An-Najah National University

Faculty of Engineering and Information

Computer Engineering Department

Healthy Lifestyle

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Acknowledgement

First and foremost, praise be to God Almighty and thanked him for our success in completing this project after a long and exhausting effort. We would also like to express my sincere gratitude and thanks to our supervisor, Dr. Samer Al_Arandi, for his patience and for directing us with his comments, which were always appropriate for the success and development of the project, and we do not forget to provide him with information and ideas that helped us in completing the project. Also want to thank the doctors of our Department of Computer Engineering for their patience and cooperation throughout the project completion period. We are deeply grateful to the Qaddumi foundation for it is support during our years in the engineering department. We would also like to commend our parents and families for their continuous support, love, care, and prayers for us, and their encouragement towards a bright future. Finally, we thank all the people who have supported us directly or indirectly in completing the research work.

Disclaimer

This report was written by Sahar Saleh and Hala Abduljalil, in the Department of Computer Engineering, College of Engineering, in An-Najah National University.

This report has not been modified and evaluated because it is considered part of the evaluation and may contain grammatical errors as well as errors in content. It is worth noting that the opinions expressed in it, along with any results and recommendations, are for students only. An-Najah National University accepts no responsibility for the consequences of using this report for a purpose other than the purpose for which it was intended.

Abstract

People's activity began to decline due to the presence of transportation, lack of movement, and the large number of restaurants that serve unhealthy meals.

Our application is intended for the individuals who want to get a perfect body through healthy food and exercises, and it is difficult for them to know what their needs and what suitable for them hence the idea of our graduation project.

We developed mobile application which gives each individual the appropriate exercises for him based on BMI calculations that depend on his age, weight and height, and the application also provides suggestions for healthy foods and drinks.

The owner of our application could be a gym owner, so we developed an admin website admin permission is to take food orders and add a coach, after coach is added, his permissions is to add exercises, foods and drinks

A mobile application Frontend built in Flutter framework written in Dart, a website built in Flutter framework also, for the back-end we used Node.js, with the MongoDB, and to send daily reminders we used the Firebase database.

Introduction

Problem

Above all, our main goal was to define the main things we strive to put into our project. When we chose healthy lifestyle subject, we initially understood the things that would be put into the app to help administrators, coaches, and users. Of course, this was only the beginning, our initial steps were research, and upon research we noticed that the main problem was the lack of commitment of the participants to go to the gym. As for some circumstances that may happen to them, or if they are lazy, they seem to resent this situation, and our project has helped them use it at home.

Objectives

Our goal is to create a program that helps subscribers in the gym to do exercises, whether at home or in the club, and it is flexible in terms of dealing with it, and it also helps the person to collect data about his weight and give him a chart that shows his weight tracking, and his progress over a period of time, it helps the user to choose to order a healthy food/drink from suggested ones ,and he could calculate if the calories suitable for him or not , and here is our project that meets these needs.

Project scope

We dealt and focused in our project on gym owners, coaches and participants as well, and we understood the nature of their work in the gym, their permissions, services available to them and it developed according to the environment used, home or gym, we researched and took all the ideas.

Importance

Our project contributes many advantages. A person calculates their body mass index (BMI) by entering their weight, height, and age. Accordingly, an overweight, a underweight, or an ideal weight appears, and then suitable exercises are offered to him based on the BMI, a chart will be given to let him tracking his weight, the other advantage of our app ,it will show healthy foods and drinks with feature of entering ingredients that he is allergic from it , so the food/drinks that contain this ingredients will be hidden, other feature he can order food and drink in different quantities, then he could calculate if the calories he ordered meets his daily need or not, if the orders are higher than what is allowed per day, he will be given a pop up screen suggests to delete one of them. Another advantage he can add an alarm which reminds him of the sport time given by him.

Report Organizing

The report is divided into several sections, the first of them is introduction, then we talked about the limitations, standards, codes, and courses that we learned before starting the project, which in turn explains to us the collection of previous experiences on the subject of our project, then we moved to the section on the core of the problem that explains By defining and describing the problem in full, then we started in methodology .then the method of implementing and presenting the project by explaining each feature with the attached figures, then we talked about the languages and tools used in the project, and finally, we reached to the results and a summary of our project.

Constraints, Standards, Earlier Coursework

Constraints

During the course of working on the project, we encountered several difficulties, including:

1- The first difficulty was the incompatibility of the versions with each other, and this causes many problems.

2- All the techniques and languages used were self-learning during this period, which required learning and applying at the same time.

3- But the hardest thing was to find the learning resources which were evident in the combination of Flutter, NodeJS and Mongo DB Atlas. Which required more time and effort.

Standards

MVC (Model View Controller)

The controller style has been used to display the form in our system. we can

Divide the entire project into three phases to make it easier to follow the work flow. These components are as follows:

1. Model: represents the database we used, Mongo DB. It will respond to both the view request and the console request to continue updating itself.

2. Presentation (view): It represents the graphical user interface GUI for subscribers to enjoy the available services, the GUI that the coach and admin will use to add or delete food/drinks and to add coaches or take orders.

3. Controller: It represents the back-end server built with NodeJS, which facilitates coordination and collaboration between Model and View. It is also responsible for managing the logic of the application.

Earlier Coursework

Regarding the online course, the Flutter and Node JS course was taken and used to build the project, as well as the critical thinking skills course which helped us to write this report.

Problem Core

Description of the problem

The problem was that many people were too lazy to go to the gym to get the perfect body and they don't know what is exercises suitable for them, also did not know which foods would suit them. Or they don't have the knowledge of calculating the body mass index, or the forget to do sport exercises, our project is to solve all of that.

Implementation

We developed a mobile application that aims to solve the previous problem, as it contains many features, the most important of which are: an application that combines exercise and healthy food, in addition to calculate the body mass index and also to calculate the calories suitable for you per day and to order food accordingly, in addition we developed an alarm for reminders, and the body weight tracking chart.

Methodology

Technologies

To build the website and the application, we needed to use several different technologies, tools, and programming languages, so now in this part, we will talk about everything we used in the project.

Server side and API

We used Node JS, Node JS is an open-source, cross-platform server environment that runs on different platforms, and an asynchronous event-driven. The reason for choosing it was that it was easy, scalable, and efficient for our project, also had a mongoose library that we used which made it a lot easier to link with the mongo database.

As for API, our choice of both enabled us to make a fast, scalable connection to database of a huge number of API requests at the same time, with high throughput.

Database

As for the database, we chose *MongoDB Atlas*, which is a open-source, non-relational database that provides flexibility, scalability, and this information for *MongoDB* in general, as for *Atlas* it is the database service that you use without worrying about physical space For your device or software updates, the cloud provides you with all these details, as it is responsible for managing all these complexities, as it is one of the best options for programming, development, and scalability that deals with the growth of our data in a flexible and optimal way.

UI Design

For a mobile application and website, we used a Flutter framework that was written using a Dart language, is open-source from google, and cross-platform using a single code base, free, fast testing, and it’s most powerful in terms of performance.

IDEs

For both the mobile app and the website, we use *Visual Studio Code*, which is a code editor with support for development processes such as debugging, playback, and version control, it's lightweight, easy to use, and available for any preferred operating system, so we chose it. Also, we used an *Emulator* to test the mobile application code as Android app.

Project Architecture

In this section we are talking about the architecture of our project, so the type of architecture we used is Model-View-Controller (MVC), which separates the project into three main logical parts, and is the most widely used web development framework in the industry, to achieve a scalable project.

Now let's talk about the details of each part of this structure, in the first part the model that makes up the data part which is transferred from the view or console, as for our project it forms MongoDB This part of the structure is common in Both the app and the website deal with a different view and controller for each. Secondly is the view, which shows the user interface of the project, so in our project, we have two different views, one for the app (Flutter app) and one for the website (Flutter website). Finally, the Controller forms a link between the View and Model, where it performs all operations between them, sends requests and responses between them and processes data. We have one models for each app and the web, and the one models used (NodeJS).

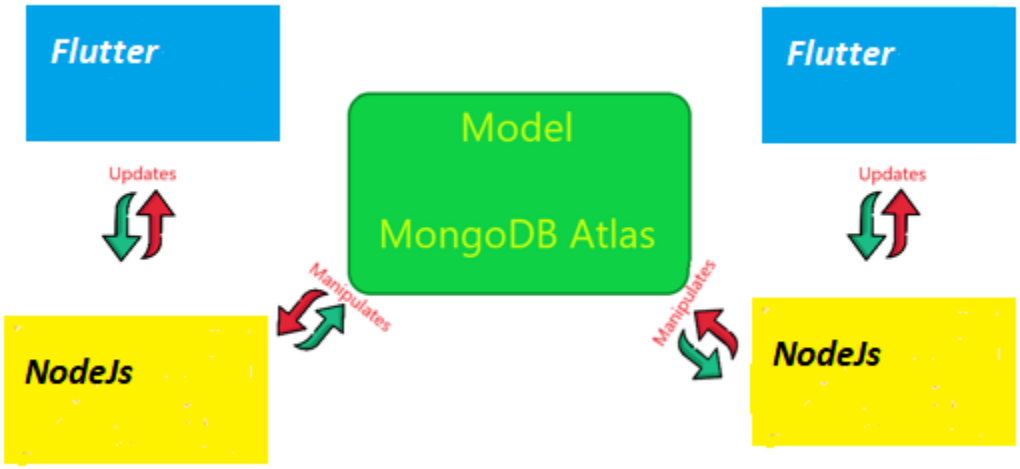

Figure 1:This figure show our Project architecture.

Project Design: Admin Website

Sign in

Now we will display the admin website with all its pages and a brief explanation of it.

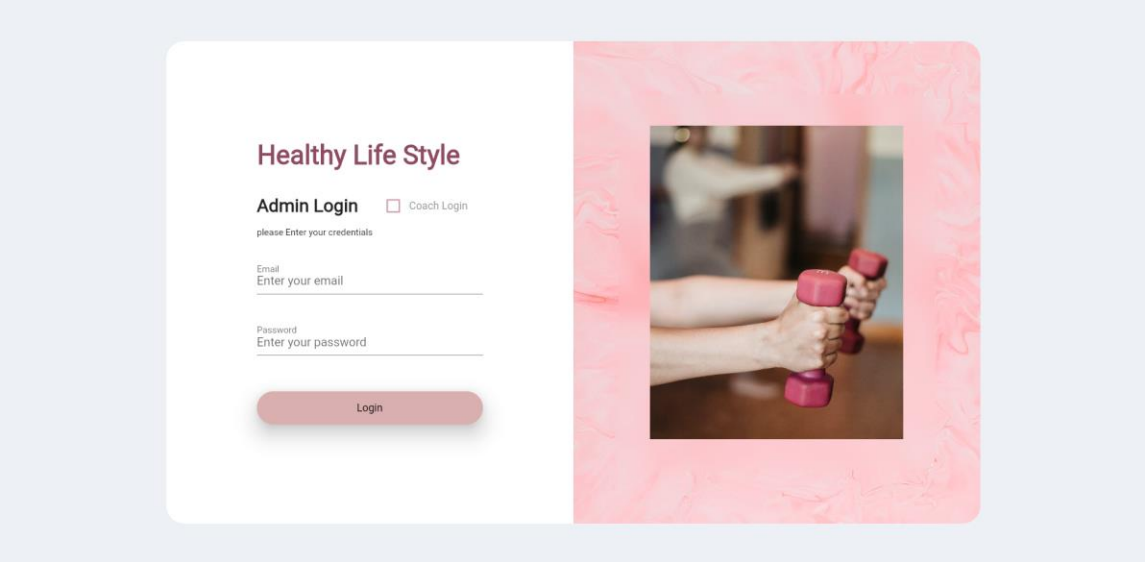

Figure 2:Admin Login Page

This is the login page for the website, in this page the admin should enter his credentials then he will enter the home admin page, if the user checked the coach login box, then he will enter the coach home page.

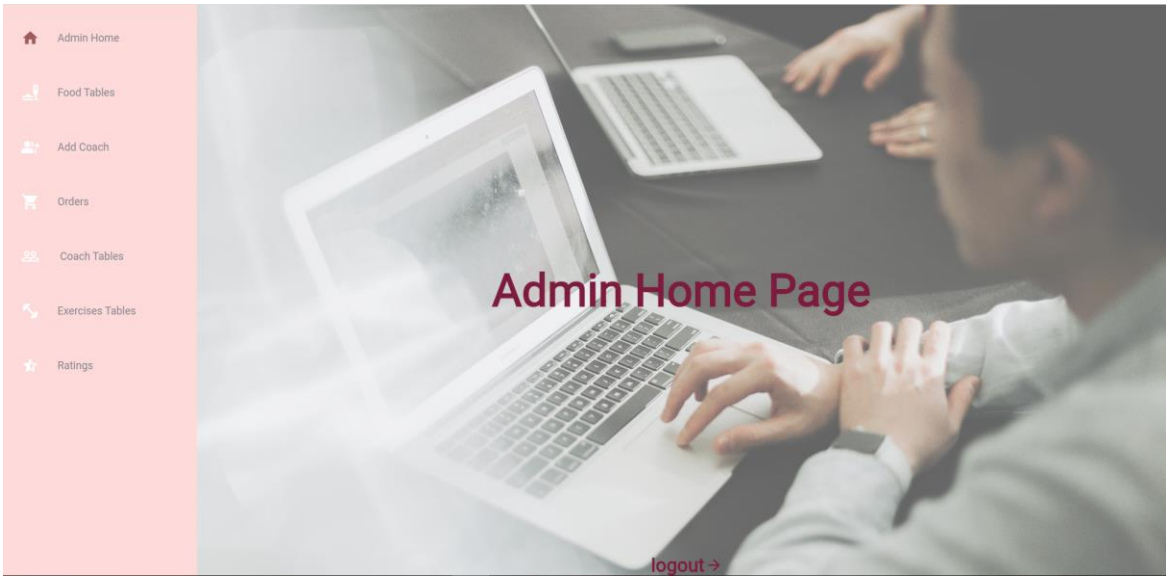

Figure 3: Admin Home Page

This is the admin home page, you can see there is a list, that admin have access to them, we will explain more in the next page.

