

Inf 43 – Spring Quarter, 2015 – Homework 1

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Awarded Points	Maximum Points	Document Aspect
	15	Clarity of writing (spelling, grammar, sentence construction) and Clarity of expression (flow, structure, making logical arguments). Roughly 7.5 each.
	15	Introduction / Executive Summary (can be different sections or combined into one)
	7.5	Application Context / Environmental Constraints (can be different sections or combined into one)
	35	Functional Requirements, including use-case diagram and each use case (following a use-case template).
	7.5	Software Qualities and Non-functional Requirements
	5 (+5)	Other Requirements and Other Items. At least a Glossary of Terms. You can earn up to 5 points Extra Credit if you go beyond Glossary
	7.5	Assumptions / Risks (can be different sections or combined into one)
	7.5	Priorities / Implementation Phases; Future Directions and Expected Changes
	100	TOTAL

ZotMyHealth System Requirements

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Introduction

ZotMyHealth, a phone and web based application commissioned by the Health Beacon Inc., allows its users to keep track of their personal health data such as workout exercises, calorie intake, and sleep cycle patterns.

Health Beacon Inc. aims to achieve data standardization in the personal health monitoring system. The data from the application is not stored locally in the users' phones or computer, but will be stored in the company's databases. This grants the company to create more future products to manage all medical and personal health care data.

This document details the requirements and the development phases of the software and serves as a template for future implementation of ZotMyHealth. Each header in the document contains a specification of its contents that provides a reference for developers and the Health Beacon Inc. management firm.

Table of Contents	
Overview / Executive Summary	Address the goals of the system and why ZotMyHealth is needed.
Application Context / Environmental Constraints	Provides a description on what technological platform and operating system the software will run on.
Functional Requirements	Describes the functionality, capabilities, and attributes that are offered with ZotMyHealth.
Software Qualities and Non-functional Requirements	Discusses software qualities and their constraints that are intended for programmers and system designers to interpret.
Other Requirements	Any specifications that weren't asserted in the sections above.
Assumptions / Risks	Addresses any known risks with the project and any assumptions that weren't covered earlier.
Priorities / Implementation Phases	Identifies the software project functionalities and requirements that have the highest priority to be developed first.
Future Directions and Expected Changes	Provide insight and guidance to the system designers and programmers by discussing future changes and adding additional features.

Overview / Executive Summary

The goal of ZotMyHealth is to be able to edit and keep track of multiple personal health data in one centralized application. Personal health data includes the following: sleep cycle patterns, calories burned off through workouts and exercises, and calorie consumption. The system target users with other installed apps and technologies that already keep track of their health such as the Nike app or the Fitbit device, and it allows the users to import data from the other apps and technologies so they don't have to start from scratch. Essentially, any person can use ZotMyHealth and start from scratch without having to import old data.

Using a centralized application provides the user to keep track of their personal healthcare data in a more efficient and organize way where they don't have to start tapping around different applications on their phones to find the data they want. ZotMyHealth allows the users to set goals or limit for their workouts, sleep cycles, or calorie consumption and in case if they ever go overboard, the application will send a notification of warning that they reached their limit or goal. The application has an option to calculate averages for certain days, weeks, or months and the user can view their data in a graphical form to see their progression from time to time. ZotMyHealth will aid the user achievements in their personal health goals and make their life easier to record.

The software provides different features for each of the three categories for the personal health data. The user cannot add data in the sleep cycle without having to import the data from another application or devices, but they are able to edit and delete the data if it is wrong. Users can enter the dish or ingredient for their calorie consumption and the application will provide a menu of options for the user to select that has information about the dish or ingredient. If the information from the menu isn't found or it is incorrect, the user is able to enter their data manually. Users can input the type of workout and the amount of calorie they burned off in the app, but they are only able to track their calorie burn-off through syncing with another device. The features in the software are designed to be user-friendly.

ZotMyHealth will already have the major agreements with the other applications and devices to allow them to track and import data. The software does not support application or devices that have multiple tracking features as it might create conflict such as importing water consumption, when the software doesn't support that type of data. ZotMyHealth will run through phones, tablets, and a web portal to allow users to view their data in a sizeable screen.

