ANDROID APPLICATION FOR HEALTH AND FITNESS

BY

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This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled **"Android Application For Health And Fitness"**, submitted by "**Bikash Chandra Devsharma and Mohammad Jonayed"** to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on January 3, 2022.

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We hereby declare that this project has been done by us under the supervision of **Md. Sazzadur Ahamed, Senior Lecturer, and Department of CSE and Co-Supervision of Md Zahid Hasan, Assistant Professor, Department of Computer Science and Engineering** at Daffodil International University. We also declare that neither this project nor any part of this project has been submitted elsewhere for the award of any degree or diploma.

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ABSTRACT

The main goal of our project is to create an android application where users will know the technique of physical exercise and the idea of creating a diet plan with health tips. Exercise makes people mentally and physically cheerful. As a result, our body's immunity system increases. In this health and fitness application users will be able to know which exercise like weight gain, weight loss, muscle gain, etc. And which diet will be beneficial. This application also works to find a gymnasium location. As a result, if the user wants to know the contact or location of any gymnasium, he should know through the app. Users will get some daily challenges through this app and by completing challenges they will be able to complete their daily tasks.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

This is an online-based app called health and fitness. This application is based on health and fitness. We have created this application for regular exercise, diet, and challenges. Our young society is becoming health cautious day by day and leaning towards exercise to make their body more attractive. So, nowadays gymnasiums become popular.

This present time is digital. At this time everyone usually has a smartphone. This smartphone has changed our way of life. Our application is also made for mobile users. As a result, users will be able to use this application for necessary instructions to keep themselves healthy and strong in an easy way. We have created this android application based on all this.

1.2 Motivation

At present everyone is very health conscious. At one point we were also admitted to the gym due to being health-conscious. But after being admitted to the gymnasium we saw a lot of users there. We also saw that it was not possible to provide proper service to all the users of the gym with two or three trainers. From there we are motivated to do this project. Where users can use this application as an alternative to Trainer. Users of this app will be able to be aware of food through proper diet, gym trainers, and health awareness through health tips. We have created this android application based on all this.

1.3 Objective

The main purpose of our project is to guide all types of exercises in the gymnasium, giving health tips for health consciousness and helping to create the right food with a diet chart.

More specifically these are called technical objectives which are given below:

- ❖ Users don't need to call the trainer again and again.
- ❖ Help to find gym location.
- ❖ Help users create diet plans with health tips
- ❖ Help users to be dedicated by setting challenges.

1.4 Expected Outcome

- ❖ Users will be health-conscious with health tips.
- ❖ Exercise and a proper diet will keep the user physically and mentally fit.
- ❖ After completing the challenges user will increase their confidence and energy level.
- ❖ Users will be protected from various diseases.
- ❖ Help to find gymnasium location.
- ❖ It Will work like a gymnasium trainer.
- ❖ Regular exercise will help user to improve their muscles and bones.
- ❖ Will help users to live a better life.
- ❖ It will help users to lose weight, gain weight and build muscles.

1.5 Report Layout

We have arranged our report into 6 chapters. A summary of what has been discussed in each chapter is given below:

Chapter-1: In this chapter, we discussed the Motivation, Objectives, and Expected Outcomes of our project.

Chapter-2: In this chapter, we discussed the Design Specification of our project.

Chapter-3: In this chapter, we discussed the Project Planning and Scheduling of our project.

Chapter-4: In this chapter, we discussed the Requirement Specification of our project.

Chapter-5: In this chapter, we discussed the Overall Implementations of our project.

Chapter-6: In this chapter, we discussed the Conclusion and Further Development of our project.

CHAPTER 2

DESIGN SPECIFICATION

Design means what an object will look like, what its functions will look like, or how it will work. Every android project has a front-end and back-end design. And with these, we have arranged this chapter.

2.1 Front-End Design

The front-end design is the work of the front part of a project. Different types of front-end designs are used in different projects. Front-end designs are developed in different languages. For example, HTML, CSS, MySQL is used for the front end of web development and XML is used for the front end in Android applications. The whole project is beautifully portrayed through front-end design. What will be there is done through front-end design. Usually, the user is attracted by this front-end design. Everyone wants their front-end design to be user-friendly. So, since it is an Android application in our project, we have used XML language in our front-end design.

XML: XML means Extensible Markup Language. This is a set of codes or tags. Through which the text is described in a digital document.XML helps to conduct complex business through the internet. It describes the content and structure of the document or data. It is used for the overall use of the Internet and it's a human and computer-friendly format.

2.2 Back-End Design

Back-end design is the work behind a project. All front-end activities are mainly working for the back-end design. That is why back-end design is the main work of a project. Users do not need to know the design of the back end. This project is using a firebase database at

the back-end. Firebase is a popular database for Android application development. The back end is designed in Android Studio. The used language is kotlin.

Kotlin: It is an open-source statistically typed programming language. Which supports object-oriented programming and Android. It started in 2010 and has been open source since the beginning. It is a powerful and modern language with many useful features.

2.3 Database

Database-where we stored data electronically in a computer system. Where data is easily accessible, modifiable, updatable, and controllable. In this project, we have used Firebase as a database. Because it is a very easy database for Android applications.

2.4 Implementation Requirement

We will implement our application after we have completed the design of our project. First, we had to use Android Studio to design the front end and back end. We did this on the Windows 10 operating system. Where we used XML for the front end and Kotlin language for the back end. Later we used Google Chrome to connect to the database. And we have used Firebase as a database.

2.5 Design Requirements

Our project is open to all types of users. Due to which the project has been arranged in a simple way to make it easy for everyone to use. Every developer wants his project will be user-friendly. So that his project users can use it easily and increase the number of users. So we first sorted through a few diagrams to create it.

Below are the diagrams we used to create our project:

❖ Use case Diagram
❖ The State Diagram

2.5.1 Use Case Diagram

Through this diagram, we have shown that how users and admins play their role in the project. [1]
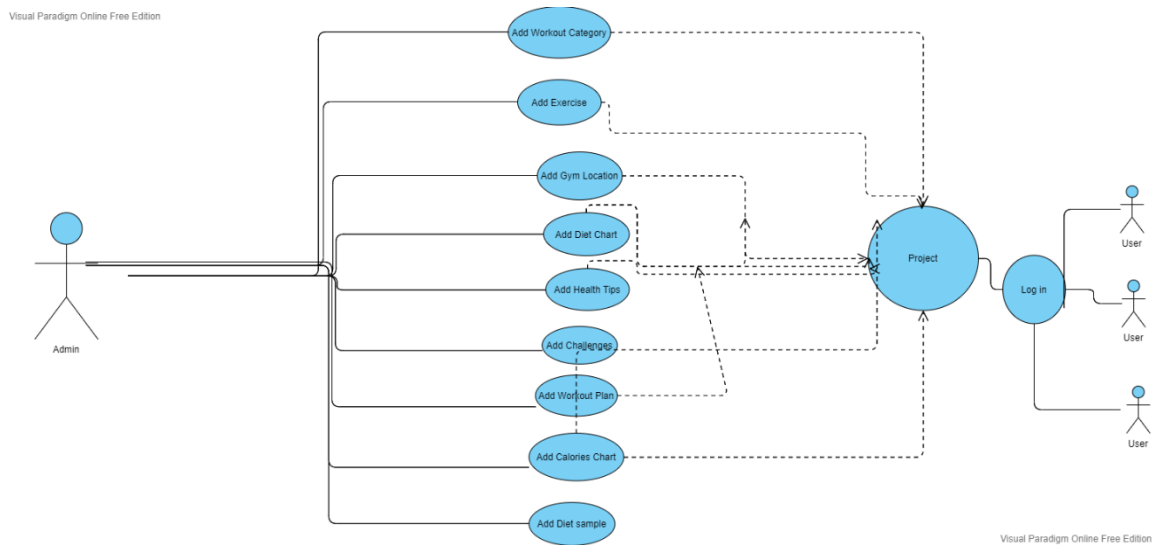

