Project report

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Present to

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OVERVIEW OF APPLICATION

Burn Cals is an application that helps users to manage their lifestyle activities for having good health, including calculating food calories and recording exercises' results. For the first step in the application, users have to login and input their information, such as name, gender, date of birth, height and weight. After that, users can add exercises that they want to record to the main page. For example, users can add running, indoor running, cycling and walking exercises. Besides, users can add details of each food that they eat, after that the application will calculate total calories. For the application working, it collects data from every exercise and displays the result day by day, an average of week and average of month.

OBJECTIVE

We have designed the Burn Cals application for calculating food calories and record exercises' results to generate the total calories that the user gains and burns day by day. Furthermore, users can check and look up the result day by day, average of the week, and average of the month. Objective of this project, we need to create application that can keep user's exercises activity and eating activity in local storage of user's device and use those data to calculate remaining calories, that user can eat in each day, week, or month. Moreover, this application needs to use authentication method to verify the user before the user use this application.

THE APPLICATION DESIGN

The application design of Burn Cals application, Burn Cals is separated into main 7 parts. The first part is login that users can login by using Google accounts, that is recorded by firebase authentication. The second part is registration activity, that it needs to fill all personal information which includes gender, date of birth, height, and weight. The third part is the main page which show burned calories, eating calories, daily remaining calories, user's weight, BMI, daily excessed calories, and needed exercises time. The fourth part is the food calories' details page, it displays the calories of each food from users input, that is users eat in one day. The details of each food come from the adding food page that users can add the details of food such as food's name, location, the grams of carbohydrate of the food, the grams of protein of the food, the grams of fat of the food. The fifth part is recording the details of exercise activity during the exercise and display detail of each exercises when user use this application that will filter by date. The sixth part is display summary of burned calories and eaten calories, that user can see summary in daily, weekly, or monthly and they can filter by picking up a date. Lastly, the last

part is user activity, that can show all personal information and edit personal information. Moreover, user can change daily goal of exercises and eating limit.

THE SYSTEM ARCHITECTURE

Application:

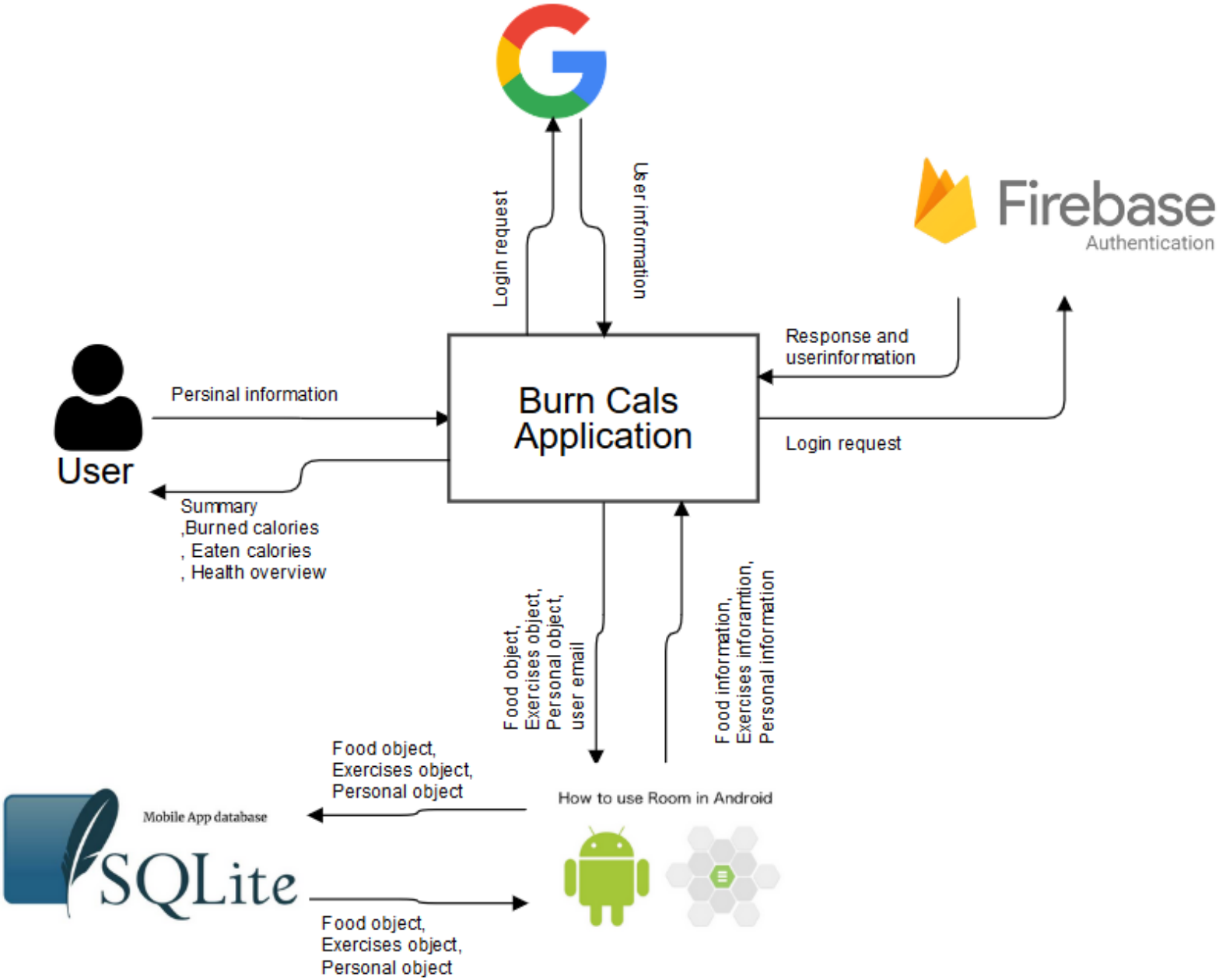
In application part, there are 3 main activity, which are login activity, register activity, and main activity. and 7 fragment activity, those are in main activity. For fragment activity, they are health activity, exercises activity, food activity, add food activity, show record food calories activity, show record exercise calories activity, and user activity. In our application can call each fragment by using item in bottom navigation bar.