Application Context / Environmental Constraints

ZotMyHealth will be accessible through phones, tablets, and a web portal. The operating systems for the phones and tablets must be Android, IOS, and Windows, and the web portal could run on any platform. Users do not have a limit for their number of logins in multiple devices. The software must always be connected to the internet, or the app displays old data from the previous session when it was connected to the internet.

The user interface for the app in the phone and tablets contains a log in where the user enters their email-id and password with an option of registering as a new user or forgetting their password. After logging in, it would display an option to sync a device, application, or start new without syncing. One of the constraints of syncing to another device or application is that the user interface displays a menu of options on which device or apps you are only allowed to sync with. An application the user might have installed that does not have an agreement with Health Beacon Inc. will not be displayed in the menu of options, thus not able to link to it. The software can only handle syncing with one device or application in order to avoid conflict such as importing multiple data in the same category at the same time. ZotMyHealth will have a menu for each of the three personal health data the user wants to interact with. They will have add data input with the exception of sleep cycle, date ranges “from” “to” input, delete button based on the date ranges, calculate averages, view graph, and an edit data button. The application will also contain a log out button, and a delete account button.

There are no constraints used to design ZotMyHealth with a certain programming language, but the web portal must display the data in excel format. Users are only able to log in through the web portal, and not register. Users can not add data or link other devices, but they are able to view their data in a graphical form, or edit their existing data. The web portal allows the user to zoom in and zoom out of the graph and they are also able to delete their account. The software will be designed in English for the beginning stages, and more languages will be added later on in the near future.

Functional Requirements

This section showcases the different interaction between the different functionalities and capabilities of the software with the users, Health Beacon Inc. databases, and other 3rd party devices or applications. It will address the basic flows of each use case and describe any alternative or exception flows when describing a scenario for the use case. **Figure 1** displays graphical use case diagram with the different actors and use cases of ZotMyHealth.

