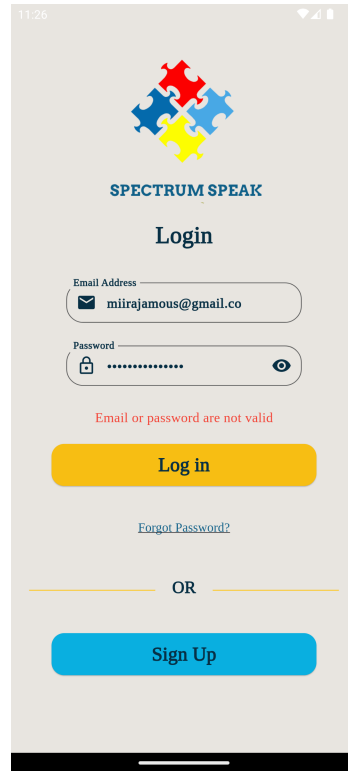


Figure 4.32: Login Error Page

Or rejects if the password or email or not correct or the user is blocked by admin as shown in 4.32.

#### 4.2.1.4 Forget Password

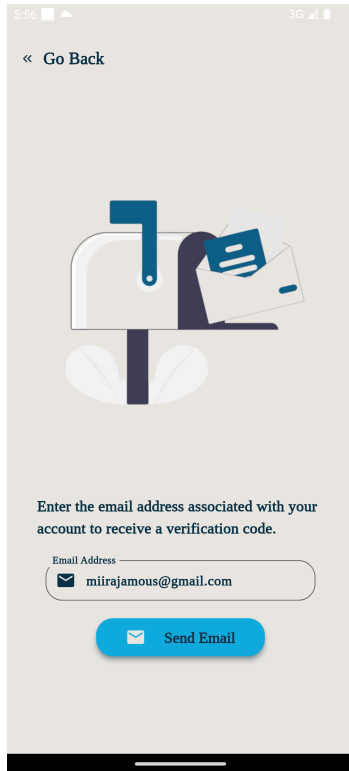


Figure 4.33: Forget Password

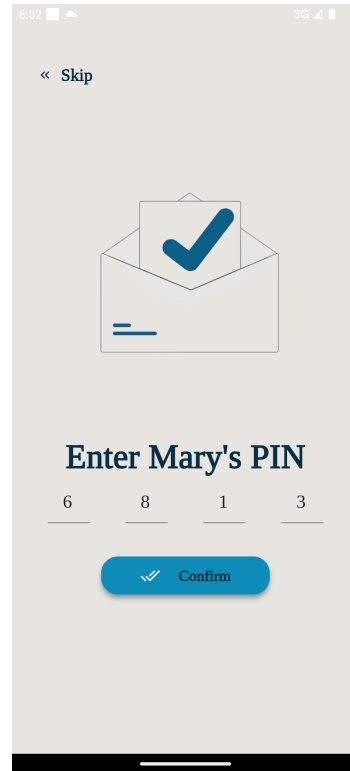


Figure 4.34: OTP Code

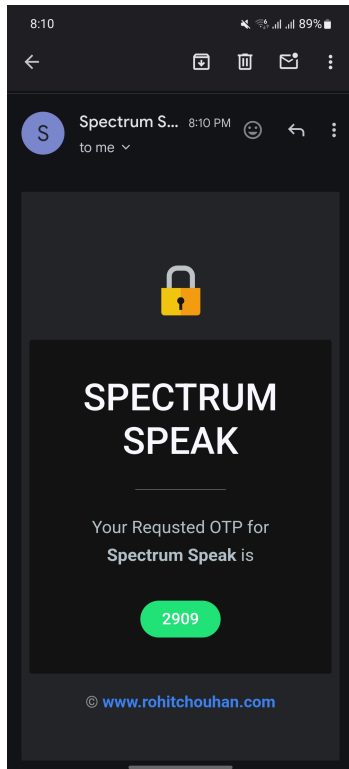


Figure 4.35: OTP Code Email

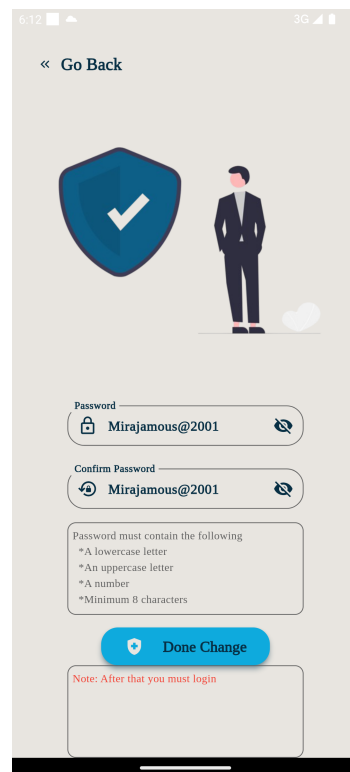


Figure 4.36: Forget Password done

If you forget your password, you only need to enter the email you created your account, and then you receive an OTP code that you enter, and then you can enter a new password.

#### 4.2.1.5 Main page

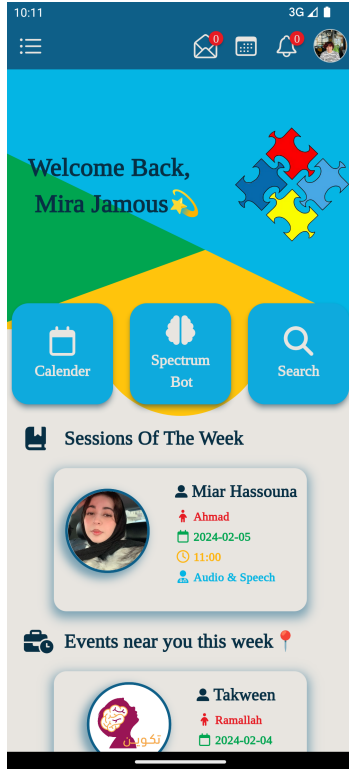


Figure 4.37: Main Page



Figure 4.38: Main Page

This is the Main page that contains a beautiful design, and three buttons to go for calendar 4.65, Spectrum bot ??, or Search page 4.72. You can see sessions for this week if you are a parent and you book an appointment with a specific specialist, or if you specialist and you have some appointments with a specialist.

Additionally, you have the opportunity to see events at centers nearby this week.

Finally, at the bottom of the page, you can see the encouragement to donate and contact philanthropists to donate to autism centers.

Also, you can choose any choice from the top bar above the page 4.37, on the top left you can open the slider menu and choose the choice you want as shown in 4.101.

#### 4.2.1.6 Profiles

##### Parent Profile



Figure 4.39: Parent Profile

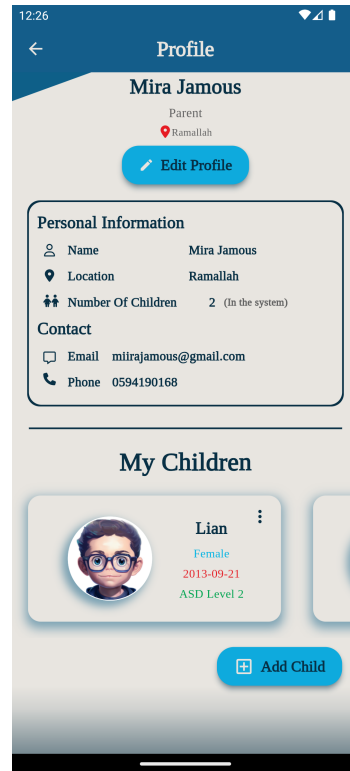


Figure 4.40: Parent Profile

This is a Parent Profile 4.39, you can show the profile photo, personal information, and contact information.

Also, a card for each child you add to the application will be shown in the profile page, from the three dots on the top right of the card you can see a small menu as in 4.41, and you can add a child from the button "Add child" at the bottom of the page 4.40. Additionally, you can see a button under the profile photo to edit the profile and if press "Edit Profile" you go to page 4.54

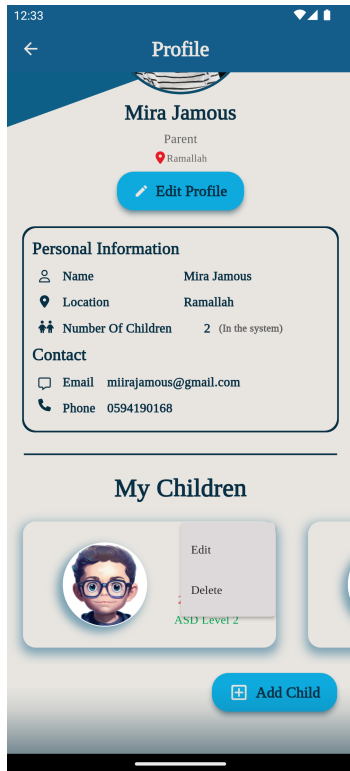


Figure 4.41: Child Menu

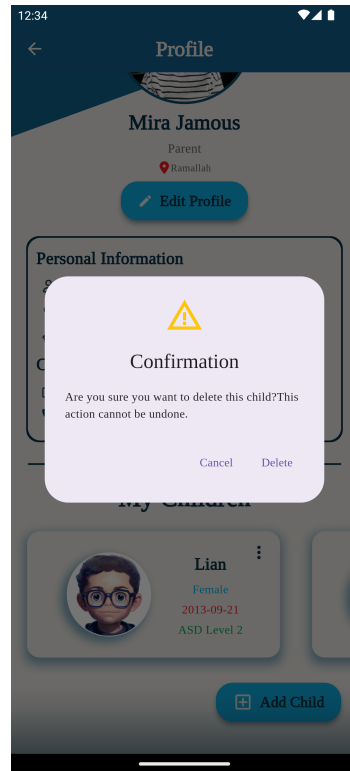


Figure 4.42: Child Delete

As you see in the child menu, you can edit the child card as in 4.57, or delete the card as in 4.42.

