PHARMACON

System-Wide Requirements Specification

1. Introduction

The Pharmacon app is a mobile device application that is being created to assist pharmacists track errors made during daily tasks, such as not correctly signing off on certain medication, dispensing errors, etc. The app will also assist pharmacists share, report, search, filter, and automatically email reports and alerts to internal contacts.

2. System-Wide Functional Requirements

2.1 Security

This subsection documents the security requirements that specify the extent to which the Pharmacon app will protect itself and its data from accidental, malicious, or unauthorised access, use, modification, destruction, or disclosure.

### 2.1.1 Identification Requirements

This section stipulates the identification requirements that detail the extent to which the Pharmacon app will identify its users before interacting with them:

* Staff member – a minimum of 99.999% of the time, the Pharmacon app will identify the staff member before permitting the staff member to perform the following:
  + Enter a new occurrence of an error
  + Update/modify a current record
* Supervisor – a minimum of 99.999% of the time, the Pharmacon app will identify the supervisor before permitting the Supervisor to perform the following:
  + Enter a new occurrence of an error and error type
  + Search and filter current records
  + Generate reports and graphs in required format
  + Update/modify a current record
  + Send reports
  + Manage contacts (add, update, delete)
* Administrator – a minimum of 99.999% of the time, the Pharmacon app will identify the Administrator before permitting the Administrator to perform the following:
  + Search and filter current records
  + Generate reports/graphs in required format
  + Send reports
  + Enter a new occurrence of an error, contact, and error type
  + Update/modify a current record
  + Delete a record
  + Manage contacts (add, update, delete)
  + Customise form

2.2 Audit

This section specifies the following requirements related to the degree to which the Pharmacon app must support auditing of its transactions:

* The app is to maintain details of each error that has occurred:
  + Date of error
  + Time of error
  + Patient name
  + Patient identification number
  + Type of patient
  + Type of error
  + Medication issued
  + Explanation of how error occurred
  + Where was error detected
  + Was an IIMS completed (IIMS is hospital wide error recording system)
  + General comment
  + Person entering the error
  + Date of entry
  + Time of entry
  + Date of modification
  + Time of modification
  + Person who made the modification
  + Changes made to record
  + Reason for modification
* The app is to maintain details of each contact:
  + Name
  + Role
  + Address
  + Phone number
  + Email address
* The app is to maintain details of each record that has been deleted:
  + Date of deletion
  + Time of deletion
  + Person who deleted the record
  + Reason for deletion

2.3 Reporting

This section specifies the following requirements related to the reporting to which the Pharmacon app must support:

* The Pharmacon app is to report on:
  + Errors recorded
    - By date
    - By error type
    - By medication
    - By patient type
    - By person entering error
  + Contact details
  + Deleted records
    - By records deleted
    - By date
    - By person making deletions
* The Pharmacon app is to create graphs/charts based on:
  + Number of errors by patient type
  + Number of errors by date
  + Medication by patient type
  + On fields selected by user
* The Pharmacon app is to be able to save report criteria to enable report to be run again in the future

2.4 Printing

This section relates to the specific requirements relating to printing to which Pharmacon must support:

* The app is to print:
  + Reports
  + Graphs/charts
  + Contacts

3. System Qualities

3.1 Usability

This section specifies the following requirements associated with the ease with which the Pharmacon app can be used.

* The majority of typical beginner users should be able to:
  + Login within three minutes
  + Complete a new data entry within three minutes
  + Complete a search within two minutes
  + Create a report within five minutes
* The majority of typical experienced users should be able to:
  + Login within one minute
  + Complete a new data entry within 1.5 minutes
  + Complete a search within one minute
  + Create a report within two minutes
* The average user should be able to freely, easily and quickly navigate between the various functions of the Pharmacon app to complete required tasks.

3.2 Reliability

3.2.1 Reliability

This section specifies the following requirements associated with the reliability of the Pharmacon app:

* The Pharmacon app shall be fully backed up daily
  + The database shall be backed up as per *Recoverability* requirements
* The mean time between app failures shall exceed four months

3.2.3 Availability

The Pharmacon app shall give users 99% operational availability.

3.2.3 Integrity

This section specifies the integrity requirements that identify the extent to which the Pharmacon app will protect its data:

* The Pharmacon app will protect 99.99% of its data from intentional corruption through unauthorised creation, modification, or deletion.
* The Pharmacon app will detect repeated authentication failure attempts and advise the Administrator, a minimum of 99.99% of the time, within two minutes if it is unable to verify the identity of any user in less than four attempts within any one-hour period.
* The Pharmacon app shall provide informed feedback to user for any error and/or bad data entry.