Figure 2.5.1: Use Case Diagram

2.5.2 State Diagram

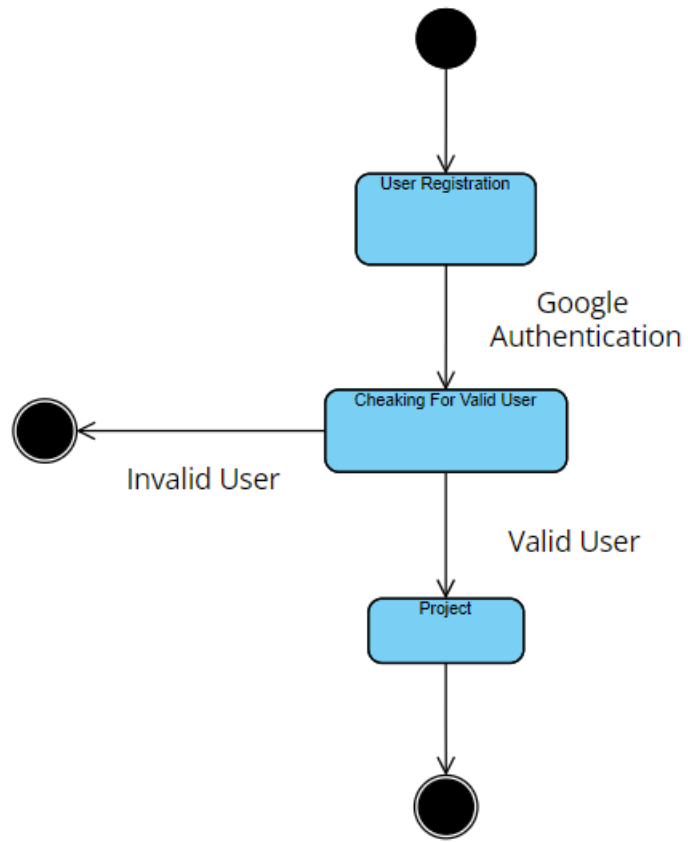Through this diagram, we have shown how a user can use it. [4]

Figure 2.5.2: State Diagram for User

CHAPTER 3

PROJECT MANAGEMENT

3.1 Project Planning and Scheduling

Project planning and scheduling play an important role in any project. For which we can complete the work of the project at the right time. Through project planning we decide how much it can be done easily, what data or material is required, its design, diagram progress. Through this, a plan is made as to when the work will be done and the date will be determined. As a result, it helps to complete the project on time.

3.1.1 Methodology

Mythology is usually used to select research or planning strategy. We use the waterfall model in our project. This model is commonly used to create the development life cycle, Construction, IT, software development. Why we use the Waterfall model is shown below step by step. [2]

Advantages of waterfall model:

- ❖ It's easy to understand and use.
- ❖ It can be easily managed.
- ❖ It works well for small projects.
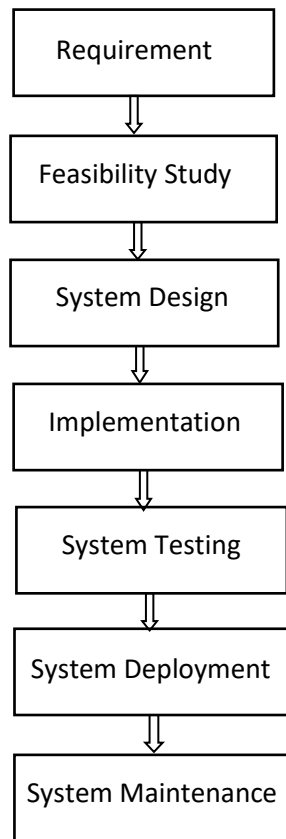- ❖ It presents simple and clear projects.

Figure 3.1.1: Waterfall Model

3.1.2 Project Management Life Cycle

It is a framework through which to translate ideas into reality in an orderly and efficient manner. This is a high-level process for a successful project. Through this, the life cycle of each project is described. The following picture shows the steps of its life cycle:

i. Initiating

ii. Planning

iii. Executing
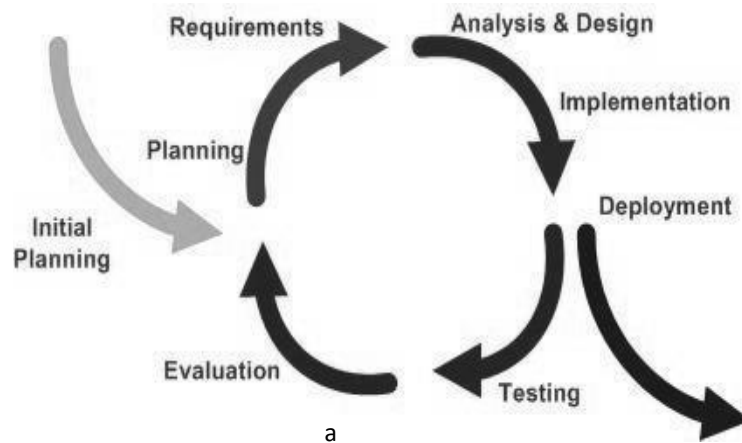
iv. Monitoring

v. Closing [5]

Figure 3.1.2: Iterative and Incremental Life Cycle

3.1.3 Project Plan

We usually plan first how our project will be done and implement it. How we planned our project and how long has it taken us to complete the project from start to finish It is given below:

Table 3.1.3: Project Plan table

Task	Duration	Start	Finish
Planning	23 Days	30/11/2020	22/12/2020
Design	57 Days	23/12/2020	18/02/2021
Data Collection	63 Days	19/02/2021	23/04/2021
Coding	-	05/05/2021	-
Delivery	-	-	-

3.1.4 Schedule Representation

The schedule is an important activity in project planning. Through which we set the schedule about when we will do. The chart of our schedule is shown below:

Table 3.1.4: Schedule Representation table

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Planning	█	█	█																			
Design				█	█	█	█	█	█	█	█											
Data Collection								█	█	█	█	█	█	█	█	█						
Coding												█	█	█	█	█	█	█	█	█		
Testing																					█	
Delivery																						█

3.2 Risk Management

Every project is usually challenging. One of them is risk management. Project risk management is a process that involves risk identification and prevention. This is usually to oversee the entire project. This is a risk identification process through which we can take steps to predict risks and resolve them. We have categorized these to avoid the risk of our project. It is given below:

i. Performance

ii. Quality

iii. Technical

iv. User Friendly or not.

