CSUDH HEALTH APP

Team

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Software Requirements Specification Document

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Updated by:	Satish Divvi	Date: 12/06/2017
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Approved by:	Darshit Shah	Date: 12/07/2017

Name	Changes	Version #	Date	Time
	1. Updated requirements section 2. Added Out of Scope Tab 3. Modified Control flow	1.1	12/6/2017	22:15

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1. Introduction

1.1 Purpose

The purpose of this document is to provide clear requirements and a detailed description of CSUDH Health mobile application. It will explain the purpose and features of the application, the necessary interfaces, and what application will do. In addition, it will describe any constraints under which this application must operate. This document is intended for developers and stakeholders.

1.2 Scope

CSUDH Health app is intended to notify users stating a user is in emergency and needs assistance with blood. With basic details like blood type and location, with one click, application will send notification to respective users whose blood type will be useful to the needy.
Application can be used by anyone who is member of CSUDH family. Simple application but very much useful; especially in case of emergency when specific blood type is needed, and one is not able to find in nearest blood bank as well.

1.3 Definitions, Acronyms, and Abbreviations

Term	Definition
API	The Application Programming Interface is a set of routines, protocols and tools for building software Application
Database	Collection of all the information monitored by the system
GUI	Graphical user interface
Software Requirements Specification	A document that completely describes all the functions of a proposed system and the constraints under which it must operate. For example, this document
Stakeholder	Any person with an interest in the project who is not a developer
User	An individual using application

1.4 References

Firebase. (September 18, 2017). ***Firebase Cloud Messaging.***[Online]. Available: https://firebase.google.com/docs/cloud-messaging/

Firebase. (2017). ***Firebase Realtime Database.***[Online]. Available: https://firebase.google.com/docs/database/

Firebase. (2017). ***Cloud Functions for Firebase.***[Online]. Available: https://firebase.google.com/docs/functions/

MPAndroidChart – For Pie Chart

1.5 Overview

The next section, the Overall Description, provides an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification. This section is meant for stakeholders.

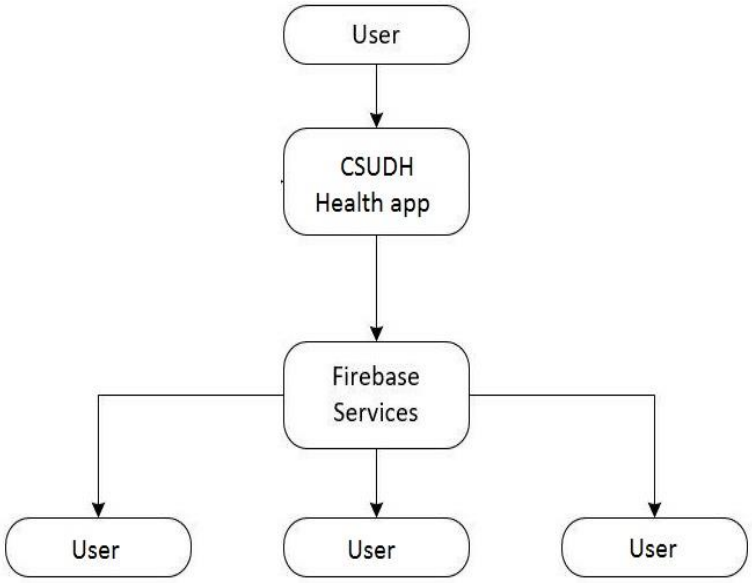
The third chapter, Requirements Specification, formally describes the technical details of the functionalities of the product. Due to its technical nature, this section addresses developers.

2. The Overall Description

2.1 Product Perspective

CSUDH Health App is an application developed for android mobile devices. It uses Firebase Cloud Messaging to send notifications. In addition, Firebase Real-time Database will be used to store information of user and most importantly their blood type. Lastly, Cloud Functions for Firebase will be used to trigger notifications based on the requirement of the user. Using this service, application will be able to send the notification message to the respective users of the application.

The following diagram provides a simple overview of the system infrastructure.



The following subsections describe how the software operates inside various constraints.

2.1.1 System Interfaces

Firebase Cloud Messaging – Allows notifications to be sent to users
Firebase Real-time Database – To update information of user and time at which user has requested for blood.
Cloud Functions for Firebase – Triggers notifications as per user's need

2.1.2 Interfaces

CSUDH Health app will interact with its users in two ways. The main way to interact with this system is through its Graphical User Interface (GUI). Users will be provided with all the necessary facilities to operate the system through this interface.

Another way of interaction is through notifications. Apart from the requested user every other designated person will receive notification of the request. Since the system is specifically designed for android mobile devices, the notification interface is standardized and variations do not have to be accounted for.

2.1.3 Hardware Interfaces

The main hardware interface will be an android-capable device, such as android smartphone or an android tablet.