3.2.4 Recoverability

This section specifies the following requirements associated with the recovery of the Pharmacon app:

* The Pharmacon app shall save all changes to the SQLLite database on the Android device every hour at a minimum.
* The Pharmacon app shall be backed up to the cloud server MySQL database hourly at a minimum. If access to the cloud server is constantly available, the app is send updates to the server as changes are made.

3.3 Performance

3.3 Response Times

Pharmacon app is to respond to user requests as follows:

* Login request – 2 seconds
* Save new entry – 2 seconds
* Create report – 1 minute
* Delete entry – 2 seconds

3.4 Supportability

3.4.1 Compatibility

This section indicates the requirements that the Pharmacon app needs to be able to integrate with other applications and the platform for which it will be supported.

* The Pharmacon app will be built for the Android platform.
* The Pharmacon app is required to integrate with Redash to enable email automatic emailing of reports/alerts to contact list of pharmacies.
* The Pharmacon app shall be able to integrate with Redash to enable the printing of generated reports.
* The Pharmacon app is to be integrated with MySQL through Redash and SQLLite.
* The Pharmacon app is to be integrated with the cloud server holding an instance of the MySQL database.

3.4.2 Maintainability

This section specifies the conformance to architectural, design, and coding standards that the Pharmacon app will meet.

* The architectural standard for the Pharmacon app will be Android 16: Android 4.1 (Jelly Bean), which currently enables the app to be used on approximately 99.2% of Android devices.
* The design of the Pharmacon app will conform to current standards.
  + Minimise cognitive load
  + Optimise user flow (how the user interacts with the app)
  + Minimise clutter
  + Make navigation self-evident
  + Optimise interactions for the medium
  + Designed elements should look like how they behave
  + Design finger-friendly tap-targets
  + Consider the thumb zone
  + Design for interruption
* The creation of the Pharmacon app will conform to current Java Programming Style Guidelines for ease of reading and maintenance of code.

4. System Constraints

4.1 Design Constraints

The Pharmacon app will require a relational database to capture the required information. As the commercial off-the-shelf (COTS) product – Redash – will be used and Android as the platform, MySQL will be the required relational database. This will enable the use of SQLLite as the app database for ease of integration with MySQL when the connection between the app and the cloud is unavailable.

4.2 Implementation Constraints

* Programming language to be used is Java.
* Coding is to conform to current Java Programming Style Guidelines.
* Android Studio will be used to create the app with an architectural standard of Android 16: Android 4.1 (Jelly Bean).

4.3 Interface Constraints

4.3.1 User Interfaces

The user interface is to limit the cognitive load of the user. It is to provide a self-evident navigation path for the user and minimise screen clutter.

4.3.2 Internal Software Interfaces

The Pharmacon app is required to interface with SQLLite.

4.3.3 Interfaces to External Systems or Devices

Pharmacon app is to interface with:

* Redash
* A cloud server
* MySQL

4.4 Physical Constraints

Pharmacon app is to be designed to be used on a smart phone with scalability to a standard sized tablet. The most popular tablet size is currently around 10-inch screen.

4.5 Time Constraints

The Pharmacon app is to be fully developed by October 2018.

Current milestones are:

* Life Cycle Objectives Milestone – due: 6 April 2018
  + Vision
  + Initial Requirement Model
  + Proposed Architecture and Design
  + Documentation
  + Technical Capability Demonstrator
  + Risk List
  + Initial Master Test Plan
  + Initial Project Plan
  + Inception Phase Project Status Assessment
* Life Cycle Architecture Milestone – due: 1 June 2018
  + Revised Vision
  + Revised Requirement Model
  + Revised Architecture and Design
  + Documentation
  + Executable Architecture
  + Revised Risk List
  + Revised Master Plan
  + Revised Project Plan
* ITC309 Milestone – due: *To be advised*

4.6 Cost Constraints

The Pharmacon app is a student project. Any cost for the development of the application is to be borne equally between the four members of the project team.

5. System Compliance

5.1 Licensing Requirements

Open source, free third-party software will be used wherever possible. If an API cannot be sourced this way, software will be used as per licensing requirements relating to that software.

5.2 Legal, Copyright, and Other Notices

Any legal disclaimers, copyright notices, etc., that are required by the use of third-party API, are to be included.

6. System Documentation

The need for dedicated online user documentation should be low due to the implementation of the Usability Requirements (such as self-evident navigation).

If it is established that there is a genuine need, a user guide for the Pharmacon app will be created as part of the project and be made available to the user through the app Help. The documentation will be created as part of the project and be available on deployment.