BioMetrix

SELF HEALTH IMPROVEMENT

Engineering requirements and project overview for the open source self-help mobile app

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Table of Contents

Introduction

This report contains a summary of requirements for BioMetrix Self Health Improvement, an open source mobile Android application. The engineering requirements inside represent features of our future application. Requirements are grouped into these headings: Functional requirements, and non-functional requirements. Subheadings include: Framework, Modules, Analysis, and Database.

Functional Requirements

Functional requirements describe system features and operations the system can perform. These requirements will be grouped into 4 separate priority levels. These levels are: High/Architectural (H-A), requirements that needs to be completed in order for the system to perform even basic functionality; High (H), requirements that are essential in order for the application to be considered complete; Medium (M), requirements that users would want in a completed application which would heavily impact use but they are not necessarily required; Low (L), requirements that would be nice to have from an end user perspective that increase usability.

Specific Symptoms

Specific health Syndromes are simply collections of organized modules and specialized analysis functions, some example requirements are detailed below.

1. H The system shall have modules for tracking information for different mental health disorders
2. M The system shall allow entry of manic and depression levels
3. M The system shall allow entry of anxiety levels
4. M The system shall allow creation of custom symptoms to track.

API for Modules

Framework requirements consist of the application programming interface of the system and shared module features.

1. H The system shall allow users to create a login
2. L The system shall allow users to login with social media account
3. L The system shall allow integration with FitBit
4. HA The system shall store the information entered by the user
5. H The system shall analyze the data stored by the user for trends when requested by the user
6. M The system shall provide feedback based on the analysis it performs
7. H The system shall inform the user when more data needs to be entered to perform analysis
8. M The system shall have graphs to assist with conveying information
9. L The system shall offer hints based on problems that the system finds
10. L The system shall suggest other information to keep track of
11. HA The system shall have common methods of input for tracking
12. L The system shall have Bluetooth device integration
13. H The system shall have common database access

Mood Module

The mood module requirements deal with the entry of, or system response to, the user's mood.

1. HA The system shall allow for mood input (emoticons with words)
2. HA The system shall allow rating for different moods
3. L The system shall influence your digital pet's mood
4. M The system shall have a mood/emotion stamped diary
5. M The system shall have emotions subsets of anger, disgust, fear, joy, sadness, and surprise
6. L The system shall have 'valves' in place to move user towards their baseline. (Figure out some way for the app the cheer someone up or relax them. Other apps have used sound recordings or breathing techniques or jokes etc.)

Medication Module

The medication module requirements deal with all information entered about medications.

1. L The system shall allow enabling of notifications for reminding meds /input info
2. L The system shall keep track of medications taking and side effects

UI

The UI requirements contain all requirements pertaining specifically to graphics and the user's interaction with the application.

1. L The system shall use different colors to convey areas of extra importance
2. L The system shall have options to remind the user to enter their daily values
3. M The system shall allow users to choose which modules are active on the tracker
4. M The system shall allow users to re-activate modules that they had previously disabled
5. L The system shall make use of the digital pet and/or sprout to assist the user with the UI

Database

The database requirements describe the file handling system that backs up the user-specific meta-analysis.

1. M The system shall have options for frequency of backups
2. H The system shall sync information gathered to the database
3. L The system shall allow sharing of progress and logs
4. M The system shall use data from reliable sources to be compared user data
5. HA The database will track multiple data point modules, including: time, frequency over time units, action(s) taken, text fields, 0-10 scales, image based scales (like mood), app usage, specialized lookups for diet(calorie) sleep(rem) exercise(bpm, bmi)

Sleep Module

The sleep module consists of all requirements that affect sleep. This includes any alarms or other methods to determine sleep patterns.

1. L The system shall have the ability to record sleep based on alarms
2. H The system shall inform the user of the sleep times that it records
3. H The system shall allow entry of sleep information
4. L The system shall allow sensors to detect pulse and movement
5. L The system shall allow holistic approaches to sleep improvement
6. L The system shall allow narrow approaches to sleep improvement (literally only reporting how much time slept based on alarms and nothing else)

Diet Module

The diet module details any requirements that are related to diet and food intake information input by the user.

