Software Requirements Specification

for

Smart Health Monitoring Application

Version 2.1 approved

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Revision History

Name	Date	Reason For Changes	Version
Winnie Zheng	10/13/18	New SRS	1.0
Winnie Zheng	12/6/2018	Functionality changes to the App	2.0
Winnie Zheng	12/19/2018	Sleep Functionality added	2.1

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1. Introduction

1.1 Purpose

This document describes the requirement specifications (SRS), both functional and nonfunctional, for the Smart Health Monitoring Application (SHMA), version 1.0, developed by SKR during Fall 2018 for EE193 Software Engineering.

The purpose of this software application is to provide a clear, easy to use, and informative application for users to track and visualize their health information including physical metrics, dietary metrics, and activity metrics.

This document will illustrate and provide the overall description, purpose, and usage of the application. This document will serve as a tool for the design/development team, managers, and software testers involved in this project, to better understand the full scope of this application.

1.2 Document Conventions

Bold-faced text has been used for section and sub-section headings.
Italicized text has been used to label tables.

The document focuses on the requirements which will be implemented for the final deliverable. Every requirement statement is to have its own priority.

The following terminologies and standards are used:

- Application (app): a software or program which is designed for use by an end--user for specific purpose
- Android: a mobile operating system (OS) developed by Google, based on the Linux kernel, which is designed primarily for touchscreen mobile devices

- BMI (Body Mass Index): a weight -to -height ratio, calculated by dividing one's weight in kilograms by the square of one's height in meters and used as an indicator of obesity and underweight

1.3 Intended Audience and Reading Suggestions

This document is to be read by the marketing staff, development team, the project managers, testers and documentation writers. Distributors for the finished product should review the document to learn about the product and to understand the requirements.

It is suggested to read this document in chronological order.

The following sections needs to be reviewed by specific readers:

I. Overall Description – Marketing staff have to become accustomed to the various product features in order to effectively advertise the product.
II. Nonfunctional and Functional Requirements – The hardware developers.
III. System features – Development team need an understanding of the system features to develop meaningful test cases and give useful feedback to the developers.

1.4 Product Scope

The final product is intended to be a personal health monitoring application. The application is intended to be used frequently by the user. Users will be able to enter their physical attributes and daily meal intakes. The application will also track user footstep amount and sleep pattern. It will then be able to compute standard health measurements such as BMI and total caloric intake, and provide suggestions for diet, water intake, and sleep suggestion.

The product is intended to help the user be more informed about their overall health by providing visualization of their health activities. It should also provide suggestions that allows users to make healthier decisions in their life.

The application is intended for use by anyone who is interested in in personal health and/or wants to be "healthier."

1.5 References

The following references were used in creating this document:

- SWE Fall 2018 Assignment D1
- SWE Fall 2018 Project Idea

2. Overall Description

2.1 Product Users

The intended users of our application will be health and/or fitness conscious individuals.

These individuals include, but are not limited to, athletes, dieters, personal trainers, and people looking to live a healthy life. This software application will not be focused on meeting the needs of people not interested in personal health.

It is preferred that these users are familiar with operating and navigating an application on Android.

2.2 Operating Environment

The application will be specifically designed for use on smartphone devices running Android OS 6.0 (Marshmallow) and above. The application is made for smartphones but should also be able to function on a tablet.

In order for the user to obtain the application, it will be available for download via the Google Play Store and the user must have access to an internet connection. Once installed, the user can access and/or alter their information (e.g. name, height, weight) without an internet connection. An internet connection is required to look up calories for food. This operating requirement is caused by the application's need to access a food database.

2.3 Assumptions and Dependencies

We assumed the following:

- User has access to an Android mobile device.
- User is aware of common functionalities of Android mobile devices.
- User will be able to find the nutritional information of consumable items.
- User has enough memory to install and operate the base application.
- User does not have any physical impairments, such as blindness, that could impair the usage of the application.

3. Functional Requirements

3.1 Create or Access Account

Only registered users are allowed to access the functions.

1. The system should allow non-registered users to create a secure account.

Every user is associated with a username and password for login.

1. The system should verify the username and password. The user is considered “logged-in” once verified.

3.2 User Profile

User is able to specify their name, sex, height, weight and age.

1. User should be able to change their height, weight, and age if needed.

3.3 BMI

The application should be able to calculate and display the users BMI based on the information the user provided. The BMI is displayed on the scale, letting the user know what range they are in (i.e. under, normal, over, etc.)

3.4 Data Input for Consumable Intake

The user should be able to document food by entering the name of the consumable, calories, fat, cholesterol, and sodium information about a single serving of the food.

3.5 Data Look Up for Consumable Intake

The application should be able to all the food in the database and the cumulative nutritional values by pressing a button.

3.6 Suggestion for Consumable Intake

When user is viewing the content of the database, it will also warn them (“TOO HIGH”) that their total intake is above the recommended daily value.

3.7 Pedometer

The app should monitor the user’s footstep count as a pedometer would as long as the user is logged in and the app is opened. The app does not need to be on-screen; it can be on in the background and should still increment as long as the user did not log out.

3.8 Data Input for Hydration Level

The user should be able to document their water intake by inputting the amount they drink by cups.

3.9 Sleep

The app tracks user’s sleep pattern using built-in sensors. Right now, the application uses the accelerator sensor to determine whether the user is at rest between 9:00 PM and 9:00 AM. The phone checks per minute whether it has moved or not. If it has not, then the sleep time counter, which tracks total sleep time, is updated every five minutes.

In the future, the application will also use the microphone, if the user gives it permission, to detect breathing patterns and/or snoring to improve the accuracy of sleep readings.

3.10 History – NOT IMPLEMENTED

The app tracks user’s history, their health information for the days they have inputted data.

4. Nonfunctional Requirements

4.1 Availability

The application should be available to users 24 hours a day, 7 days a week.

4.2 Data Integration

Information transmissions should be secure without making any change in information.

4.3 Maintainability

Routine server-side maintenance that is executed while users are active should not cause a perceptible increase in response time.

The develop tool is Android Studio.

- The minimal version the App should support is Android 5.0.0, which means the App should support approximately 85% of devices.
- The application doesn't need to support Android instant App support. But the application should try to use fragments if possible.

C++ may be added in this project, include exception support and runtime support.

4.4 Performance

The system must be interactive.
Maximum allocated time for a request is 30 seconds before sending user a message to notify that the request was not fulfilled and to try again later.

4.5 Portability

The application should be available on smartphone or tablets running the Android 6.0 or newer OS.

4.6 Recoverability

If the application crashes or the user loses internet connection, no information will be lost.

Application should be able to recover and continue the current request.

4.7 Reliability

If the app crashes, the offline capabilities should be available immediate or within the hour.

4.8 Security

All information pertaining to a specific user is accessible only by that user when he/she is logged in.

Developers will maintain the confidentiality of all user data knowledge.

4.9 Usability

The system should be easy to handle and navigates in the most expected way with no delays.

5. Other Requirements

1. The application will not affect any other application installed on the user's mobile device nor will it cause any damage to the device.
2. Application should not be used while driving.
3. The developers of this software application product are not responsible or liable for any advice, course of treatment, diagnosis or any other information, or consequences as result of information provided through the app.
    a. User should consult medical personnel before making significant medical decisions.
    b. In case of an emergency, user should call 911.