## Specialist Profile



Figure 4.43: Specialist Profile

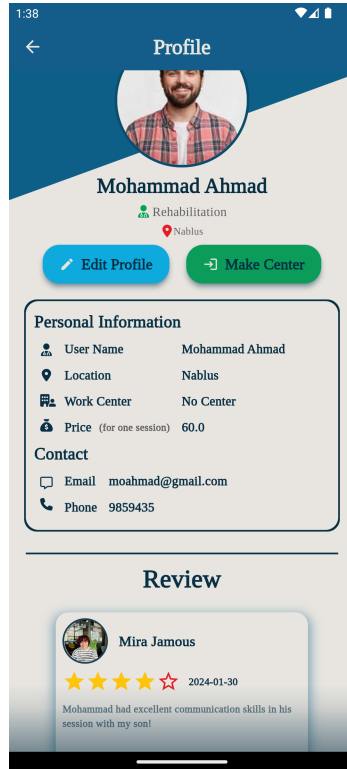


Figure 4.44: Specialist Profile

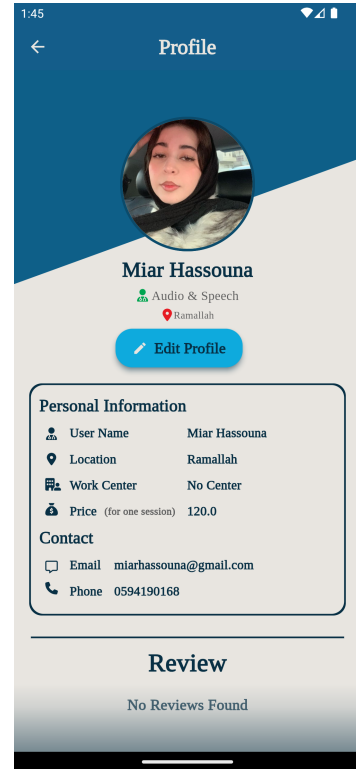


Figure 4.45: Specialist Profile

This is a Specialist Profile 4.99, you can show the profile photo, personal information, and contact information.

Also, you can see cards for users' reviews, rates, and comments from other users if found. Additionally, you can see a button under the profile photo to edit the profile and if press "Edit Profile" you go to page 4.55.

Note if the Specialist category is Rehabilitation you find the button next to the "Edit Profile" button, the Yellow button goes to the center profile ??(The specialist is the admin of the center), or the Green button goes to create a center page ??.

## Shadow Teacher Profile

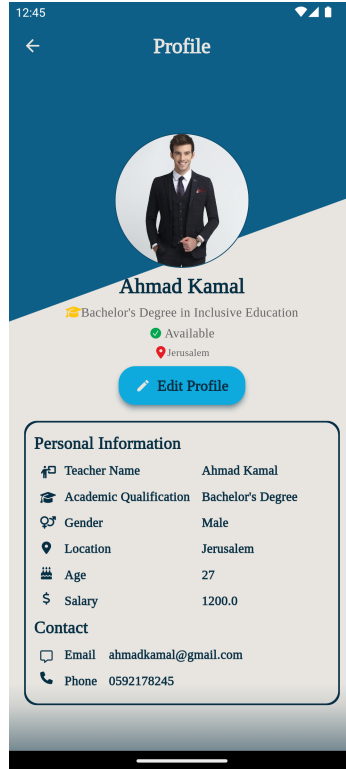


Figure 4.46: Shadow Teacher Profile

This is a Shadow Teacher Profile 4.46, you can show the profile photo, personal information, and contact information.

Additionally, you can see a button under the profile photo to edit the profile and if press "Edit Profile" you go to page 4.56.

## Center Profile

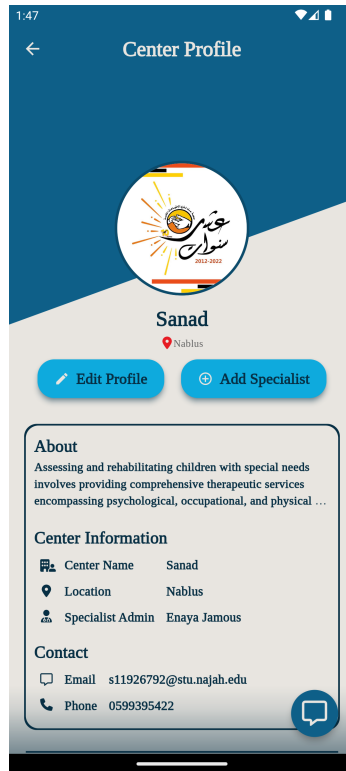


Figure 4.47: Center Profile

In Center Profile you can show the profile photo, some information, and contact information. Additionally, you can see a button under the profile photo to edit the profile and if press "Edit Profile" you go to page 4.58 Also, you can see cards for users' reviews, rates, and comments from other users if found. Note if you are the admin of the center, you find the button next to the "Edit Profile" button, to add a specialist for the center, you go to page 4.62

#### 4.2.1.7 Create Center Profiles

1:57

**SPECTRUM SPEAK**

Welcome, Specialist

Center Name  
Spectra Center

Email Address  
spectra@gmail.com

Phone Number  
0599202594

About  
We provide comprehensive treatment for children with autism spectrum disorders.

79/200

Nablus

Done

Figure 4.48: Create Center Profile

If you are a Rehabilitation Specialist you can create a Center by entering all the information in 4.48 and then go to 4.49 to add a profile picture, after that, we go to center profile 4.47.

1:58

<< Skip

Upload from Gallery

Pick Camera

Done

Figure 4.49: Add Center Photo

You can upload a photo from your device or you can open the camera and take a photo.

#### 4.2.1.8 Add Event

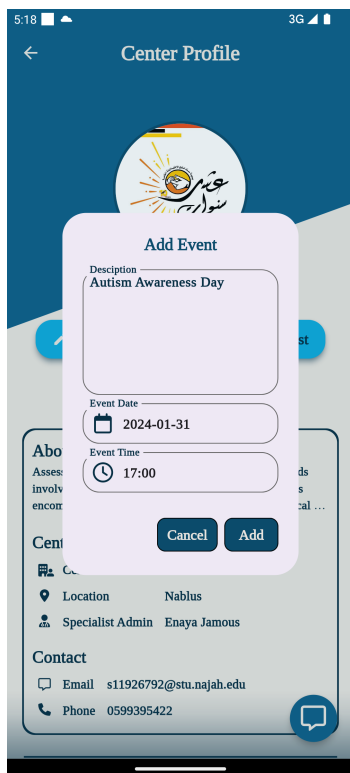


Figure 4.50: Add event

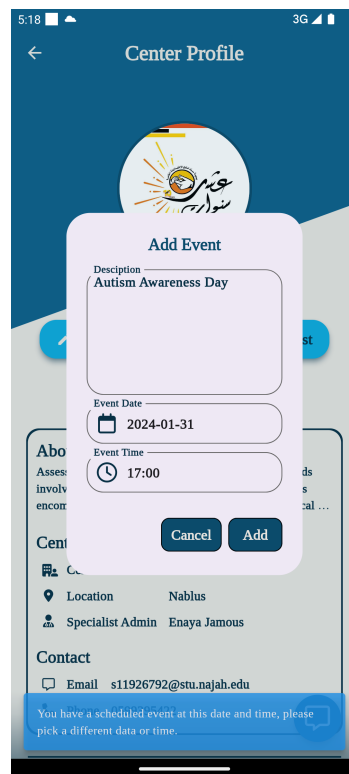


Figure 4.51: Add event Already exist

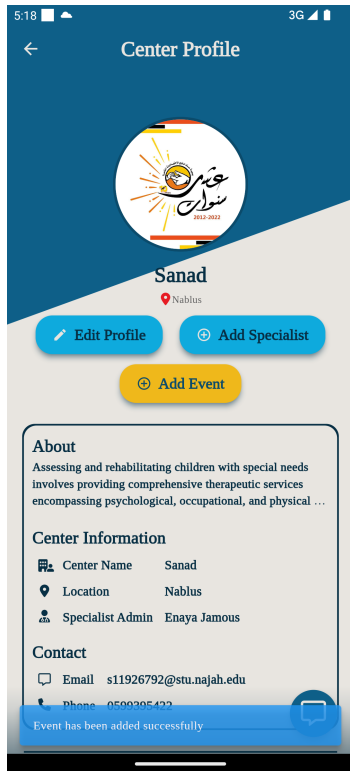


Figure 4.52: Add event Successfully

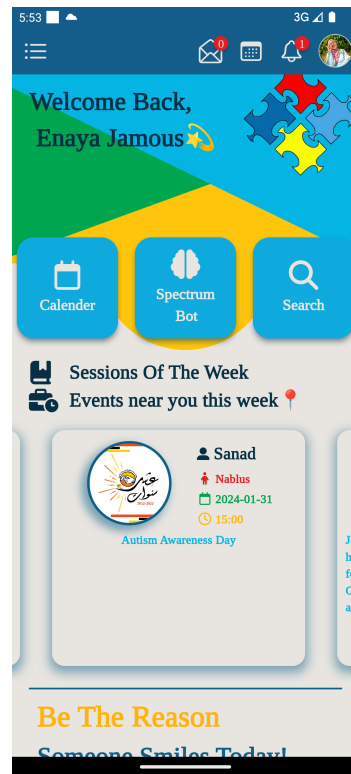


Figure 4.53: Main Updated

As Admin of the Center, you can appointment for an event as shown in the above photo.

