

Web Technology – Mobile Platforms (MAPD712)**Project: Patient Data Mobile App with React-Native****Submitted to: Prof. Rania Arbash**

By:

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1. Introduction

The effective management of patient clinical data is not only necessary, but also a crucial component of offering high-quality healthcare services in today's quickly changing healthcare environment. In an effort to improve patient care and lighten administrative duties, hospitals and other medical facilities are increasingly turning to digital solutions to streamline and optimize their workflows. A substantial step towards attaining this objective has been made with the Patient Data REST API initiative.

1.1. Background

To manage patient information in the past, healthcare providers used paper-based records and fragmented systems. This method has frequently led to waste, delays, and the potential for mistakes in patient care. Electronic health records (EHRs) and modern technology have caused a paradigm change in the healthcare sector. The difficulty, though, is in successfully utilizing digital tools' power to offer easy access to patient data while protecting data security and privacy.

1.2. Scope

The design, creation, and deployment of a RESTful API service suited to the requirements of healthcare professionals, including doctors and nurses, are all included in the project's scope. The API enables the addition and retrieval of comprehensive clinical test results as well as general patient information. A critical patient identification tool is also included, which analyzes health indicators to identify patients with critical conditions.

The goal of the project is to strike a balance between scalability, data security, and user-friendliness. It seeks to provide a complete answer to the problems healthcare providers confront in effectively handling patient data.

2. Requirement analysis

A. User Authentication and Authorization:

- The ability for users (healthcare providers) to securely log in is required.
- Different user roles (such as doctors and nurses) ought to have different access levels and permissions.

B. Add Patient Information:

- General patient data, such as name, age, gender, contact information, and medical history, should be added by healthcare professionals.
- This information needs to be securely validated and stored by the system.

C. View Patient Information:

- Users should be able to do a search using patient identifiers and read the general information for a particular patient.

D. List All Patients Information:

- A list of each patient's general information, which can be paginated for convenience, should be provided via the API.

E. Add Clinical Tests for a Patient:

- The ability to input clinical test information for a single patient, including the date, time, type of data, and readings or values, is required.
- The data should be verified by the system, and it should be linked to the appropriate patient.

F. View Clinical Tests of a Patient:

- Users ought to have access to and be able to examine comprehensive clinical test data for a particular patient.
- The information must be structured and presented clearly.

G. Delete Patient Information:

- In order to comply with data privacy laws, healthcare providers should have the flexibility to erase patient information as needed.
- The deletion procedure must be secure and permanent.