Database:

In database part, we use SQLite database to record all information into local storage. Room is an ORM for SQLite database in android. Moreover, we have used injection to make it easy to call database in multiple activity and use DAO to execute query to get information from the entities, there are 3 main DAO, those are user, food, and exercises, those use to make transactions with the database. Furthermore, there are three main entities, those are user entity, that will record all user information such as first name, last name, weight, height, email, image that record image URL, and gender, food that will record all food record, and exercises entity. In food entity, its records food name, food image, location, amount of carbohydrate, protein, and fat. In exercises entity, its records exercises name, exercises image, location, number of burned calories.

Authentication:

In the authentication part, we use Firebase Authentication provides backend services, easy to- use SDKs, and ready-made UI libraries to authenticate users to your app. It supports authentication using passwords, phone numbers, popular federated identity providers like Google, Facebook and Twitter, and more. Moreover, Firebase Authentication integrates tightly with other Firebase services, and it leverages industry standards like OAuth 2.0 and OpenID Connect, so it can be easily integrated with your custom backend. And in this part, we design to use Google as a provider. Because Google has the Google Authenticator which is a software-based authenticator by Google that implements two-step verification services using the Time-based One-time Password Algorithm and HMAC-based One-time Password algorithm, for authenticating users of software applications. When logging into a site supporting Authenticator (including Google services) or using Authenticator-supporting third-party applications such as password managers or file hosting services, Authenticator generates a six- to the eight-digit onetime password which users must enter in addition to their usual login details.


Login request
User information
Firebase
Authentication
Response and
userinformation
Persinal information
Burn Cals
Application
User
Login request
Summary
,Burned calories
, Eaten calories
, Health overview
Food object,
Exercises object,
Personal object,
user email
Food information,
Exercises inforamtion,
Personal information
Food object,
Exercises object,
Personal object
How to use Room in Android
Mobile App database
SQLite
Food object,
Exercises object,
Personal object

First Activity: Login Activity

Our first activity is Login activity. In this activity we user firebase authentication that link with google authentication. Google authentication use to get user account from google and use firebase authentication to record user account. It can make people don't need to log in every time when they restart the application. In addition, in this activity can check user, who is a first time log in after download application. If user is a first-time login user, it will start register activity and sent user information such as user's name and picture to register activity. If user have already logged in, it will retrieve user information from database by using user's email and start main activity with user information object.

Second Activity: Register Activity

Second activity is register activity. This activity retrieve user information from login activity. It can retrieve other information such as weight, height, gender and date of birth, from user. When user tab register button, this activity is recording all of user in formation to database, that is a local database and start main activity. Moreover, it will send user information object to main activity by using function, that is in companion object.

Third Activity: Food Activity

For this activity, it is Food activity. In this activity, it gets all food record from room database and filter those food via added date. Moreover, user can choose date from calendar intent and that date will use to filter food from room database. In addition, it uses recycle view to display food record. Furthermore, in each food card contain food name, food's calories, food location and food base64 string picture those retrieve from room database.

Fourth Activity: Add Food Activity

Add food activity is an activity, that user can put food information into the system. In addition, user can put food information and food picture from smart phone camera and record as base64 string. When user click add button this activity will add food information into local database and go back to food activity with updated record information.

Fifth Activity: Exercises Activity

For this activity, it is Exercises activity. In this activity, it gets all exercises record from room database and filter those exercises via added date. Moreover, user can choose date from calendar intent and that date will use to filter food from room database. In addition, it uses recycle view to display exercises record. Furthermore, in each food card contain exercises name, burned calories, location and base64 string picture those retrieve from room database as.

Sixth Activity: Add Exercises Activity

Add food activity is an activity, that user can put exercises information into the system. In addition, user can put exercises information and exercises picture from smart phone camera and record as base64 string. When user click add button this activity will add exercises information into local database and go back to exercises activity with updated record information.