Admin Tables

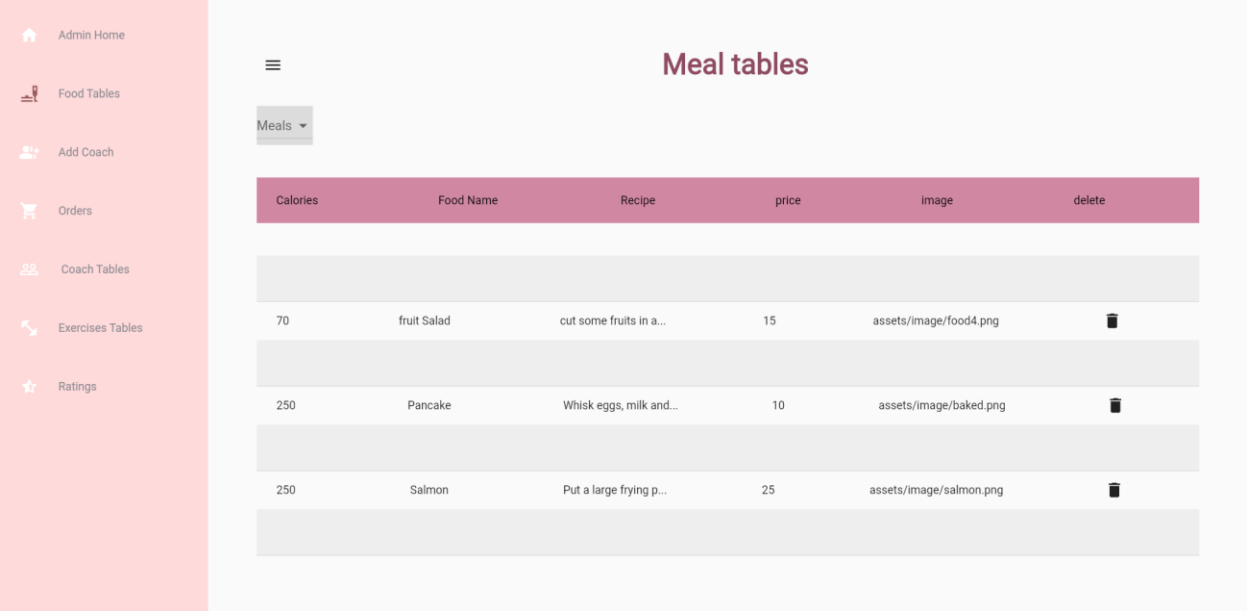

Figure 4:Food Tables

The first page of admin list that he could see the all food types added to the mobile app by the coach , he can switch to drink or meal using “table of: “ list .

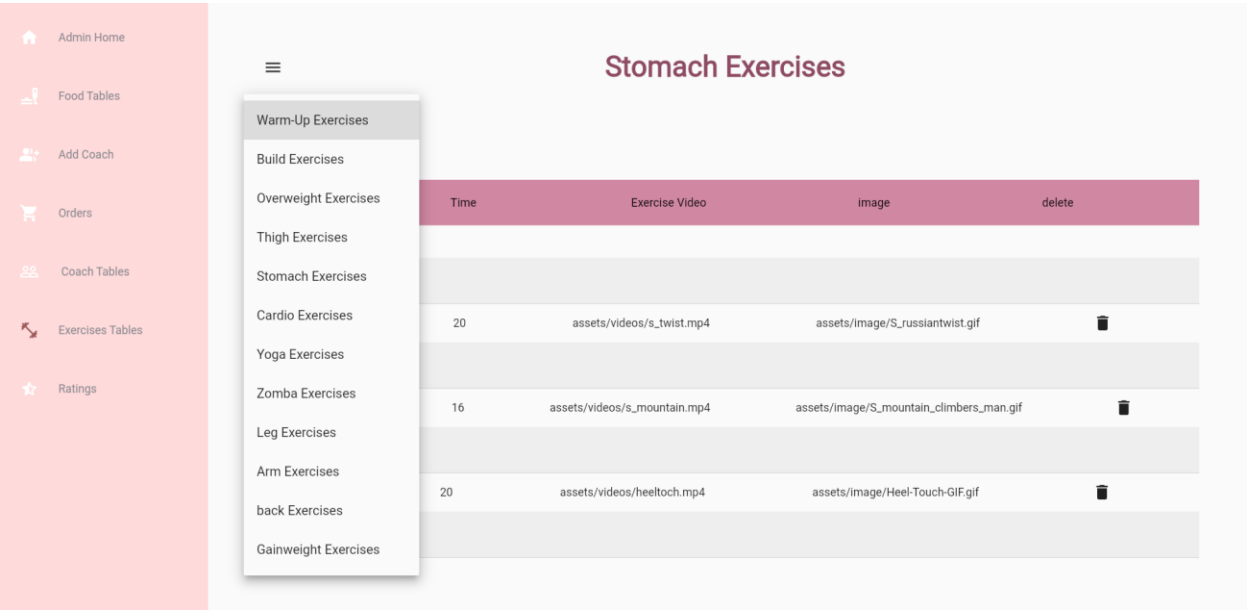

Figure 5: Exercises Tables

The second page of admin list that he could see the all Exercises added to the mobile app by the coach, he can switch to other exercises group using “table of: “list.

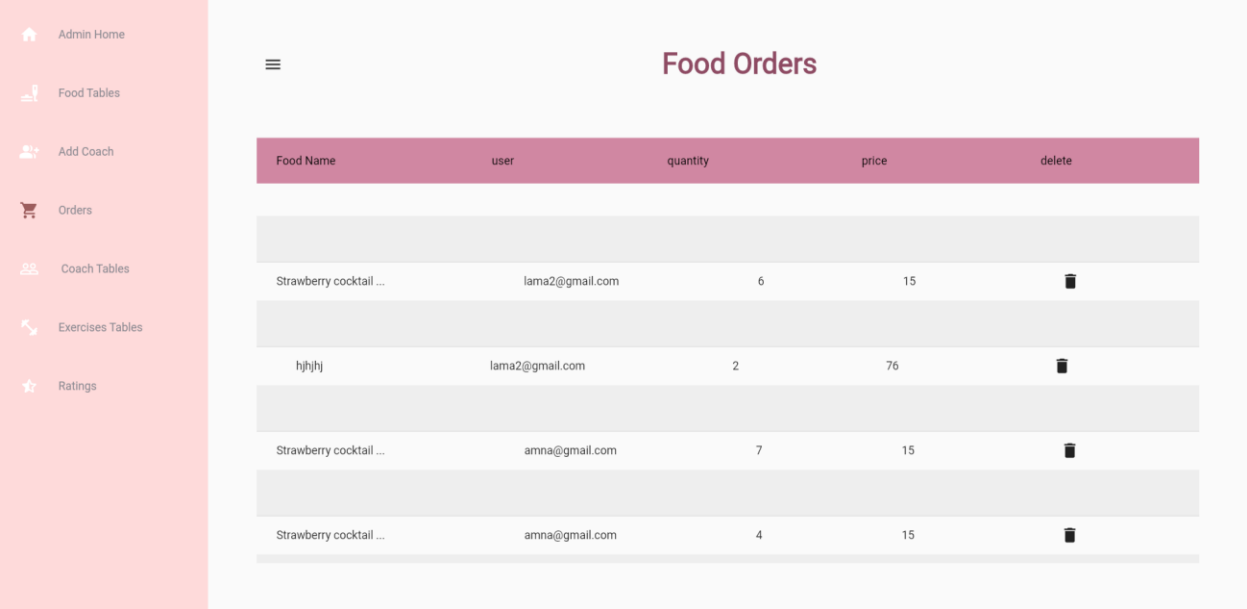

Figure 6: Food Orders

The third page of admin list that he could see the all orders for foods from the app users and he can delete an order if he want.

Add Coach

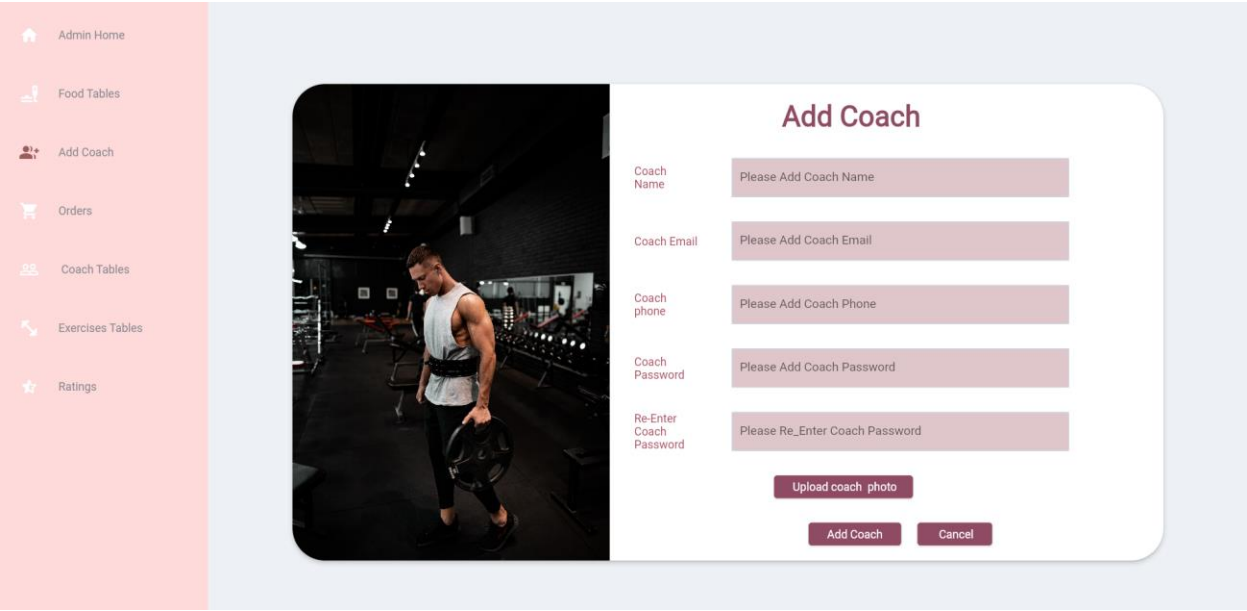

Figure 7: Add Coach page

In this page the admin can add a coach, and he can fill some data for him.

Also, there is a page to sow all coach's data, and he can delete any of them.

Coach Website

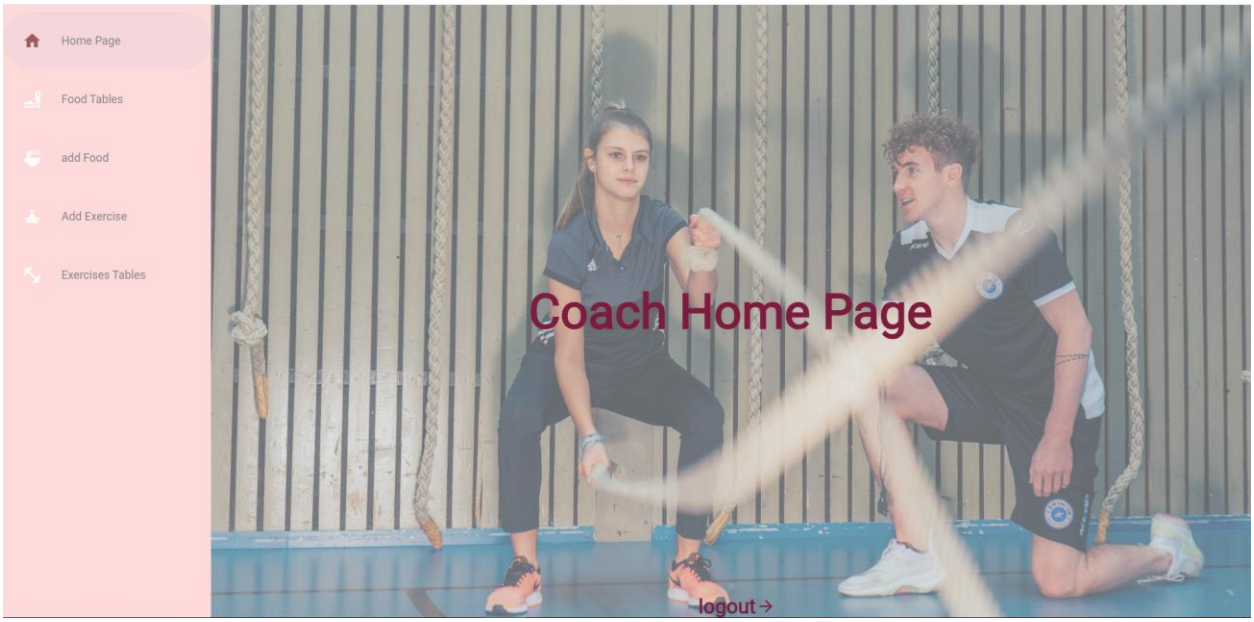

Figure 8: Coach Home Page

If he checked the coach login check box, then he will enter this is coach home page. Which enables him to do a list of features as: add food (meal or drink), add exercises (depend on area of focus) And to show the tables for food or exercises and throw them he can delete a food or exercise if he wants.