CHAPTER 4

REQUIREMENT SPECIFICATION

4.1 Requirement Collection and Analysis

Our Health and Fitness Project is based on the Exercise and Diet Plan. For that, we had to collect various information on exercise and diet plans. To get this information we had to go to different places and work in different places and take different data from the internet. The overall issues of our data collection are highlighted below:

4.1.1 Gymnasium

Since the main theme of our project is fitness, we need a gymnasium to show the exercises in the video. Where we can easily get all the tools to do the exercises. And since users will use this application as an alternative to a gym trainer, the videos should have a touch of the gymnasium.

4.1.2 Trainer

Since our project will have videos of the exercises, so we need a skilled trainer to do the exercises video.

4.1.3 Camera Setup

Since there will be video in the project, a camera was needed to make the video. we needed a tripod as well so that the camera does not move while making videos.

4.1.4 Video Editing

After the video is finished, we need to edit the video to find out the exact time and shape. we used here adobe premiere pro software for our video editing

4.1.5 Video Upload

After finishing the video edit it must be stored. We've stored videos of our project on YouTube.

4.1.6 Diet Chart, Location, And Health Tips

In addition to exercise, our project has gym locations, diet charts, and health tips. As a result, we had to go to different places in Dhaka city and collect the location of the gymnasium. Diet charts and health tips we collected from the gym trainer and the internet.

4.2 Hardware Requirement

Processor: Core i5 processor.

Ram: 8 GB

Hard Disk: 250 GB

4.2 Software Requirement

4.3 Software Requirement

Operating System: Windows 10

Development Software: Android Studio, Premiere Pro, Google Keep.

Language: Kotlin, XML

Database: Firebase.

Framework: Android

Browser: Google Chrome [3]

CHAPTER 5

OVERALL IMPLEMENTATION AND TESTING

5.1 Database Implementation
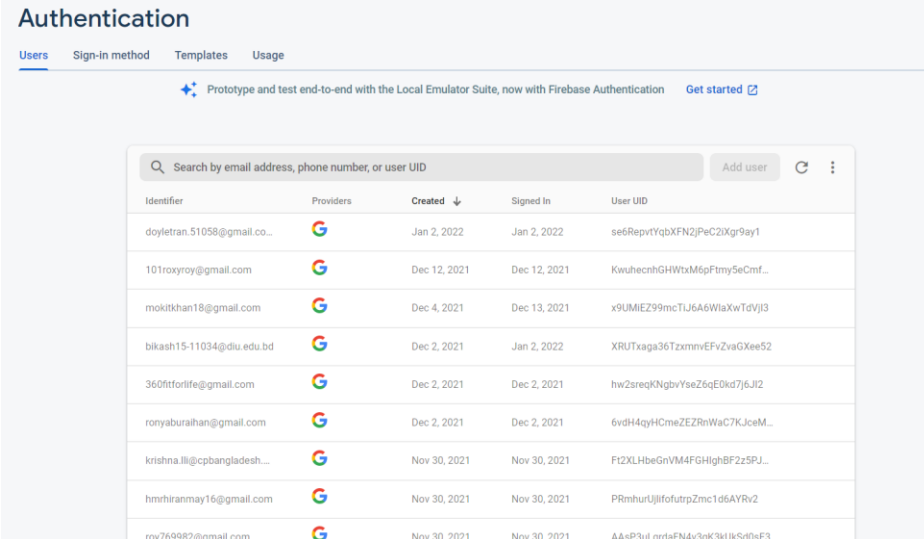
We use the Firebase database to store our data and Information. It is a popular database for storing data. It helps save and sync data between your users in real-time. And we used Gmail and password for registration of our users and used the Firebase database to submit other information

5.2 Database Implementation Description

Here we discussed how the system works. In our Health and Fitness application, there have many features like exercise, Gym location, Health Tips, Diet charts, Challenges even so many things.
so, their information will store by only the Admin/Developer.

5.2.1 Firebase Authentication Page

In the Firebase database at the authentication page here will be store the information of users. Only those are registered, only they can be login to the system.