Seventy Activity: User Activity

User activity, it will show all information of user, that retrieve from login activity or register activity. In this activity, it has a logout button that will sign out google account and firebase authentication. Moreover, it can show user profile image by using glide for retrieve image from image URL. Moreover, user can edit user personal information and update exercises goal and eating limit, those will save to json file.

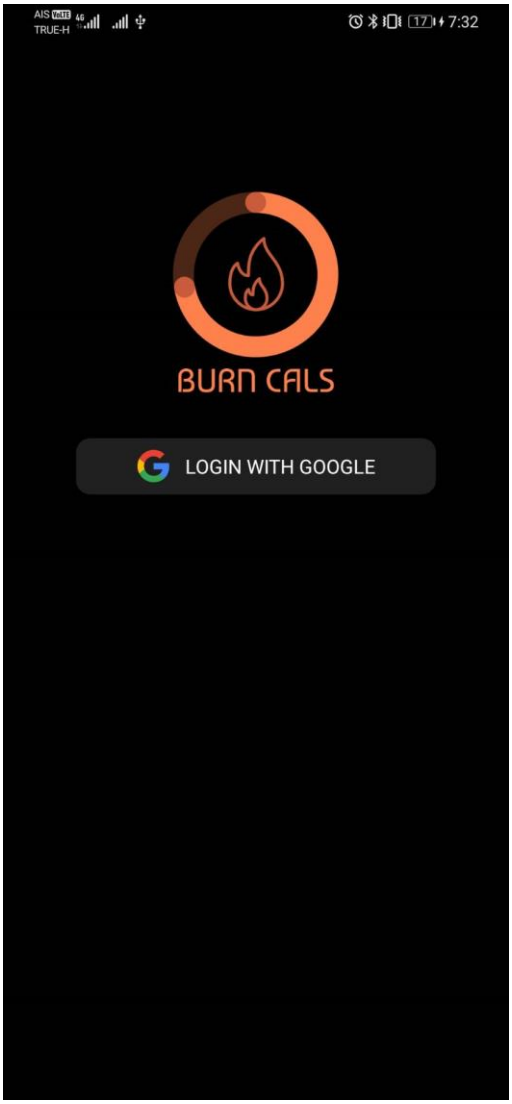
Eight Activity: Health activity

Health activity can show over all of user shape, daily eaten calories remaining, daily eaten calories, daily burned calories, and excessed calories, that user need to burn.

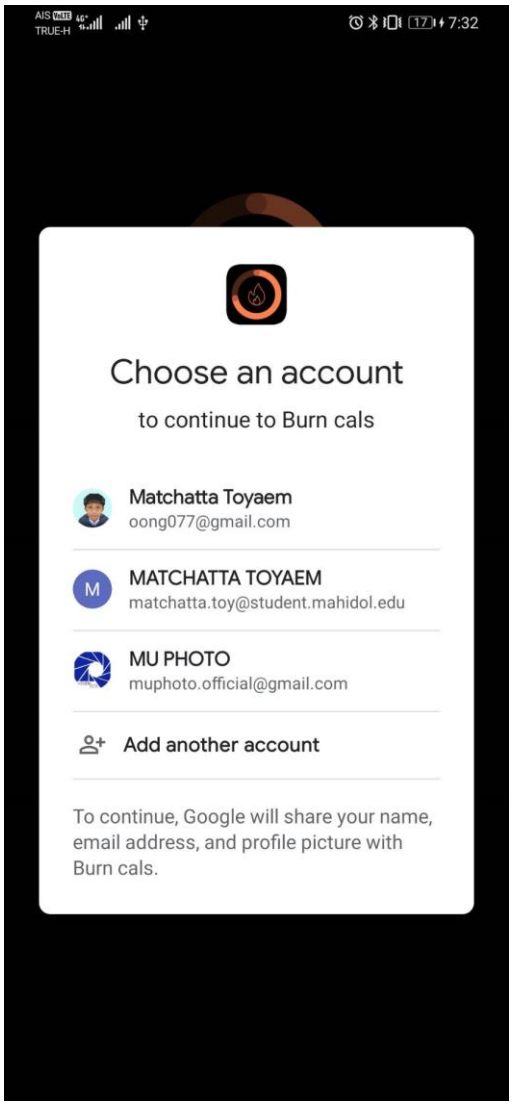
Ninth Activity: Record Activity

Record activity, it will show burned and remaining calories in week, day, and month. Moreover, it will filter those calories via added date, that user can pick date from date picker dialog to see activity in that day.