Add Food

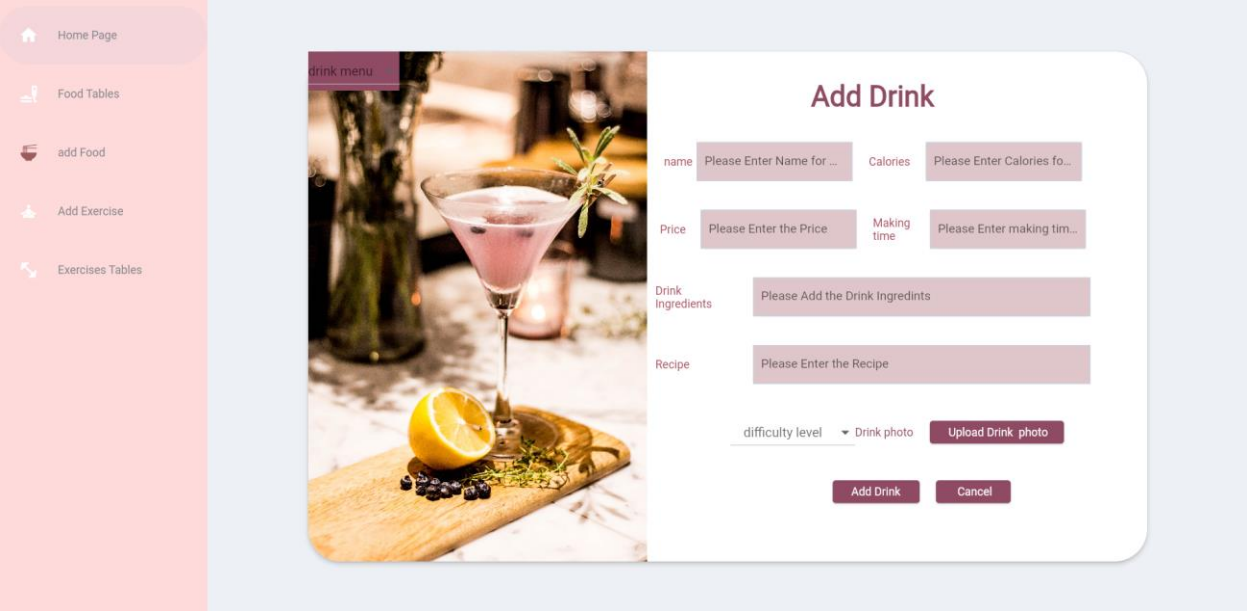

Figure 9: Add Food by coach

In this page the coach can add a new meal or drink depends of what he selected from the list, he can add the food name, calories count, price, making time, ingredients, recipe, difficulty level an photo of the drink or meal.

Add Exercises

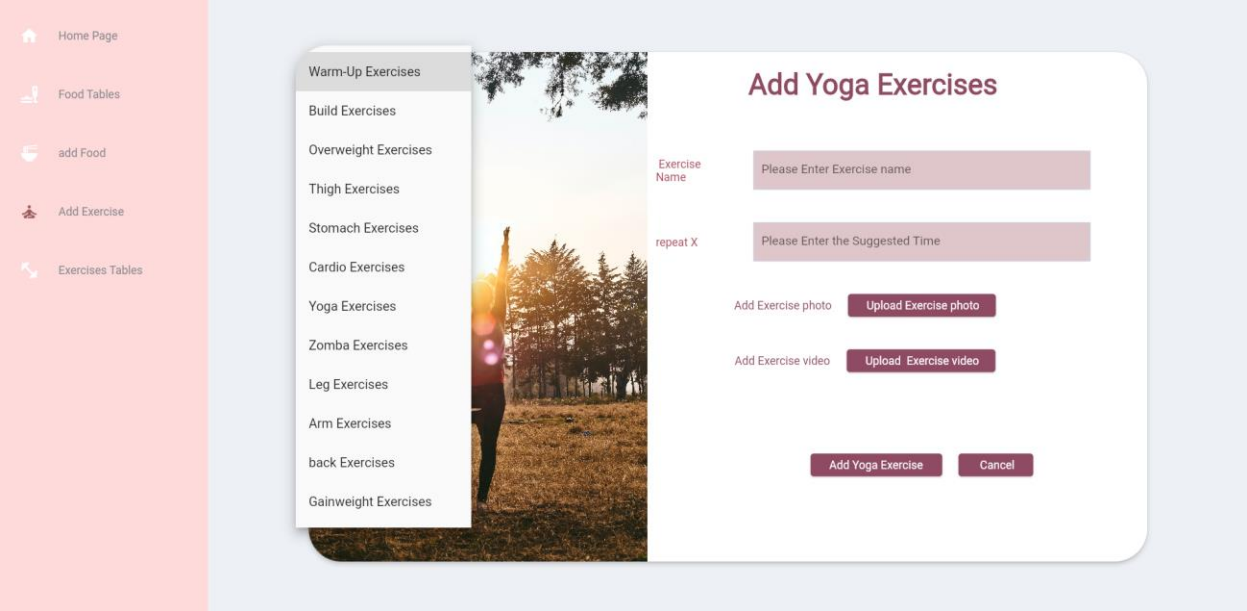

Figure 10: Add Exercises by Coach

Here the coach can add a new exercise depends on the area of focus list as shown in the Figure above. He will add exercise name, repeat count, a gif for the exercise and a video .

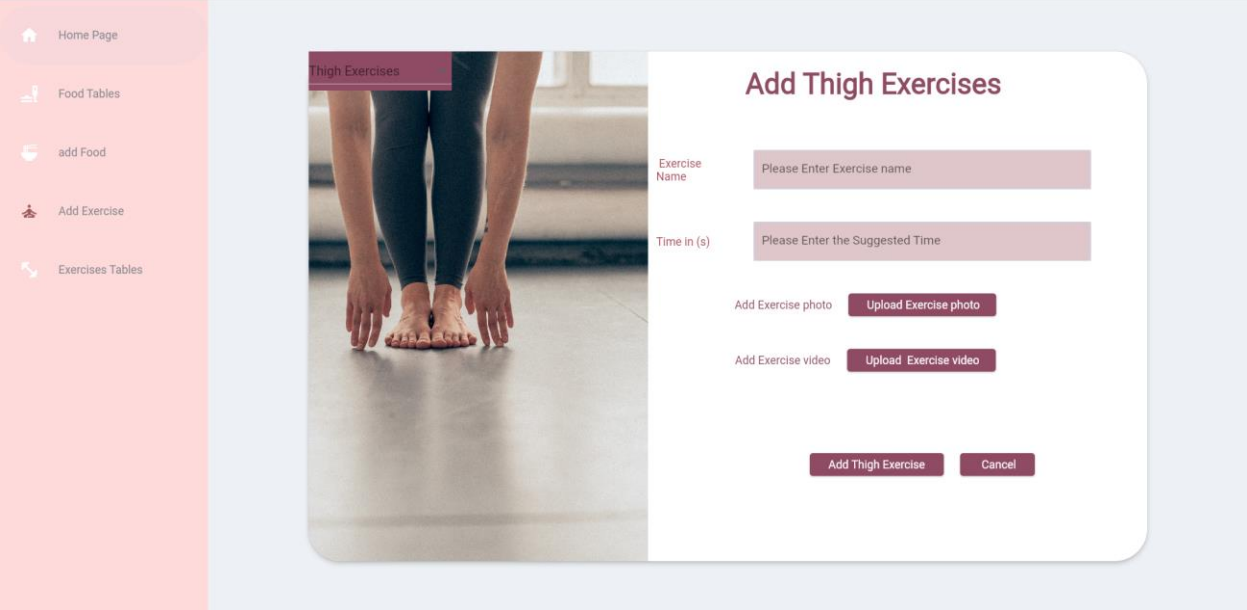

Figure 11: add exercise after selectin

Here we chose another area of focus from the list and the page content will change as you can see in the figure above.

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healthy Lifestyle mobile application

Welcome page

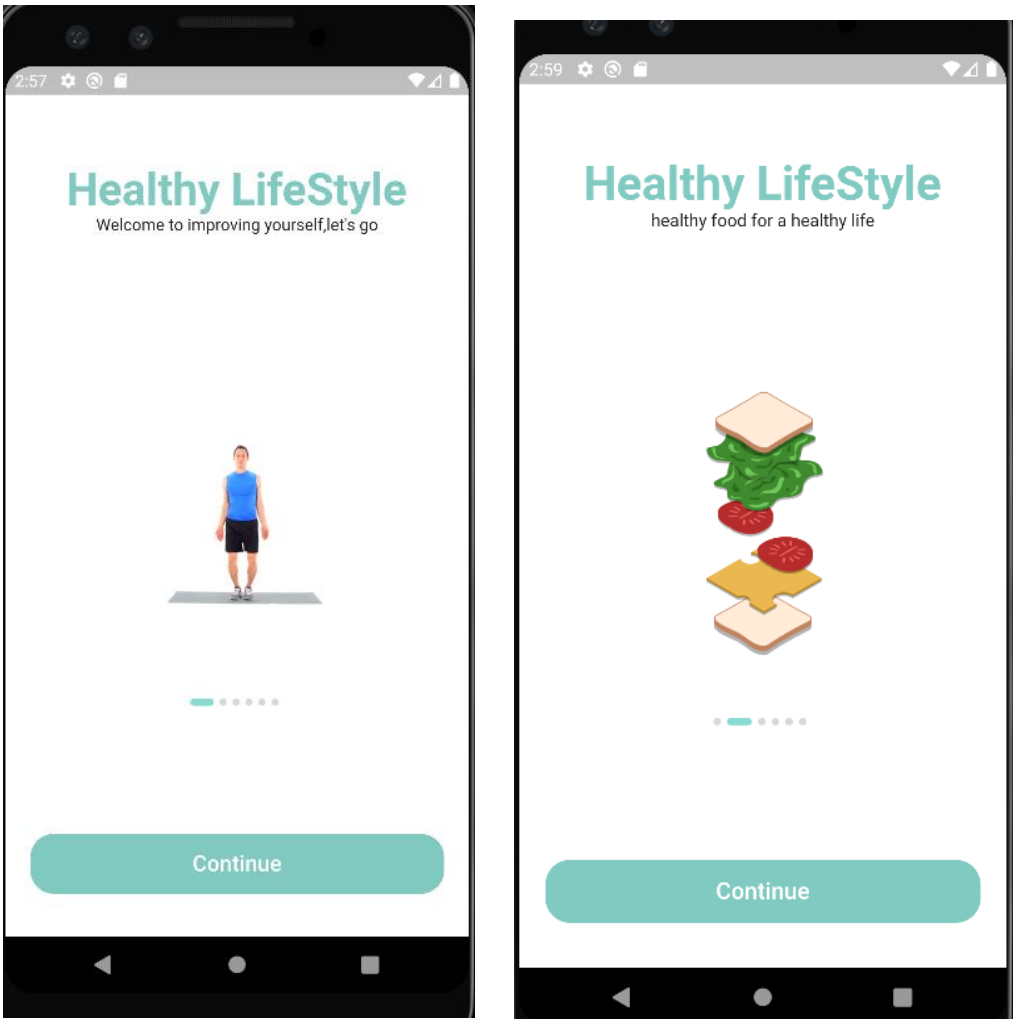


Figure 12: welcome page

The first page that enables him to see the name of the application and gives him a splash screen slider to let him see the app features.

Sign up page

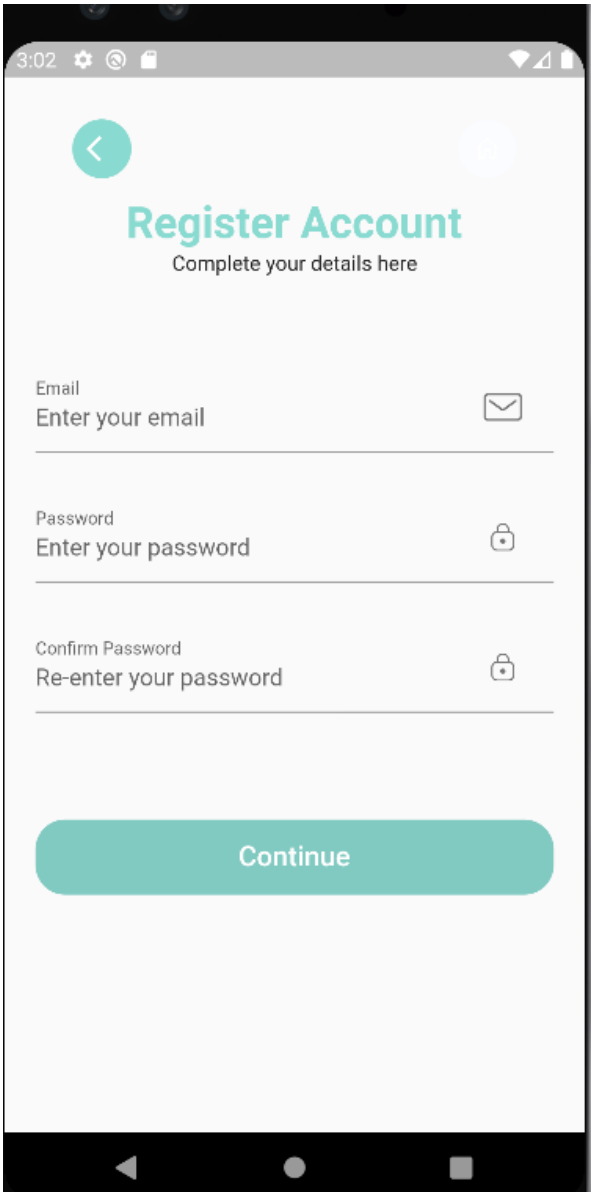


Figure 13: sign up page

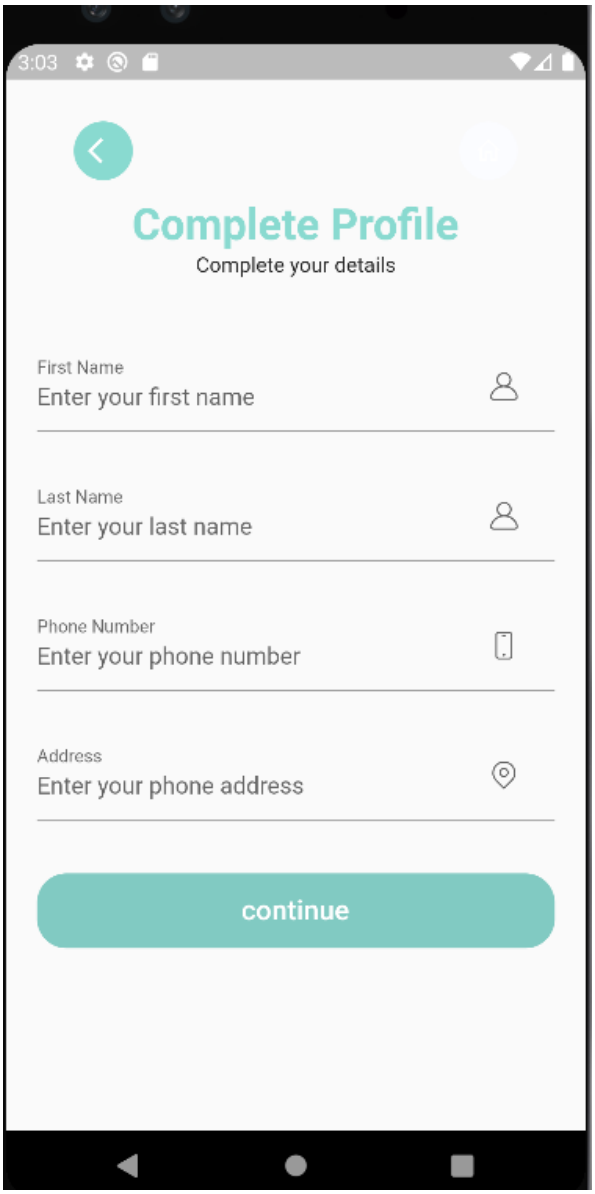


Figure 14: complete profile page

The first steps required to create an account on the application.