1. M The system shall allow entry of diet information
2. L The system shall allow searching by food and autocomplete nutritional info
3. H The system shall have a ‘simple’ mode that allows users to self-report general ‘healthiness’ of daily food intake (point being to take non-judgemental baby steps up from their horrible diets; simply to eat better than yesterday is the only goal)
4. L The system shall use flags and alerts to draw user attention (“Too much acidic food”, “Too many preservatives”, “Lacking omega-3s”)
5. L The system shall suggest alternative food items
6. L The system shall link to ‘what can I make from what food I have’ services
7. L The system shall link to grocery services and meal planning services
8. L The system shall allow for blood work test entry

Exercise Module

The exercise module requirements deal with the entering or use of the exercise module. This includes entry of physical activity levels, integration with other fitness applications, and physical measurements done by the system.

1. H The system shall have a module to track exercise
2. M The system shall use built in sensors (google fit, pedometer)
3. L The system shall link to most effective exercises for goals (burn localized fat, build up glutes, strength training, endurance, cut weight, body build, gain more energy, etc.)
4. L The system shall allow for motivational playlists, quotes, images either local or linked services
5. L The system shall always display progress on all screens to increase retention/motivation/accountability
6. M The system shall use self-reporting of exercise, time, reps, weight, distance
7. L The system shall measure resting heart rate and lung capacity

Digital Pet & Retention Policies

Retention policy requirements outline the methods and goals of keeping users in the app and using it frequently. Digital pets are part of the retention policies but have many special requirements.

1. L The system shall have a digital pet (Link to some designs of pets)
2. L The system's digital pet shall be used to 'talk' to user in place of text tutorials
3. L The system shall employ a digital currency used to reward healthy habits and usage of app
4. L The system shall have Sprout as a guide and various other characters as pets for branding, messaging, and retention of users of the app.
5. L The system shall have 'freemium' mini games that have digital currency micro transactions (take 200 steps to play some more). [Utilizing the dark magic of freemium to help instead of hurt people!]
6. L The system shall use Sprout in educational, nurturing, and authoritative roles
7. L The system shall use Digital pets in user dependent roles, user takes care of them
8. L The system shall have a flying chibi cat, a puppy, a cholo bunny, a wooden living doll, an anthropomorphic squid, and weird lizard as digital pets. They will have names and personalities.
9. L The app shall have social challenges and groups (which roommate does the dishes tonight, who in the company has made the most fitness progress in the month, who in the JP group drinks the most caffeine etc.)
10. L The app shall have optional sharing to social media (Imagine a digital pet proudly displaying the user's progress while advertising our app)
11. L The app shall allow local challenges and records, "Branden has 7 day streak of exercise! Can you beat that?!"(Branden can't even beat that. -Branden)

Non-Functional Engineering Requirements

Non-functional requirements are those related back to a specific portion of the system. These types of requirements include tools and frameworks used to build the system, system performance requirements, and requirements for system network behavior. These requirements also include other requirements for usability and helpfulness that cannot easily be quantified, among these are usability and helpfulness requirements.

1. The system shall have a database more complicated than just file handling
    1.1. The system shall make use of Amazon Web Services' Relational Database Service, or another database system deemed appropriate
    1.2. The system shall employ the use of Microsoft SQL Server for its database
2. The system shall employ Java written using Android Studio
3. The system shall employ the use of C++ in a significant way
4. The app will be developed using scrum methodology
    4.1. MeisterTask shall be used to maintain Scrum sprints
5. The system shall be completed and on the Google Play Store before July 2016
6. The app shall retain users for longer periods than competing apps
7. The system shall NOT be marketed as medical or scientific. However, the system shall use scientific data where possible to analyze a user's health
8. The app shall remain open source and free
9. The system shall implement good and intuitive UI