Screen short

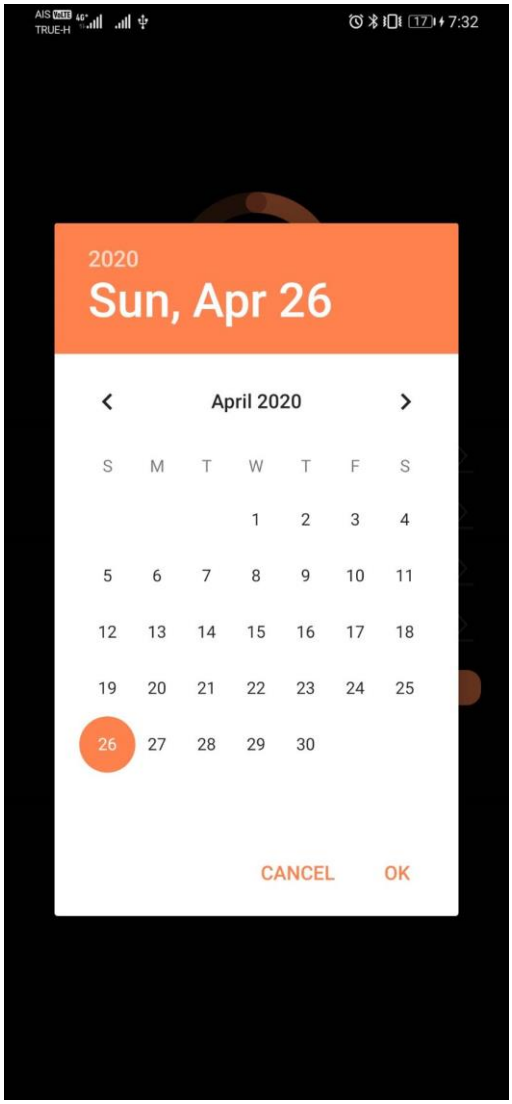


Login activity

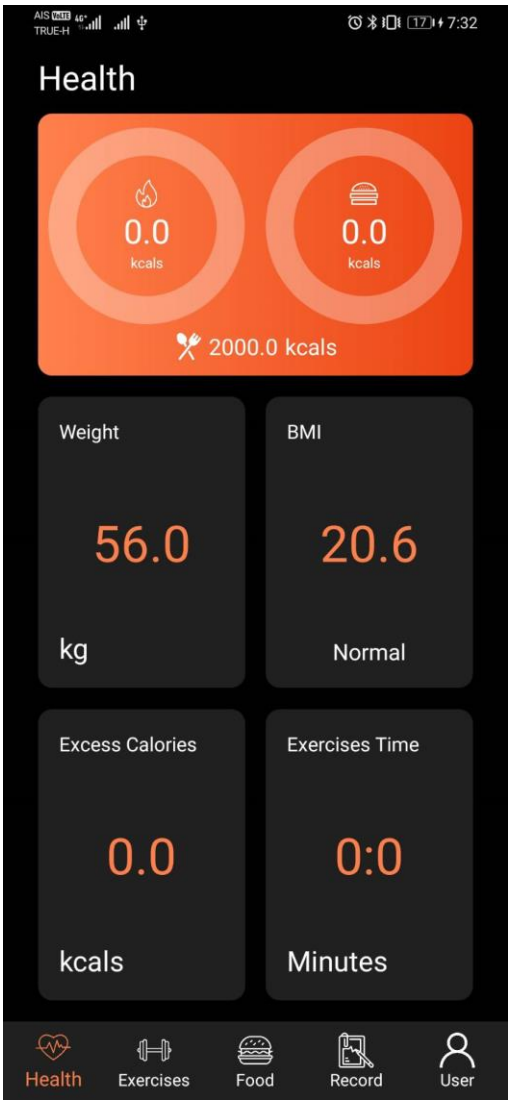


Login activity

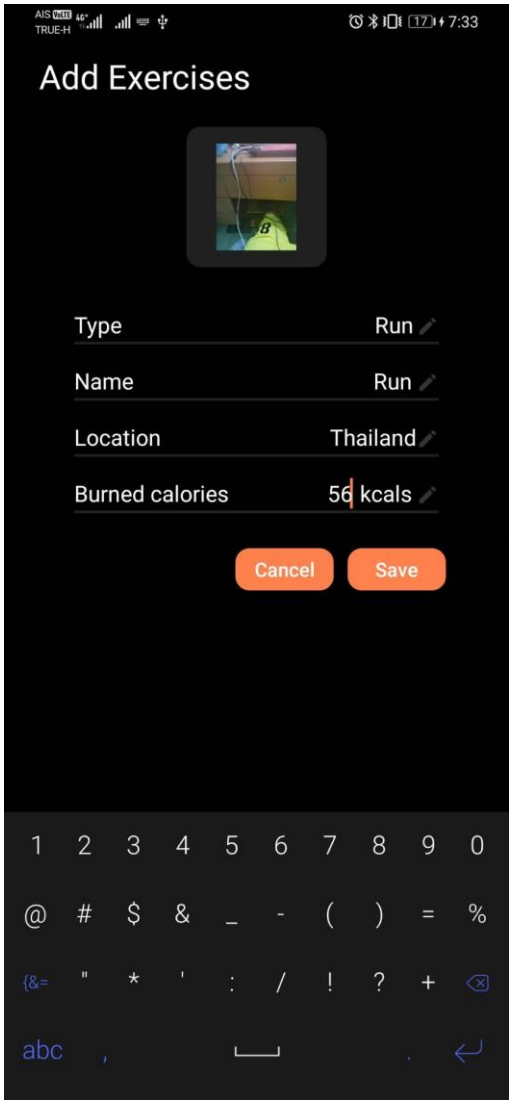