The user enters his phone number, his e-mail, his address and some other information. Then he can register to the application.

Sign in page

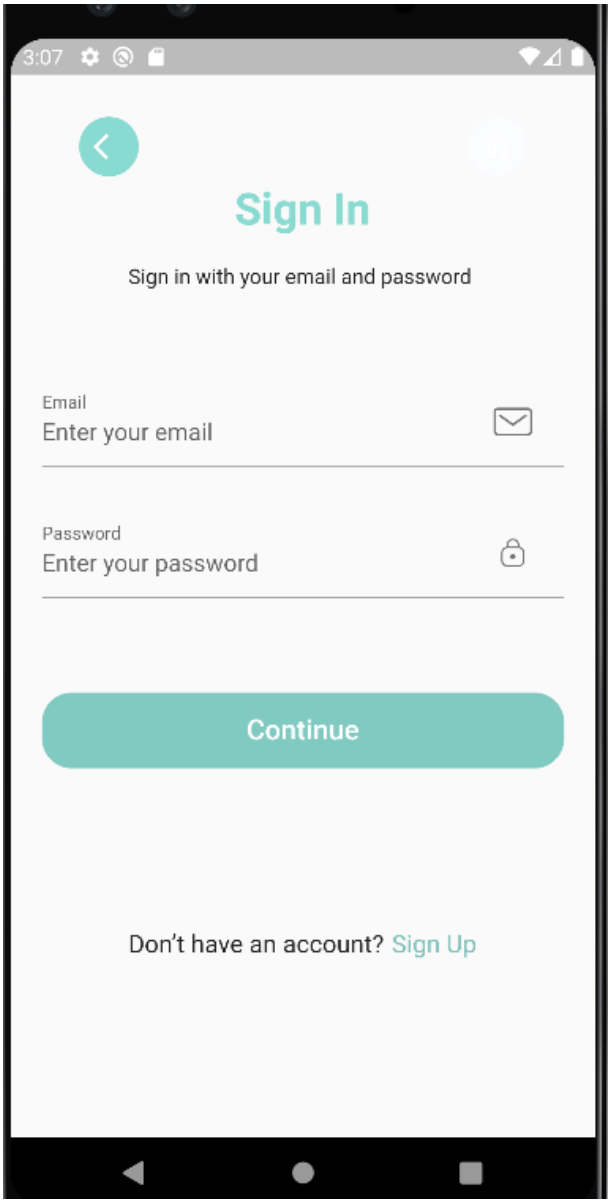


Figure 15: sign in page

Here, it is required to enter the previously entered email and the account password to ensure the security, after he clicked in continue button and ensure that his e-mail and password are in the app database, the home page app will appear.

Home page

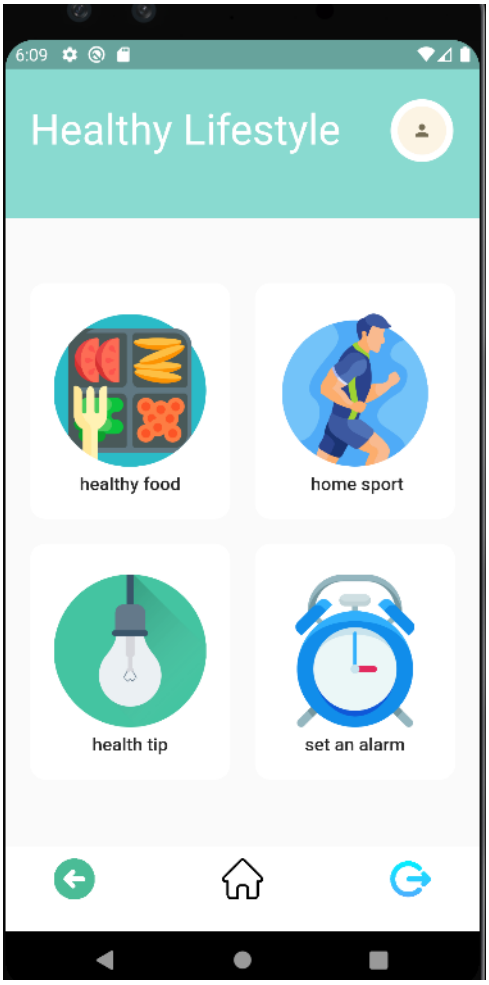


Figure 16: home page

This page is a window overlooking the services provided by the application, this home page provides him an access to food part, home sport exercises, set an alarm to have a daily reminder, also a profile button that enables him to see his data and update it if he wants.

Food Main Page

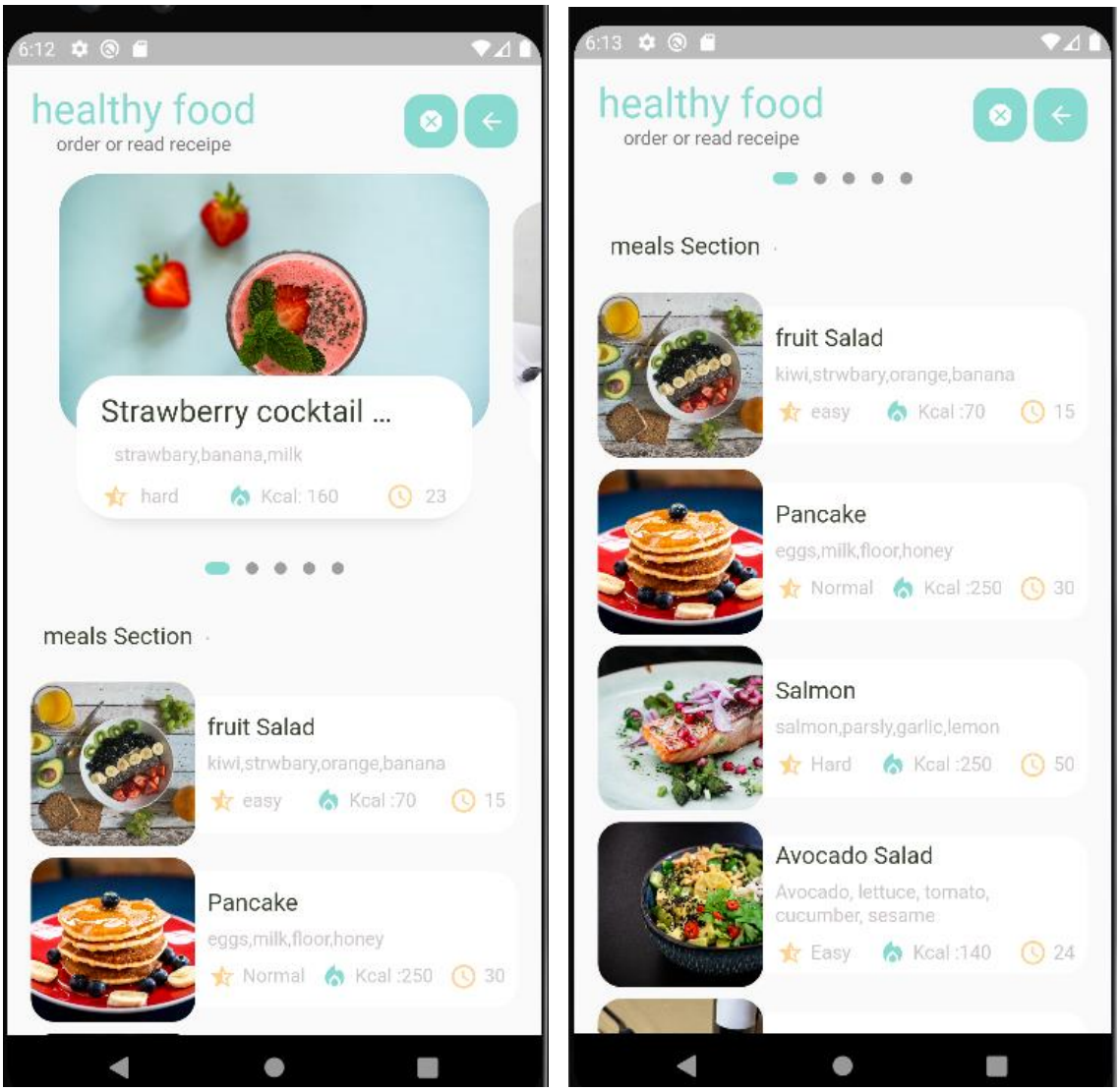
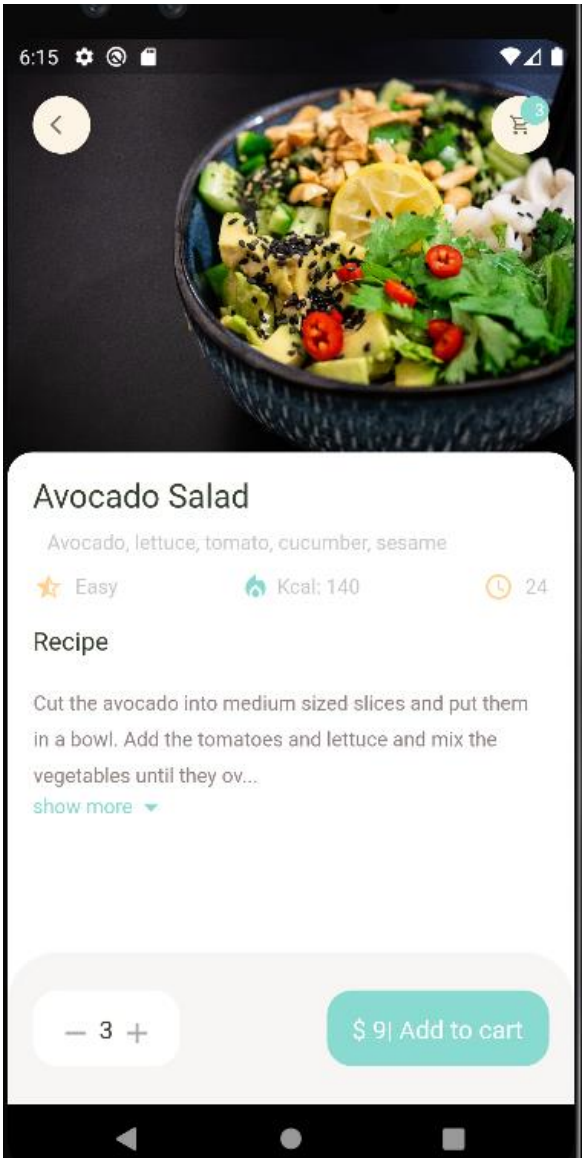


Figure 17: food main page dinks, meals

In this page the user can see what the app offers healthy meals and drinks for him, each one is a card showing these information: the name of the food, an image, difficulty level, calories count(Kcal), making time and the ingredients .depending on this information he have a choice ,either read the recipe or order the food .

Food Details Page



18 :food page details

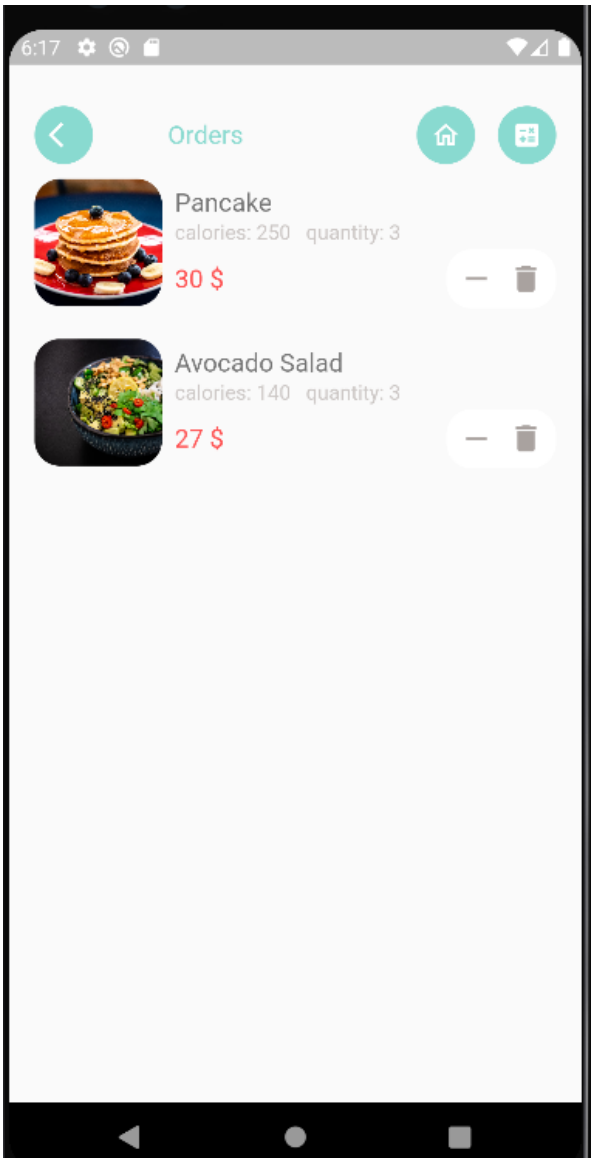


Figure 19: user orders

In the lift page, the user can read the recipe for the food after he clicked on the card, he could also see the price for this food, he can order it in a quantity up to 10.

In the right page he can see the orders he made, he can delete the order or just increase the quantity if he wants.