#### 4.2.1.9 Edit Profiles

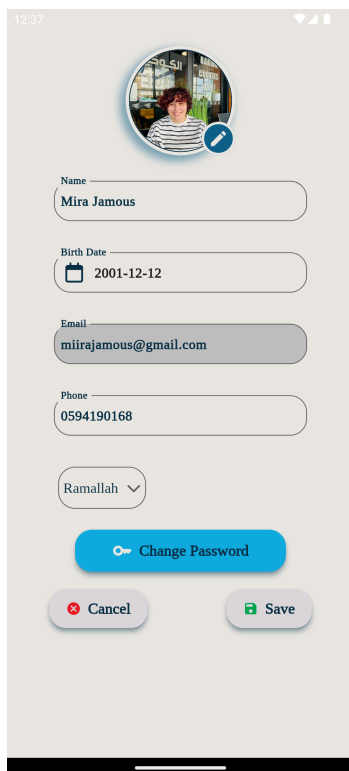


Figure 4.54: Edit Parent Profile

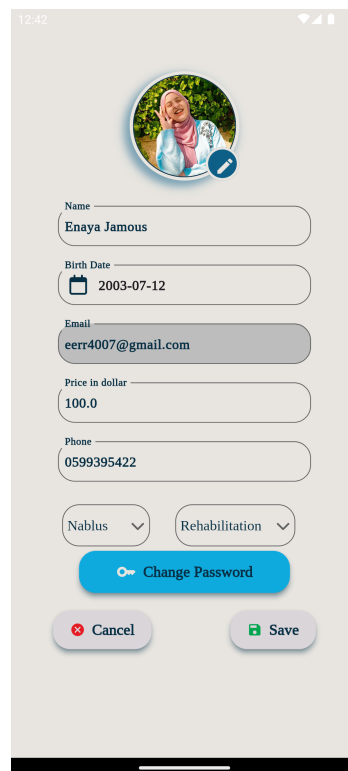


Figure 4.55: Edit Specialist Profile

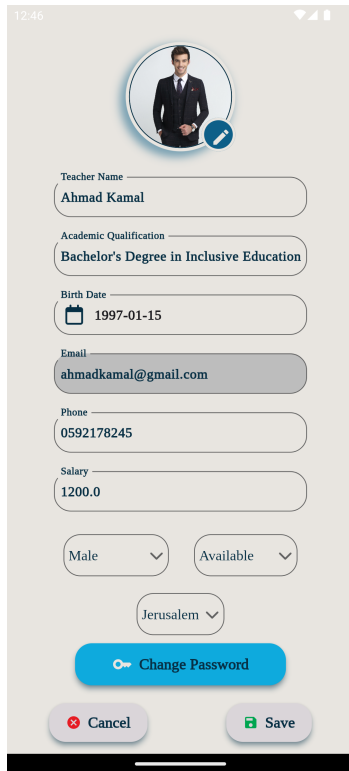


Figure 4.56: Edit Shadow Teacher Profile

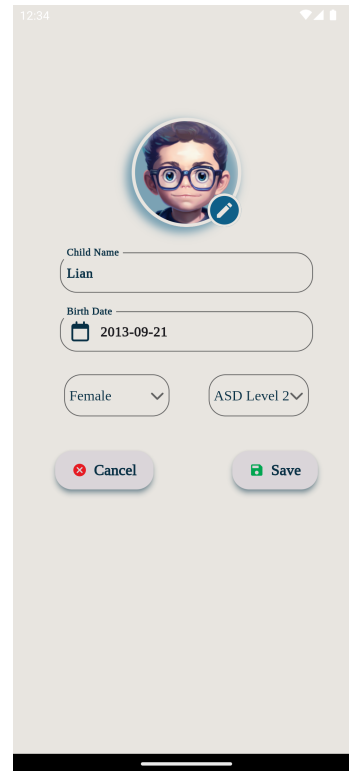


Figure 4.57: Edit Child Profile

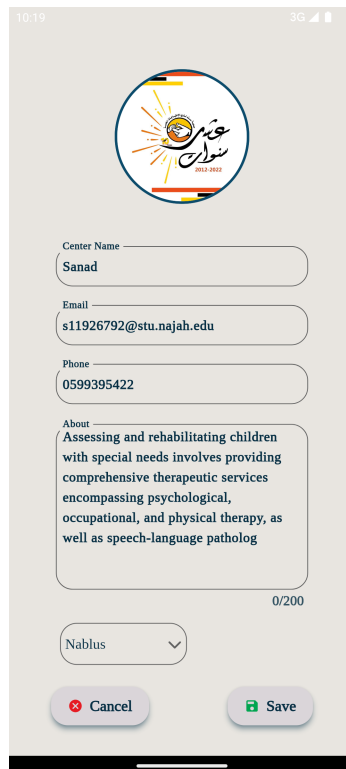


Figure 4.58: Edit Center Profile

You can edit any information for profiles (Parent, Specialist, Shadow Teacher, Center, Child) except email don't change.

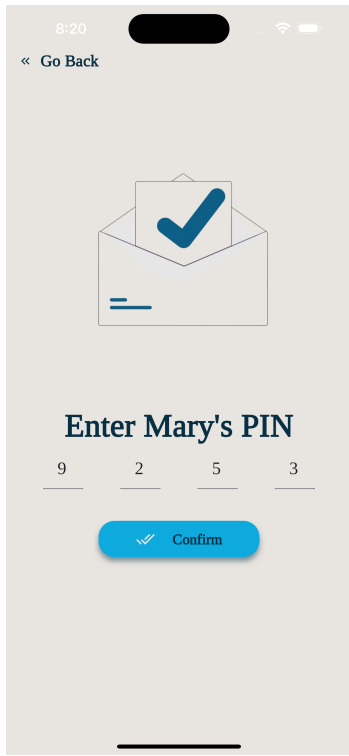


Figure 4.59: OTP Send to Email

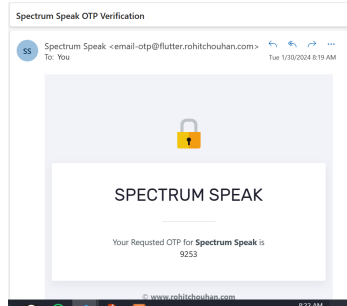


Figure 4.60: OTP Email

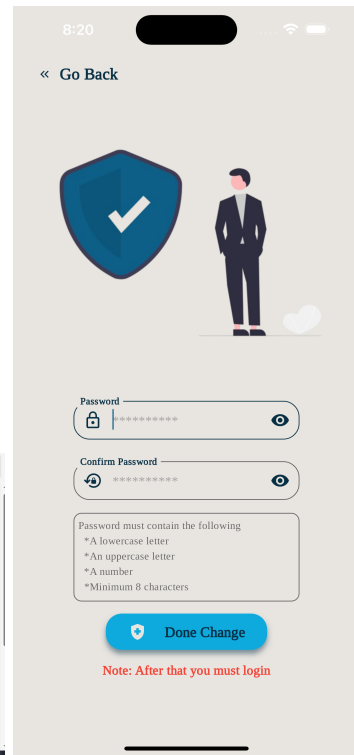


Figure 4.61: ResetPassword

You can change the account password as in the three photo above.

#### 4.2.1.10 Add Specialist

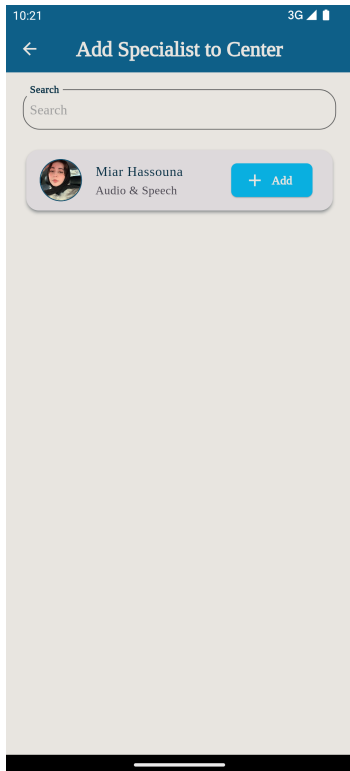


Figure 4.62: Add Specialist

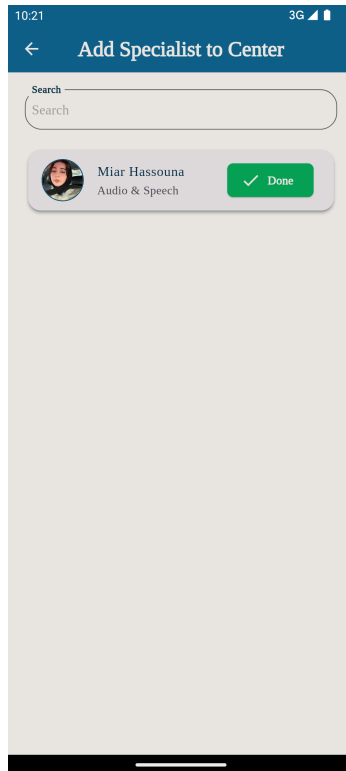


Figure 4.63: Offer Sent

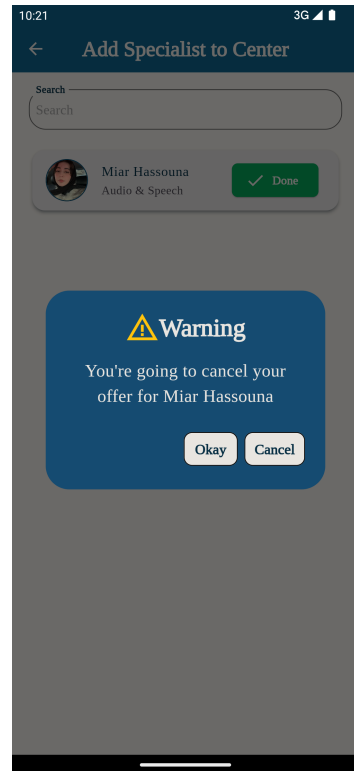


Figure 4.64: Offer Cancelled

The specialist admin in the center can add another specialist (as a worker in the center) by searching on the text field above the page and pressing add, then the application sends a notification for the specialist, and he can accept or reject.

#### 4.2.1.11 Calendar

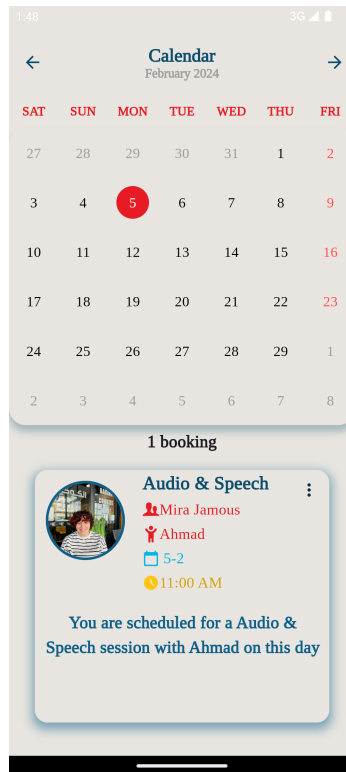


Figure 4.65: Calendar Page

From the calendar, you can see all bookings, and center events.

