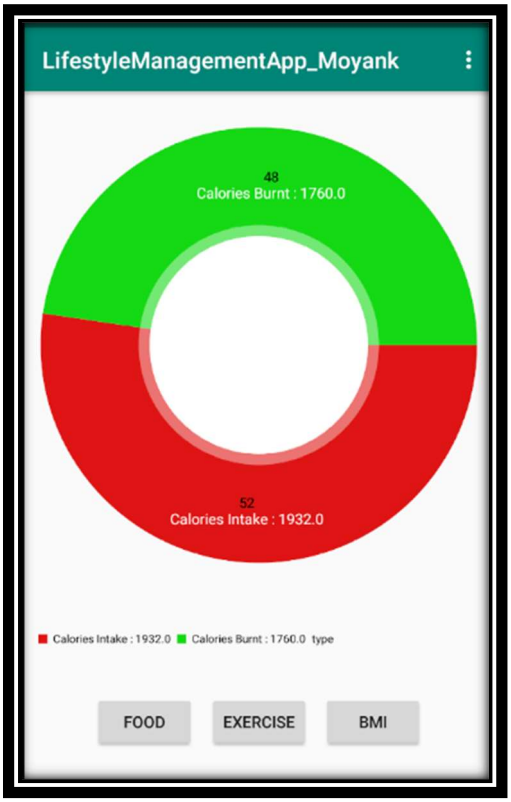


LIFESTYLE MANAGEMENT APP

Abstract

The following document proposes a simple android application developed in Java as part of the subject “Android Application Development”. The main purpose served by this application is to provide users with insights about their day-to-day life with respect to the number of calories they intake and the calories they burn. The application given here also provides the user with utility functions to track their lifestyle. The project is done as a proof of concept.

MOYANK GIRI

4th Semester, CSE

Contents

Problem Statement

Design an android application in order to track and provide insights about a user's lifestyle with respect to health using graphs and utility functions

Introduction

What?

An android application that provides users insights about their lifestyle with respect to their inputs.

Why?

In order to provide user a way to know how healthy their lifestyle is and how they might improve it.

How?

The main procedure includes taking inputs from the user about the food they have taken and the exercise they have done in the day. Based on the user's input the calories intake and burnt is calculated by using values stores in an SQLite table and this value is then added to the total calorie intake/calorie burnt value of a particular day.

Who?

This application is designed to be used by any user of any age with the sole purpose to provide insights about the user's lifestyle.

The following document proposes an application which is designed for helping a user in tracking their daily lifestyle and provide them with certain insights on the same.

Solution Architecture

- The user is allowed to sign up and create an account by using their email addresses or sign in using a pre-existing account
- The application makes use firebase in order to provide the user with authentication.
- All accounts created are stored in firebase for authentication purposes.
- The user is given three tries to login into the account. After three unsuccessful attempts, the sign in button is disabled
- The following describes the various technologies used in the application:
    1. Building the Application: Java programming language
    2. Database: SQLite Database
    3. Authentication and user account storage: Firebase
- The application described here consists of three main features namely:
    1. Calorie Intake Calculation
    2. Calorie Burnt Calculation
    3. BMI calculator
- The following shows a block diagram to describe the flow of the application

Block Diagram:

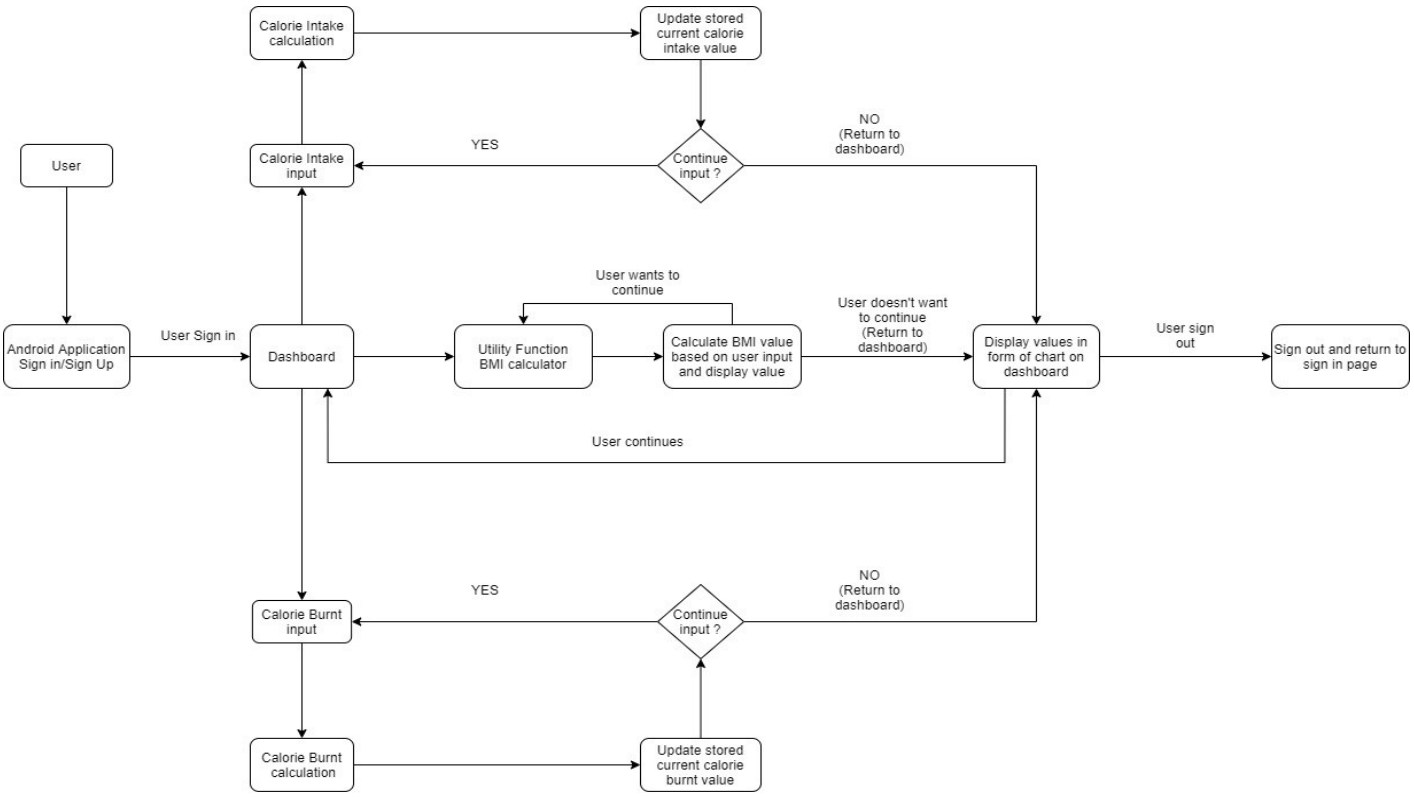


Fig: Block Diagram to display App working

Calorie Intake Calculation

- This part of the application is used to by the user to track their food habits and the calories they take in a particular day.
- The data used for this part is mentioned in Appendix2
- Calorie intake is calculated by the following steps:
  1. The user selects the food item from an auto-complete text box which consists of all food items listed in the database
  2. The user enters the quantity of selected item consumed (in g or ml based on the food item)
  3. The user selects the date of the consumption of the particular food item
  4. The user confirms entry
  5. The calories of the food item selected are fetched from the database. The database consists of the calories in food per 100g (or ml)
  6. The calorie intake is calculated as follows:

$$Calorie\ Intake = (Calories\ in\ food\ item) * (\frac{Amount\ consumed\ by\ user\ (in\ g\ or\ ml)}{100})$$

  7. The calculated calorie intake value is added to the stored calorie intake value which is stored in the user's database under the date provided.

Calorie Burnt Calculation

- This part of the application can be used by the user to track the amount of physical exercise and activity the body gets in a particular day.
- The data used for this part is mentioned in Appendix3
- Calorie burnt is calculated by the following steps:

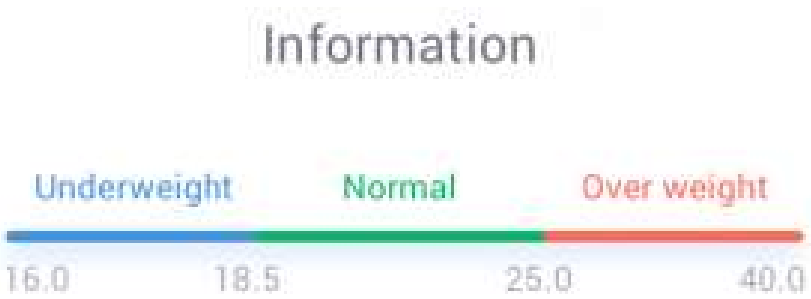
  1. The user selects the activity/exercise from an auto-complete text box which consists of all activity/exercise listed in the database
  2. The user enters the time he/she spent on the activity/exercise
  3. The user selects the date when the activity/exercise was done
  4. The user confirms entry
  5. The calories burnt from the selected exercise are fetched from the database. The database consists of the calories burnt per exercise per hour
  6. The calorie burnt is calculated as follows:

$$Calorie\ Burnt = (Calories\ Burnt\ in\ exercise) * (\frac{Time\ (in\ hrs)}{1})$$

  7. The calculated calorie burnt value is added to the store calorie burnt value which is stored in the user's database under the date provided.

BMI Calculator

- A utility tool provided to users to calculate Body Mass Index (BMI)
- Body mass index (BMI) is a measure of body fat based on height and weight
- The inputs required to calculate the Body Mass Index (BMI) of a user are:
    - Height of user
    - Weight of user
- The ranges of BMI value are given as follows:
    - BMI greater than 25 implies overweight
    - BMI in range 18.5 to 25 implies normal weight
    - BMI lesser than 18.5 implies underweight



User Interface and Outputs

Login and Signup Page:

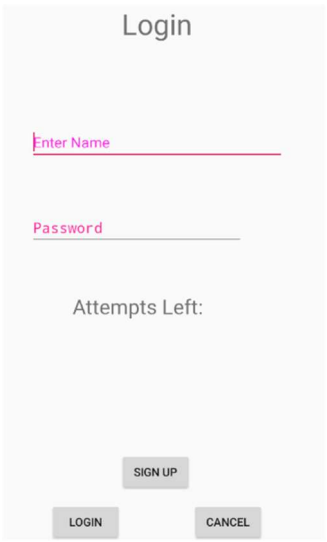


Fig: Login Page

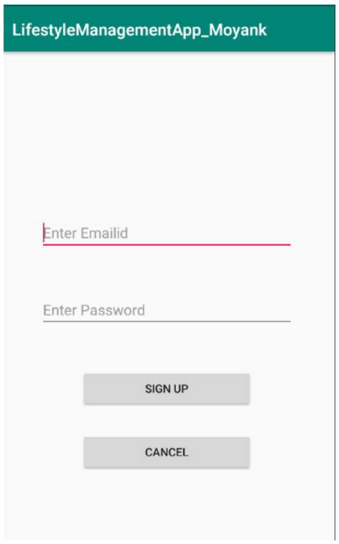


Fig: Signup Page

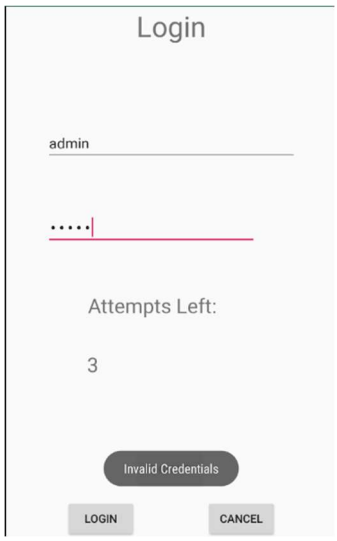
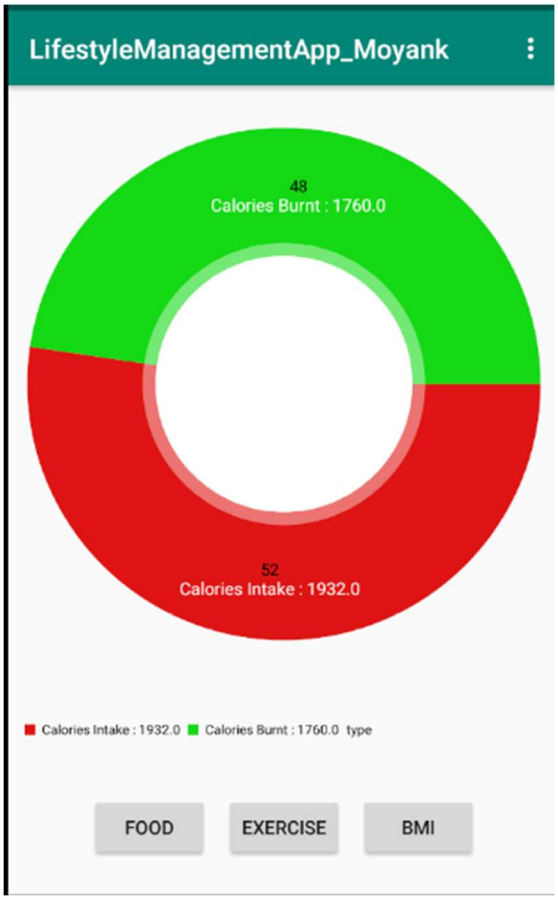