Figure 5.2.1: **A**uthentication Page

5.2.2 Realtime Database

In the Firebase database at the real-time database page, here all information and data of our application will be stored by features specific name.
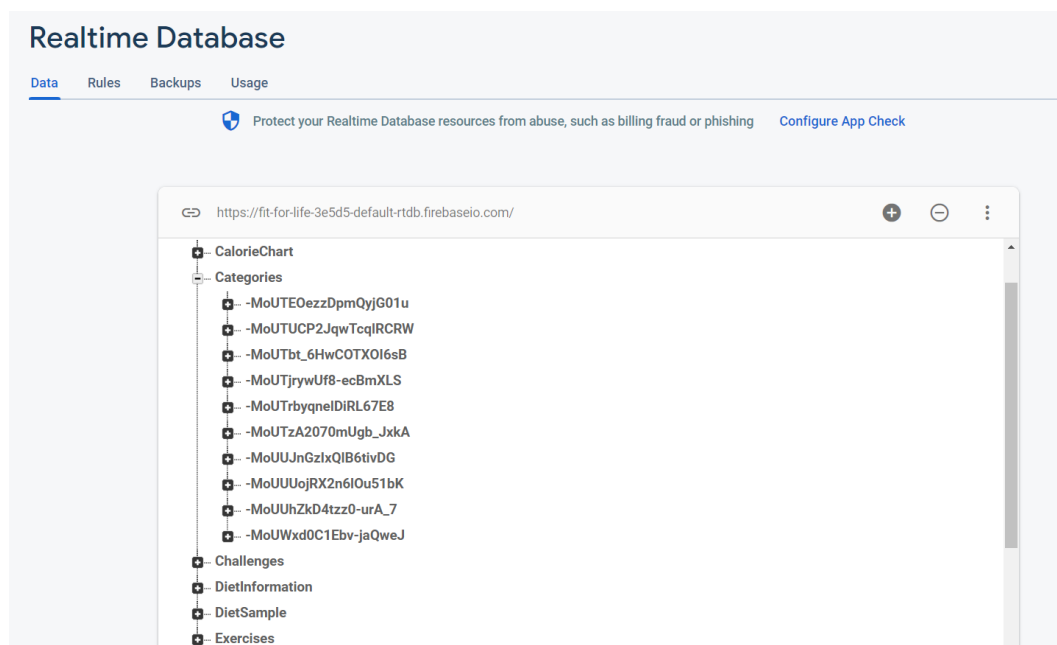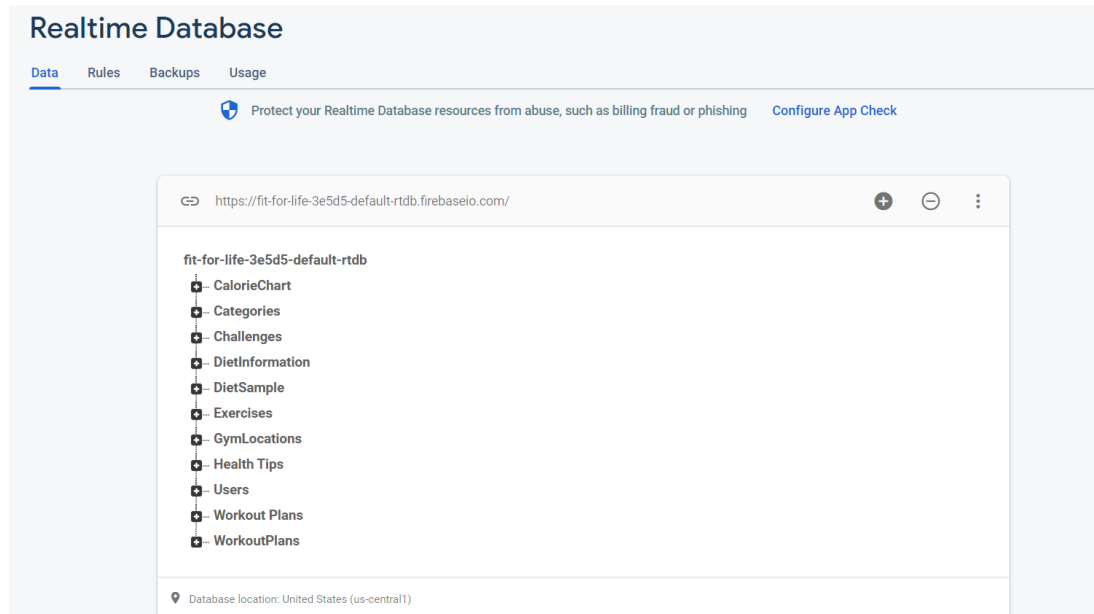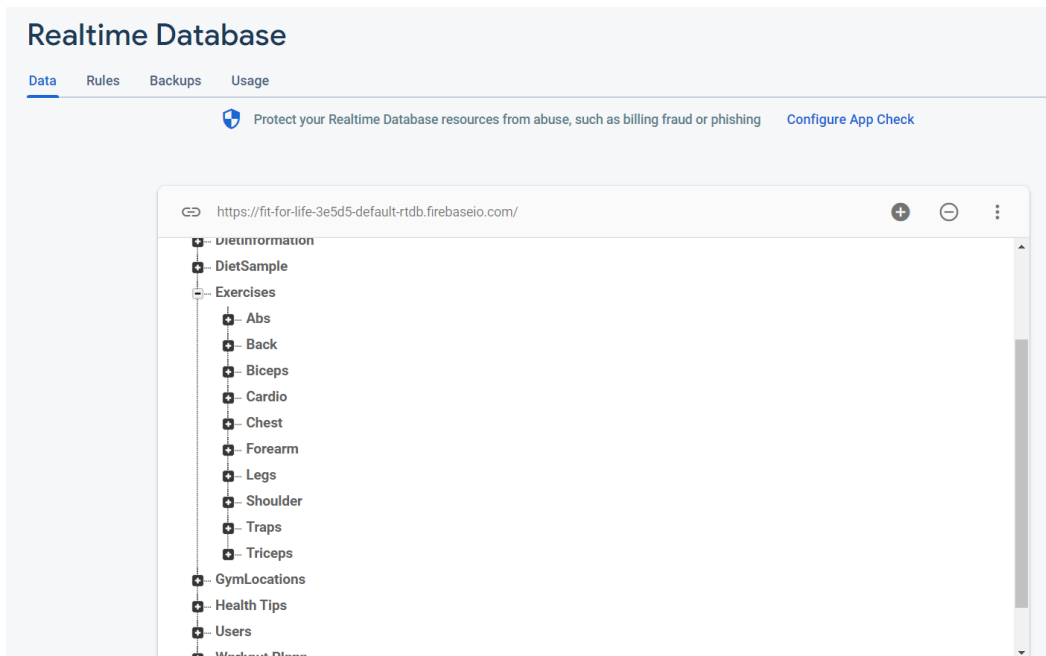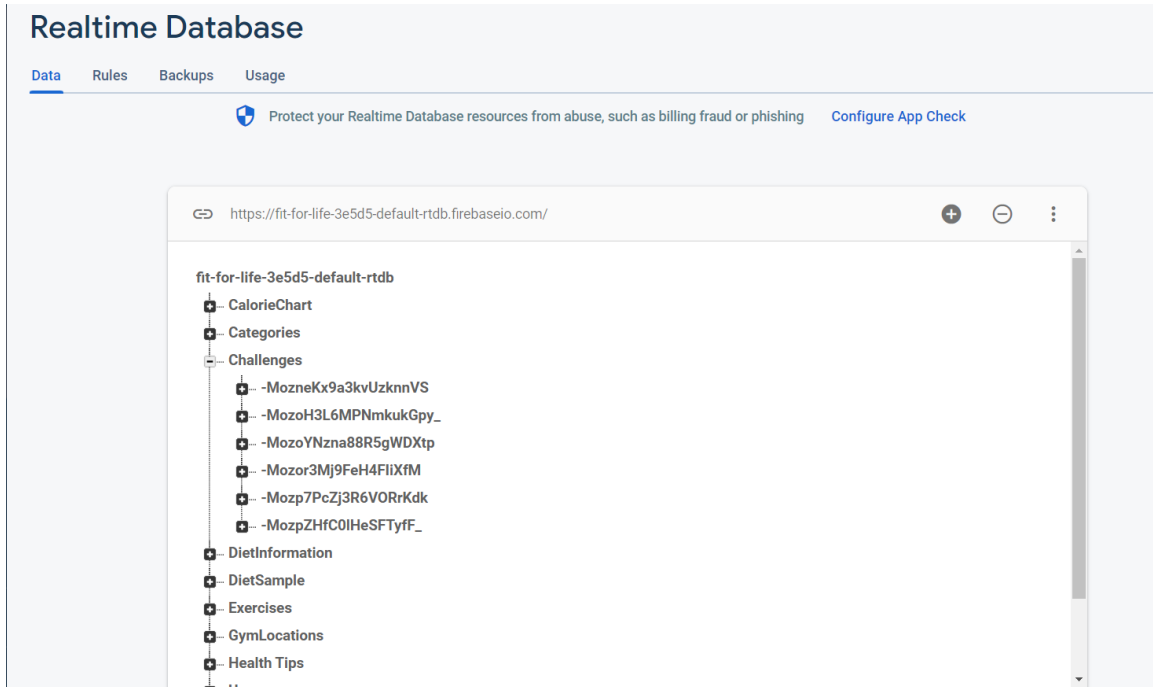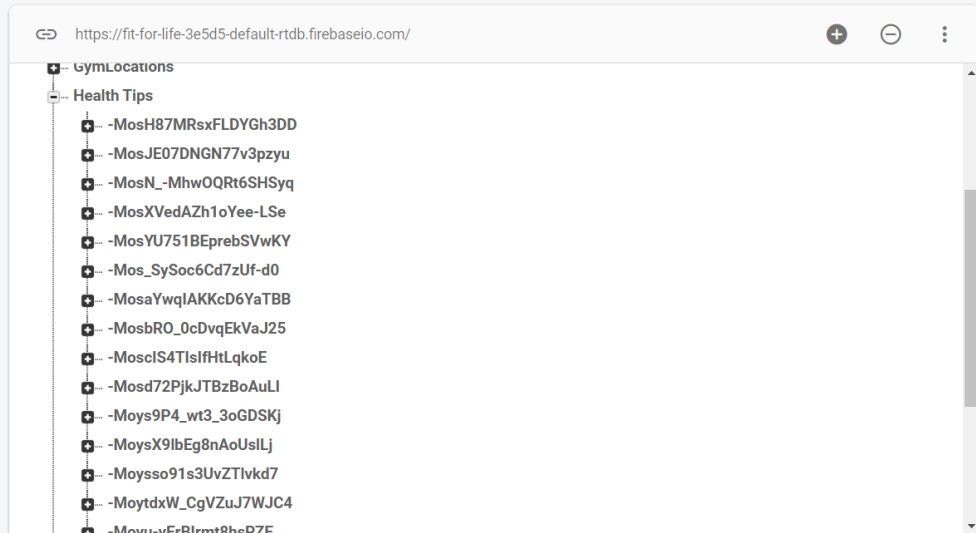
Realtime Database