2.1.4 Software Interfaces

To obtain the necessary functionality, users are required to have a minimum Android version 4.4, “KitKat”. The target Android version for this system is 7.1, “Nougat”; however, anything from version 4.4 and up will be supported.

2.1.5 Communications Interfaces

A device to send notification must be connected to internet while in case of receiving end it is not mandatory to have internet connectivity.

2.1.6 Memory Constraints

There are no specific memory constraints. Any device capable of running the specified software interfaces as mentioned in section “2.1.4” will be able to use this application.

2.1.7 Operations

To align to the primary purpose of the application, CSUDH Health App will be operated in a very simple way. After successful registration, whenever user needs blood, just one click, few details, and notification will be sent with firebase cloud base services. On click of the notification, application will show the details entered by the requested user.

2.1.8 Site Adaptation Requirements

There are no site adaptation requirements apart from installing “CSUDH Health App” on the android device.

2.2 Product Functions

The following is a high-level overview of "CSUDH Health App" functionalities available to its users:

1. System shall provide a way for a new user to register with a valid CSUDH email address, password, first name, last name, and blood type.
2. System shall authenticate an attempt to login. If authentication fails, user shall be instructed to reattempt login.
3. System shall provide an option for a user to logout, at which point that user shall be taken to the login screen.
4. A user may send notification by selecting required blood type and details of where is it required.
5. Notification shall be sent to other users whose blood type is matched with the required blood type or compatible for the required blood type.
6. Notification shall be available off-line i.e. without internet connectivity.
7. Notification shall be floating on the android device which will mandate user to check at least once regarding the trigger notification.
8. A user may view details of past sent notifications along with details.
9. Application will keep records of all users' requests.
10. The system shall provide an option to edit personal details like first name, last name, blood type, etc.
11. The system shall provide an option to clear the user's notifications screen.

2.3 User Characteristics

Application user must be able to know how to use a mobile device, how to install a new mobile application, and navigate around a basic user interface (UI). UI of the application will be simple and understandable, so that it will be used by most of the android users in CSUDH.

2.4 Constraints

Users must have an android-capable device, such an android smartphone or an android tablet.
To obtain the functionality users are required to have a minimum android version 4.4, "KitKat". The target android version for this system is 7.1, "Nougat"; however, anything from version 4.4 and up will be supported.
A device must be connected to the internet in order to send required notifications. An interruption in internet signal or service may result in failure of the notification or incomplete notification. While in receiving end, it is not mandatory to have internet connectivity.

2.5 Assumptions and Dependencies

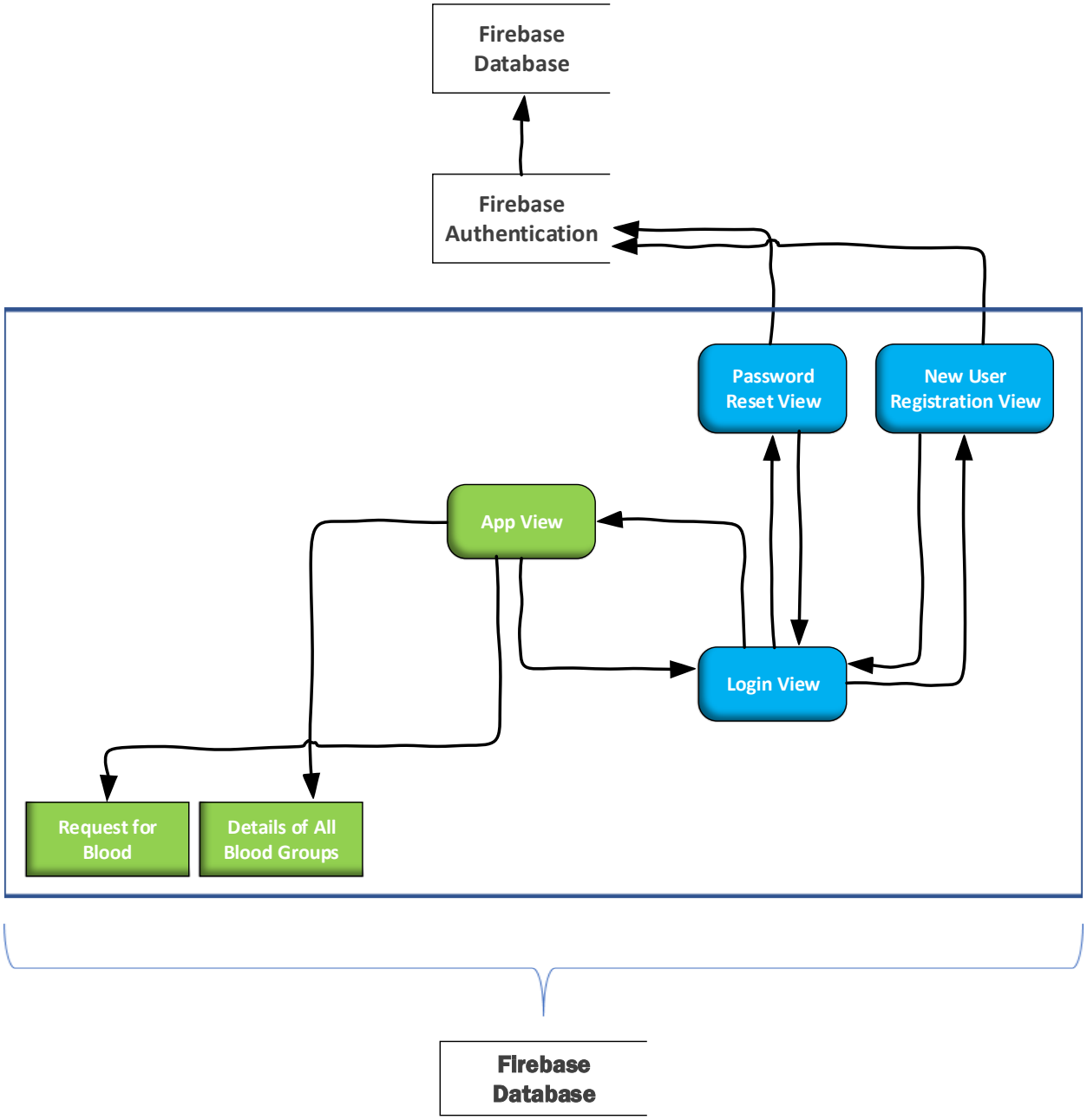
Since all the software and hardware interfaces are in existence, this application is being built on no assumptions. However, it does depend on Firebase Cloud Messaging, Firebase Real-time Database and Cloud Functions for Firebase to be operational. Since those services are controlled by a third party, Google, application is dependent on Google to continue operating these services. With that said, those services are not a must and it may be easily adjusted to operate on a variety of other services and systems, which require a change to SRS.

