Functional Requirement Documentation

1. Initialization of the product (Description of User Interface)
   1. Product Description

The product is an android application integrating various governmental datasets (including air-quality, weather information, car-park availability, food nutrition’s data and other health-related data) to provide beneficial and accessible information to target users who care about personal health conditions and need convenient application to perform certain task.

* 1. UI description

The sections 3-6 each stand for a relatively independent subsection of the application.

* 1. Each subsection shall be accessed by touching a button representing itself on a bar containing all the icons of the subsections at the left side of the application.
  2. The bar of icons shall be displayed by swiping right and shall be hidden when any of the button is touched.

1. User Registration
   1. User Registration Process
      1. Upon initialization of the application, the user shall be asked to create his/her own account by providing required information.
      2. The following information shall be collected, and the completeness of the information shall be tested to ensure an account to be created successfully:
         1. Username can be a string of lowercase English letters or an email-address.
         2. The string shall only contain English letters with length between 6 – 18.
         3. If the user decides to use email-address as the user name, the user input shall be checked to ensure the format is correct.
         4. Password: shall contain as least one lowercase letter, one uppercase letter, one special character (!@#$%^&\*) and with a length of 6 – 18 characters.
         5. TBC (may have userID (to be seen and displayed by the application), birthday (to calculate age and be used by other health advisory section), Country and Location (not necessary))
      3. The Information provided by users shall be protected and not accessible by other users. (Privacy Protection)

1. Workout Section

The workout section intends to suggest the user suitable exercises regarding to the user’s preferences and purposes and record the amount of exercises that has been performed and the energy consumed (measured in calories) by the user. More importantly the major functionality of this section is to track the exercise records of the user, for instance the duration and distance of a running/cycling/walking exercise. The information of energy consumed can be shared with other sections of the application, for example body health section.

* 1. User Preference
     1. The login status of the user will be checked when the user intends to use the functionality in this section.
     2. If the user is not logged in, the user will be directed to the login page.
     3. Upon initialization, the user shall go through several preference selections, including indoor-outdoor activities, past workout experiences, purpose of exercise, and estimated intensity of everyday workout.
     4. The data shall be used to generate recommended exercise time, activities, and estimated calorie consumption of each activity. (The fitness plan part, I don’t know if we are going to include this)
  2. Record functions

The subsection shall provide the user his/her workout records, exercise type, duration, and calories burnt.

* + 1. In this section, the system shall provide three kinds of activities to be recorded, running, walking, and cycling.
    2. All three activities can by selected on a toolbar at the top, and each shall be having an independent page.
    3. The user must be able touch the corresponding button to select the function the user wants to use.
    4. The system shall use GPS for location and distance records.
    5. If GPS is not available for user or the signal is not enough for the GPS tracking to function properly, then the vibration censor in the phone shall be used instead to estimate the distance, location is omitted.
    6. When the user clicks “Start” button, the recording shall start and the time, the distance, and the calories burnt shall be displayed on the screen.
    7. When the user clicks “End” button, the recording shall end. The time will stop running and distance shall stop growing.
    8. The calories burnt will be synchronized with “daily calories burnt” function in the health section.
    9. The user shall see a bar chart displaying the duration, distance and calories burnt information of exercises on a daily, weekly or monthly basis.
  1. After the user has finished the exercise, the application will suggest a suitable water intake according to the exercise intensity (the detailed algorithm shall be developed later)
  2. Extensions
     1. Cycling Paths (Cycling Path Network && LTA Bicycle Rack)
        1. When the user starts a cycling exercise, a map of Singapore’s available cycling path shall be displayed along with the distance and duration etc. information. The data shall be extracted from Cycling Path Network.

1. Body Health Section
   1. User Input Body Information
      1. The login status of the user will be checked when the user intends to use the functionality in this section. If the user is not logged in, the user will be directed to the login page.
      2. To use the functions in this section, the user shall be asked to input the body weight, height, and expected body weight to the system. And the system will recommend daily calories intake.
   2. Calorie Tracker
      1. User shall be able to input the weight and type of food to record the calorie intake. (There’s no such dataset on gov data but there are other available datasets)
      2. When user input the weight and type for one kind of food, the records shall be added to the daily consumption data and corresponding calorie will be accumulated.
      3. User must be able to see how much calories he/she have intake for the day.
      4. At the end of the day, by comparing the recommended calorie intake and actual calorie data, the application shall notify the user whether he/she has fulfilled the daily goal.
   3. Weight Tracker
      1. User shall be able to input the body weight at any point of time, and a line-chart demonstrating the body weight trend shall be displayed.
      2. User can choose to display weekly, monthly or yearly trend.
   4. Water Consumption Recommendation
      1. The application shall suggest the suitable water intake based on a certain algorithm regarding temperature, exercise intensity, age, and body weight.
      2. The application shall remind the user to drink enough water to stay hydrated for a designated period of time.
2. Discover Section

5.1 After the user entering the Discover Section, the application shall suggest to the user on what sports activity the user could engage in by displaying the name and a picture of the sports activity.