Register activity



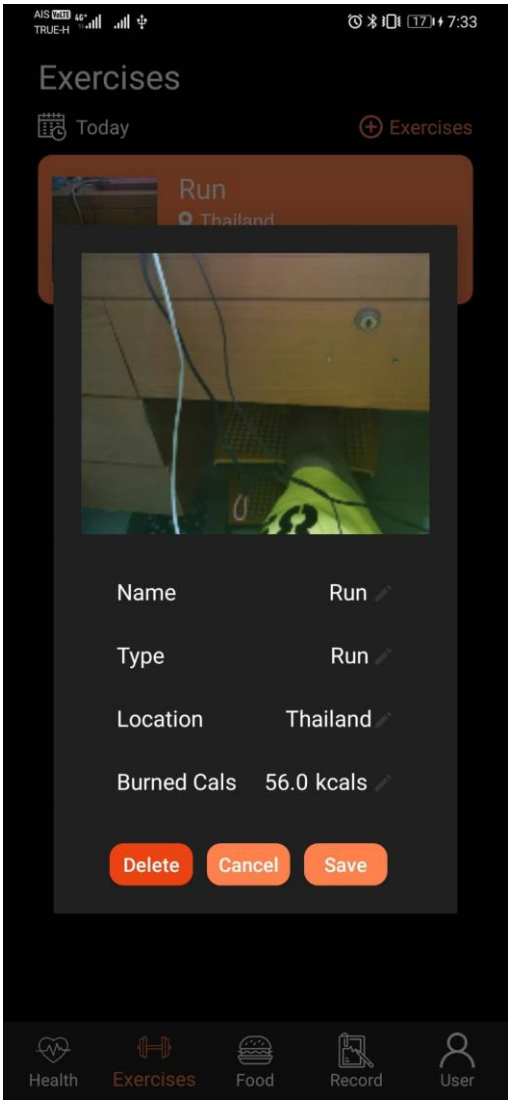
Register activity



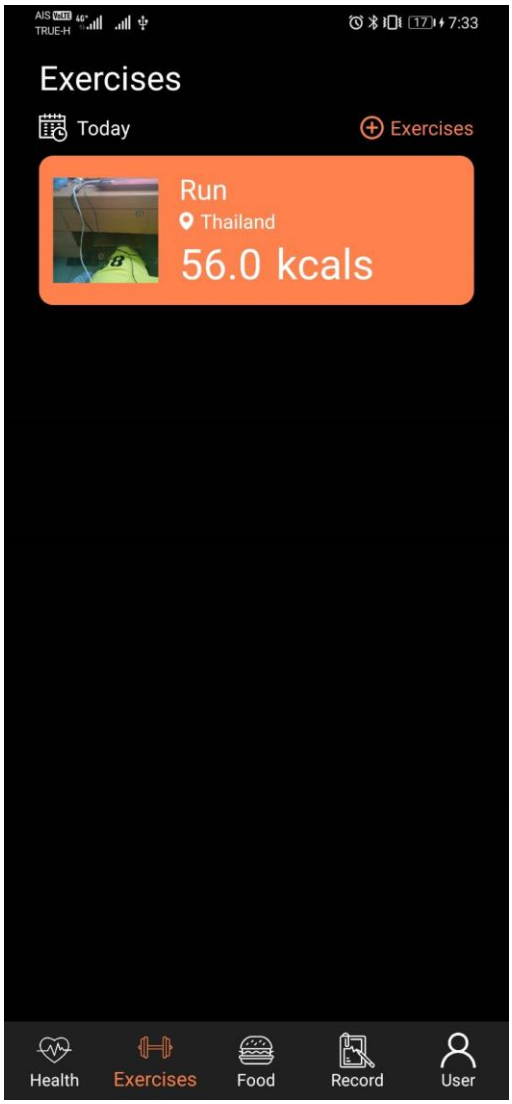
Health activity



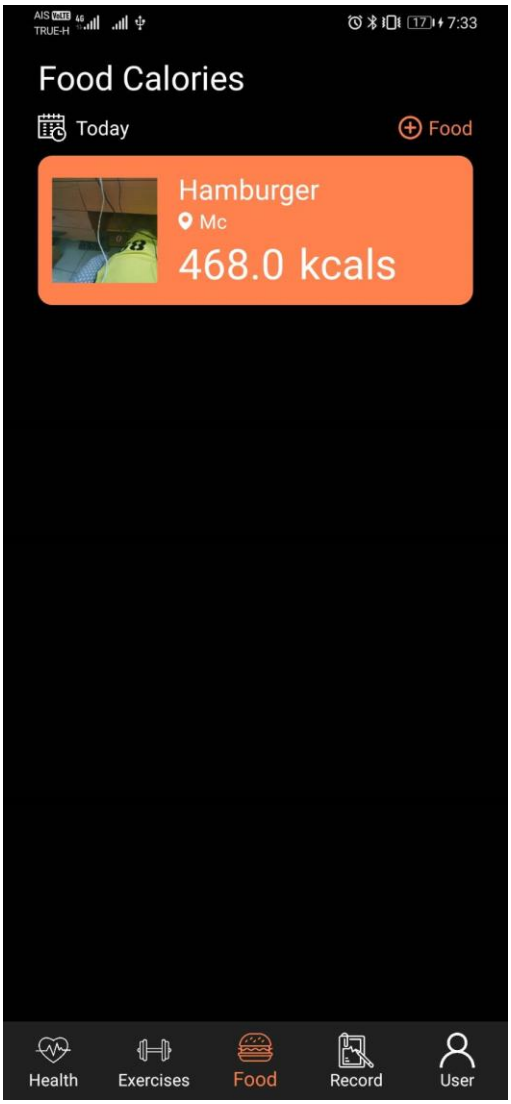
