

## Document Status: Approved

Approved by: Management Representative

Released by : Mentor Labs

## Revision / Document History

| Ver. | Date       | Changed by  | Modifications   |
|------|------------|-------------|-----------------|
|      |            |             |                 |
| 01   | 24/06/2024 | Bhagyashree | Initial version |
|      |            |             |                 |
|      |            |             |                 |

## List of Abbreviations

|     |                           |
|-----|---------------------------|
| DFD | Data Flow Diagram         |
| E-R | Entity Relationship       |
| RS  | Requirement Specification |

## Table of Contents

|   |           |
|---|-----------|
| <b>1. INTRODUCTION</b>                                      | <b>3</b>  |
| 1.1 Purpose   | 3         |
| 1.2 Scope   | 3         |
| 1.3 Definitions, Acronyms and Abbreviations                 | 3         |
| 1.4 References  | 3         |
| 1.5 Coordinators  | 3         |
| <b>2. SOFTWARE REQUIREMENTS</b>                             | <b>3</b>  |
| 2.1 Operational Requirements                                | 3         |
| 2.2 Functional Requirements                                 | 4         |
| 2.3 User Interface Requirements                             | 7         |
| 2.4 External Interface Requirements                         | 18        |
| <b>3. PROJECT EXECUTION RELATED REQUIREMENTS</b>            | <b>18</b> |
| 3.1 Development Environment                                 | 18        |
| Technologies to be used for development of the Application: | 18        |
| 3.2 Design requirements                                     | 18        |
| 3.3 Coding requirements                                     | 18        |
| 3.4 Error handling requirements                             | 18        |
| 3.5 Resource Requirements                                   | 18        |
| Technologies to be used for development of the Application: | 18        |
| 3.6 Risk management   | 18        |
| 3.7 Training Requirements                                   | 18        |
| <b>4. TESTING REQUIREMENTS</b>                              | <b>18</b> |
| <b>5. QUALITY ASSURANCE ACTIVITIES</b>                      | <b>19</b> |
| <b>6. SOFTWARE ACCEPTANCE CRITERIA</b>                      | <b>19</b> |
| <b>7. DELIVERABLES</b>                                      | <b>19</b> |
| 7.1 List of Deliverables                                    | 19        |
| 7.2 Delivery  | 19        |
| <b>8. REQUIREMENTS ACCEPTANCE STATEMENT</b>                 | <b>19</b> |

## **1. Introduction**

### **1.1 Purpose:**

The purpose of this document is to outline the software requirements for a digital medication management system that helps patients track their prescriptions, dosages, and reminders.

### **1.2 Scope:**

The scope of this project includes the design, development, testing, and deployment of a digital medication management system that:

- Allows patients to track their medications, dosages, and schedules
- Sends reminders and notifications for medication doses and refills
- Integrates with pharmacy systems for real-time updates on medication availability and pricing
- Provides a secure and user-friendly interface for patients to manage their medications
- Offers features for healthcare providers to monitor patient adherence and communicate with patients.

The scope of this project excludes:

- Development of a physical device or hardware component.
- Integration with electronic health records (EHRs) or other healthcare systems beyond pharmacy systems.
- Provision of medical advice or diagnosis.
- Development of a mobile app for healthcare providers.