#### 4.2.1.12 Search

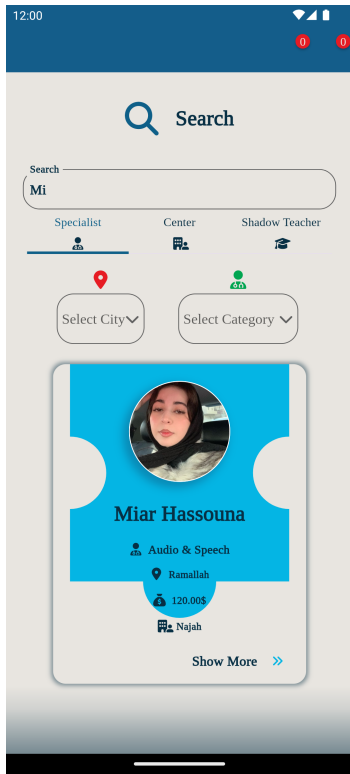


Figure 4.66: Specialist Search

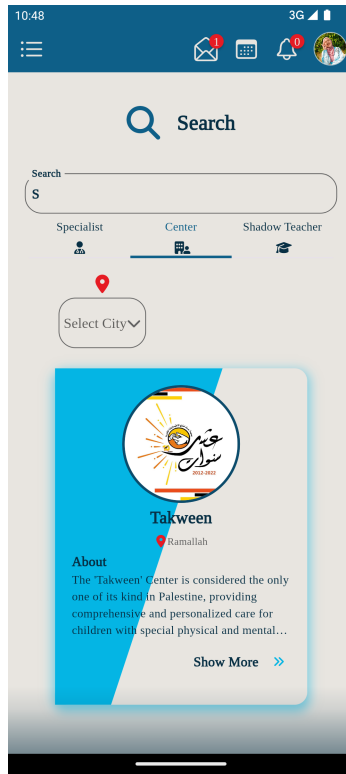


Figure 4.67: Center Search

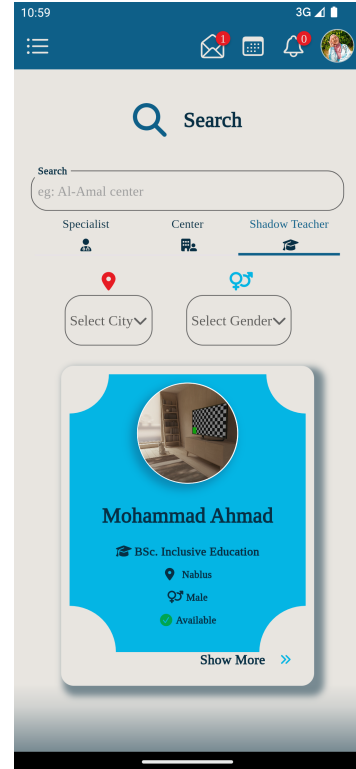


Figure 4.68: Shadow Teacher Search

You can search in the field above the page by the name, and you can use Filters to make the search more easy.

You can see the profile of any by press show more.

If you go to the Specialist profile you can press "Booking session" and then you can choose the day, time, and child that you want, then he sends a notification to a specialist, and you can accept or reject the date. Note if the data and time were booked before, he didn't allow you to book this date.

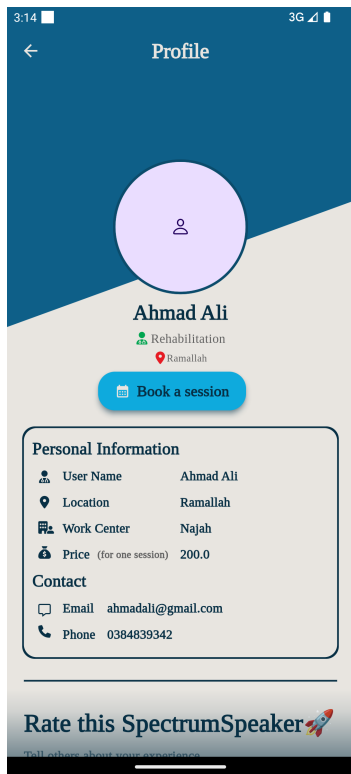


Figure 4.69: Specialist Profile Booking

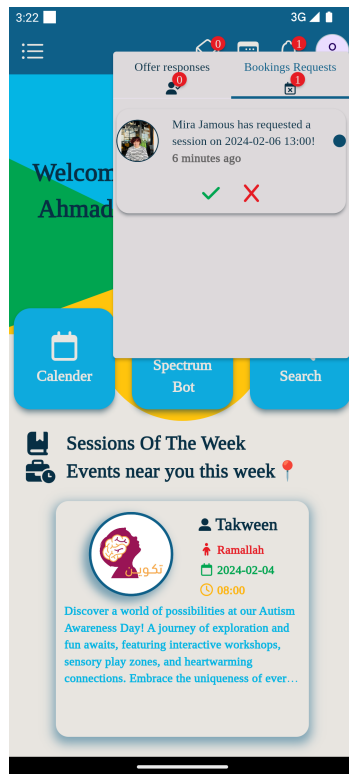


Figure 4.70: Specialist Profile Booking Notification

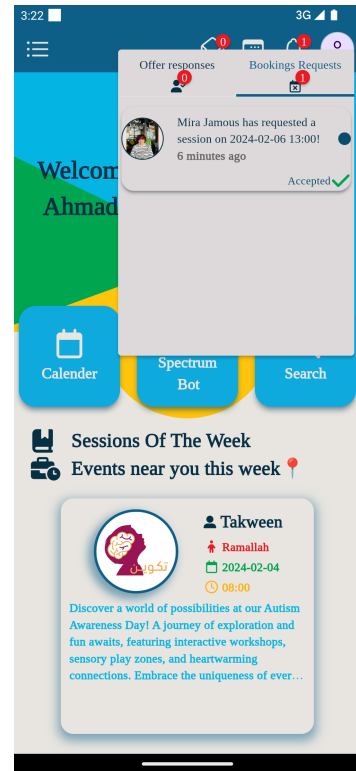


Figure 4.71: Specialist Profile Booking Notification Accepted

#### 4.2.1.13 Spectrum bot

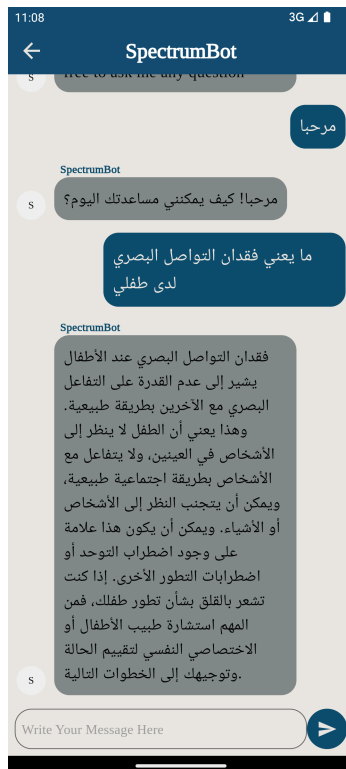


Figure 4.72: Spectrum Bot Page

Spectrum Bot provides an interactive and supportive chatbot that helps all users and gives them some information within the scope of autism spectrum-related needs.

#### 4.2.1.14 Quiz

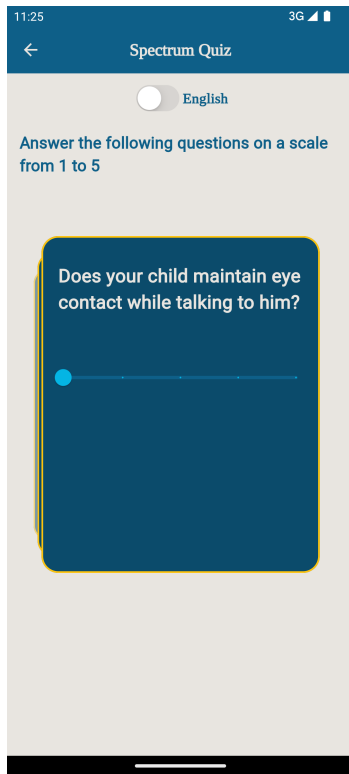


Figure 4.73: Quiz In English

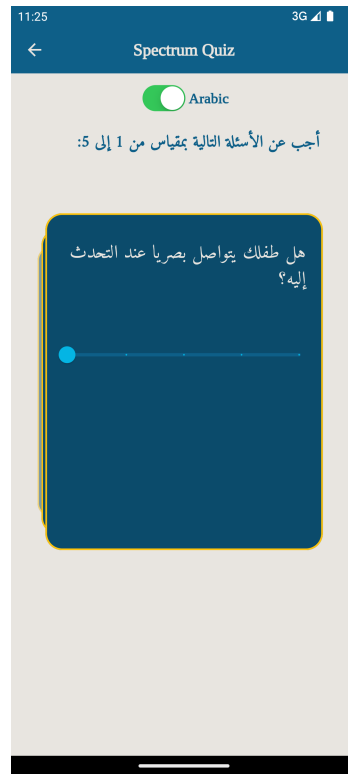


Figure 4.74: Quiz In Arabic

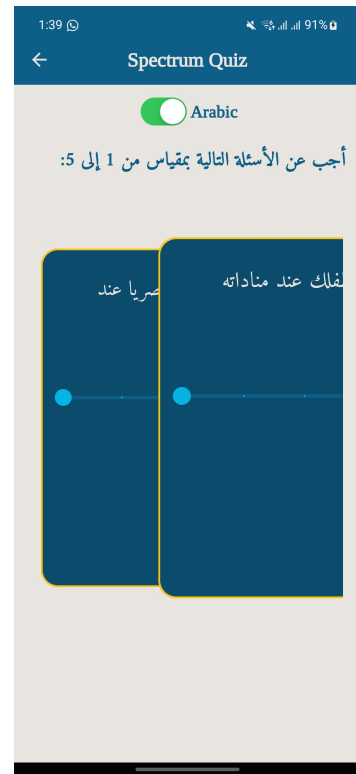


Figure 4.75: Question Swipe

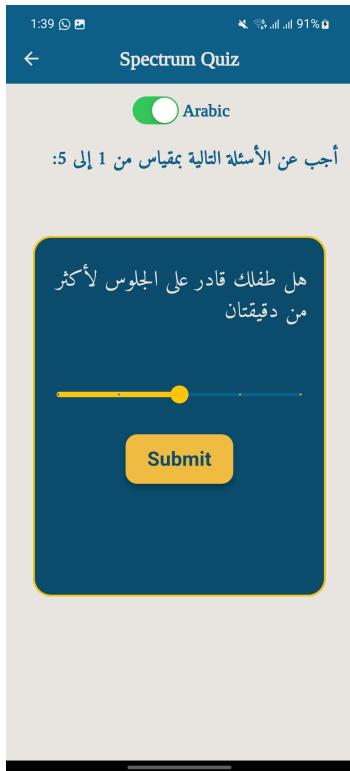


Figure 4.76: Quiz Submit

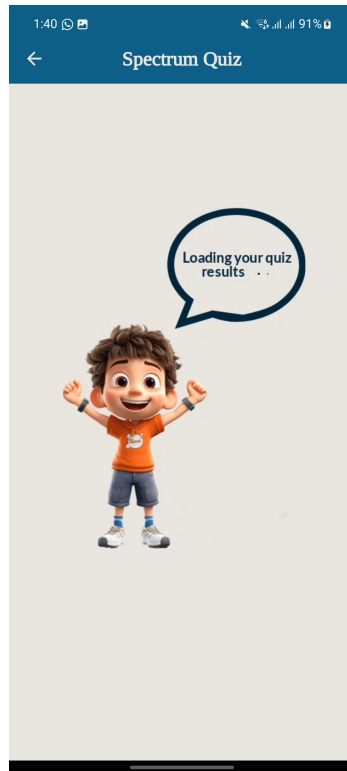


Figure 4.77: Load Result

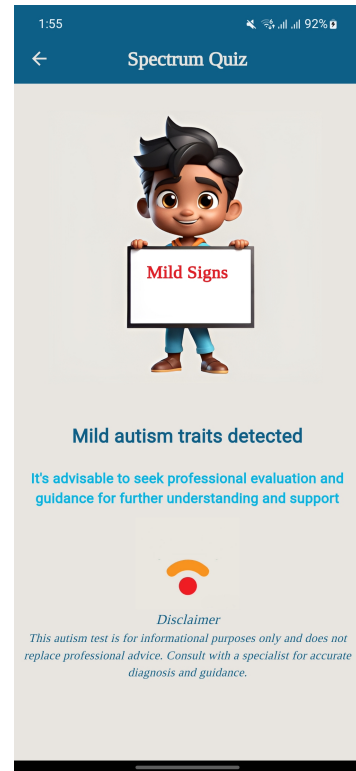


Figure 4.78: Quiz Result

Spectrum Speak app offers a unique opportunity, where parents can take this quiz for their children, and through it they can know the possibility of degree of autism for each of them, the quiz cannot be used as a diagnosis tool, a specialist evaluation is required.