Data   Rules   Backups   Usage

🛡 Protect your Realtime Database resources from abuse, such as billing fraud or phishing   Configure App Check

🔗 https://fit-for-life-3e5d5-default-rtdb.firebaseio.com/   ⊕   ⊖   ⋮

    ⊞ GymLocations
    ⊟ Health Tips
        ⊞ -MosH87MRsxFLDYGh3DD
        ⊞ -MosJE07DNGN77v3pzyu
        ⊞ -MosN_-MhwOQRt6SHSyq
        ⊞ -MosXVedAZh1oYee-LSe
        ⊞ -MosYU751BEprebSVwKY
        ⊞ -Mos_SySoc6Cd7zUf-d0
        ⊞ -MosaYwqIAKKcD6YaTBB
        ⊞ -MosbRO_0cDvqEkVaJ25
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Realtime Database

Data   Rules   Backups   Usage

🛡 Protect your Realtime Database resources from abuse, such as billing fraud or phishing   Configure App Check

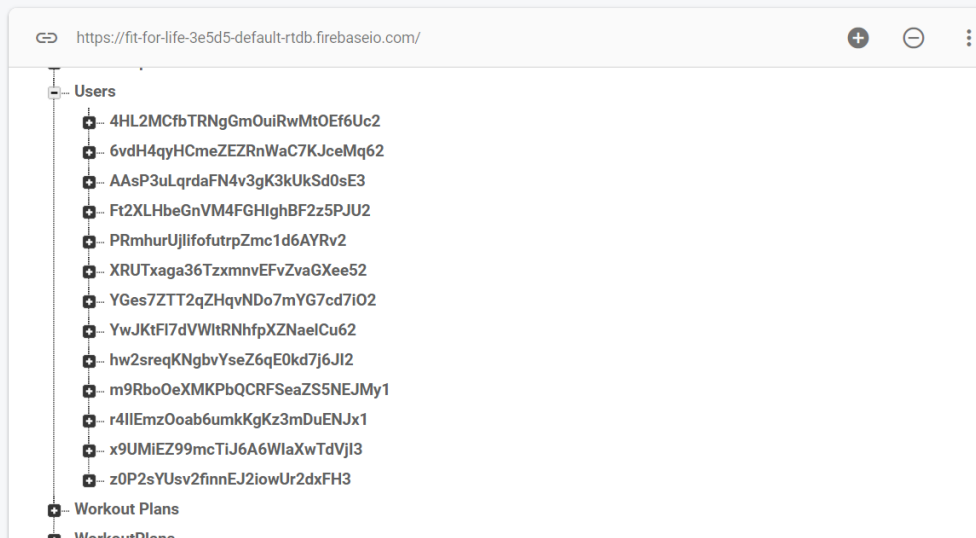🔗 https://fit-for-life-3e5d5-default-rtdb.firebaseio.com/   ⊕   ⊖   ⋮

    ⊟ Users
        ⊞ 4HL2MCfbTRNgGmOuiRwMtOEf6Uc2
        ⊞ 6vdH4qyHCmeZEZRnWaC7KJceMq62
        ⊞ AAsP3uLqrdaFN4v3gK3kUkSd0sE3
        ⊞ Ft2XLHbeGnVM4FGHlghBF2z5PJU2
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        ⊞ x9UMiEZ99mcTiJ6A6WlaXwTdVjl3
        ⊞ z0P2sYUsv2finnEJ2iowUr2dxFH3
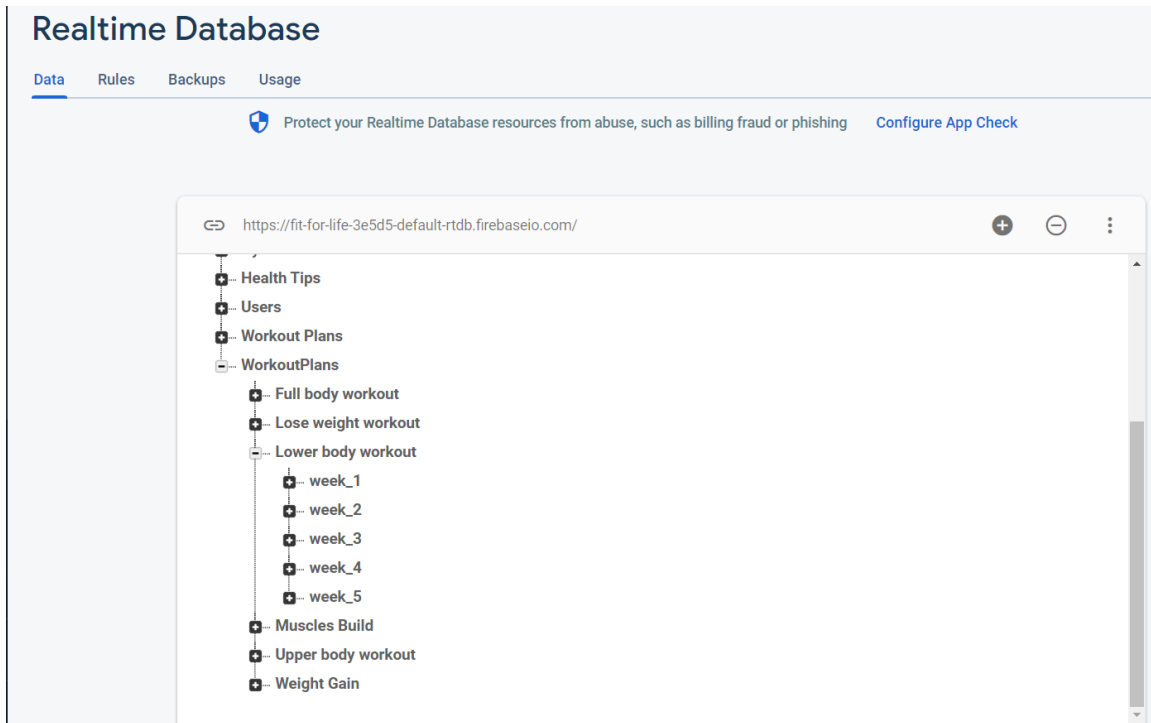   ⊞ Workout Plans
    ⊞ WorkoutPlans

Figure 5.2.2: Realtime Database

5.3 Testing Implementation of Frontend Design

Our Health and Fitness Project has many features and options. To test our project, we need to check all the features and options of our application to see if all our options are working. We tested the options and compared them with the expected results.