### **1.3 Definitions, Acronyms and Abbreviations**

**SRS:** Software Requirements Specification

**UI:** User Interface

**API:** Application Programming Interface

## 2. References

Business process requirements document

### 2.1 Coordinators

1. Bhagyashree

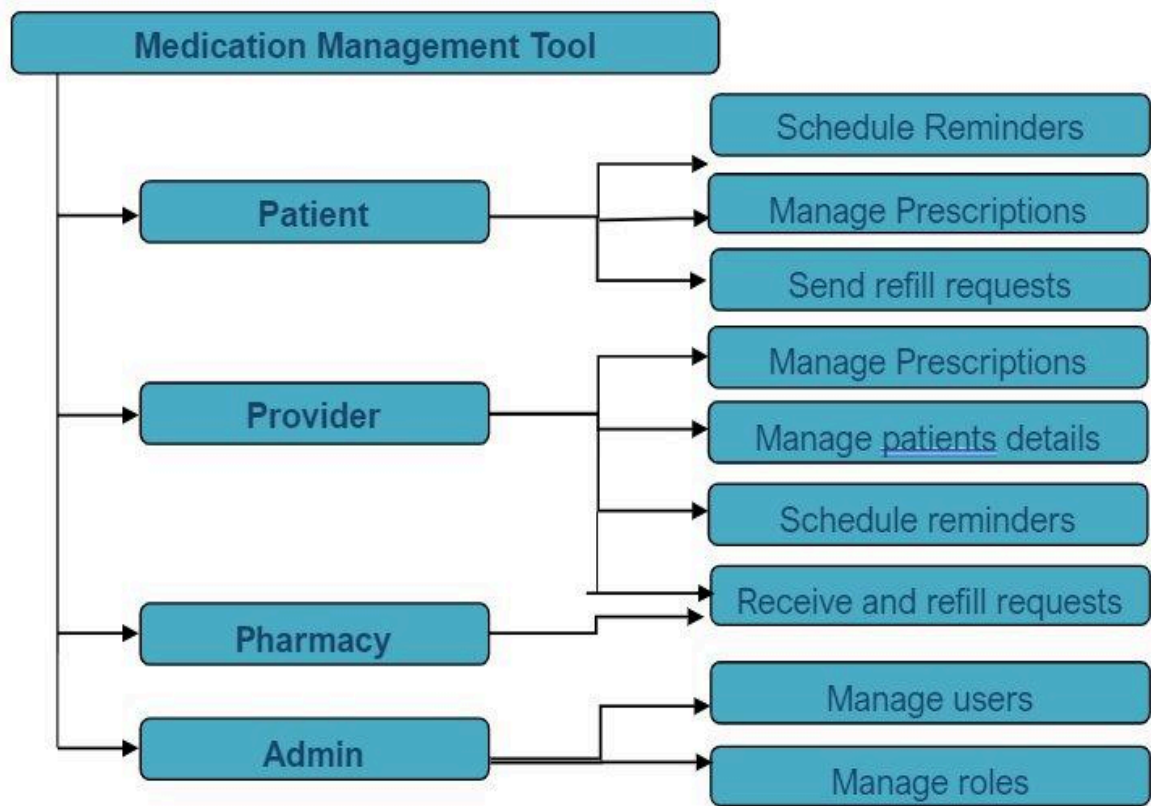
## 3. Software Requirements

### 3.1 Operational Requirements

**The Medication Management Tool shall meet the following operational requirements:**

- Medication Scheduling: The system shall allow patients to schedule and manage their medication regimens, including dosages, frequencies, and refill reminders.
- Pharmacy Integration: The system shall integrate with pharmacy systems to retrieve real-time medication availability, pricing, and refill information.
- Patient Reminders: The system shall send reminders to patients via SMS, email, or in-app notifications for medication doses, refills, and appointments.
- Adherence Tracking: The system shall track patient adherence to medication regimens, including missed doses and late refills, and provide alerts to healthcare providers.
- Secure Messaging: The system shall provide a secure messaging platform for patients to communicate with healthcare providers, including secure messaging and video conferencing.
- Reporting and Analytics: The system shall generate reports and analytics on patient adherence, medication usage, and health outcomes, to support healthcare providers in making informed decisions.

FIGURE 2.1 USE CASE DIAGRAM



### 3.2 Functional Requirements

|                    |                            |                                      |
|--------------------|----------------------------|--------------------------------------|
| Requirement Tag ID | RS-I-1 Fetch all the users |                                      |
| Source/Trigger     | Admin                      |                                      |
| Description        | Input                      | -                                    |
|                    | Process                    | Search for all the registered users. |
|                    | Output                     | Search successful.                   |
| Validation Method  |                            |                                      |

|                    |                    |                      |
|--------------------|--------------------|----------------------|
| Requirement Tag ID | RS-I-2 Fetch Roles |                      |
| Source/Trigger     | Hospital Staff     |                      |
| Description        | Input              | -                    |
|                    | Process            | Search all the roles |
|                    | Output             | Search successful.   |
| Validation Method  |                    |                      |