Add exercises activity



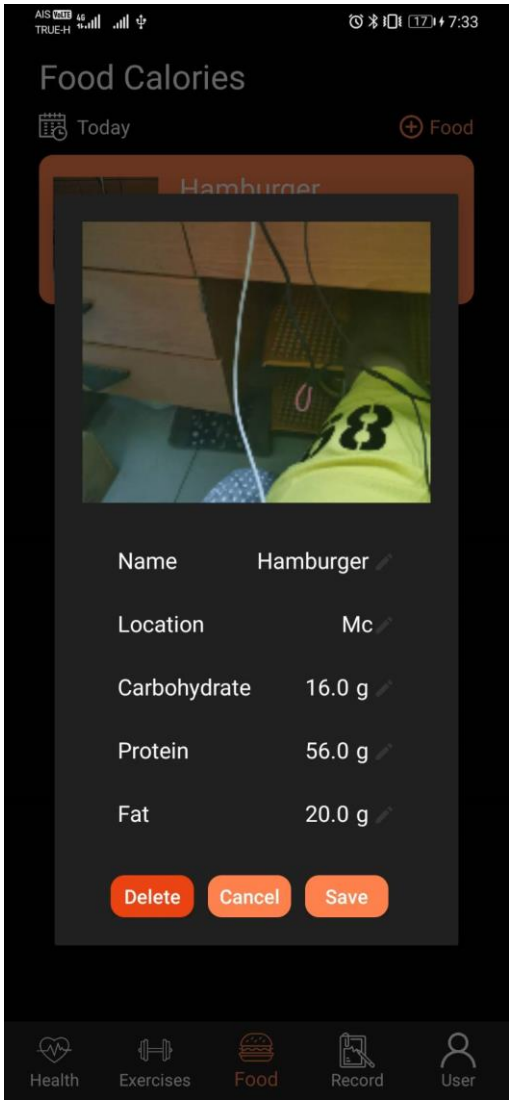
Exercises activity



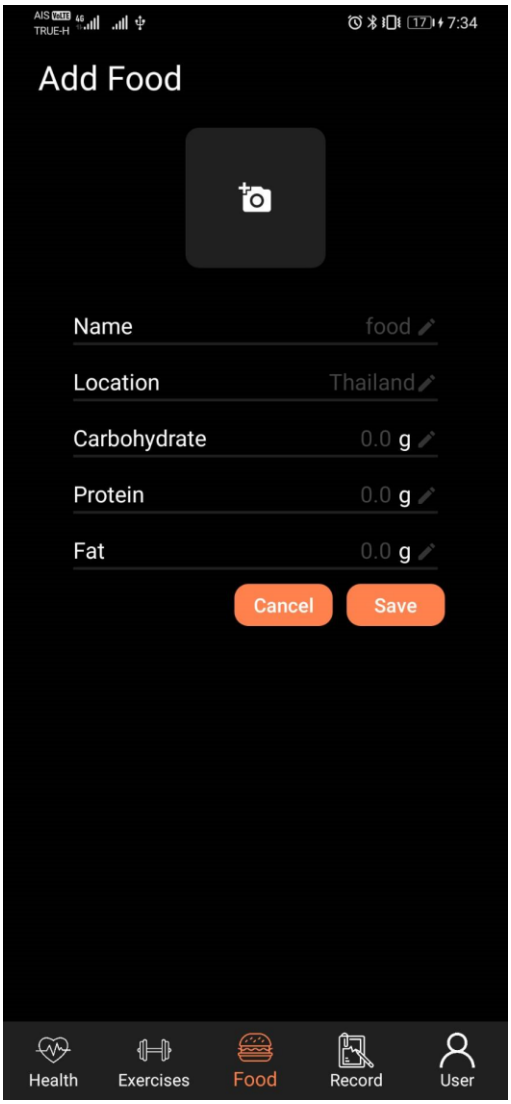
Exercises activity