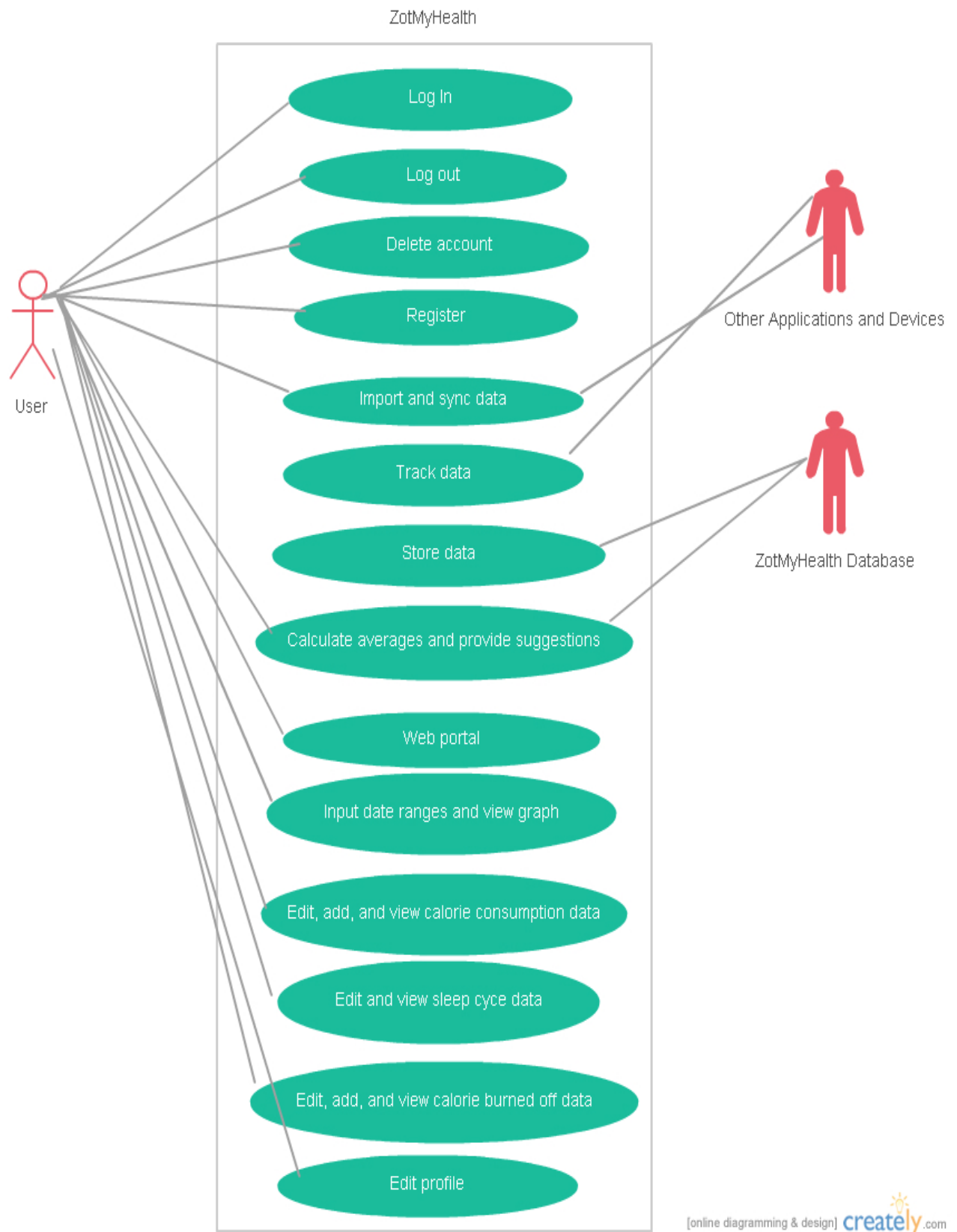


Figure 1: Use Case Diagram of ZotMyHealth

Log In

Basic Flow: Users are required to enter their username id and password in order to use the application. The software will display an interface for the user to interact with.

Alternative Flow: User attempts to log in without a registered account, and the application will display a pop-out message and ask the user if they want to register. User forgets their password and an option to recover password will send an email verification to recover the lost password.

Exception Flow: User forgets their username id and email, and the account will be lost.

Log Out

Basic Flow: Users have the option to log out from the settings. The application will stop syncing and importing data from another device or application. The application will revert back to the log in interface.

Alternative Flow: If the users change their password, the device will log them out in all devices.

Exception Flow: Users enter a data and forget to add it in the software, and logs out from the software will result in data loss.

Delete Account

Basic Flow: Users have the option to delete account from the settings in the app and the web portal. The app and web portal will prompt the user to confirm their deletion and warns them that there will be no way to recover the data from the account. The application will revert back to the log in interface.

Alternative Flow: Automatically logs out of all devices if the account is deleted.

Exception Flow: Someone stole the user's phone or hacked their computer, and deletes their account. The data cannot be recovered as the data in the Health Beacon Inc. database will also be deleted.

Register

Basic Flow: User will be required to enter their email, password, a confirmation password, gender, age, and an optional input for height and weight. The system will send an email that provides a link for the confirmation of creating the account. The user clicks the link for confirmation. User is now able to log into the application and use the interfaces.

Alternative Flow: User cannot enter a negative value for height, weight, and age, and will not be able to proceed with registration until a valid input is entered. User cannot use an existing user id that has already been registered, and the application will prompt the user to enter another one. If the two passwords are unmatched, the application will notify the user to fix this. Users entered the wrong gender, age, weight, or height, but are able to change it in the settings.

Import and Syncing Data

Basic Flow: Users are given a list of options to select one app or device to sync and track data with. Users can select multiple or all 3rd party apps and devices to import

data into ZotMyHealth and they are allowed to choose which app should be prioritized. Users have to specify one workout before they can set ZotMyHealth to automatically import the data from the 3rd party device or app. Users are now able to view, edit, delete, add, or track more data.

Alternative Flow: If data conflicts with the dates, user will be notified and prompt if they want to delete the old data. If the user logs out and logs back in, they have to manually reset ZotMyHealth to import data automatically from the 3rd party app again.