5.1.2 A list of possible sports activities shall be stored in the application’s database. The list of activities is as the following:

|  |  |
| --- | --- |
| Outdoor | Indoor |
| Jogging | Running (On treadmill) |
| Swimming | Yoga |
| Single tennis | Jump rope |
| Basketball | Cardio workout |
| Soccer |  |
| Walking |  |
| Cycling |  |

5.2 The sports activity recommended shall be based on data from weather forecast, Ultraviolet Index and Pollutant Standard Index.

5.2.1 The data used for criteria mentioned in 5.1 shall be taken from data.gov.sg.

5.2.2 The suggested sports activity shall be selected based on the following guideline:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Outdoor Temperature | Rain Prediction | Ultraviolet Index | Pollutant Standard Index |
| Outdoor Activity | Temperature < 35℃ | No rain in next 2 hours | UVI < 8 | PSI < 100 |
| Indoor Activity | Nil | Rain in next 2 hours | Nil | Nil |

5.2 There shall be a button named “Recommended Venue”. By tapping on the button, the application shall suggest a venue according to the activity recommended.

5.2.1 The type of facilities/venues recommended should follow the following guideline:

|  |  |
| --- | --- |
| Facilities/Venue | Activity |
| Gym | Running (On treadmill), Yoga, Jump Rope, Cardio Workout |
| Park | Jogging, Cycling, Walking |
| Sports Field | Single Tennis, Basketball, Soccer |
| Swimming Complex | Swimming |

5.2.2 The facility/venue suggested to the user shall be the one that is the nearest to their current location.

5.3 The user could swipe left on the screen if he dislikes this activity. After swiping left, display of the current sports activity will disappear.

5.3.1If there are multiple suitable sports activities (refer to guidelines in 5.1.2 and 5.2.2), the application shall display information about another sports activity randomly chosen from the list of suitable activities.

5.4 There shall be a button named “Recommended Eateries”.

5.4.1 By tapping on the button, the application shall display the user information about the healthy eateries around the user’s current location.

5.4.2 The information of healthy eateries shall come from data.gov.sg.

5.5 There shall be a button named “Done”.

5.5.1 By tapping on the button, the application shall return to home page.

5.3 The user will be able to see the suggested amount of water intake. [reserve for lab 2]

5.3.1 The suggestion on the amount of water intake will be calculated based on weather forecast, temperature and humidity.

5.3.2 The suggestion on the amount of water intake will be displayed with the unit being mm.

[data used: weather forecast, PSI, UVI, humidity, nearby park/sports field/gyms]

1. Discover Section
   1. Comprehensive Environment Condition Analysis

Information collected and analysed from datasets including PM2.5, UV lights and air pollutants will provide suggest the user whether it’s suitable for outdoor activities. (Ultra-violet Index (UVI), PM2.5, Pollutant Standards Index (PSI), Weather Forecast, Relative Humidity)

* + 1. The application shall give a rating for the appropriateness of going out and shall give information for suggested clothing.
    2. The information and rating from this section shall be used by other sections, for instance eatery and gym recommendations, to provide more comprehensive suggestions.
  1. Healthier Eatery Recommendation (Healthier Eateries)

User shall acquire suggested healthier eatery locations and food preferences. Healthier Eateries doesn’t really provide signature dish information, but I think we could apply web crawler to get it.

* 1. Healthier Food Recommendation (Healthier Choice Symbol (HCS) Product List)

The Products listed on “Healthier Choice Symbol (HCS) Product List” shall be displayed in this page. A filter that can select foods according to the foods category and a search bar that can search for the name of the food shall be available to user. User can type in the name to check whether the product is on the list.