|                    |                                |   |
|--------------------|--------------------------------|---|
| Requirement Tag ID | RS-I-3 Fetch all prescriptions |   |
| Source/Trigger     | Patient                        |   |
| Description        | Input                          | patient id  |
|                    | Process                        | Search for all the prescriptions given for that particular patient. |
|                    | Output                         | Search successful.  |
| Validation Method  |                                |   |

|                    |                             |  |
|--------------------|-----------------------------|--|
| Requirement Tag ID | RS-I-4 Add new prescription |  |
| Source/Trigger     | Patient                     |  |
| Description        | Input                       | prescription details, medication details, reminders                      |
|                    | Process                     | Collect all the details from the user and then add it into the database. |
|                    | Output                      | Prescription id  |
| Validation Method  |                             |  |

|                    |                                  |   |
|--------------------|----------------------------------|---|
| Requirement Tag ID | RS-I-5 Fetch all refill requests |   |
| Source/Trigger     | Patient                          |   |
| Description        | Input                            | Patient id  |
|                    | Process                          | Search for all the refill requests made by the patient. |
|                    | Output                           | Search successful.                                      |
| Validation Method  |                                  |   |

|                    |                           |  |
|--------------------|---------------------------|--|
| Requirement Tag ID | RS-I-6 Fetch all patients |  |
| Source/Trigger     | Provider                  |  |

# Quality System Template

RS-yyyy/nnnn Requirements Specification - Medication Management Tool Version: 1.2

Page 7 of 19

|                          |                |   |
|--------------------------|----------------|---|
| <i>Description</i>       | <i>Input</i>   | -   |
|                          | <i>Process</i> | <i>Search all the patients based on the provider d.</i> |
|                          | <i>Output</i>  | <i>Search successful.</i>                               |
| <i>Validation Method</i> |                |   |

|                          |                        |  |
|--------------------------|------------------------|--|
| Requirement Tag ID       | RS-I-7 Add new patient |  |
| Source/Trigger           | Provider               |  |
| <i>Description</i>       | <i>Input</i>           | <i>Patient details, prescription details, medication details,</i>  |
|                          | <i>Process</i>         | <i>Create a new record of the patient and map prescription and medication details to it and set the reminders for medications.</i> |
|                          | <i>Output</i>          | <i>Patient id</i>  |
| <i>Validation Method</i> |                        |  |

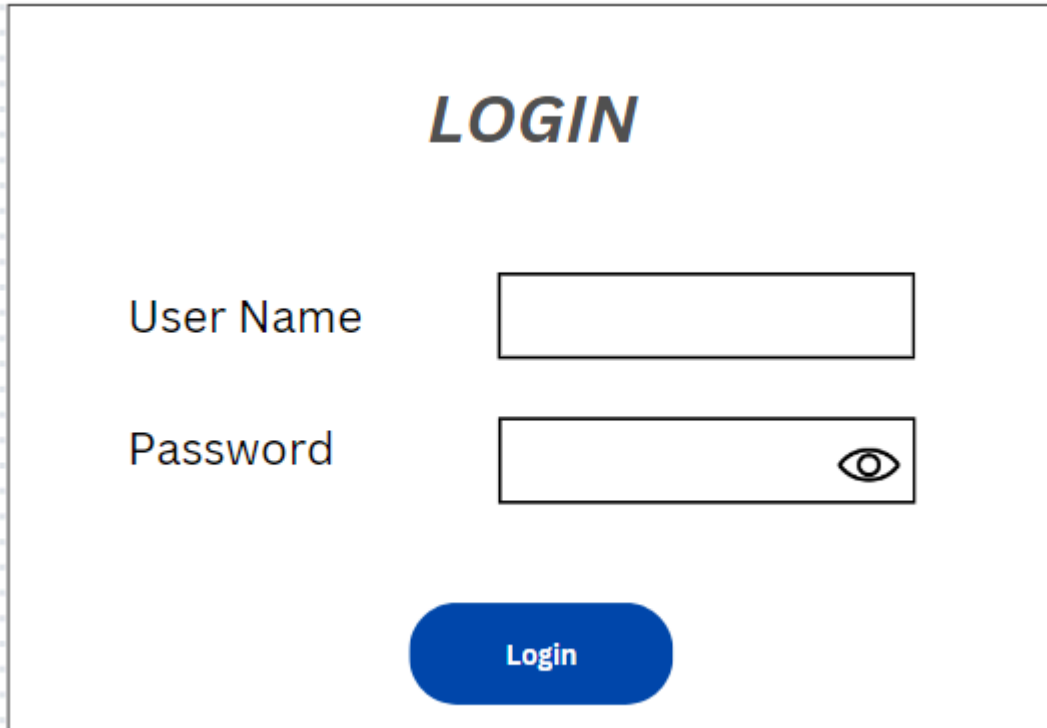
|                          |                                |  |
|--------------------------|--------------------------------|--|
| Requirement Tag ID       | RS-I-8 Fetch all the requests. |  |
| Source/Trigger           | Provider                       |  |
| <i>Description</i>       | <i>Input</i>                   | -  |
|                          | <i>Process</i>                 | <i>Search all the requests made for prescriptions.</i> |
|                          | <i>Output</i>                  | <i>Search successful.</i>                              |
| <i>Validation Method</i> |                                |  |