Fig: Invalid Login Credentials

Dashboard:



Calorie Intake Input:

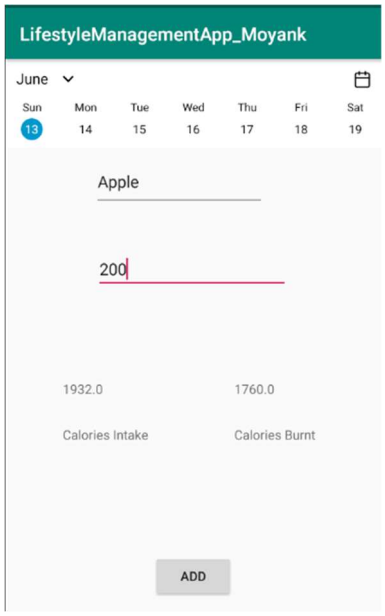


Fig: Calorie Input with all values

Fig: Error for invalid number of inputs

Calorie Burnt Input:

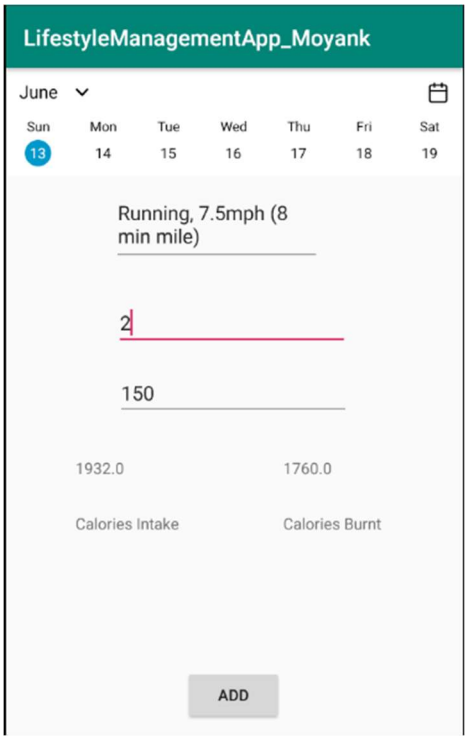


Fig: Calorie Burnt with all values

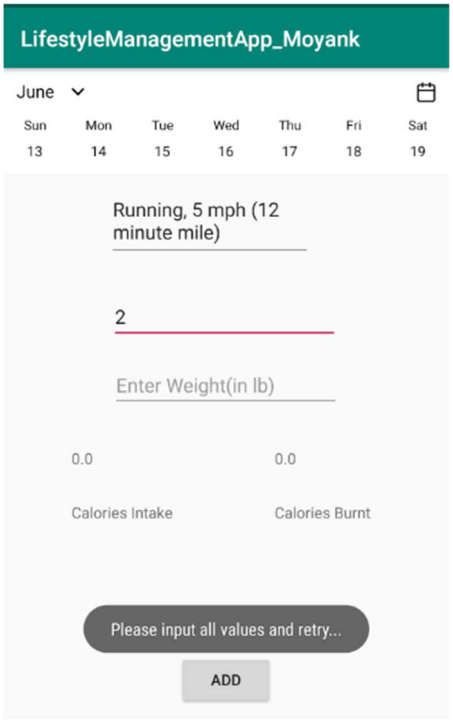
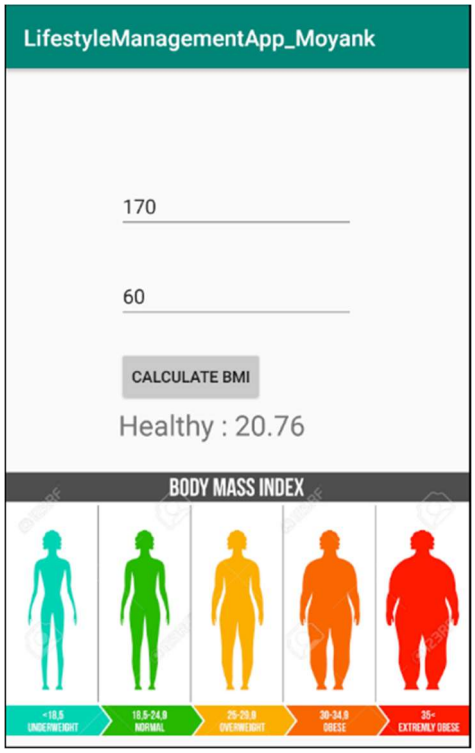
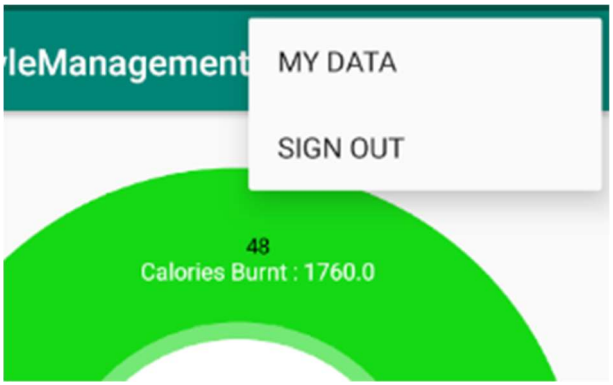


Fig: Error for invalid number of inputs

BMI Calculator



Options Menu



User Data Display

Appendix 1: User manual:

This part of the documentation describes about the method of usage, the necessary inputs and the output expected from a component in the application

How to Login?

- This part of the application is used for authentication of user
- The user will be prompted to login first
- The user needs to provide an email id and password which they had used to sign up on the application
- The user is given 3 tries for logging in to their account. In case the user fails to provide a valid credential to login for 3 times in a row, the login button is then disabled
- On successful login, the user is directed to the dashboard

How to Signup?

- This part of the application is used to authenticate new users and get them started with the application
- The user can navigate to this part of the application by clicking the “SIGNUP” button on the login page
- The inputs required by the user are:
    - An email id
    - A password of min length 6
- If the user gives a password of length lesser than the 6, the user is asked to re-enter another password with a length greater than 6
- Upon a valid entry, the user is signed up to the application and their credentials are added to the database
- The user will now be able to use their credentials to login into the application

How to use Dashboard?

- Once the user is logged in, they land at the dashboard of the application
- This part of the application displays a summary of the current day’s calorie intake and calorie burnt
- This part is mainly used to display the results and to navigate to different parts of the application
- The user can from the dashboard move to any of the following:
    - Calorie Intake input
    - Calorie Burnt input
    - BMI Calculator

How to find Calorie Intake?

- Once the user had logged in, they can navigate to this part from the dashboard using the button named “FOOD”
- The required inputs are:
    - Food Item taken (from an autocomplete text view)
    - Amount taken (in g or ml)
    - Date of intake
- For invalid number of inputs, the application asks the user to enter all necessary values for calculation
- The calculation is done as stated above and the value is stored under the specified date in the database
- The output on this part would be:
    - A visual display of calorie intake and calorie burnt for the current date
    - Proper entry to database for the mentioned inputs

How to find Calorie Burnt?