Calories Calculator Page

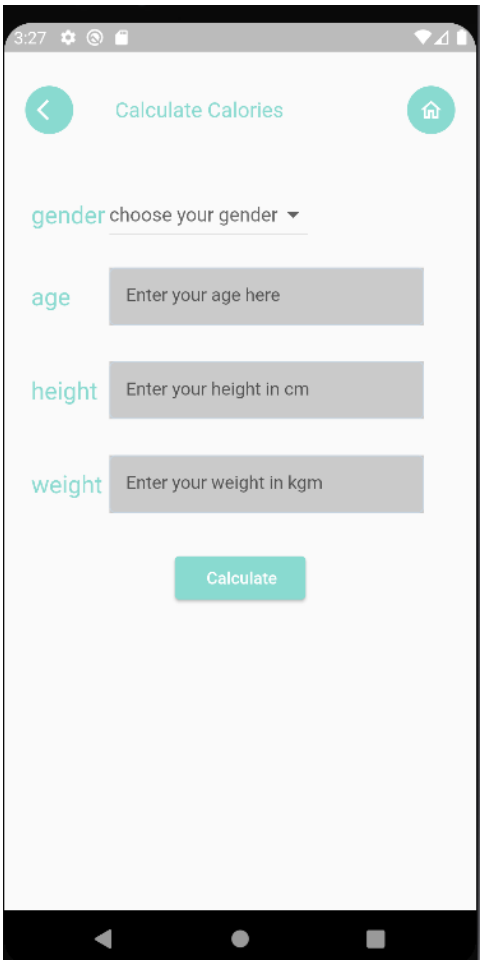


Figure 20: calories calculator

In this page we asked the user to enter his gender, age, height and weight to collect the data required to calculate the calories allowed for him per a day.

Calories Calculator Result Screen

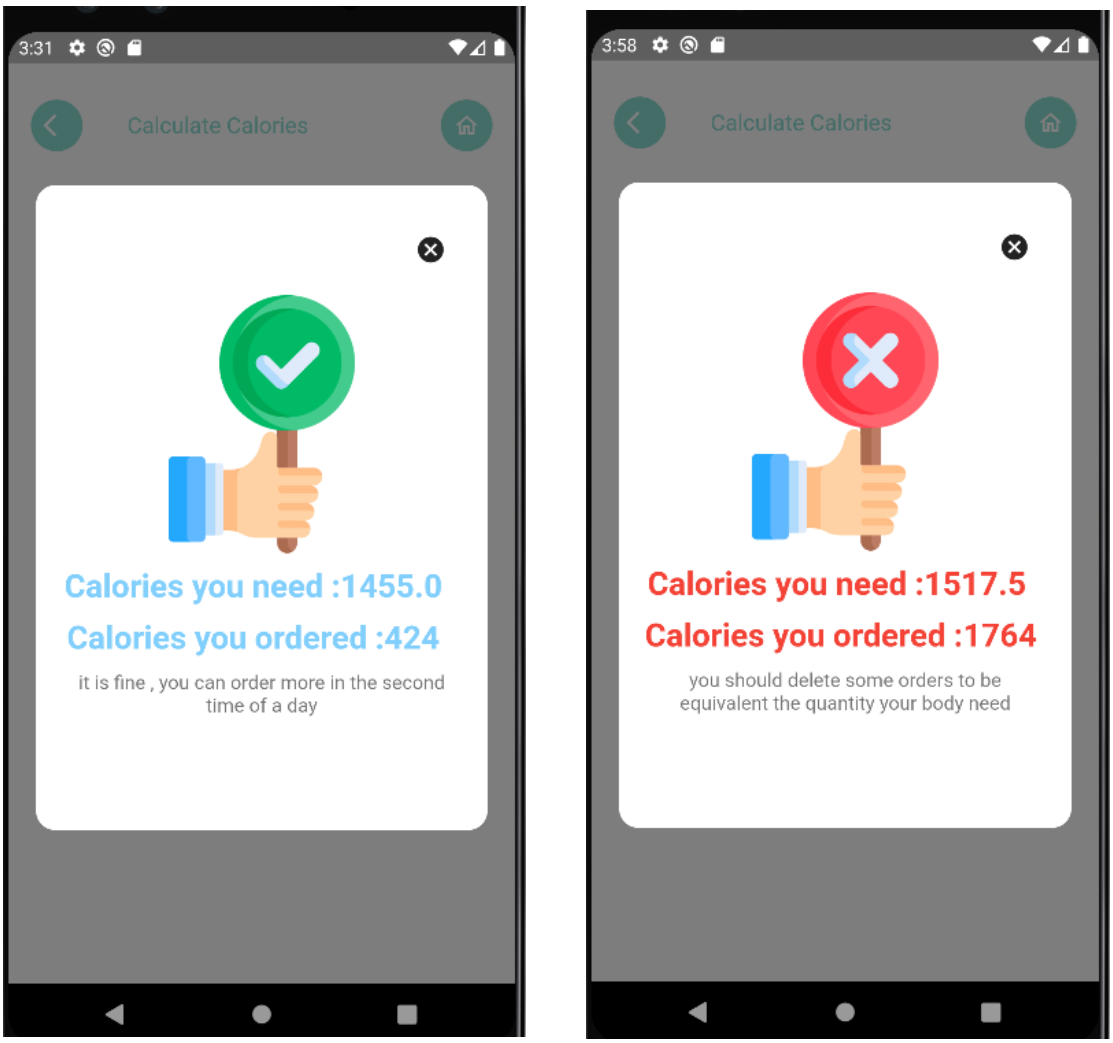


Figure 21: calories calculator result screen

In the left page, a pop-up screen appears if the calories he ordered less than his needs.

In the right page, a pop-up screen appears if the calories he ordered more than his needs .so it advise him to delete some orders .

Allergy to food Screen

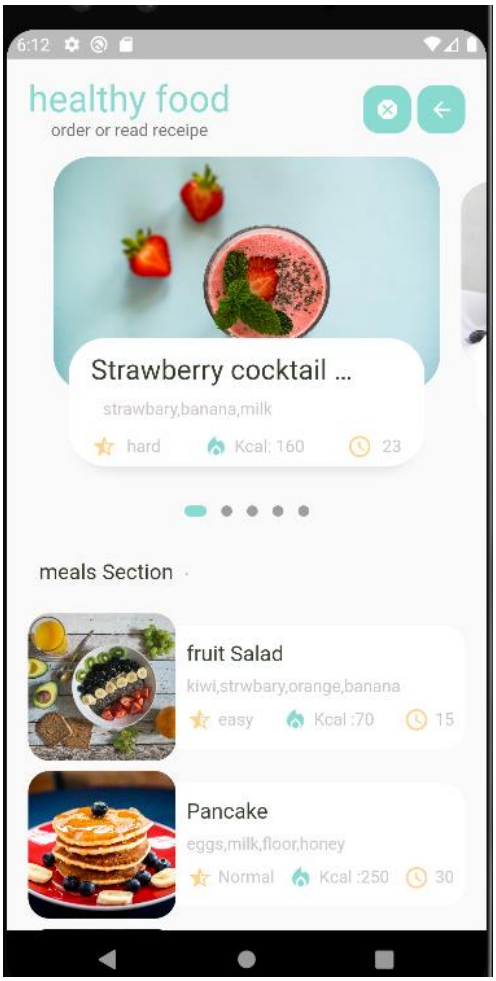


Figure 22: food list before the allergy

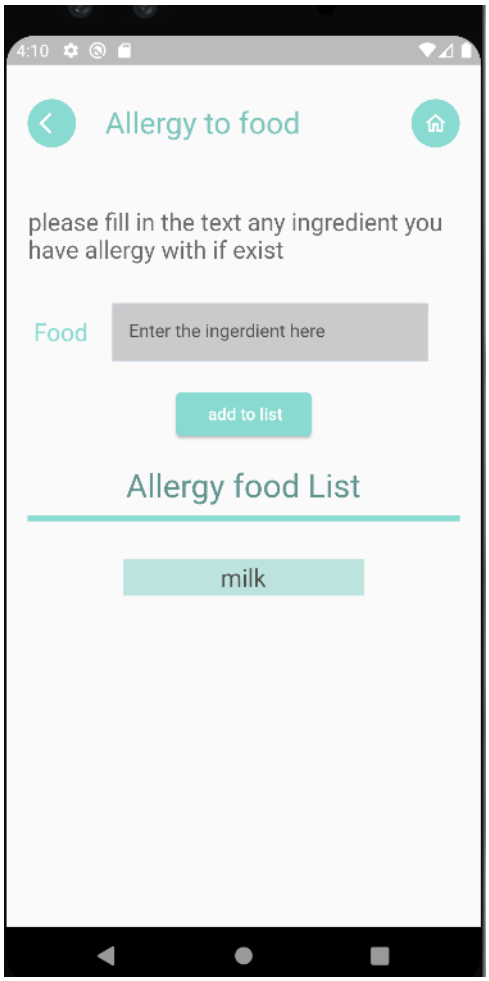


Figure 23: allergy to food page

In the left page you can see there is a milk ingredient in first card in drinks and food,In the right page the user can enter any ingredient he has allergy to it, and it will be shown in the list. Note that he entered milk.

Allergy to food Result

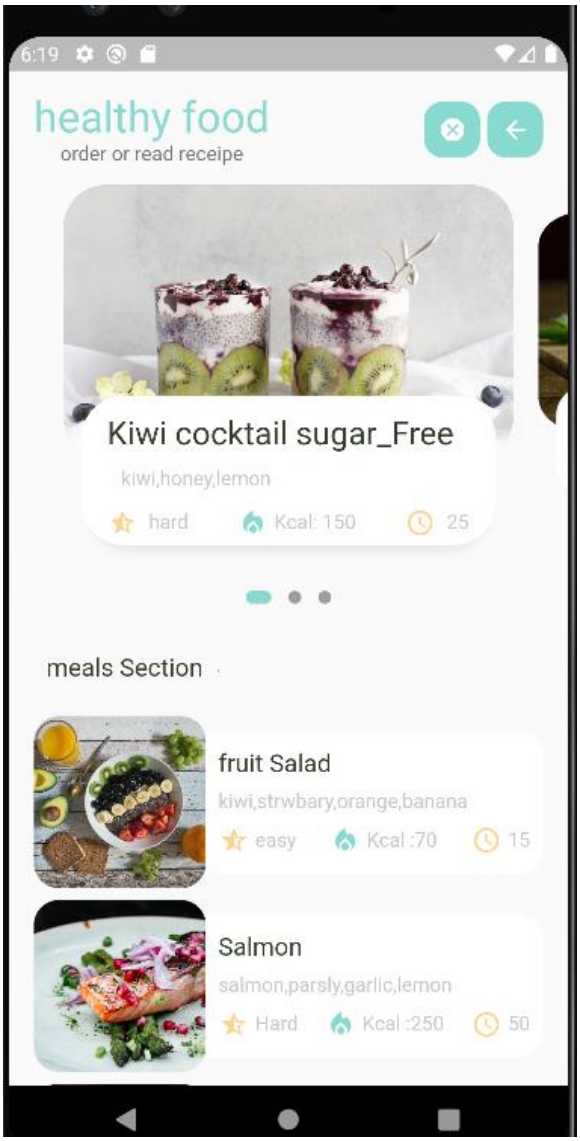


Figure 24: food list after user adds an allergy

In this page you can see that any food either drink or meal contains milk will disappear from the food list.

Exercises main page

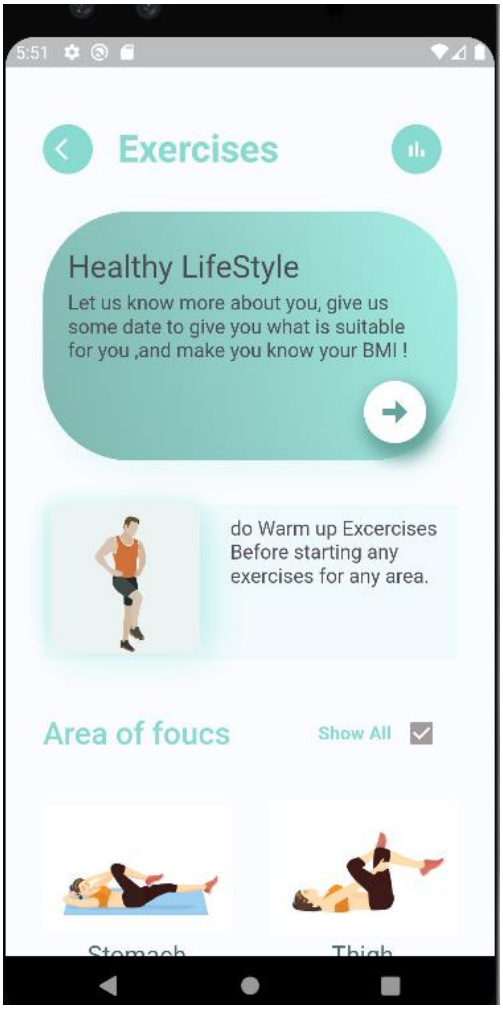


Figure 25: exercises main page

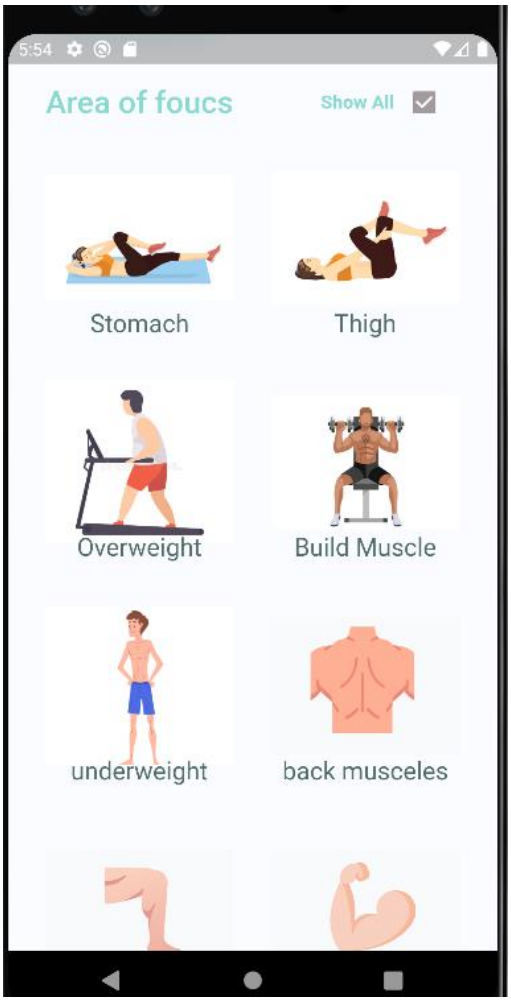


Figure 26: area of focus groups

In the lift page you can see three parts, in the first one we asked the user to enter some information required to calculate BMI to give him the exercises suitable for him, you will see it in details in the next few pages in this report.