|                          |                        |  |
|--------------------------|------------------------|--|
| Requirement Tag ID       | RS-I-9 Update request. |  |
| Source/Trigger           | Provider               |  |
| <i>Description</i>       | <i>Input</i>           | <i>Updated request details .</i>                   |
|                          | <i>Process</i>         | <i>Update the existing refill request details.</i> |
|                          | <i>Output</i>          | <i>Search successful.</i>                          |
| <i>Validation Method</i> |                        |  |

|                          |                                |  |
|--------------------------|--------------------------------|--|
| Requirement Tag ID       | RS-I-8 Fetch all the requests. |  |
| Source/Trigger           | Pharmacy                       |  |
| <i>Description</i>       | <i>Input</i>                   | -  |
|                          | <i>Process</i>                 | <i>Search all the requests made for medications.</i> |
|                          | <i>Output</i>                  | <i>Search successful.</i>                            |
| <i>Validation Method</i> |                                |  |


|                          |                        |  |
|--------------------------|------------------------|--|
| Requirement Tag ID       | RS-I-9 Update request. |  |
| Source/Trigger           | Pharmacy               |  |
| <i>Description</i>       | <i>Input</i>           | <i>Updated request details .</i>                   |
|                          | <i>Process</i>         | <i>Update the existing refill request details.</i> |
|                          | <i>Output</i>          | <i>Search successful.</i>                          |
| <i>Validation Method</i> |                        |  |