#### 4.2.1.15 Messages

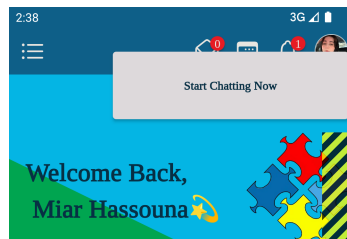


Figure 4.79: Menu Message

You can open chat from the top bar chat icon, then drop the list as in 4.79.

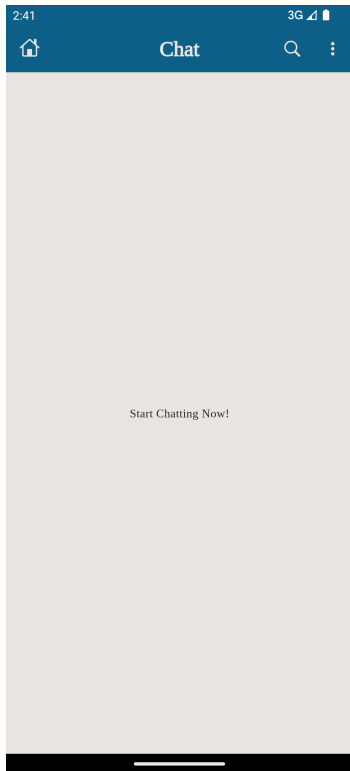


Figure 4.80: All chats before search

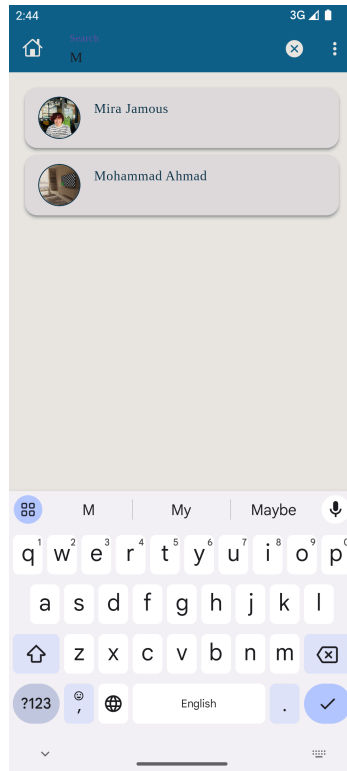


Figure 4.81: All chats after search

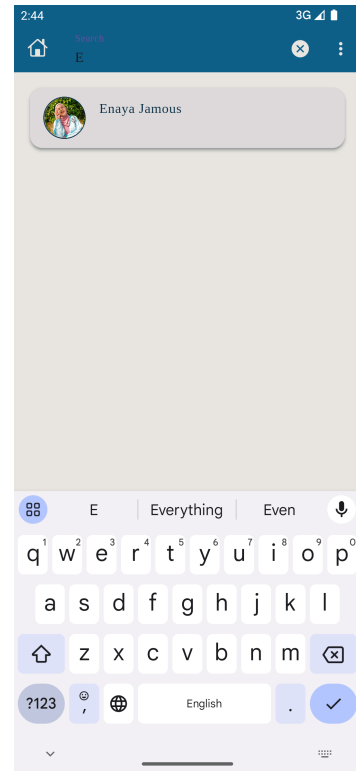


Figure 4.82: All chats after search

You can see recent all users' chats, or you can search for any user and send a message.

See the below photos to show messages between two users and notifications between them.

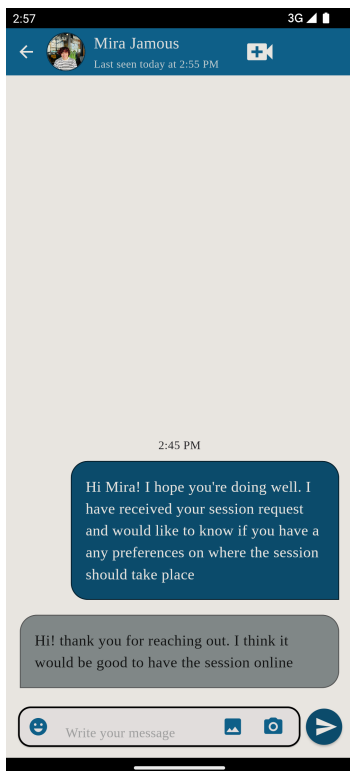


Figure 4.83: User1 send Message

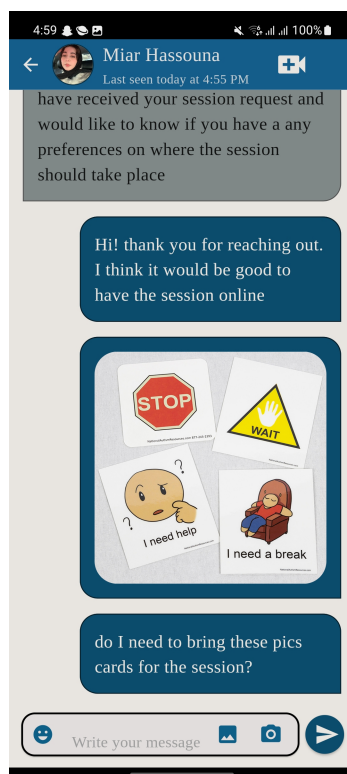


Figure 4.84: User2 send image

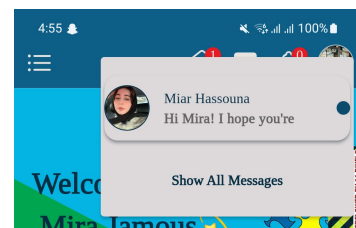


Figure 4.85: User2 Received Notification

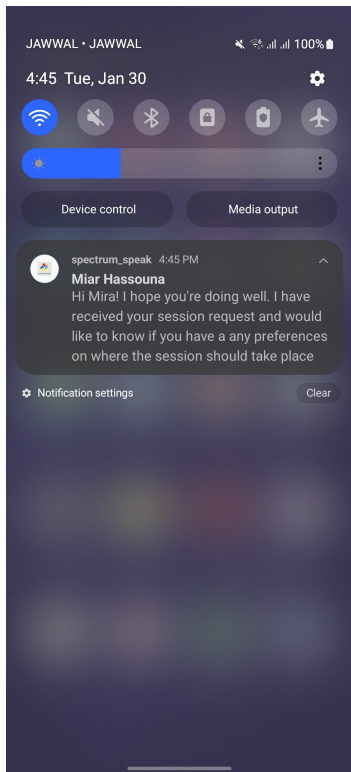


Figure 4.86: User2 Outer Notification



Figure 4.87: User1 receive image

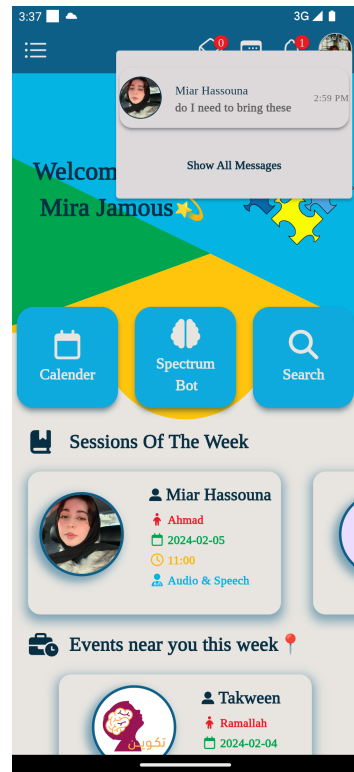


Figure 4.88: Chat Menu for User1

#### 4.2.1.16 Video call



Figure 4.89: User2 Waiting For User1 To Join

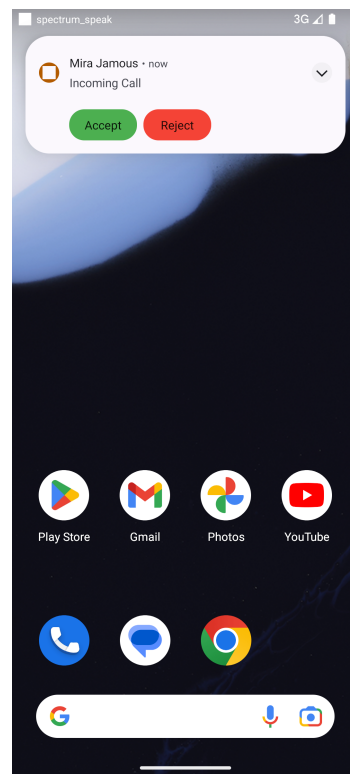


Figure 4.90: User2 Outer Video call notification

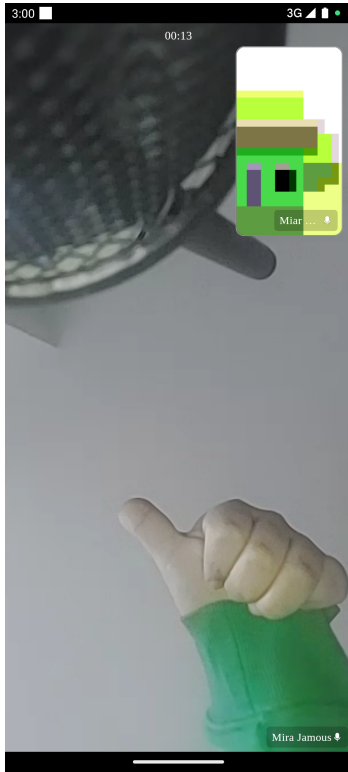


Figure 4.91: User1 joined Video call through Accept button



Figure 4.92: User2's screen after User1 joined

Our video call feature enhances communication between specialists, shadow teachers, and parents during online rehabilitation and speech therapy sessions. This ensures vital visual engagement for effective interventions. This bridges the gap across distances and enhances the sessions' quality.