The second part there is a card when he clicked it , a page for warm-up exercises will appear ,

See the next page of this report.

In the last part which is area of focus you can see that there are some cards represents the exercises groups he can do and he can scroll down to see all groups.

Also, there is a chart button on top of this page to give the user a report for his progress, as you will in the next few pages.

Second Part Exercises

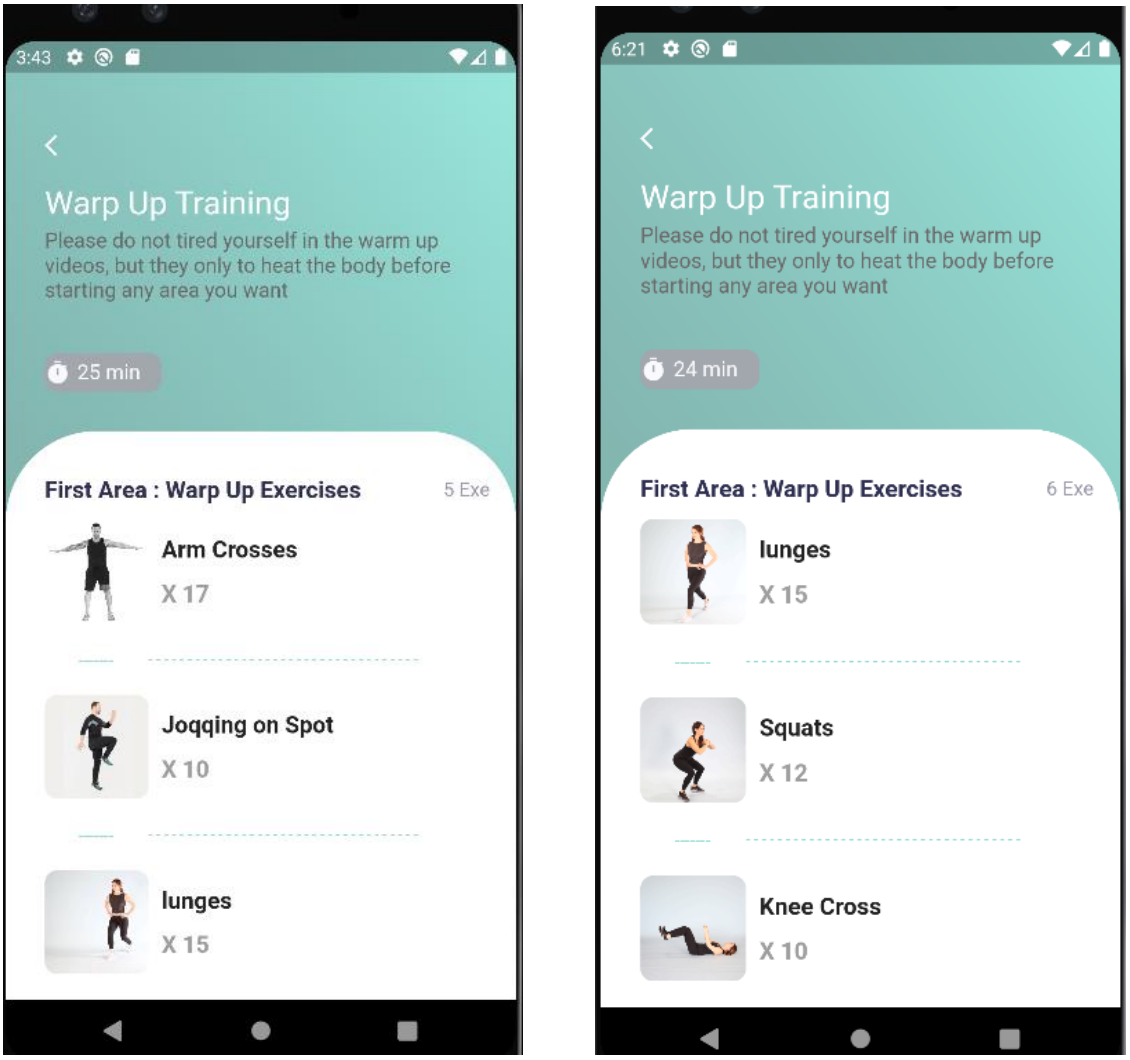


Figure 25: random exercises each time open exercises group

The second part there is a card when he clicked it, a page for warm-up exercises will appear.

Note that every time you enter one of the Area of focus groups or the warm-up exercises, the exercises will be chosen randomly in this group, to not let the user feel bored of the app, or exercises.

BMI data collection pages

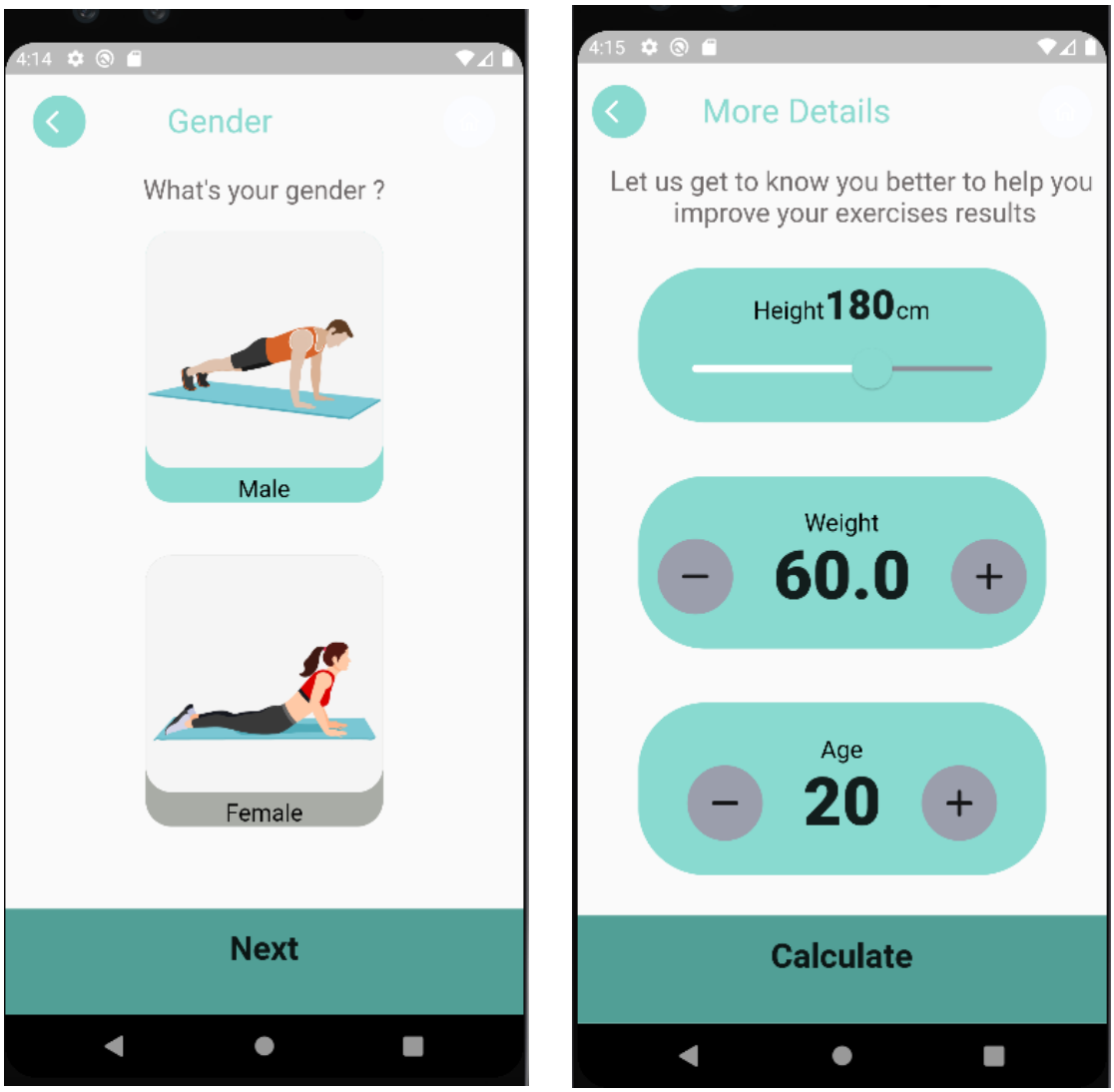


Figure 26: BMI collect data

In the lift page, the user will be asked to enter his gender, in the right page he asked to enter his height, weight and age and there is a calculate button when he clicked it, the app will give his BMI and advice depending on the values he entered.

BMI Result Page

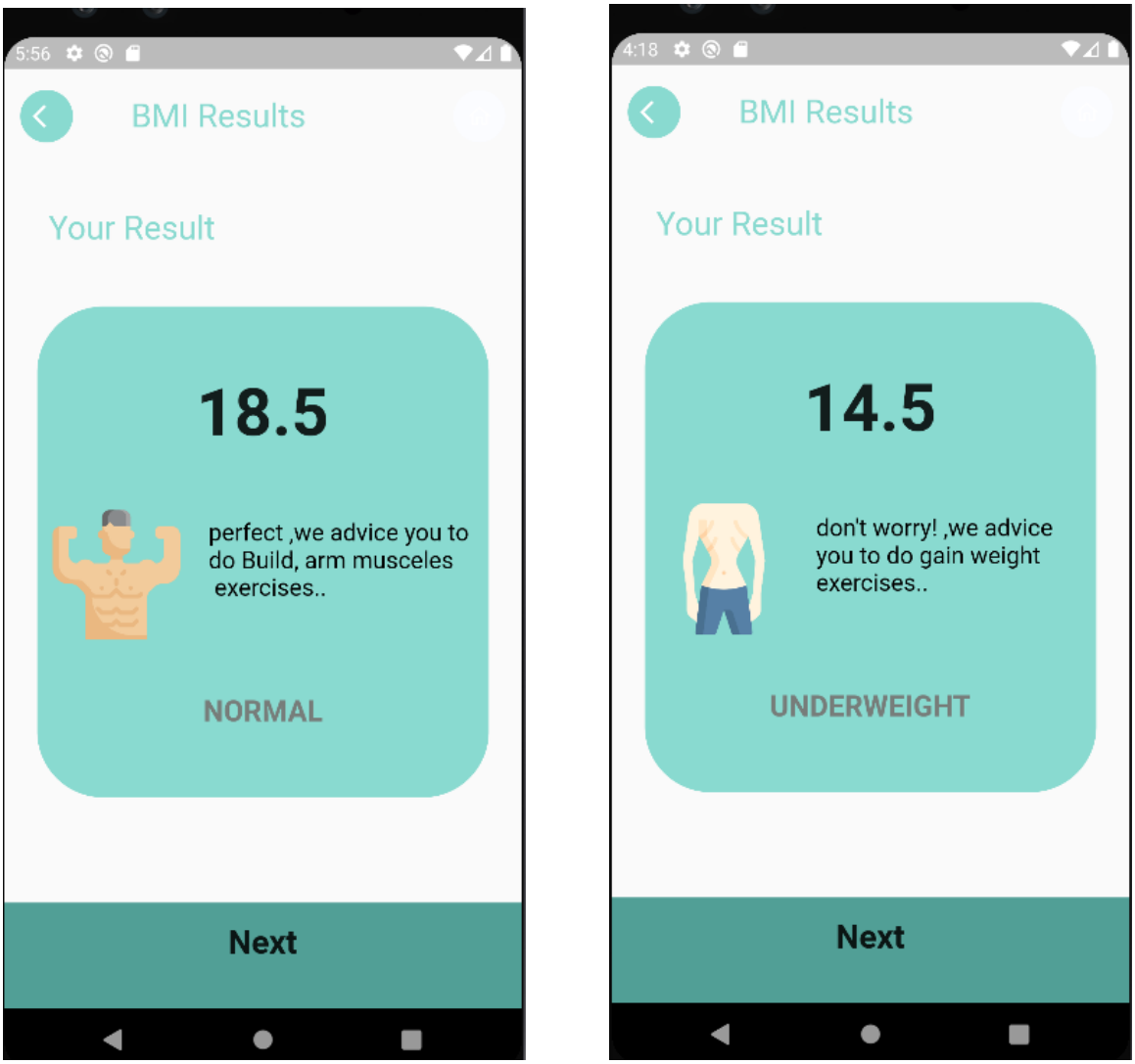


Figure 27: BMI result pages

In this page you can see depending on the values he entered in the previous pages, BMI result will appear and an advice to what exercises group he should be enrolled to.

