Functional Requirement Documentation

1. Initialization of the product (Description of User Interface)
   1. UI description

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

* 1. Each section shall be accessed by touching a button representing itself on a bar containing all the icons of the sections at the left side of the application.
  2. The user shall be directed to discover section once the user has launched the application and logged in.

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.
      3. The Layout of the registration page will be as following:
         1. Each type of information (Username, password etc.) shall be followed by an input box with width same as the screen.
         2. The submit button shall be placed at the bottom-centre of the screen.
      4. If any portion of the information inputted by the user does not match the format requirements mentioned above, a warning message will be displayed above the corresponding input box.
      5. The Information provided by users shall be protected and not accessible by other users. (Privacy Protection)

1. Workout Section
   1. Record functions

The section 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.
      2. A button with text “+” will be displayed at the bottom-right corner of the application.
      3. Once clicked on the button, the user shall be directed to a page asking the user to choose the type of food and input the weight of the food.
      4. There will be a search bar to search food names on the top of the page.
      5. Foods will be listed by alphabetical order under the search bar.
      6. When user clicked on the food name, an input box asking for the weight will pop up, with a “ok” button and “cancel button” at the bottom.
      7. The user can click “ok” to confirm adding a record.
      8. 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.
      9. User must be able to see how much calories he/she have intake for the day.
      10. 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.

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| Data Name | Description |
| initialization | **Initialization refers to the state where the user has first launched the application Helia while not having an account at the moment. The user will be directed to a registration page and complete the preference setting procedure.** |
| section | **The term section represents one of the three main functionality of the application Helia – Discover, workout record and health record.** |
| application | **Application refers to the final product of this project – a health oriented android application named Helia.** |
| discover | **TBC.** |
| username | **Username refers to the unique account name that the user has inputted while registering. The username will be used along with password to authenticate a user.** |
| Privacy protection | **The user’s data collected while registering and setting personal preferences will be protected and not accessible by external entities unless the user has agreed to share some parts of his/her information.** |
| Workout records | **The workout records are generated after the completion of one exercise (running, cycling or walking). A record will contain the duration, distance, and the calories burnt information.** |
| Exercise Type | **Refers to the three exercise functions provided by the application – running, cycling and walking.** |
| Calories | **A calorie is a unit of energy. The small calorie, or gram calorie (symbol: cal), is defined as the amount of energy needed to raise the temperature of one gram of water by one degree Celsius at a pressure of one atmosphere. We adopt large calories, which is 1,000 units of gram calorie in our application.** |
| Vibration sensor | **The vibration sensor is a built-in sensor in mobile phones. It will be an alternative if the GPS signal is not sufficient to support the functions of the application.** |

1. Discover Section
   1. After the user entering the Discover Section, After the user entering the Discover Section, the application shall display two main tiles: Sports Activity (refer to Section 5.1-5.4) and Healthy Eateries (refer to Section 5.5).
      1. The Sports Activity tile 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.
      2. A list of possible sports activities shall be stored in the application’s database. The list of activities is as the following:

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

* 1. The sports activity recommended shall be based on data from weather forecast, Ultraviolet Index and Pollutant Standard Index.
     1. The data used for criteria mentioned in 5.1.1. shall be taken from data.gov.sg.
     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 |

* 1. There shall be a button named “Recommended Venue”. By tapping on the button, the application shall suggest a venue according to the activity recommended.
     1. The type of facilities/venues recommended should follow the following guideline:

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| --- | --- |
| 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 |

* + 1. The facility/venue suggested to the user shall be the one that is the nearest to their current location.
  1. The user could swipe left on the screen if he dislikes this activity. After swiping left, display of the current sports activity will disappear.
     1. If there are multiple suitable sports activities (refer to guidelines in 5.1.2 and 5.2.1), the application shall display information about another sports activity randomly chosen from the list of suitable activities.
  2. On the main page of Discover Section, there shall be a tile named “Recommended Eateries”.
     1. By tapping on the button, the application shall display a map that marks the locations of healthy eateries around the user’s current location.
     2. The information of healthy eateries shall come from data.gov.sg.
  3. 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 an 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 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.
     4. There should be a button to allow the user to logout of the app.
     5. The section shall be separated in to five categories. The order of the categories shall be Avatar, Workout Data, Body Information,
  4. 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.
  5. Body Information
     1. The user shall be able to modify his weight, height in this category.
  6. 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.

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| 1. Avatar | **Avatar is an icon, figure, or photo that displaying a particular person on the Internet.** |
| BMI | **Body Mass Index (BMI) is an attempt to quantify the amount of tissue mass(muscle, fat, and bone) in an individual, and then categorize that person as underweight, normal weight, overweight, or obese based on that value.**  **The value is derived from the body mass divided by the square of the body height. The unit is kg/m2.** |
| Workout Purposes | **Refers to the purposes of the workout, including:**  **Startup: Simple and light workouts to get user fit and relax.**  **Lean Fit: Get lean and fit with moderate exercises that builds endurance.**  **Body Strong: high intensive exercises that helps to push body strength and improve muscle tone.** |
| Activity Level | **Refers to the number of hours per week the user is currently working out. The data is used to calculate the recommended workout in Discover section.** |
| Water Consumption | **Water consumption is defined as the freshwater intake by the user per day.** |
| Histogram Graph | **A Histogram Graph is an accurate representation of the distribution of numerical data. A Histogram Graph will be used to represent the user’s calories changes over a period of time.** |
| Login | **Login is the process by which an individual gains access to a computer system/ database/ application by identifying and authenticating themselves.** |
| Logout | **Logout means to end access to a computer system/ database/ application. Logout informs that the current user wishes to end the login session** |