The options announced in the navigation are listed below:

- ❖ Workout Plans
- ❖ Challenges
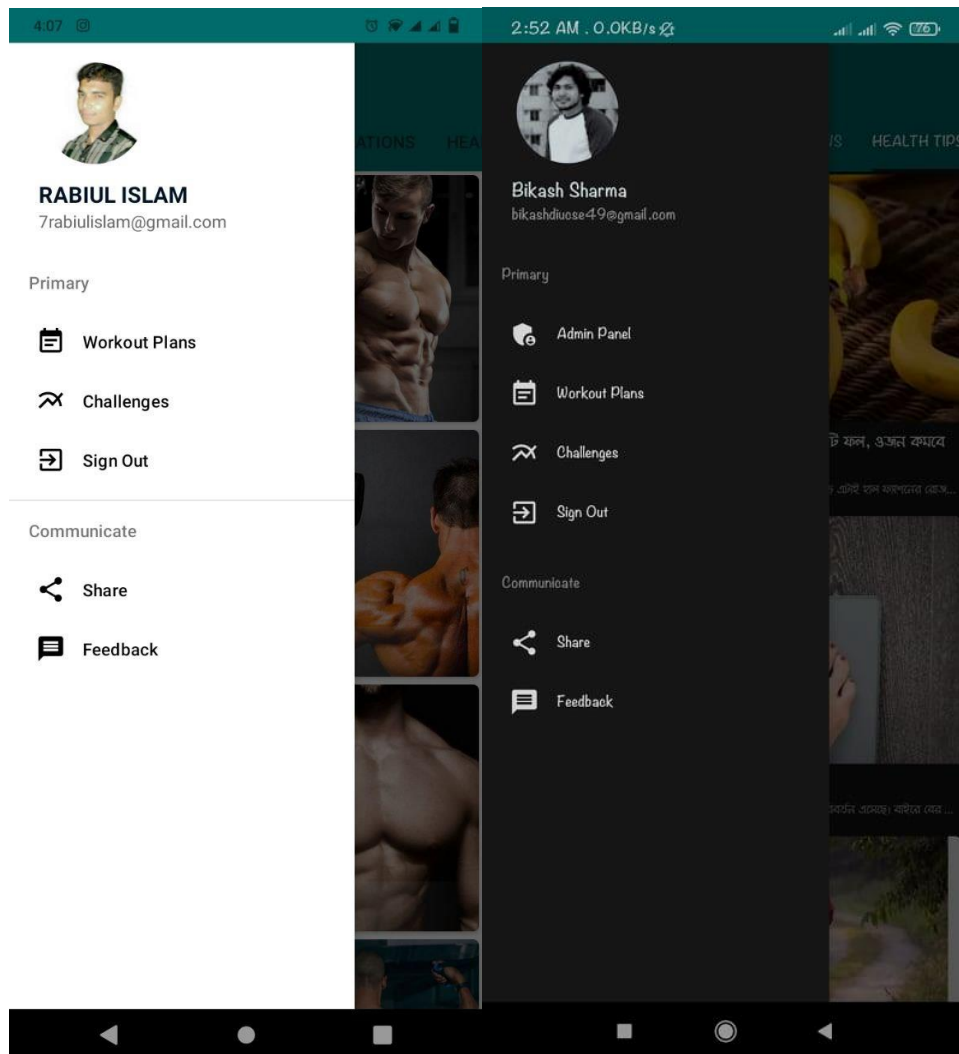- ❖ Sign Out
- ❖ Share
- ❖ Feedback

Figure 5.3: Navigation Bar Admin and Users

Workout Plans: By using this option user goes into the Workout Plans Option

Challenges: By using this option user goes into the Challenges Option.

Sign Out: By using this option users can sign out of this application.

Share: By using this option user can share this application with another.

Feedback: By using this application users can share their opinions, which features if we add this application as they will be benefited.

5.3.1 Authentication Button:

Every user needs to log in with Google Authentication before using this app.

Figure 5.3.1: Authentication Button

5.3.2 Users Pages

How users see our application. Details are given below:

5.3.2.1 Exercise Page: All Categories exercises are Available here. Users can go to any category with this page.

Figure 5.3.2.1: Exercise Page

5.3.2.2 Diet Charts Page

All Diet Plan/ Information Available in this page.
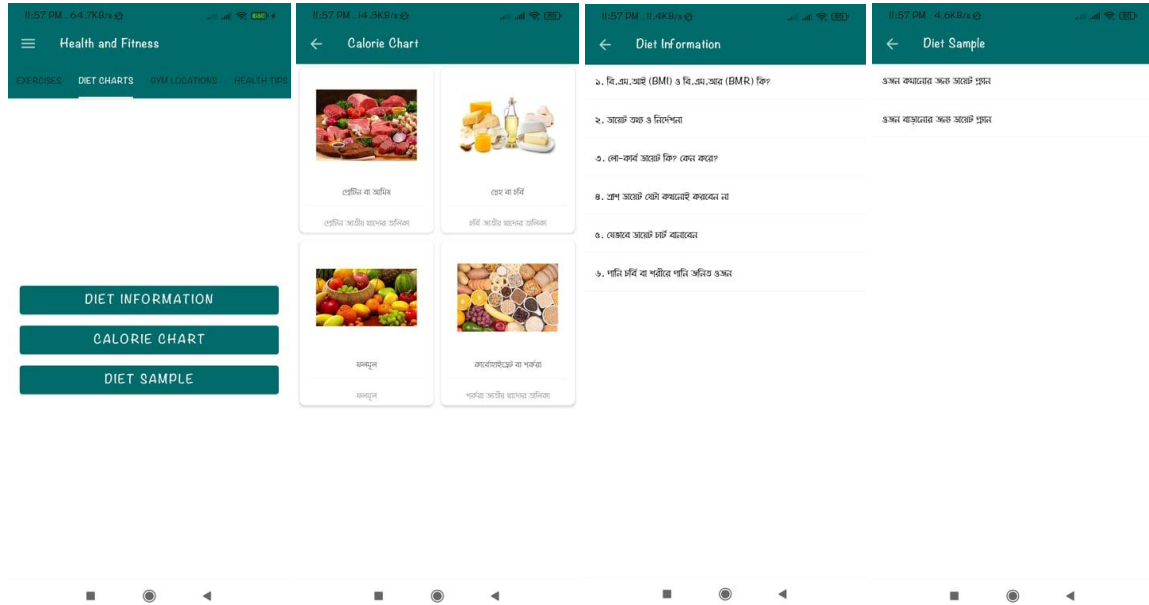