Main Goal Page

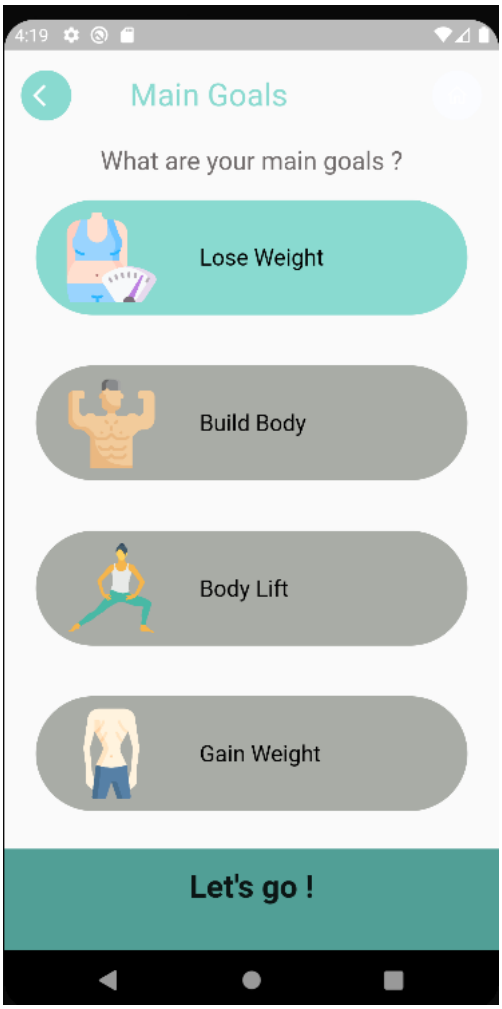


Figure 28: main goal

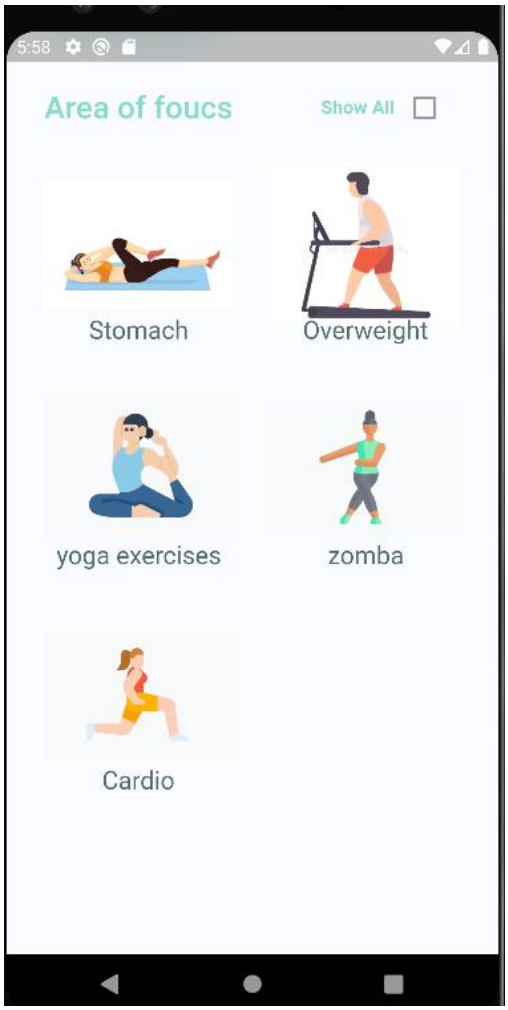


Figure 29: exercises groups depends on BMI , Main goal

In the left page he will be asked to choose what is his main goal in exercises, to lose weight or build body, or Body lift or to gain weight , depending on this data collection ,the suitable exercises for his case only will appear, as you can see in the right page.

There is a show all check box, when it is checked it will show him all exercises even if it is for him or not, otherwise it will show just the suitable exercises.

Exercises Page

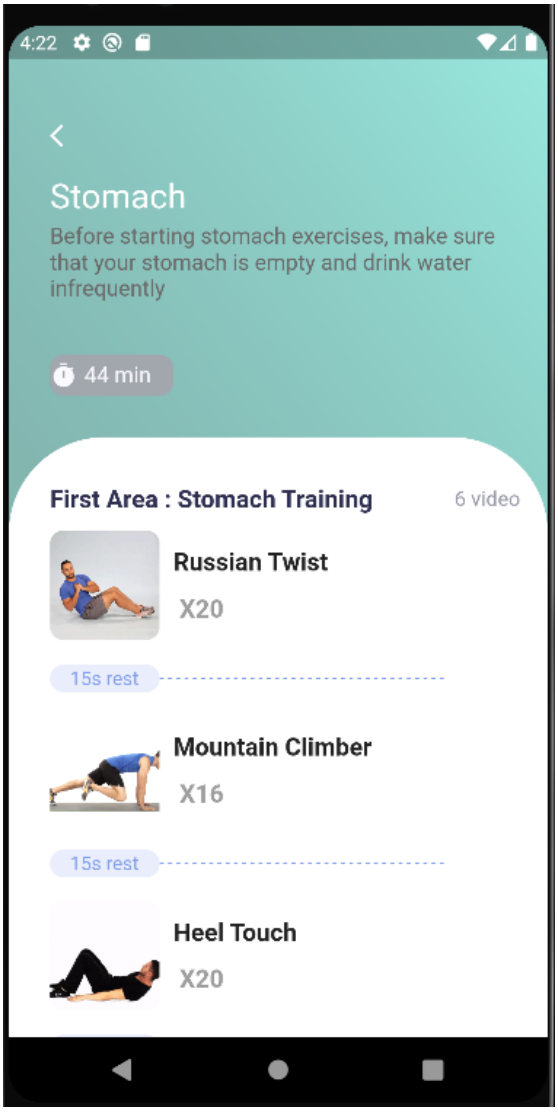


Figure 30: stomach exercises

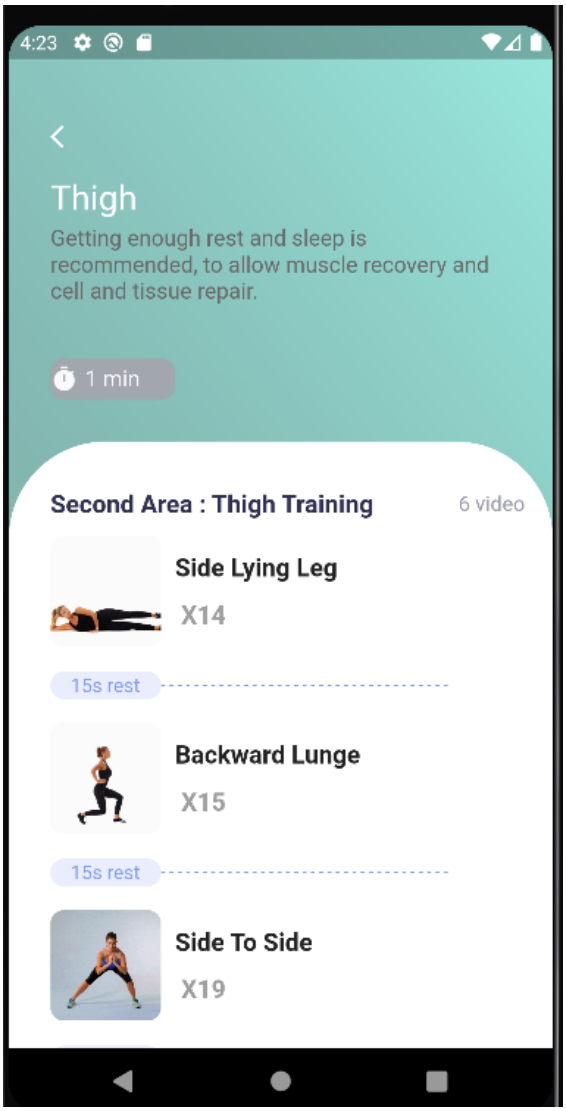


Figure 31: thigh exercises

These pages will show for him a list of exercises, depends on what the area of focus he chose, If his selection was stomach exercises the left page exercises will appear which is for stomach. If his selection was thigh exercises the left page exercises will appear which is for thigh. In the same way for all other area of focus groups.

Exercises Page

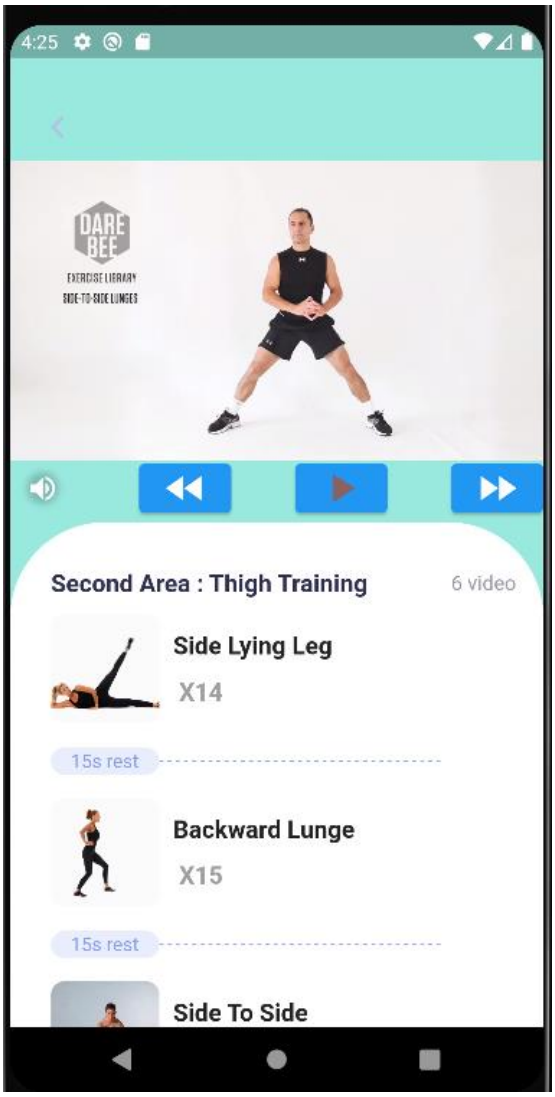


Figure 28: exercise video list page

As you can see in this page, a list of exercises he can play them and how many times he should repeat each one, a gif that describes the exercise and a video for the exercise he can stop it or move to the previous one or the next one, also he can mute the voice.

Report Page

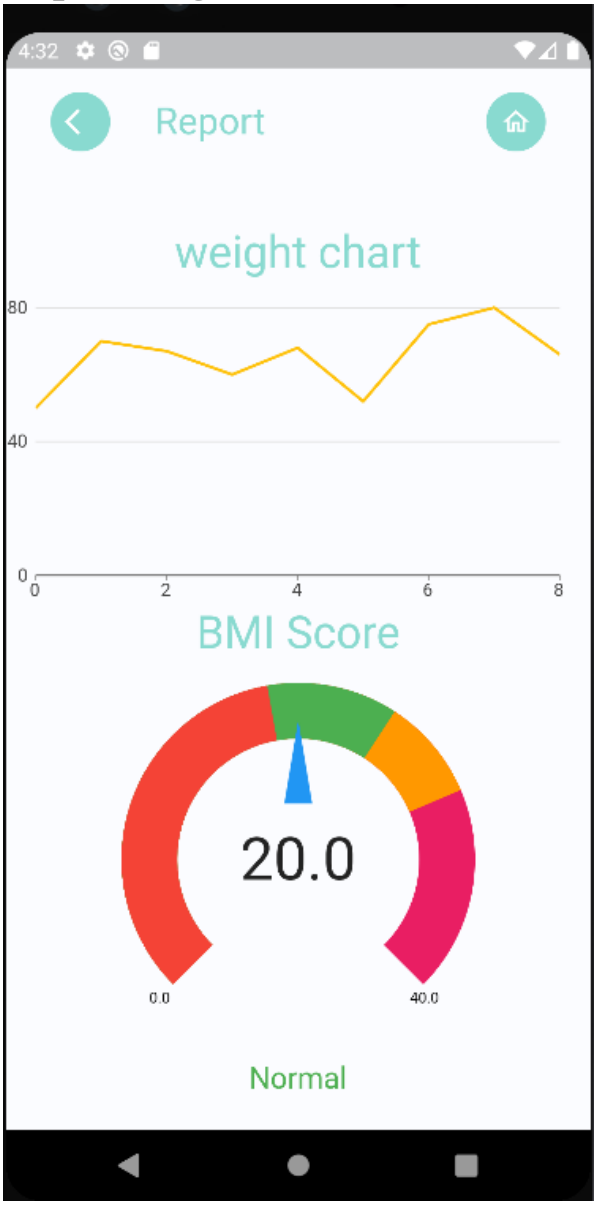
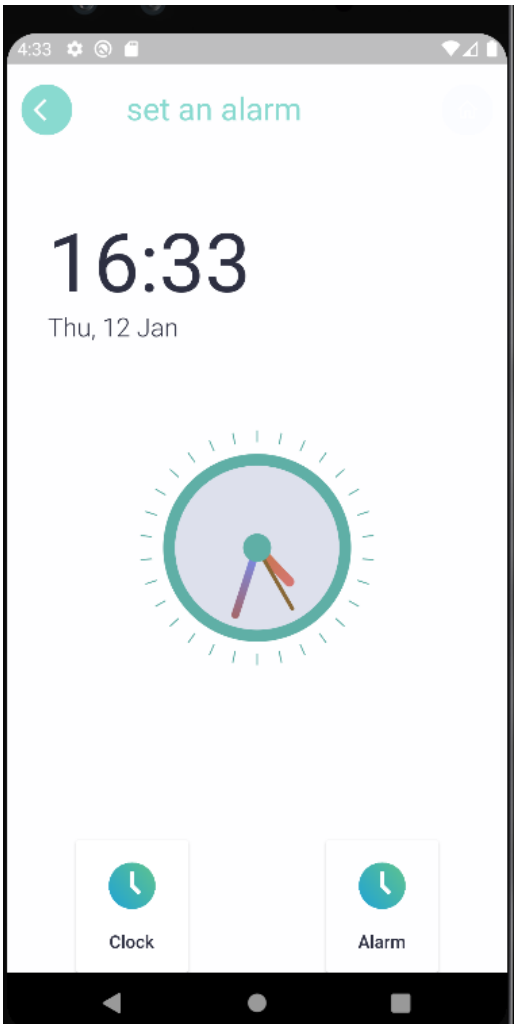


Figure 29: report page

In this page he can see his weight tracking chart to describe the progress for him, also it will give him a gauge chart to show him his current BMI.

Alarm Page



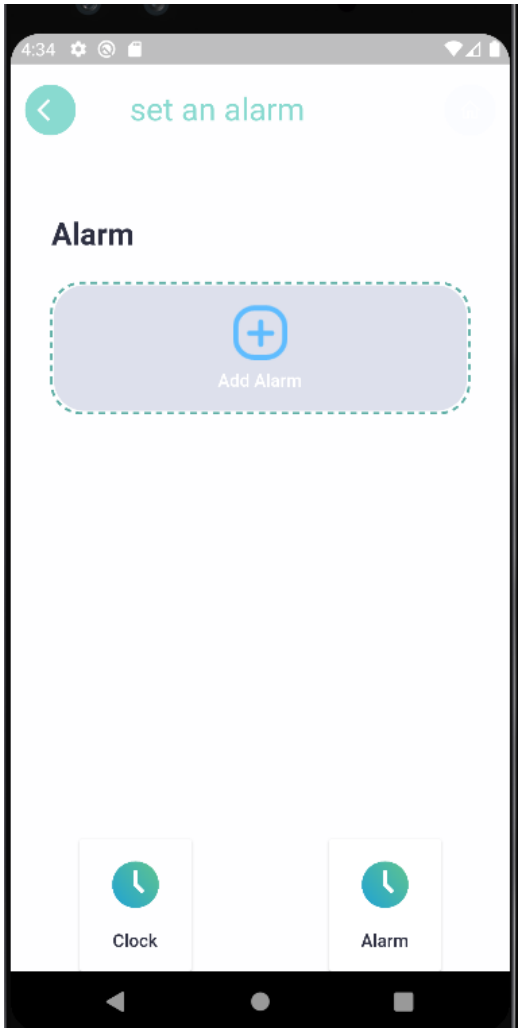


Figure 30: add alarm page

Figure 31: alarm main page

In this page he can see the current time clock, if he clicked alarm button ,the app will move him to the right page which he can set an alarm through it .