#### 4.2.1.17 Guide

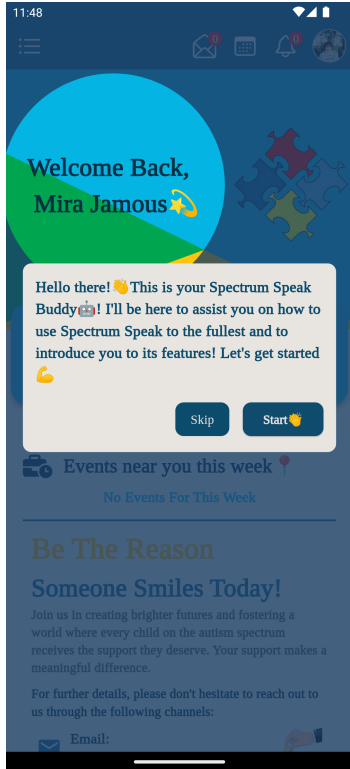


Figure 4.93: Parent Profile

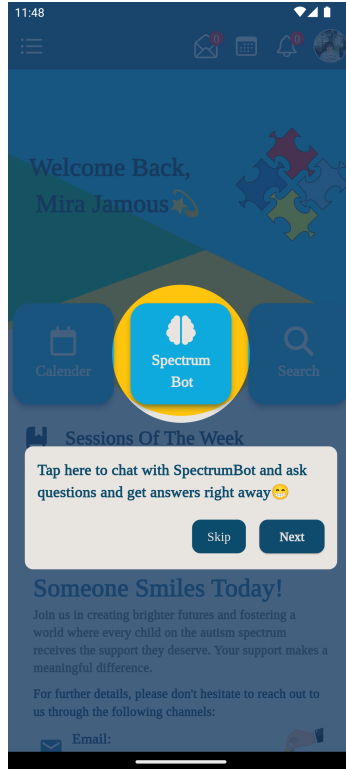


Figure 4.94: Parent Profile

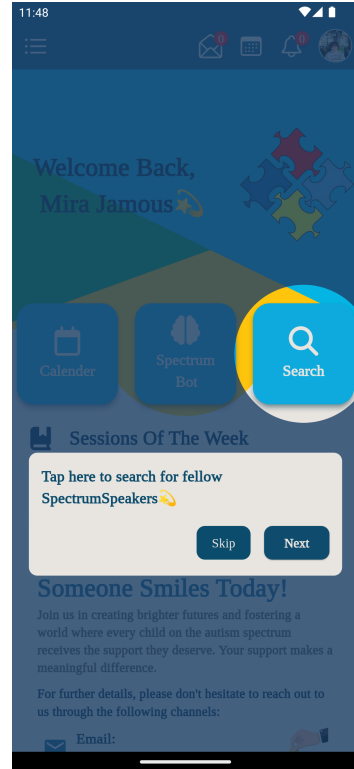


Figure 4.95: Parent Profile

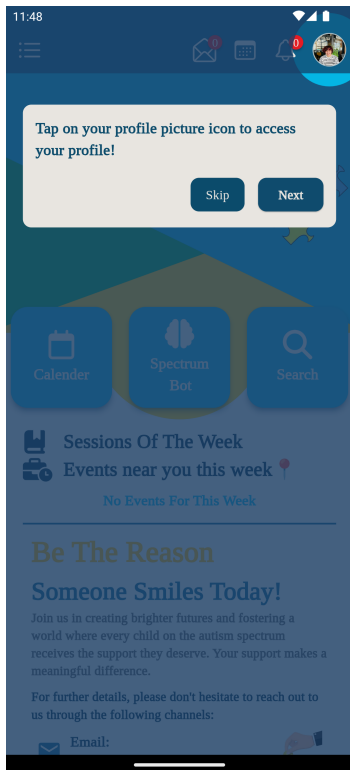


Figure 4.96: Specialist Profile

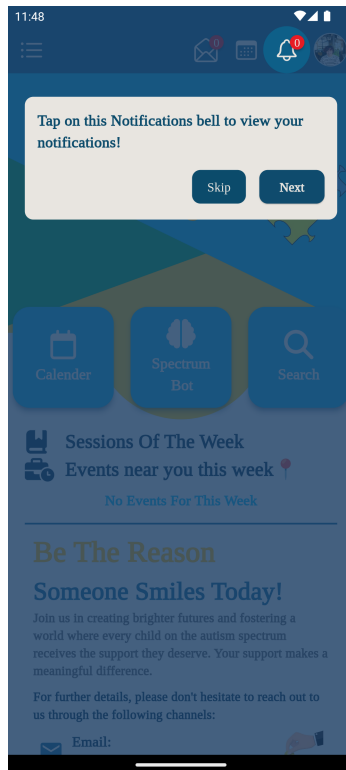


Figure 4.97: Specialist Profile

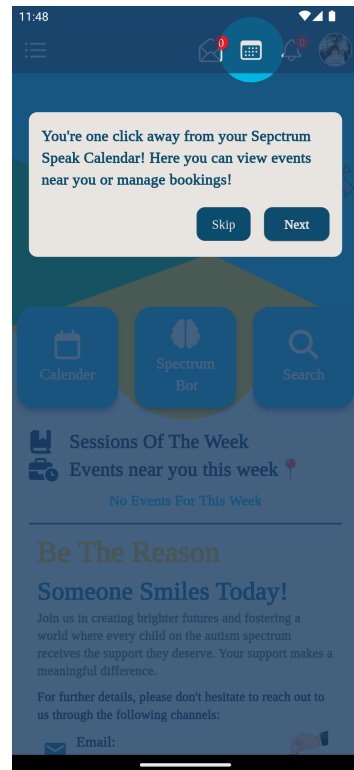


Figure 4.98: Specialist Profile

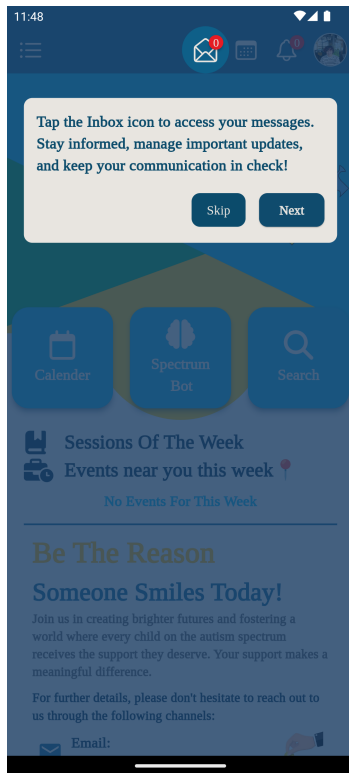


Figure 4.99: Specialist Profile

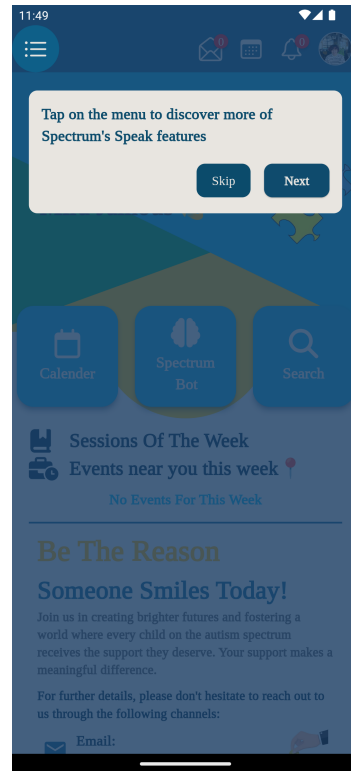


Figure 4.100: Specialist Profile

A guide is an explanation of how to use the program, above many pictures from the Guide in Spectrum Speak application.

#### 4.2.1.18 Slider menu

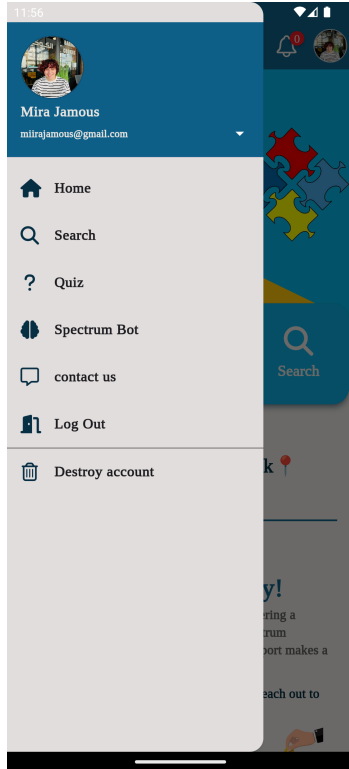


Figure 4.101: Slider Menu For User

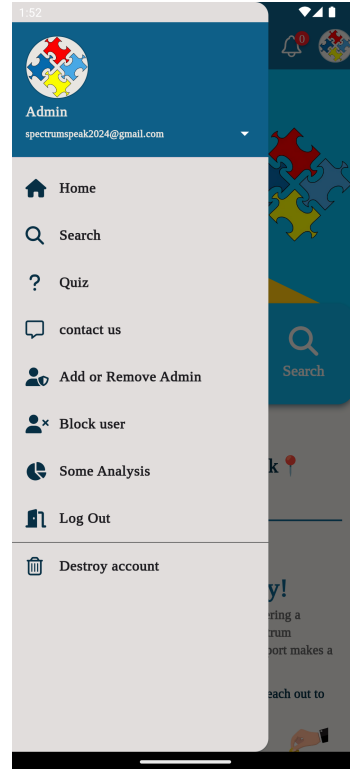


Figure 4.102: Slider Menu For Admin

### User Side

On the slider, on top, you can see your name, email, and profile photo, and if press on any of them, can go to your profile.

Under all, you see many buttons Home go to 4.37, Search go to 4.66, Quiz go to 4.73, Spectrum Bot go to 4.72, Contact Us go to 4.103, Logout return to the login page and you can't enter app page without entering your email and password, Destroy account go to 4.111.

### Admin Side

Under all, you see many buttons Home go to 4.37, Search go to 4.66, Quiz go to 4.73, Contact Us go to 4.104, Add or Remove Admin go to 4.105, Block User go to 4.106, Analysis go to 4.109, Logout return to the login page and you can't enter app page without entering your email and password, Destroy account go to 4.111.