### 3.3 User Interface Requirements

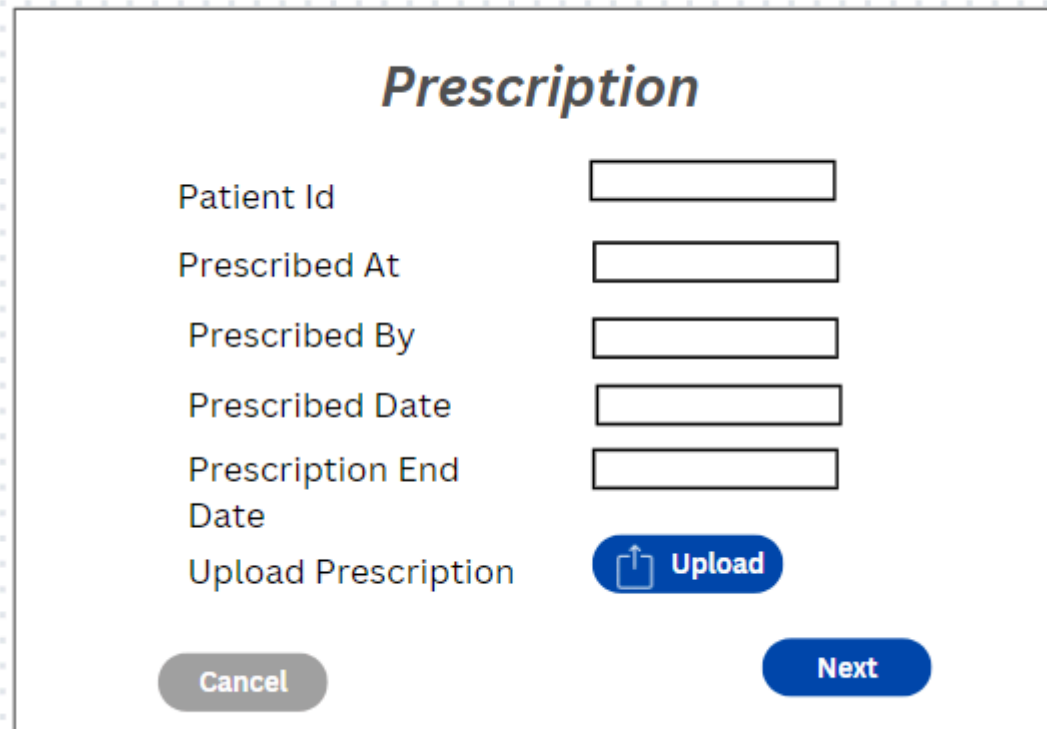


**LOGIN**

User Name

Password  

**Login**



**Prescription**


Patient Id

Prescribed At

Prescribed By

Prescribed Date

Prescription End Date

Upload Prescription  **Upload**

**Cancel** **Next**



### Medications

| Medication Name | Pharmacy Name | Quantity | Refill Threshold | Dosage Time |
|-----------------|---------------|----------|------------------|-------------|
|                 |               |          |                  |             |
|                 |               |          |                  |             |
|                 |               |          |                  |             |
|                 |               |          |                  |             |

Add

Prescribe

### Reminders

Patient Id

Medication Id

Remind On

Set Reminder

### Request Refill

Request Type

Prescription ID/  
Medication ID

Status

Send Request

| Available Prescriptions |                    |                   |             |
|-------------------------|--------------------|-------------------|-------------|
| Prescription ID         | Prescribed By      | Total Medications |             |
| PRE001                  | Dr. Sunil Kalaskar | 2                 | <div></div> |
| PRE002                  | Dr. Ahmed Khan     | 3                 | <div></div> |
| PRE003                  | Dr. Greeshma       | 5                 | <div></div> |
| PRE004                  | Dr. Ganesh         | 3                 | <div></div> |
|                         |                    |                   |             |

## *Sent Refill Requests*

Refill request sent for Sinorest to PHARM001

Refill request sent for Insulin to PHARMA002

Refill request has been sent to HOS002

## *Notifications*

**PRE004 need to be refilled**

**Dosage time**


Refill request for PRE002 has been sent

## Patient Admission Form

|               |                      |            |  |
|---------------|----------------------|------------|--|
| Govt ID       | <input type="text"/> | ID Type    | <input type="text"/>   |
| First Name    | <input type="text"/> | Last Name  | <input type="text"/>   |
| Date of birth | <input type="text"/> | Age        | <input type="text"/>   |
| Gender        | <input type="text"/> | Contact No | <input type="text"/>   |
| Address       | <input type="text"/> | Image      |  Upload |

Admit

## Modify Patient Details

|               |                      |            |  |
|---------------|----------------------|------------|--|
| Govt ID       | <input type="text"/> | ID Type    | <input type="text"/>   |
| First Name    | <input type="text"/> | Last Name  | <input type="text"/>   |
| Date of birth | <input type="text"/> | Age        | <input type="text"/>   |
| Gender        | <input type="text"/> | Contact No | <input type="text"/>   |
| Address       | <input type="text"/> | Image      |  Upload |