Exception Flow: Users are not able to sync 3rd party applications or devices that are not listed in the ZotMyHealth application and any device that multiple tracking features. Users are not able to sync data from their friend's 3rd party application if the usernames or emails do not match.

Track Data

Basic Flow: User linked ZotMyHealth to a 3rd party device or app. The 3rd party device provides ZotMyHealth with the current calorie burned off from exercising or the amount of hours slept. Users have the option to stop the tracking of data. Users are now able to view, edit, delete, or add more data.

Alternative Flow: ZotMyHealth is not able to track data without another device or application, and it will notify the user to connect to a 3rd party device or app.

Exception Flow: The connection between the 3rd party device or app and ZotMyHealth is interrupted when there is no Wi-Fi.

Store Data

Basic Flow: Users enter or import their data in ZotMyHealth. The data is then stored in the databases in Health Beacon Inc. Users are now able to refer to their personal health data through their accounts.

Alternative Flow: If users change their data, then the data in the databases are also altered.

Exception Flow: One of the databases in Health Beacon Inc. is corrupted and all data are lost for the users.

Calculate Averages and Provide Suggestions

Basic Flow: Users press the calculation average button in the interface. The databases will calculate the user data and sends their results to the user in the interface. User enters a dish or ingredient and database will provide a suggestion on the amount of calorie it has.

Alternative Flow: The suggestions are not what the users are looking for, so they enter their data manually into the app.

Exception Flow: The formulas the databases are wrong and provide the user with the wrong calculations and suggestions.

Web Portal

Basic Flow: Users are prompt to enter their username and password, with no register option. Once logged in, users are able to edit, delete, and view their data in excel format. Users have the option to delete their account and view their data in a graph. Users

can zoom in and zoom out of the graph and be able to click a certain point to see their specific data on that day. Users can log out from the web portal.

Alternative Flow: Users can also view their data in their phones and tablets.

Exception Flow: The data in the web portal do not match the data in the app

Input Date Ranges and View Graph

Basic Flow: User will be prompt to enter a date range with a “from” “to” input. User selects the type of personal health data they want to see: calorie consumption, calorie burned off, sleep cycle pattern. The calorie graphs will display the amount of calories gained or loss and the sleep cycle graph will display the number of hours the user slept. Users can zoom in and zoom out of the graph and they are able to tap on a specific day on the graph to see the data on a specific day.

Exception Flow: User enters a date range that doesn’t exist in the database.

Edit, View, Delete, and Add Calorie Consumption Data

Basic Flow: Users can search for the food they want information about in the app. User can add the amount of calories consumed based on the suggestion by entering the dish, ingredient, and the amount they ate. Users can edit or delete data from previous days. They can calculate the average calories they can consume using a date range or on a specific day. Users are able to set goals and a limit to the amount calorie they want to intake.

Alternative Flow: The ingredients or dish suggestions are incorrect, but the users can manually enter the correct calorie consumption into the app. Users are not able to enter a negative value or calories consumed.

Exception Flow: Users are not allowed to add data from previous days. Users enter a date range that has no data stored in the database.

Edit, View, and Delete Sleep Cycle Data

Basic Flow: Users sync with another device to import data on their sleep cycle patterns. Users can edit or delete their data if it is incorrect. They can view their data in a graphical form by entering a date range. Users are able to calculate the amount of average sleep they get from a certain date range.

Exception Flow: The connection between the app and the device is lost and some of the data are not imported.

Edit, View, Delete, and Add Calorie Burn-Off Data

Basic Flow: Users have the option to sync with another 3rd party equipment to import data. Users are able to label their exercises and enter the amount of time they spent. The exercise name and calories burned are required to be entered in order for the data to be stored in the databases. User may or may not enter the amount of weight they use to work out with and the amount of distance they ran. From the data the user provided, the database is able to calculate the amount of calories they burned off based on their weight and age. Users are able to edit, view, and delete data from previous days and they are also able to view the data in a graph.

Alternative Flow: Users are able to enter calories burned-off without having to sync with another device or app. They are not allowed to add an exercise if they enter a negative value for calories burned off.

