PHARMACY ERROR TRACKER

System-Wide Requirements Specification

1. Introduction

The Pharmacy Error Tracker application is a single page web 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 application will also assist pharmacists share, report, search, filter, and 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 Pharmacy Error Tracker application 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 Pharmacy Error Tracker application will identify its users before interacting with them:

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

2.2 Audit

This section specifies the following requirements related to the degree to which the Pharmacy Error Tracker application must support auditing of its transactions:

* The application 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 application is to maintain details of each contact:
  + Name
  + Role
  + Address
  + Phone number
  + Email address
* The application 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 Flexibility

This section specifies the following requirements related to the degree to which the Pharmacy Error Tracker application must support the ability of the administrator to update the error form layout.

* The administrator is to be able to:
  + Rename fields
  + Update field types (e.g. text to drop down menu)
  + Update field table
  + Add field to form
  + Remove field from form (this does not remove field from table)
* The application is to create a new instance of the database based on changes to the form and ensure reporting is updated as well.

2.4 Reporting

This section specifies the following requirements related to the reporting to which the Pharmacy Error Tracker application must support:

* The Pharmacy Error Tracker application 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 Pharmacy Error Tracker application 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 Pharmacy Error Tracker application is to be able to save report criteria to enable report to be run again in the future

2.5 Printing

This section relates to the specific requirements relating to printing to which Pharmacy Error Tracker must support:

* The application 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 Pharmacy Error Tracker application can be used.

* Most 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
* Most 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 Pharmacy Error Tracker application to complete required tasks.

3.2 Reliability

3.2.1 Reliability

This section specifies the following requirements associated with the reliability of the Pharmacy Error Tracker application:

* The Pharmacy Error Tracker application shall be fully backed up daily
  + The database shall be backed up as per *Recoverability* requirements
* The mean time between application failures shall exceed four months

3.2.3 Availability

The Pharmacy Error Tracker application shall give users 99% operational availability.

3.2.3 Integrity

This section specifies the integrity requirements that identify the extent to which the Pharmacy Error Tracker application will protect its data:

* The Pharmacy Error Tracker application will protect 99.99% of its data from intentional corruption through unauthorised creation, modification, or deletion.
* The Pharmacy Error Tracker application 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 Pharmacy Error Tracker application 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 Pharmacy Error Tracker application:

* The Pharmacy Error Tracker application shall be backed up to the webserver MySQL database hourly at a minimum.

3.3 Performance

3.3 Response Times

Pharmacy Error Tracker application 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 Pharmacy Error Tracker application needs to be able to integrate with other applications and the platform for which it will be supported.

* The Pharmacy Error Tracker application will be built for a single page web application.
* The Pharmacy Error Tracker application is required to integrate with Metabase to enable email automatic emailing of reports/alerts to contact list of pharmacies.
* The Pharmacy Error Tracker application shall be able to integrate with Metabase to enable the printing of generated reports.
* The Pharmacy Error Tracker application is to be integrated with MySQL through Metabase.
* The Pharmacy Error Tracker application is to be integrated with a webserver holding an instance of the MySQL database.

3.4.2 Maintainability

This section specifies the conformance to architectural, design, and coding standards that the Pharmacy Error Tracker application will meet.

* The architectural standard for the Pharmacy Error Tracker application will be the use of Vue.js HTML/Javascript framework, MySQL database software, and Metabase data visualisation software to enable ease of development of a single page web application.
* The use of the chosen architectural frameworks will promote ease of development.
* The design of the Pharmacy Error Tracker application will conform to current standards.
  + Minimise cognitive load
  + Optimise user flow (how the user interacts with the application)
  + 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 Pharmacy Error Tracker application will conform to current World Wide Web Consortium (W3C) standards for ease of reading and maintenance of code.

3.4.2 Priorities

* This section specifies the top five priorities, in order, of the requirements for the Pharmacy Error Tracker application.
  + Security - login and level of authority
  + Usability - ability to quickly add an error
  + Flexibility - ability to manipulate the error form
  + Reporting - ability to create visualisations
  + Auditing - logging of changes

4. System Constraints

4.1 Design Constraints

The Pharmacy Error Tracker application will require a relational database to capture the required information. As the commercial off-the-shelf (COTS) product – Metabase – will be used and Vue.js HTML/Javascript framework as the framework, MySQL will be the required relational database.

4.2 Implementation Constraints

* Programming language to be used is HTML, CSS, JavaScript.
* Coding is to conform to current World Wide Web Consortium (W3C) standards.
* Visual Studio Code will be the main development environment.

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 Pharmacy Error Tracker application is required to interface with MySQL.

4.3.3 Interfaces to External Systems or Devices

Pharmacy Error Tracker application is to interface with:

* Metabase
* A webserver
* MySQL database
* Email application

4.4 Physical Constraints

Pharmacy Error Tracker application 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 Pharmacy Error Tracker application is to be fully developed by October 2018 (final date to be advised in ITC309).

Current milestones are:

* Life Cycle Objectives Milestone – due: 9 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: 4 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 Pharmacy Error Tracker application 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 using 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 Pharmacy Error Tracker application will be created as part of the project and be made available to the user through the application Help. The documentation will be created as part of the project and be available on deployment.