Figure 5.3.2.2: Diet Charts Page

5.3.2.3 Gym Location Page

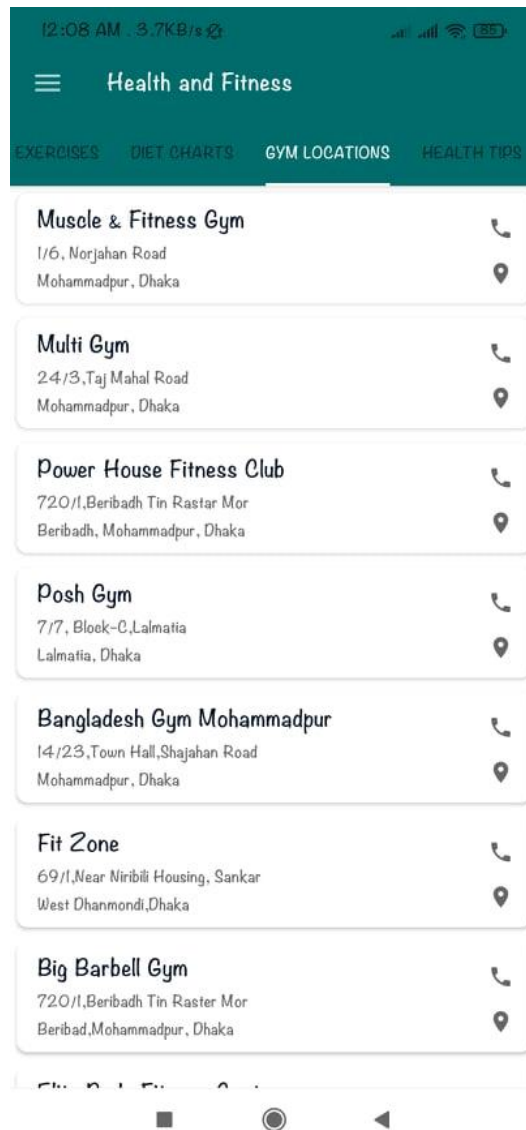All Gym Location Available here. Users can find his/her gym here.

Figure 5.3.2.3: Gym Location Page

5.3.2.4 Health Tips Page

Users can get health tips here.

Figure 5.3.2.4: Health Tips Page

5.3.2.5 Workout Plans Page

Users can find his/her workout plans from here.

Figure 5.3.2.5: Workout Plans Page

5.3.2.6 Challenges Page

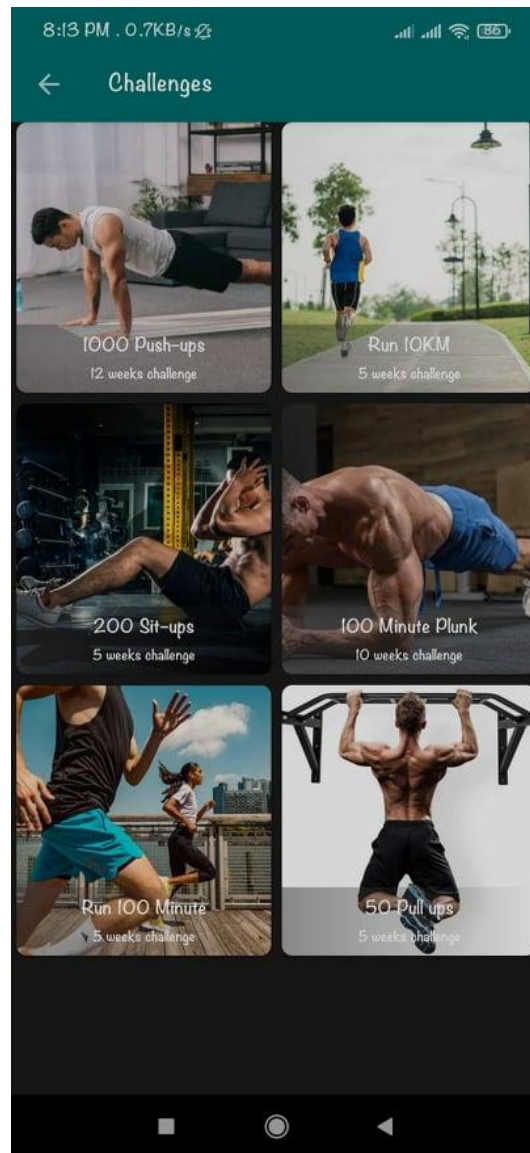Users can find some Challenges from here.

Figure 5.3.2.6: Challenges Page

5.3.3 Admin

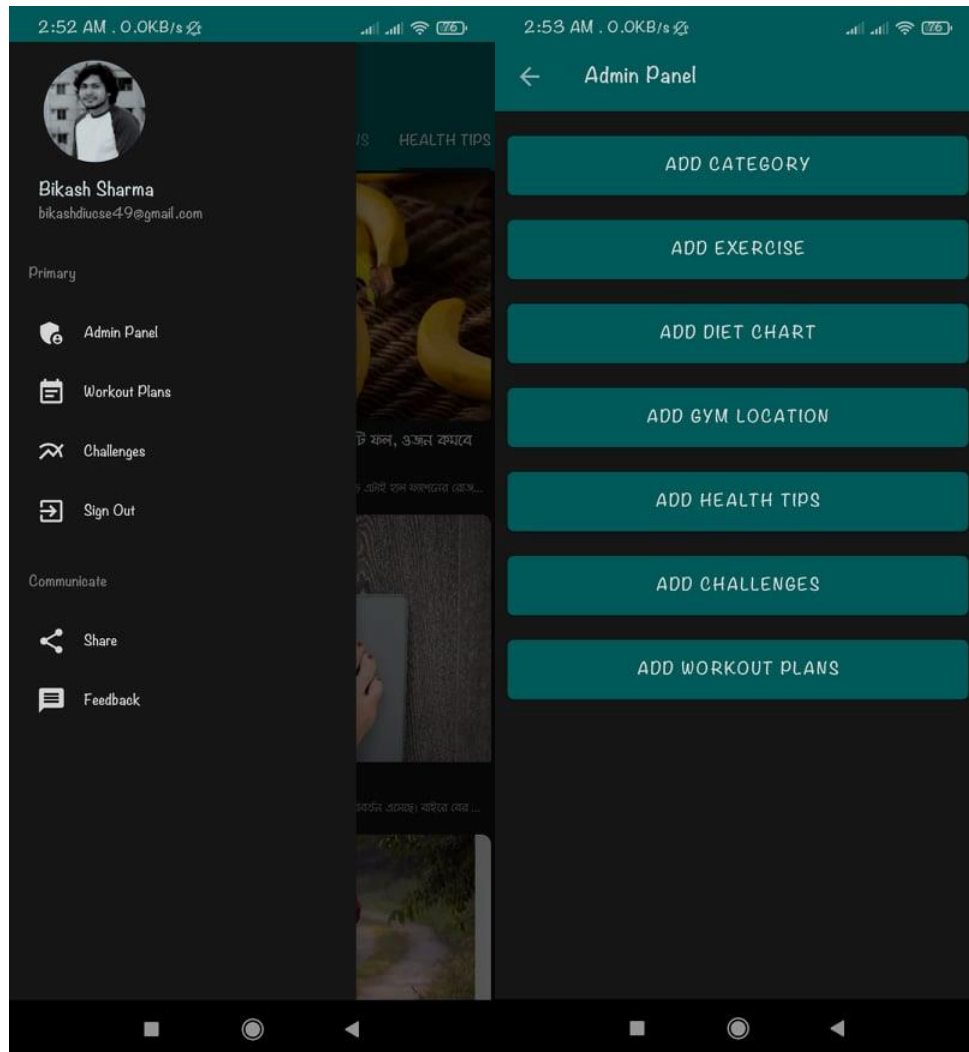This section is Only for Admin/Developers. Using these options Developer/we add data to firebase.