Exception Flow: Users are not allowed to add data on previous days. The connection between the app and the device is lost and some of the data are not imported.

Edit Profile

Basic Flow: Users have the ability to change their weight, height, gender, and age. Users have the ability to change their passwords. User can edit any data that is incorrect in their personal health data.

Software Qualities and Non-functional Requirements

- **Maintainability** - The software should be easily handled by the user, and any updates for a newer version of the software will be automatically updated. If the software crashes, it would reboot and start where it was left off. The software should not drain the battery life of the phone, but be built to be efficient as possible.
- **Flexibility** - The software should mainly be compatible with both Android and the iOS operating system. The software should still be able to function if there are any updates to the operating system.
- **Security** – The user's account should be protected by their password. Data between syncing ZotMyHealth and another device or application should not be leaked.
- **Suitability** – The software is designed to be a centralized app where the user can view all their personal health data in one location. Users are able to view and edit their data in multiple devices.
- **Usability** – The interface for the software will be easily accessible and simple for the user to comprehend. The application should not be technical.

Other Requirements

Some requirements that weren't emphasized are ZotMyHealth should still be able to function without a 3rd party application and the data the users input or imported are ordered chronologically.

Interface – the graphical page with a menu of options for the user to interact with

Excel Spreadsheet - Through the web portal the data should be exported into a Microsoft Excel spreadsheet in which the user should be able to view and edit their data and check their current progression.

Web Portal – the internet web version of ZotMyHealth with fewer features

Basic Flow – the steps and capabilities that describes the function of the use case

Alternative Flow – scenarios that might affect the steps in a use case, but are solved and still able to function for the use case

Exception Flow – scenarios that aren't allowed and cause the function in the use case to stop working

3rd Party Applications or Devices – appliances that weren't developed by the ZotMyHealth management team and are not part of the interior of the ZotMyHealth software

Health Beacon Inc. Database – all users' who are using ZotMyHealth will have their data stored in the company's database

Import – receiving data from another app or device that isn't from ZotMyHealth

Prompt – system asking the user for an input

Constraints – anything that might affect the development of ZotMyHealth in a negative way

Assumptions / Risks

The implementation to design this software is assumed to have no limit on the budget, but we have a time constraint on when this project should be completed. ZotMyHealth calculations are assumed to be correct as they are calculated from the Health Beacon Inc. databases, with no user analytics. Health Beacon Inc. is assumed to have major agreements with all the 3rd party apps and devices listed in ZotMyHealth software.

Assumptions for users are they have the basic knowledge to download, delete, and install the mobile application. Users who want to link with other devices or other apps are assumed to have it already installed on their phone or tablet. If the users link to another device such as FitMyPal, and they change their data in the device from a previous day, it is assumed the data in ZotMyHealth will not be affected. The data in the software are assumed to be in the same unit such calories, SI, and BMI.

Several risks of using ZotMyHealth are data being stored in databases that aren't local, losing data with no Wi-Fi connection, and security risk of breaching the users' personal health data.

Priorities / Implementation Phases

First Phase

- Basic user preferences
- Basic user interfaces and settings
- Able to add data for calorie consumption and calories burned off

- Implement a graph for the calorie tracker

Second Phase

- Track sleep cycle patterns
- Sync and connect to 3rd party devices and application
- Provide notifications for the user if they exceed their limit or achieve their goals

Third Phase

- Develop a web portal
- Develop a windows app
- Grants the user to zoom in and zoom out of the graphical data
- Tutorial on how to use the app

Future Directions and Expected Changes

The future directions and expected changes for the ZotMyHealth system is to implement additional features and be more user-friendly if the current interface is causing some problems.

Some additional features include being to track more personal health data other than the three main ones: calorie burn off, calorie consumption, and sleep cycles. Users in the near future will be able to connect social media and share their individual goals and achievements. Additional languages might also be implemented in the software.

An expected change to be implemented in ten through fifteen years is the application will be able to provide notification on how the user is doing health wise when they gather all data and calculations. The application will also provide suggestions to consume more calories and exercise more often based on the user data.