Delete

Update

### *Available patients*



Bhagyashree P



Reddirani B



Dhivyaa S



Roshan C



Komal M C



Heena K



Radhipriya R

### *Received Refill Requests*

Mr. Adarsh requested for refill of Sinorest

Ms. Bhanashree requested a refill for Insulin

Mr. Chayan has requested a refill of Cheston cold

### Refill request received by #BP12071005

| 1 FOR 71  |  |
|---|--|
| DOD PRESCRIPTION  |  |
| FOR: (Full name, address, & phone number) (if under 18, give age)   |  |
| John H. Doe, M.D., M.P.H., U.S.N.   |  |
| U.S.S. NEVER FORGETTEN (DD-178)   |  |
| MEDICAL FACILITY  | DATE   |
| U.S.S. NEVER FORGETTEN (DD-178)   | 23 Jun 99  |
| <b>B</b> (Description) <span style="float: right;">am or ml</span><br>(Exemption) <span style="float: right;">15 ml</span><br>In 100ml bottle<br>Amphetamine <span style="float: right;">120 ml</span><br>(Substitution)<br>70 & 1/2 solution<br>(Signa)<br>Signa: 5ml 1:1 & c. |  |
| REFILL: (Date)  | EXP. DATE: (Date)  |
| REF. NO: 2345/105   | FILLED BY: (Signature)   |
| IL NUMBER: 10072  | (Signature)<br>SIGNATURE, TITLE, NAME<br>SIGNATURE, RANK, AND DEGREE |

EDITION OF 1 JAN 80 MAY BE USED FOR  
SIR 010317-200-0001

Deny

Refill

### Ms. Bhanashree requested a refill for Insulin

Medication Name Insulin


Requested quantity 10

Status

Comment

Deny

Send



#BP12071005

Update

Patient Details

Prescription Details

Medication Details

Govt ID

ID Type

First Name

Last Name

Date of birth


Age

Gender

Contact No

Address

NEXT


#BP12071005
Update

✓ Patient Details
○ Prescription Details
● Medication Details

Prescribed At

Prescribed By

Prescribed Date


Prescription End Date

Upload Prescription

View Prescription

BACK

NEXT


#BP12071005
Update

✓ Patient Details
✓ Prescription Details
○ Medication Details

| Medication Name | Pharmacy Name | Quantity | Refill Threshold | Dosage Time |
|-----------------|---------------|----------|------------------|-------------|
|                 |               |          |                  |             |
|                 |               |          |                  |             |
|                 |               |          |                  |             |
|                 |               |          |                  |             |

BACK

FINISH



### 3.4 External Interface Requirements

The system shall integrate with pharmacy systems using APIs or other standardized interfaces.

The system shall support data exchange with healthcare providers and pharmacies.

## 4. Project Execution Related Requirements

### 4.1 Development Environment

- The system shall be developed using. React and Spring Boot
- The system shall be developed using VS Code and Eclipse.

### 4.2 Design requirements

React js is used for designing this application.

### 4.3 Coding requirements

- The system shall be developed using React and Spring Boot Java Framework.
- The system shall follow Object Oriented Programming principles.

### 4.4 Error handling requirements

- The system shall provide error handling mechanisms to handle unexpected errors and exceptions.
- The system shall log errors and exceptions for debugging and troubleshooting purposes.

### 4.5 Resource Requirements

- The system shall require 1GB of storage
- The system shall be deployed on Tomcat Server.

### 4.6 Risk management

*Not applicable.*

#### **4.7 Training Requirements**

Proper training must be provided regarding the usage of the application to the end user.

The system shall provide user documentation and training materials.

### **5. Testing Requirements**

- The system shall be tested to ensure that it meets the functional and non-functional requirements outlined in this document.
- The testing shall include unit testing, integration testing, system testing, and acceptance testing.
- The testing shall be performed by the development team and independent testers.

### **6. Quality Assurance Activities**

- The project shall establish a quality assurance process to ensure that the system meets the required standards and specifications.
- The quality assurance process shall include code reviews, testing, and validation.
- The quality assurance process shall be performed by the development team and independent reviewers.

### **7. Software Acceptance Criteria**

- The system shall be accepted by the stakeholders upon completion of the testing and quality assurance activities.
- The system shall meet the functional and non-functional requirements outlined in this document.
- The system shall be free from defects and errors.

### **8. Deliverables**

#### **8.1 List of Deliverables**

Not applicable

#### **8.2 Delivery**

The system shall be delivered within 10 days.

## **9. Requirements Acceptance Statement**

Not Applicable