Figure 5.3.3: Admin panel 1

This option is for data implementation for admin/Developers. Like Add Gym Location, here we put on these options Title means Gym Name, Description means the Area name, Address, contact number, and google map's locations. And Add Exercise options we put

exercise Photograph, exercise name, exercise description, exercise level, exercise category, and video ID from YouTube. All admin options are the same as their requirement.
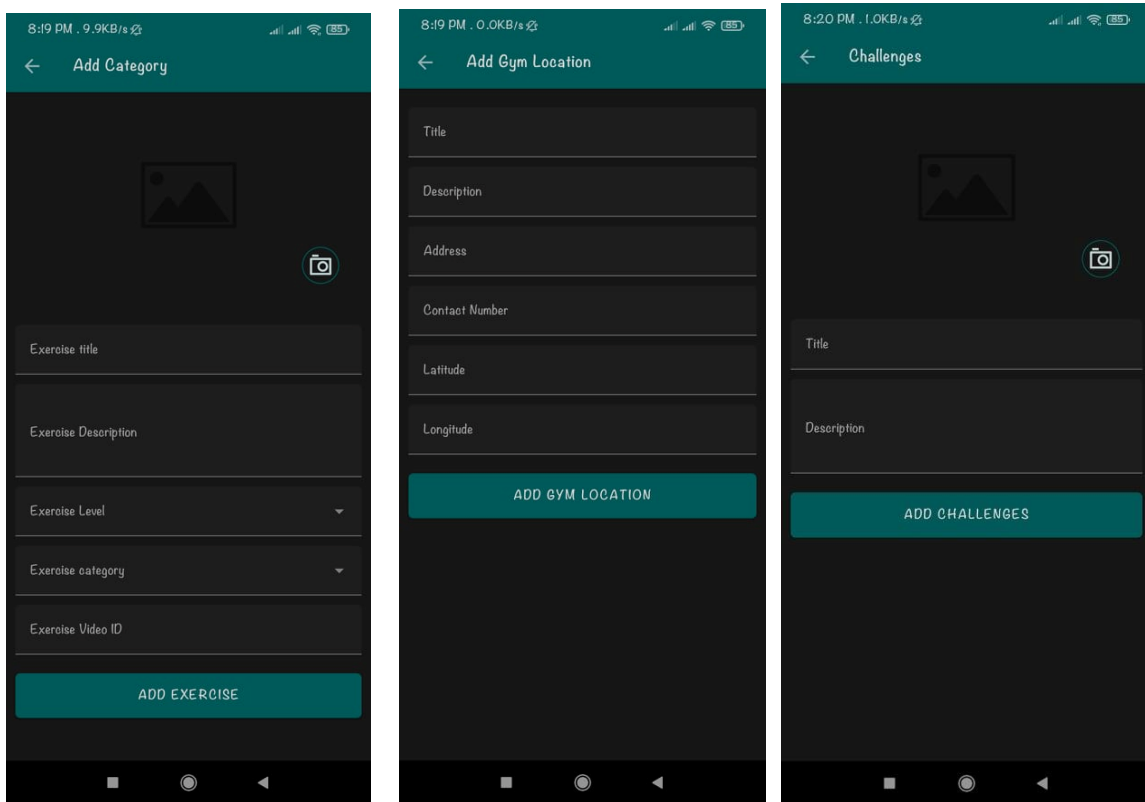

Figure 5.3.3: Admin panel 2

5.4 Test Result and Report

A test report is required to reflect the test results in a formal way, which gives an opportunity to quickly estimate the test results. Test results are a document that records data from an evaluation study on an organization's approach, defines the environment or operating conditions, and compares test results with objectives. So, after we finally define the general architecture for the interaction object, we can continue to use the results as an advantage of the final usability test, the problem is how to design a set of examples to make

available to user developers. Interface In the real world, interactions are found almost everywhere. Interaction is the key to making a system dynamic and attractive to the user. It is very important to make a system interactive and we try. As mentioned earlier, we also include some unique features to interact with our system.

5.5 Unit Test

Unit testing is required to ensure that each module in the system is bug-free. It also helps to identify if there are any logical errors in the module. All modules of the system are tested individually during the development process, so this test has been successfully covered.

CHAPTER 6

CONCLUSION AND FURTHER DEVELOPMENT

6.1 Discussion and Conclusion

We know that health is wealth. Health and fitness are related to each other. For people of all ages, regular exercise is essential for fitness. Because health and fitness can help us achieve a lot of happiness in our life. Physical exercise increases a person's physical ability and physical well-being. Our application users will be able to get the right idea about physical exercise in their spare time and users can monitor their health.

6.2 Scope For Further Development

In the future, home workouts may be provided in this project. Through which users have the right idea to work out from home. We know that exercising in the gymnasium is expensive and time-consuming. But using our application will save users time and money. Increase the location area more in the future. As a result, users can easily find out the location of the gymnasium in its vicinity. In the future, diet recipes may be provided in this project. Because many users can't cook properly even after looking at the diet menu. By adding AI in this project, the technology of tracking user movement and workout can be added. As a result, the user will be able to count the step and duration.

REFERENCES

[1] Use case diagram from licidchart, Available at<< https://www.lucidchart.com/pages/uml-use-case-diagram >>, last accessed on 17 November 2021 at 1:45 am.

[2] Waterfall model from tutorials point, Available at<<https://www.tutorialspoint.com/sdlc/sdlc_waterfall_model.htm >>, last accessed on 10 November 2021 at 10:25 pm.

[3] Software Requirement from studocu, Available at << https://www.studocu.com/row/document/sichuan-university/software-engineering/software-requirements-specification-gym-app/8216521 >>, last accessed on 2 November 2021 at 8.00 pm.

[4] State diagram from Wikipedia, Available at << https://en.wikipedia.org/wiki/State_diagram >>, last accessed on 19 State diagram 2:00 am.

[5] Project management life cycle from invensislearning, Available at << https://www.invensislearning.com/blog/5-phases-project-management-lifecycle/ >>, last accessed on 25 august 2021 at 2:30 am.

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