(One limitation is that the database does not provide nutrition info)

* 1. Gym Location Suggestion (Might integrate with parking availability)

Gym Location shall be suggested based on distance, weather, operating hour (gyms that passed their operating hour shall not be highlighted or marked by another colour) and possibly parking availability. I think we could add-on images of gyms if possible.

Gym name, location and contact info will be displayed.

* 1. Park Suggestion (Parks@SG SportsFields@SG)

Parks shall be shall be suggested based on distance, “Comprehensive Environment Condition Analysis”, and available activities.

(Besides suggestions, what more could we provide to users based on data manipulation?)

* + 1. Water Activities

Water activities shall be a subsection of outdoor activity.

1. General Health Section
   1. Pharmacy / Clinics Location (CHAS Clinics)

For injury or illness concerns.

1. User Options

What settings could the user change based on personal preferences.

* 1. ME section
     1. The user shall be able to choose or upload their photo as Avatar.
        1. If the user does not want to upload their photo, they shall be able to choose a avatar from a list default avatars.
     2. The user shall be able to manipulate their basic personal information(name, gender, weight, height, BMI), user preferences, workout purposes, activity level
     3. The user shall be having the choice to link their account to other social media or email account, which serves as an alternative way of login. logout of the app, app settings.
     4. The user shall be able to allow the user to check the exercise records of the user, for instance the duration and distance of a running/cycling/walking exercise. The information of energy consumed can be shared with other sections of the application, for example the workout section.
     5. There should be a button to allow the user to logout of the app.
     6. The section shall be separated in to five categories. The order of the categories shall be Avatar, Workout Data, Body Information,
  2. Avatar
     1. The Avatar is a square shaped picture that is located at the top of the ME section
     2. The user shall be allowed to enlarge the Avatar to their phone screen size by simply pressing on the Avatar.
     3. The user shall be allowed to change the Avatar by uploading their own photo.
        1. There shall be a button at the bottom of the enlarged photo to allow the user to change their Avatar.
        2. If the user does not want to upload their own photo, there is a list of default Avatars to choose from.
  3. Workout Data
     1. The user shall be able to check all of his completed workout.
        1. There should be a “My Workout Data” button to allow the user to check his completed workout.
        2. The user shall be able to check his exercise records, for instance the duration and distance of a running/cycling/walking exercise.
        3. The user shall be able to check his water consumption, track his calorie change.
        4. A Calories-time graph is generated based on the changes in calories from workout.
           1. The graph shall be a histogram graph, with Time as X-axis and Calories as Y-axis.
           2. The unit for time is day, and the unit for calories is kCal.
           3. The maximum number on X-axis is 30 days or one month depending on the number of days in a month, with intervals of 1 day.
           4. The maximum number on Y-axis is 10,000kCal, with intervals of 100kCal.
        5. All the data in this category shall be shared with other sections of the application, for example the workout section.
  4. Body Information
     1. The user shall be able to modify his weight, height in this category.
     2. Preference Setting
        1. The user shall be able to modify his workout intensity from 4 categories, light, moderate, hard, intense.
        2. The user shall be able to choose his preferred exercise types, such as indoor, outdoor, physical, relaxing.
        3. All the data in this section shall be taken into consideration by the back-end to precisely calculate the recommended activities in the Discover section.
  5. Link account and Logout
     1. The user shall be able to logout of the app
        1. There shall be a “Logout” button at the bottom of the section.
        2. Upon pressing on the “Logout” button, the user shall be able to return to login page.
     2. The user shall be able to link his social media accounts
        1. The user shall be able to link his Gmail account by pressing “Link My Gmail” button.
           1. Upon pressing the “Link My Gmail” button, a UserInterface will pop up to request the user to enter his Gmail Account and Account Password and press “Submit”.
           2. After verification from the Gmail database, there shall be a pop up dialog in the app to remind user “Successfully Linked”
        2. The user shall be able to link his Instagram account by pressing “Link My Instagram” button.
           1. Upon pressing the “Link My Instagram” button, a UserInterface will pop up to request the user to enter his Instagram Account and Account Password and press “Login”.
           2. After verification from the Instagram database, there shall be a pop up dialog in the app to remind user “Successfully Linked”
        3. The user shall be able to link his Facebook account by pressing “Link My Facebook” button.
           1. Upon pressing the “Link My Facebook” button, a UserInterface will pop up to request the user to enter his Facebook Account and Account Password and press “Login”.
           2. After verification from the Facebook database, there shall be a pop up dialog in the app to remind user “Successfully Linked”