- Once the user had logged in, they can navigate to this part from the dashboard using the button named “EXERCISE”
- The required inputs are:
    - Exercise/ Activity done (from an autocomplete text view)
    - Time spent on the activity (in hrs.)
    - Date at which it was performed
- For invalid number of inputs, the application asks the user to enter all necessary values for calculation
- The calculation is done as stated above and the value is stored under the specified date in the database
- The output on this part would be:
    - A visual display of calorie intake and calorie burnt for the current date
    - Proper entry to database for the mentioned inputs

Using the BMI Calculator

- Once the user had logged in, they can navigate to this part from the dashboard using the button named “BMI”
- This part of the application is a utility function given to the user in order to calculate their Body Mass Index (BMI)
- Required Inputs:
    - Height (in cm)
    - Weight (in kg)
- The output from this is:
    - The calculated BMI of the user based on their inputs
    - Result to specify whether the user is underweight or normal or overweight based on the BMI calculated

Usage of User Data Display

- Once the user had logged in, they can navigate to this part from the dashboard using the options menu on the top-right corner (the three dots) and selecting the “MY DATA”
- This part is mainly used to provide a display of the user’s entries on various dates and the calorie intake and burnt on those dates

Appendix 2: Food Calorie Database

The following table displays a sample of the SQLite Database used for calculation of calorie intake. The total number of entries in the actual database is 568 food items

Food	Serving	Calories
3 Musketeers	100g	400 cal
Acai	100g	70 cal
Acerola	100g	32 cal
After Eight	100g	452 cal
Airheads	100g	375 cal
Alligator	100g	232 cal
Almond Milk	100ml	17 cal
Almond Roca	100g	571 cal
Anchovy	100g	131 cal
Angel Delight	100g	451 cal
Angel Food Cake	100g	258 cal
Animal Crackers	100g	446 cal
Apple	100g	52 cal
Apple Cake	100g	252 cal
Apple Cobbler	100g	198 cal
Apple Crisp	100g	156 cal
Apple Crumble	100g	156 cal
Apple Pie	100g	237 cal
Apple Strudel	100g	274 cal
Apple Turnover	100g	348 cal
Applesauce	100g	68 cal
Applesauce Cake	100g	358 cal
Apricot	100g	48 cal
Arby's Grand Turkey Club	100g	210 cal
Arby's Reuben	100g	208 cal
Arby's Roast Beef Classic	100g	234 cal
Arby's Roast Beef Max	100g	234 cal
Artichoke	100g	47 cal
Arugula	100g	25 cal
Asian Pear	100g	42 cal

Appendix 3: Calorie Burnt in Activity/Exercise Database

The following table displays a sample of the SQLite Database used for calculation of calorie burnt. The calorie burnt values (in cal) for 4 weights were used for calculation

The total number of entries in the actual database is 249 Exercises/Activities

Activity	130lb	155lb	180lb	205lb
Aerobics, general	384.0	457.0	531.0	605.0
Aerobics, high impact	413.0	493.0	572.0	651.0
Aerobics, low impact	295.0	352.0	409.0	465.0
Aerobics, step aerobics	502.0	598.0	695.0	791.0
Archery	207.0	246.0	286.0	326.0
Backpacking, Hiking with pack	413.0	493.0	572.0	651.0
Badminton	266.0	317.0	368.0	419.0
Bagging grass, leaves	236.0	281.0	327.0	372.0
Ballet, twist, jazz, tap	266.0	317.0	368.0	419.0
Ballroom dancing, fast	325.0	387.0	449.0	512.0
Ballroom dancing, slow	177.0	211.0	245.0	279.0
Basketball game, competitive	472.0	563.0	654.0	745.0
Basketball, officiating	413.0	493.0	572.0	651.0
Basketball, shooting baskets	266.0	317.0	368.0	419.0
Basketball, wheelchair	384.0	457.0	531.0	605.0
Bathing dog	207.0	246.0	286.0	326.0
Billiards	148.0	176.0	204.0	233.0
Bird watching	148.0	176.0	204.0	233.0
Boating, power, speed boat	148.0	176.0	204.0	233.0
Bowling	177.0	211.0	245.0	279.0
Boxing, in ring	708.0	844.0	981.0	1117.0
Boxing, punching bag	354.0	422.0	490.0	558.0
Boxing, sparring	531.0	633.0	735.0	838.0
Calisthenics, light	207.0	246.0	286.0	326.0
Calisthenics, vigorous, pushups, situps…	472.0	563.0	654.0	745.0
Canoeing, camping trip	236.0	281.0	327.0	372.0
Canoeing, rowing, light	177.0	211.0	245.0	279.0
Canoeing, rowing, moderate	413.0	493.0	572.0	651.0
Canoeing, rowing, vigorous	708.0	844.0	981.0	1117.0
Carpentry, general	207.0	246.0	286.0	326.0