2.6 Apportioning of Requirements

All the currently planned requirements are accomplishable within the initial development cycle. If there are any additional requirements in the future, this SRS will be updated to account for such changes.

3. Specific Requirements

The following is the diagrammatic representation of the data flow within the system.
This should be used as a general abstraction and not as a design template.



3.1 External Interfaces

3.1.1 User Interfaces

While it is recommended for users to use a touchscreen-based device, users are also allowed to interact with the interface of the system using a stylus or a keypad-driven mobile device.

3.1.2 Hardware Interfaces

Devices with android operating System – This interface is required for both users and subscribers.

3.1.3 Software Interfaces

Android Operating System – Minimum version 4.4, “KitKat”. Target version 7.1, “Nougat.”
Firebase Realtime Database – Stores information on the blood groups of each registered user.
Cloud Functions for Firebase – Triggers notifications based on route updates.

3.1.4 Communications interfaces

Internet Service – Provided by the user’s cellphone carrier and interfaced with through the Android operating system.
Firebase Cloud Messaging – Allows notifications to be sent to registered users.

3.2 Functions

CSUDH Health operates in two modes: background mode and foreground mode. While foreground mode offers a full set of functions, background mode is very limited in its interaction with a user.

3.2.1 Background Mode

Background mode of operation involves application not being visible to the user on their device’s screen. The system continues its operation and must fulfill certain functional requirements. The following are the functional requirements involving background mode of operation.

3.2.1.1 Functional Requirement 1.1

When user clicks on Request Button, respective users will be notified about the request.

3.2.1.2 Functional Requirement 1.2

A foreground mode shall be activated when a subscriber clicks on the request.

3.2.2 Foreground Mode

Foreground mode of operation involves application being visible to a user on their device's screen. The following are the functional requirements involving foreground mode of operation.

3.2.2.1 Functional Requirement 2.1

CSUDH Health App shall provide a way for a new user to register with a valid email address i.e. containing "csudh.edu", password, first name, last name, birth date and blood type.

3.2.2.2 Functional Requirement 2.2

System shall authenticate an attempt to login. If authentication fails, user shall be instructed to reattempt login.

3.2.2.3 Functional Requirement 2.3

System shall provide a functionality to user to reset password.

3.2.2.4 Functional Requirement 2.4

System shall provide an option to user to logout, at which point user shall be taken to the login screen.

3.2.2.5 Functional Requirement 2.5

A user may request for the blood needed by selecting the blood type and clicking on "Request" button which will trigger notification to all designated registered users.

3.2.2.6 Functional Requirement 2.6

A user may have the option of selecting the urgency of request by selecting any of the expected options – “Very Urgent”, “Immediate”, “Within a day”.