Alarm Page

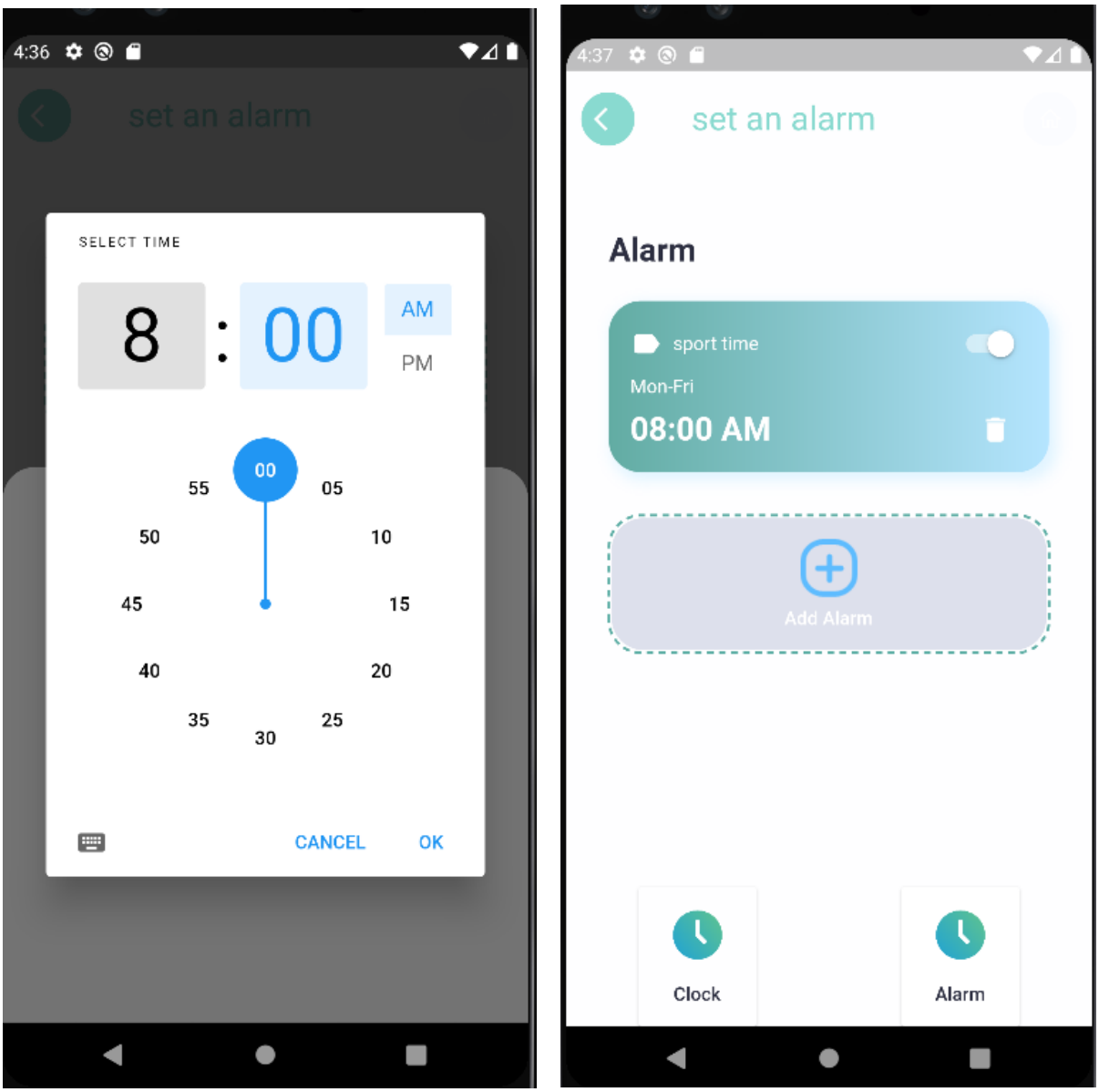
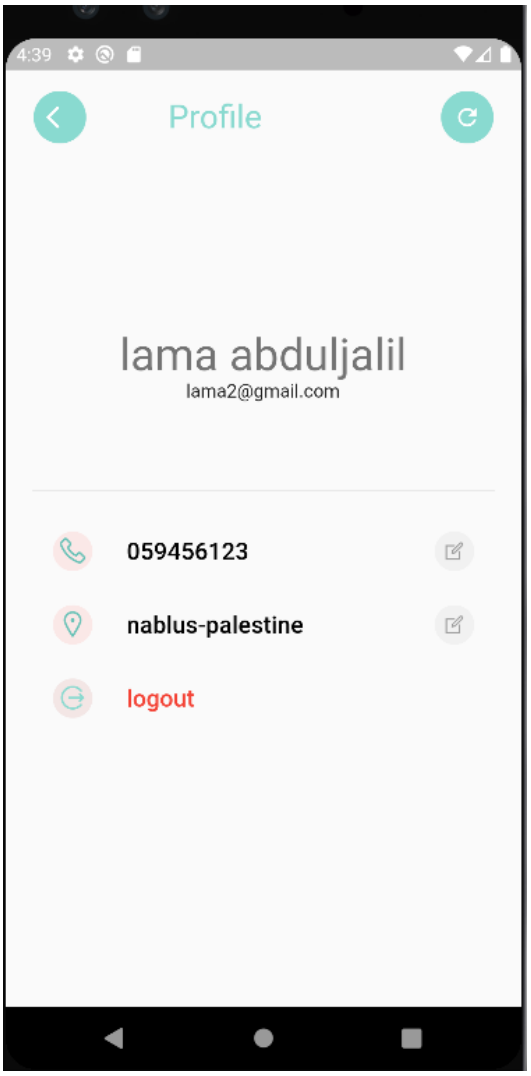


Figure 32: insert alarm , result page

After he clicked add alarm from the previos page , this show time picker wil appear , he can set the time , he can give the alarm a name and there is an option to repeat this reminder daily or just for one day .

Profile Page



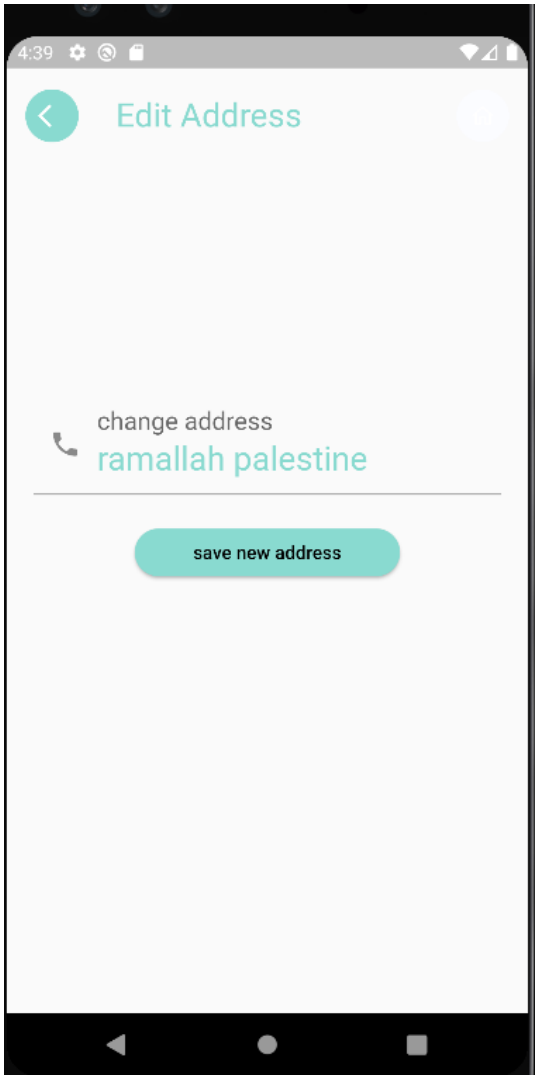


Figure 33: change address page

Figure 34: user profile page

In this page the user can see his data he entered before , and he can update his information like address or phone number if he want as you can see in the right page . and will save it after changing .

Health Tip Page

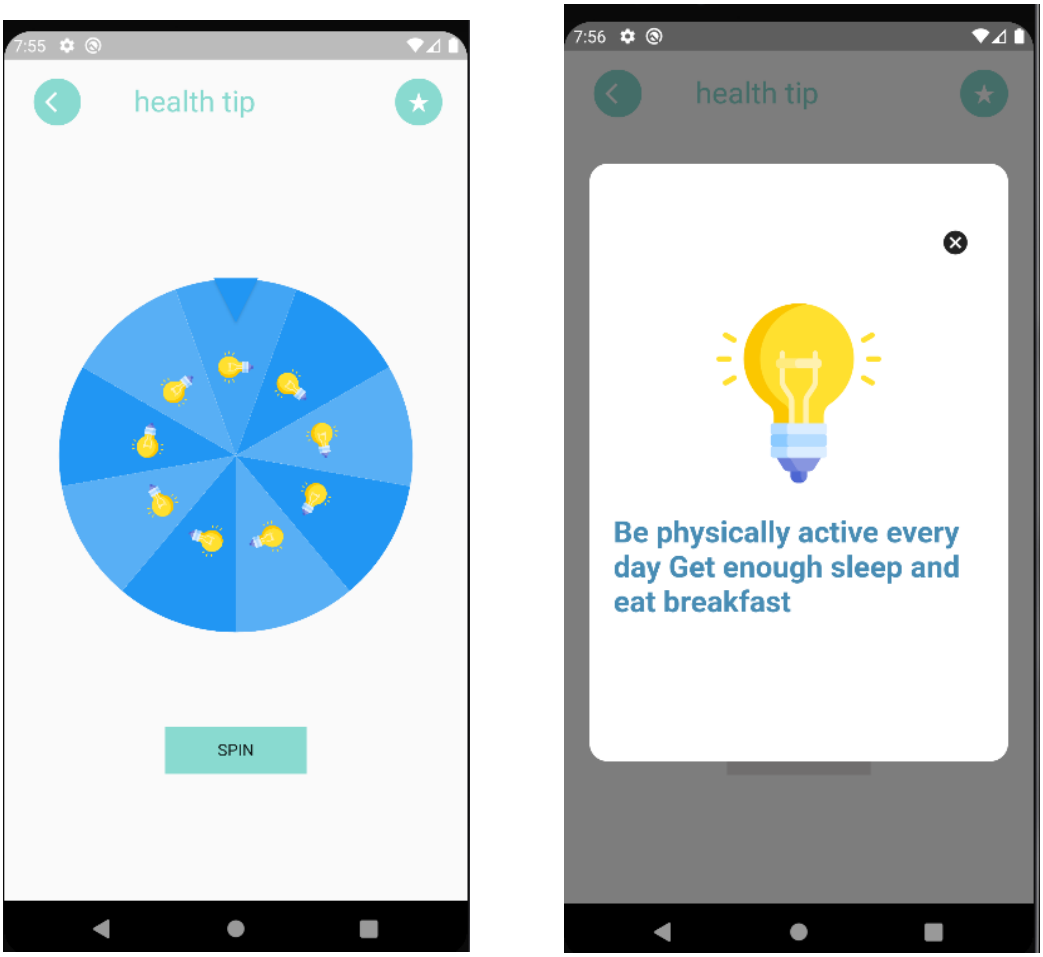


Figure 35: health tip page

In this page, we developed a spinner to make it funny to the user to get his daily advice, he can spin just one time per day .

Rating Page

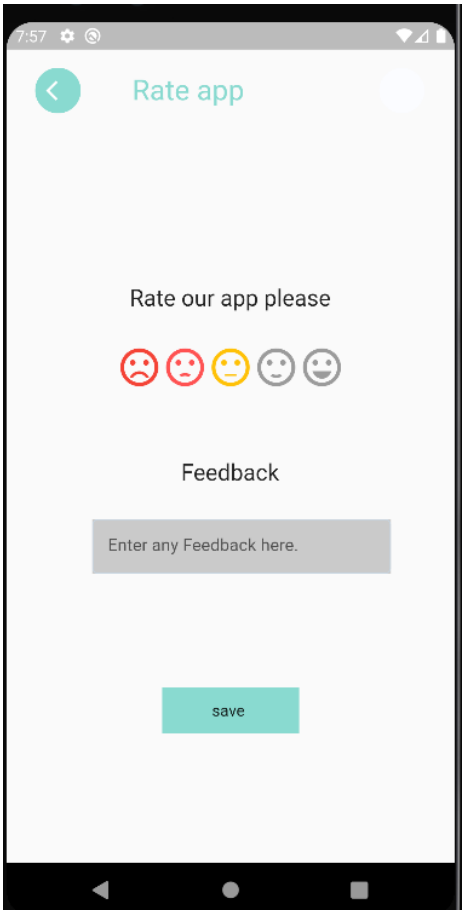


Figure 36: Rating page

In this page, the user can give the app some feedback to enhance it.

Conclusion and Discussion

Healthy lifestyle application directed to the individuals who wants to improve themselves, to improve their food type and to be healthy, and to get the body they want using the exercises we offer for them easily, and they could get some advice from the app, the app can be managed by a gym owner which we made a website for him to make it easy to add or delete to the database.

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Future View

Above of all the features we mentioned above, the future work is to make a shopping page for the individuals that enables them to order sport tools and gym machines to make their exercises done in the best way, and instead of the admin take the orders, a delivery company will have an account that enable to take the orders.

References

1. Flutter documentation," Flutter documentation | Flutter".
2. Show time picker
3. Image Picker plugin for Flutter ," image_picker | Flutter Package (pub.dev)".
4. MongoDB Database. Deploy a multi-cloud database," MongoDB Atlas Database | Multi-Cloud Database Service | MongoDB".
5. Video player for flutter https://pub.dev/packages/video_player
6. Time zone https://pub.dev/packages/timezone
7. Pretty gauge https://pub.dev/packages/gauges