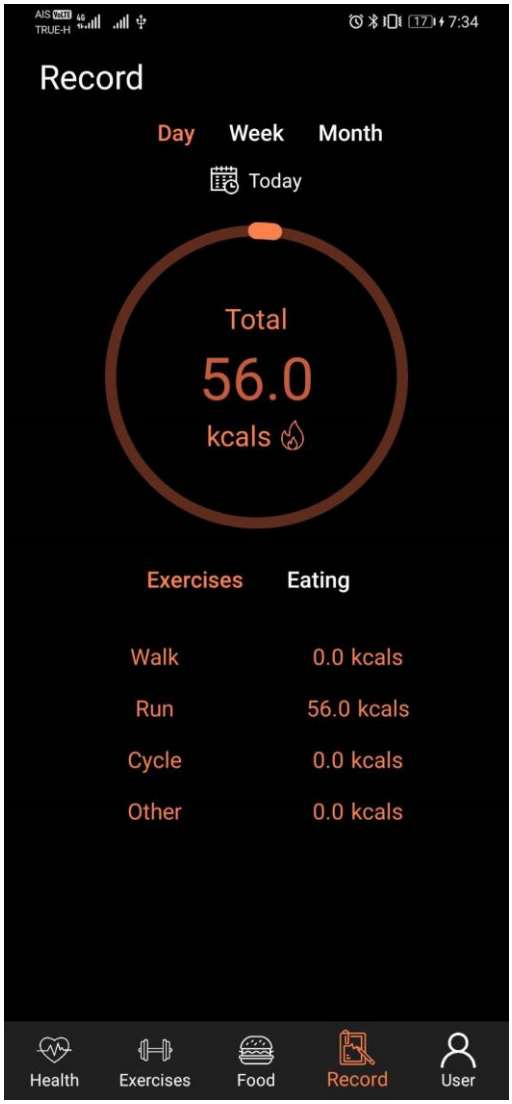
Food activity



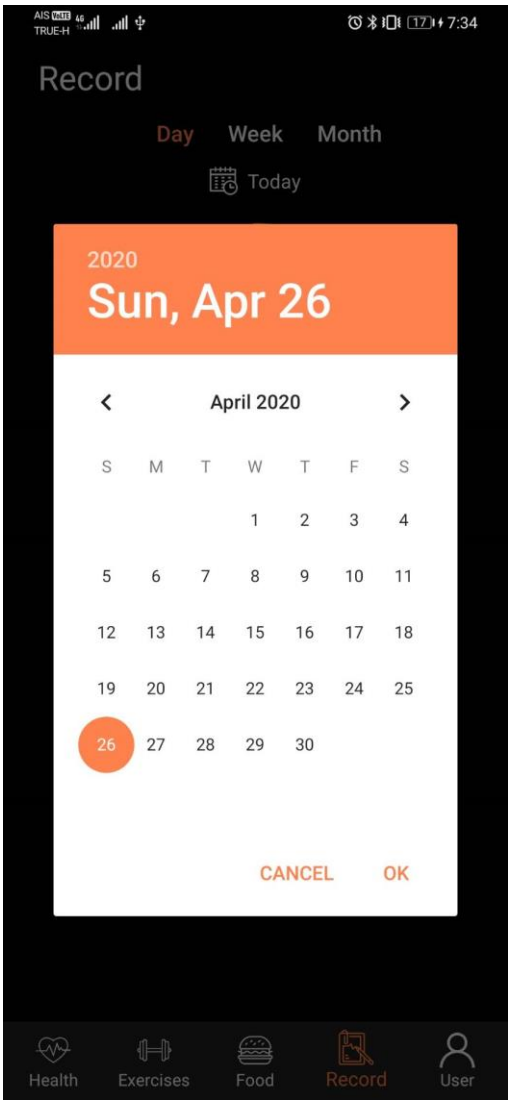
Food activity



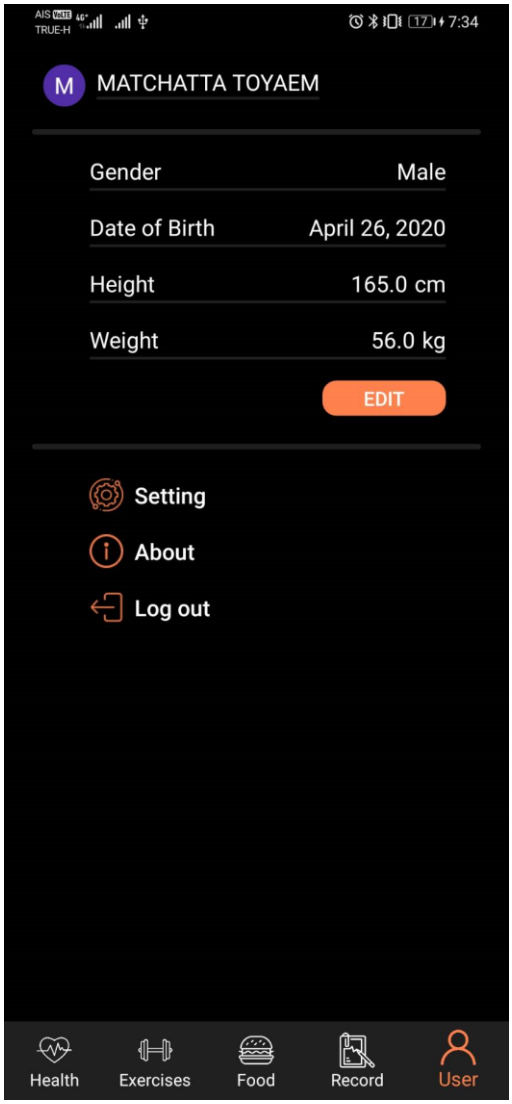
Add food activity