3.2.2.7 Functional Requirement 2.7

App shall provide a way for the interested user to reach out to the requested user asking for more details.

3.2.2.8 Functional Requirement 2.8

App shall provide requested user to respond to interested user in case of required additional details like “Address”.

3.2.2.9 Functional Requirement 2.9

App shall provide all registered users an opportunity to edit their current personal details.

3.2.2.10 Functional Requirement 2.10

App shall provide all registered users a chance to look at their previous activities.

3.2.2.11 Functional Requirement 2.11

App shall provide users notifications on the recent updates or releases of the new versions.

3.2.2.12 Functional Requirement 2.12

An App may provide users an opportunity to provide reviews/comments on the services.

3.2.2.13 Functional Requirement 2.13

The system shall provide an option to clear user’s notifications screen.

3.2.2.14 Functional Requirement 2.14

Implement pie chart in the home page which will show blood groups % of users registered.

3.3 Out of Scope

Below requirements are out of scope as part of 1st Release:

Functional Requirement 2.07
Functional Requirement 2.08
Functional Requirement 2.09
Functional Requirement 2.10
Functional Requirement 2.11
Functional Requirement 2.12

3.4 Performance Requirements

The system does not have specific performance requirements.

3.5 Logical Database Requirements

Firebase Real-time Database shall store the following data:

1. User's first name, last name, email address, birth date and blood type upon registration.
2. Update of the required blood type and details provided by user on click of the blood requirement button.
3. A list of users to which notification has been sent.
4. A list of requests raised by each user.

3.6 Design Constraints

System must be developed on a minimum Android version 4.4, "KitKat".
The target Android version for this system is 7.1, "Nougat;" however, anything from version 4.4 and up will be supported. Thus, developers must use technologies which fit into these constraints.

3.6.1 Standards Compliance

Users' personal information such as first name, last name, email address, birth date and blood type shall be stored securely. All efforts to avoid unauthorized access shall be taken.

3.7 Software System Attributes

3.7.1 Reliability

At the time of release, less than 15% of devices may experience technical difficulties. Such difficulties may be experience not to neglect improper testing in code, but simply due to the variety of devices available.

3.7.2 Availability

Since users may be using this application at any time of the day or night, it should be available 24/7. In a case of a crash, its recovery time should be less than an hour. If a system is scheduled to go down for an emergency repair, users should be notified, if feasible. The goal for the stable application uptime should be 99.999% (five nines).

3.7.3 Security

Personal information apart from first name, blood type requirement, and details provided by needy user should not be shared to other users without explicit permission from the user. By default, a user should only be able to get a notification of the emergency of blood requirement along with name, and details, without any further details.
All user registration information shall be securely stored using Firebase services.
No other information shall be collected beyond what is specified in this document.

3.7.4 Maintainability

Comments shall be written in code where names of classes, fields, methods or variables to provide all the necessary information about their operations. A method shall only execute one action. This means that a method should only have one responsibility. If a method verifies user credentials, it should only do that and nothing else. This will ease the process of testing, maintainability, and in case of enhancement.

3.7.5 Portability

As per the given states “CSUDH Health App” will start support from Android version 4.4, “KitKat” and the target Android version for this system is 7.1, “Nougat,” its portability only depends on devices meeting that requirement. Any device operating Android version 4.4 will meet the requirements of operation of the application.

3.8 Additional Comments

Document has been modified as per the current development status, changes are expected as the development progresses. Individuals reading this document must be open to a possibility of changes as new options are continuously explored.

4. Change Management Process

Changes to this document shall follow the following steps:

1. Customer requests a change. A request must be made using valid csudh e-mail ID only. Customer should fill up the form and send over using this email.
2. Project Manager / Development Lead will determine if the change is realistic and is aligned with the function of the app.
3. If the change requires adjustments to provide feasibility, Project Manager / Development Lead will work with the customer to adjust the requested change.
4. If the change is feasible, Project Manager / Development Lead will request a formal meeting with the customer to confirm the details. A face meeting is a must to avoid confusions caused by ambiguities of remote communication mechanisms, such as emailing or phone calls.
5. Development Lead will then present the requested changes to the team.
6. Once the team has determined that they are able to make the change, they shall determine if the change can be done in the existing timeframe or if any changes need to be made. They will also determine if any other parts will be affected by this change. If the team determines that changes cannot be made, proceed to step 3.
7. If changes to the timeline and/or development structure need to be made, the team will work on calculating a new timeline and structure.
8. Once the team has determined the new details required to implement the change, information will be presented back to the customer for approval. This must be done in person in a formal meeting.
9. If the customer disagrees, proceed to step 3.

5. Document Preparation, Review and Approval

Prepared by:
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Signature: ***Satish Divvi*** Date:12/6/2017

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Signature: ***Darshit Shah*** Date: 09/21/2017