#### 4.2.1.19 Contact Us

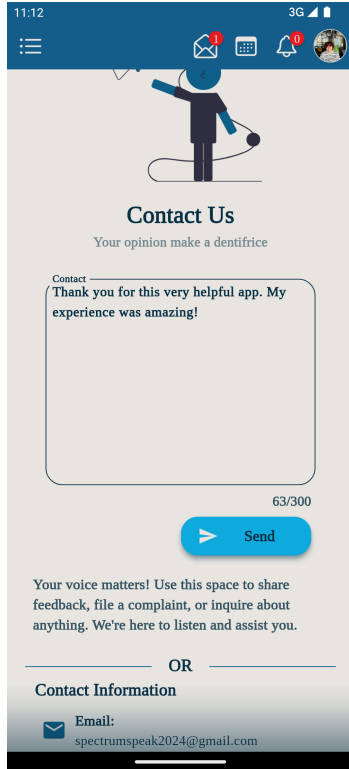


Figure 4.103: Contact Us User

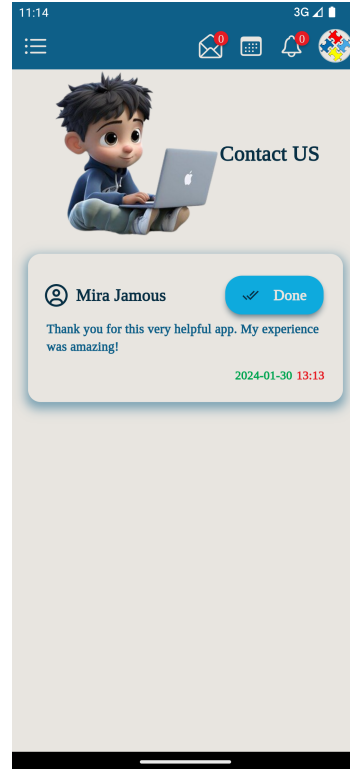


Figure 4.104: Contact Us Admin

### User Side

From the user side, any user can send a complaint, praise flattery, report a glitch, etc. All you need write what you would like to say to the admin in the text area and press send or you can contact by phone or email written at the bottom of the page.

### Admin Side

Admin can show all the contacts that the users sent, after reading it, taking it seriously, and treating it carefully, the manager can press "done" that is, it has been dealt with. If the admin finds that many users have complained about a particular user, the admin can do a block with this refrain through a page 4.106.

#### 4.2.1.20 Add/Remove admin

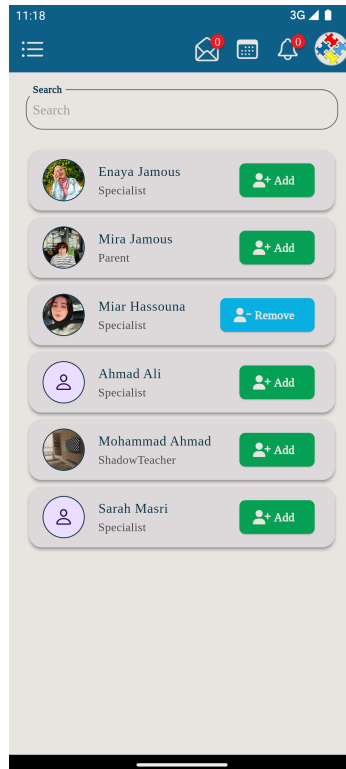


Figure 4.105: Add Remove Admin

If you are an admin, you can add or remove another admin by this page 4.105.

#### 4.2.1.21 Blocked user

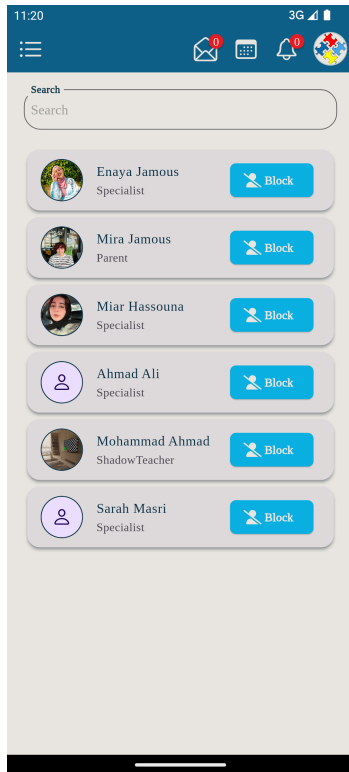


Figure 4.106: Block User

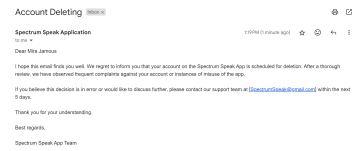


Figure 4.107: Block Email

From this page 4.106, you can block any user, and when block it Spectrum Speak sends the user an email as the email 4.107

#### 4.2.1.22 Analysis

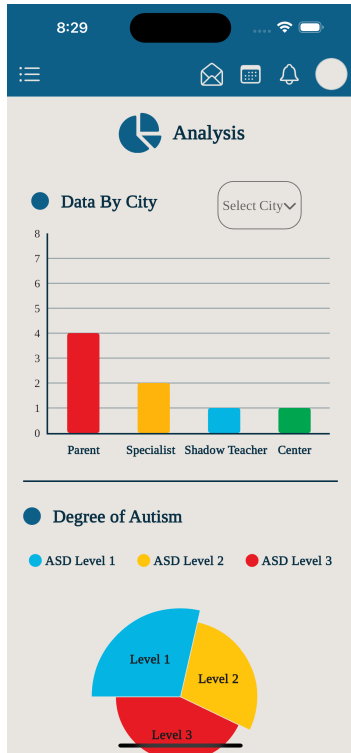


Figure 4.108: Count of users and centers

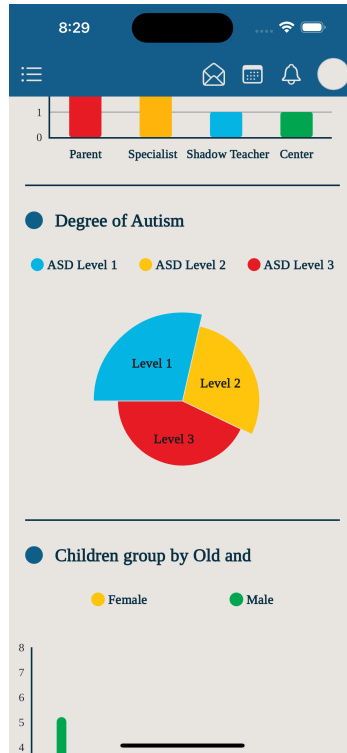


Figure 4.109: Count Degree of Autism

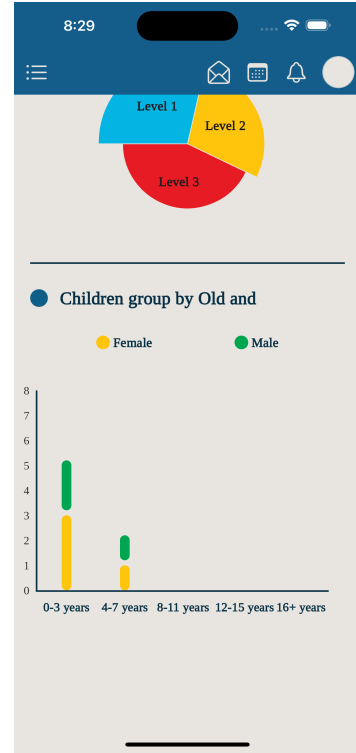


Figure 4.110: Count of Child By Gender

The first chart displays the count of (Specialists, Parents, Shadow Teachers, and Centers) in Spectrum Speak By city. The second one as a Pie chart shows the number of children on each level of autism in Spectrum Speak. The third one showed the number of children by Gender (male or female).

### 4.2.1.23 Destroy Account

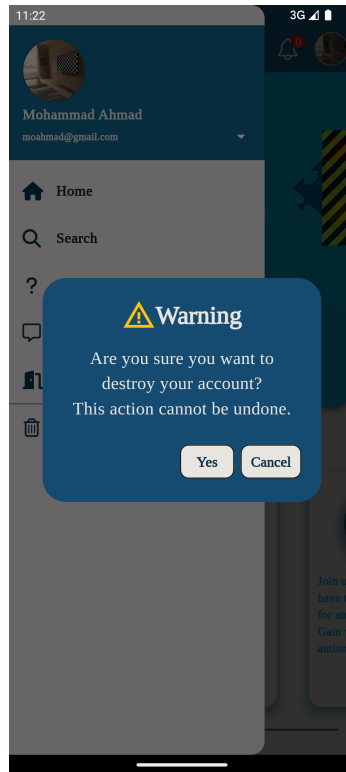


Figure 4.111: Delete Account

You can destroy your account by pressing "Destroy account" on the slider menu and the app shows you an alert because if you destroy can't retrieve your account.

Also if you are an admin of the center, you can destroy the center account by pressing "Destroy center account" on the slider menu.

## 4.2.2 Website

It is worth noting in this section that the web operates with the same machinery and has the same features as the mobile app except the video call feature. Below is where you can attach some images of web pages:

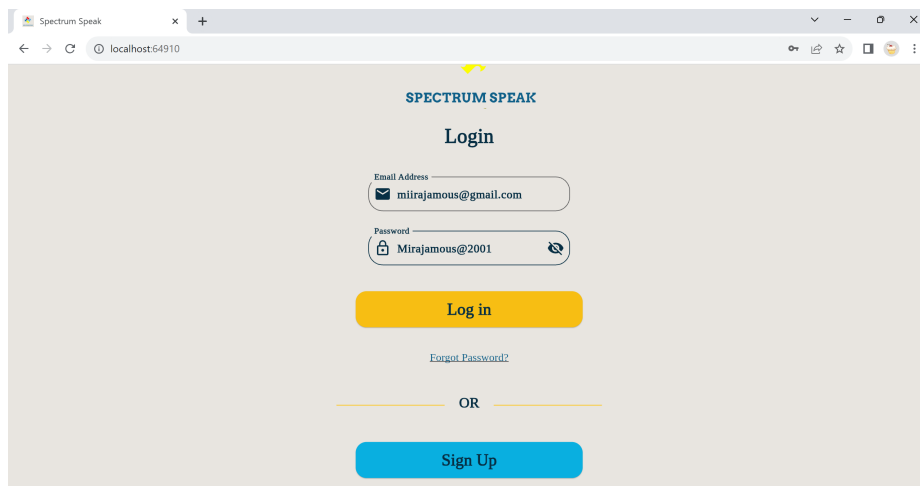


Figure 4.112: Login Page Web

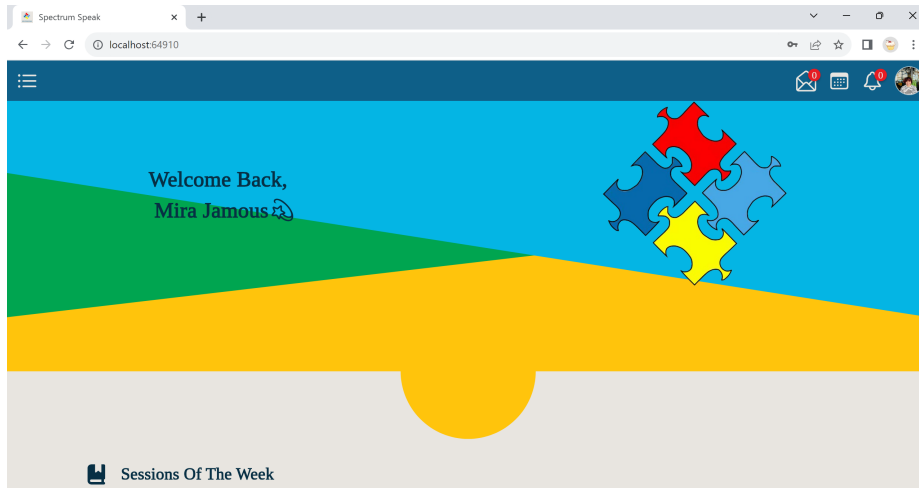


Figure 4.113: Main Page Web

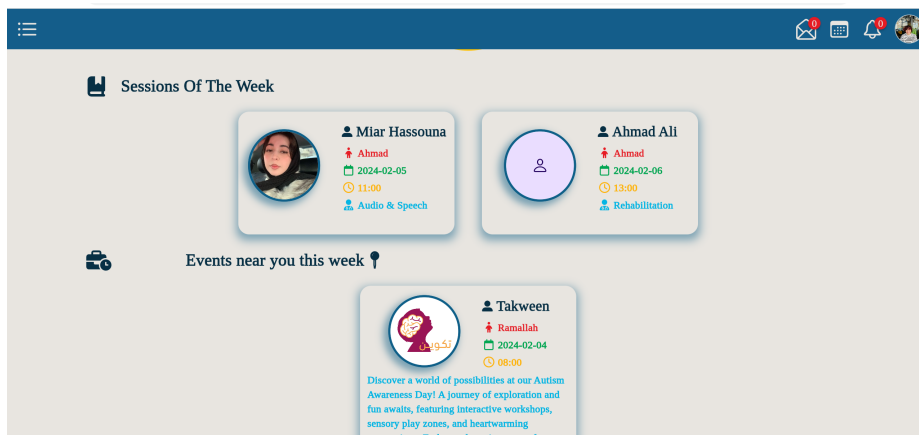


Figure 4.114: Main Page Web

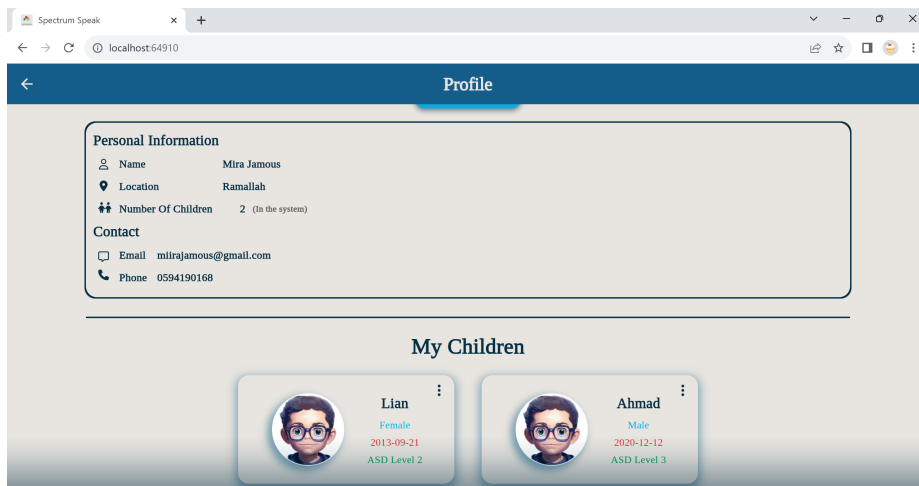


Figure 4.115: profile Page Web

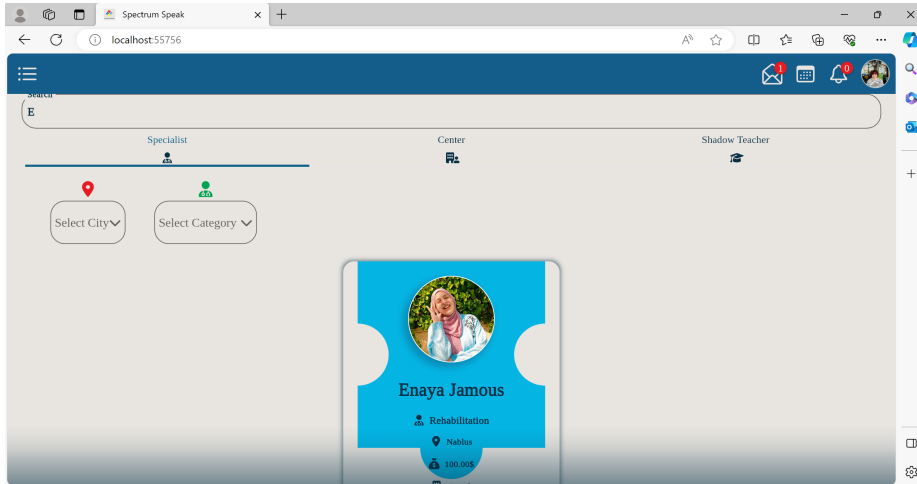


Figure 4.116: search Page Web



Figure 4.117: Quiz Page Web



Figure 4.118: Spectrum Bot Page Web

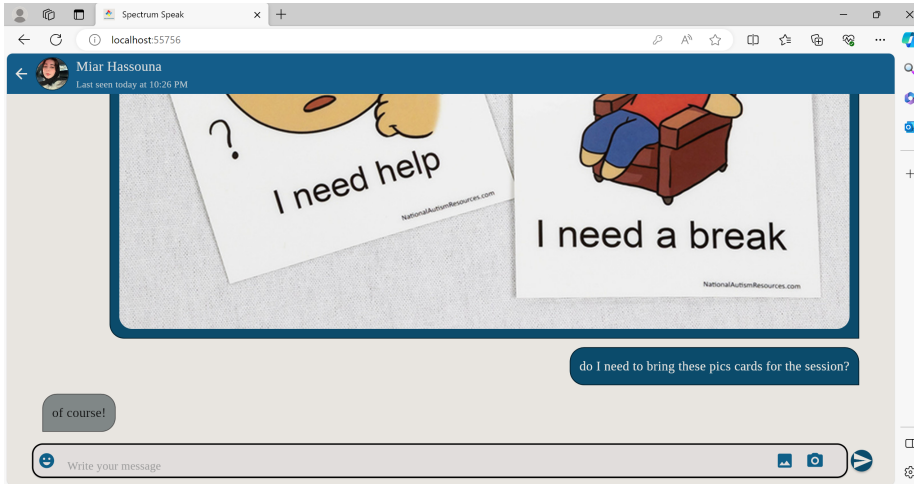


Figure 4.119: Chat After Notification Page Web

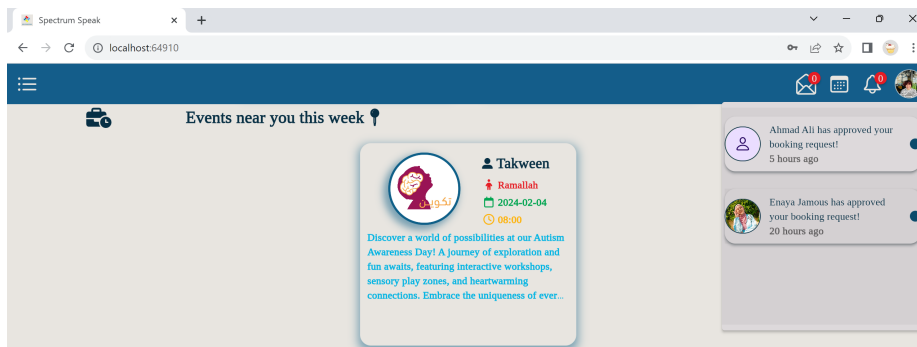


Figure 4.120: Notifications Web

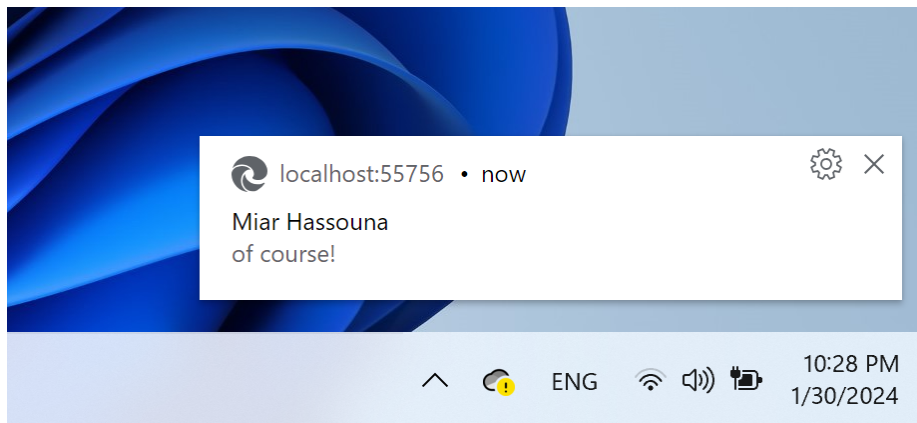


Figure 4.121: Outer Notifications Web

## **5. Conclusion**

### **5.1 Summary**

Spectrum Speak is an exhaustive mobile and website, designed to make communication between parents, shadow teachers, and specialists in the realm of autism. It facilitates the process of finding jobs for teachers, knowing the dates of events for autism, and facilitates the process of communicating with appropriate professionals.

### **5.2 Future Work**

In the future, Spectrum Speak can be expanded and enhanced in several ways to further improve its functionality and impact:

#### **5.2.1 Localization**

We want Spectrum Speak to help people from different countries. So, we will make it work in many languages, especially Arabic.

#### **5.2.2 Map Feature**

We are thinking of adding a map to show which schools accept children with autism. This can help parents and shadow teachers find the right school for their child.

#### **5.2.3 Improved Video Calls**

We want to make the video calls better, especially when using the website. This will make talking to specialists online easier for everyone.