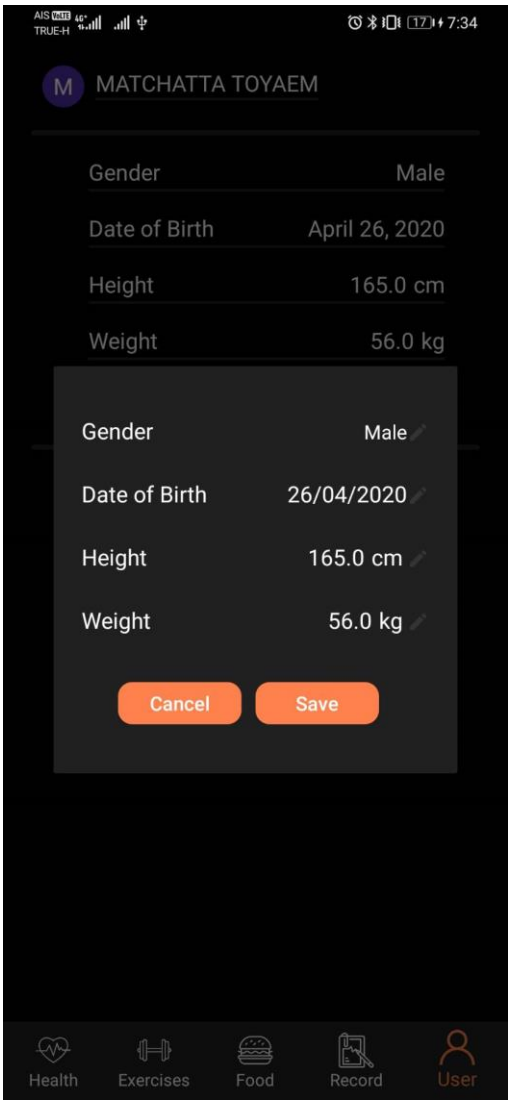
Record activity



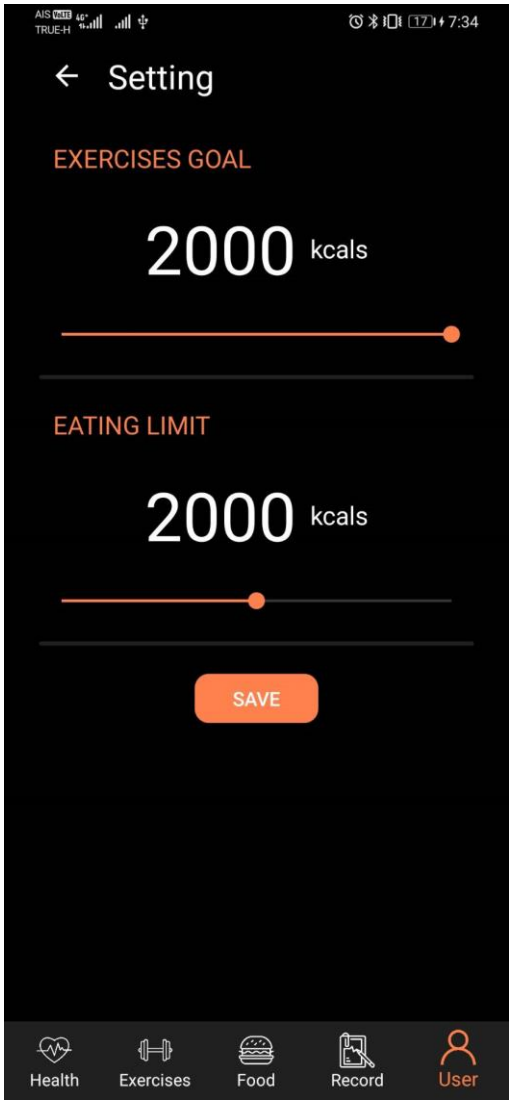
Record activity



User activity



User activity



Setting activity

(In user activity)