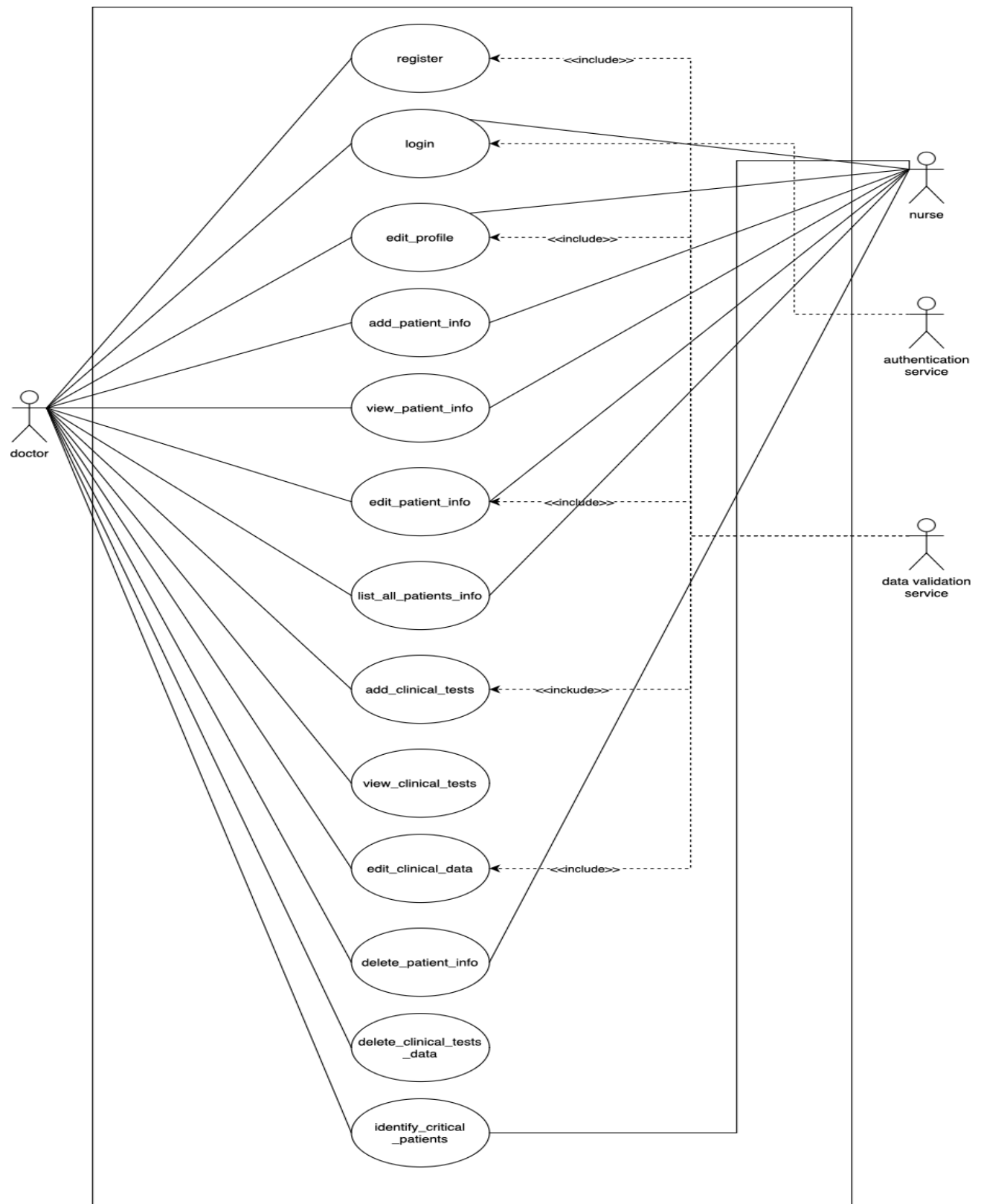
H. Delete Clinical Test Data:

- When appropriate, clinical test data for a single patient should be erasable by healthcare providers.
- Deletion must be carried out safely and with a log for auditing.

I. Identify critical patients:

- A component that allows the system to recognize patients in critical condition based on particular health parameter criteria, like blood pressure, should be included.
- Reliable and prompt identification of critical patients is required.

3. Use case Diagram



A. Use case descriptions

- Login:
 - Actor: Healthcare Provider
 - Description: Allows healthcare providers to log into the system securely using their credentials.
- Add patient info:
 - Actor: Healthcare Provider
 - Description: Enables healthcare providers to add general patient information, including name, age, gender, contact details, and medical history.
 - Relationship: <<include>> Data Validation: Includes data validation checks through the "Data Validation Service" to ensure correctness and data type compliance.
- View patient info:
 - Actor: Healthcare Provider
 - Description: Allows healthcare providers to view the general information of a specific patient by searching using patient identifiers.
- List all patient info:
 - Actor: Healthcare Provider
 - Description: Provides a list of all patients' general information for quick access. This can be paginated for easier navigation.
- Add clinical tests:
 - Actor: Healthcare Provider
 - Description: Permits healthcare providers to add clinical test data for a specific patient, including date/time, type of data, and readings/values.
 - Relationship: <<include>> Data Validation: Includes data validation checks through the "Data Validation Service" to ensure correctness and data type compliance.
- View clinical tests:
 - Actor: Healthcare Provider
 - Description: Enables healthcare providers to retrieve and review detailed clinical test data for a specific patient.
- Delete patient info:
 - Actor: Healthcare Provider
 - Description: Allows healthcare providers to delete patient information if required. The deletion process should be secure and logged for auditing.

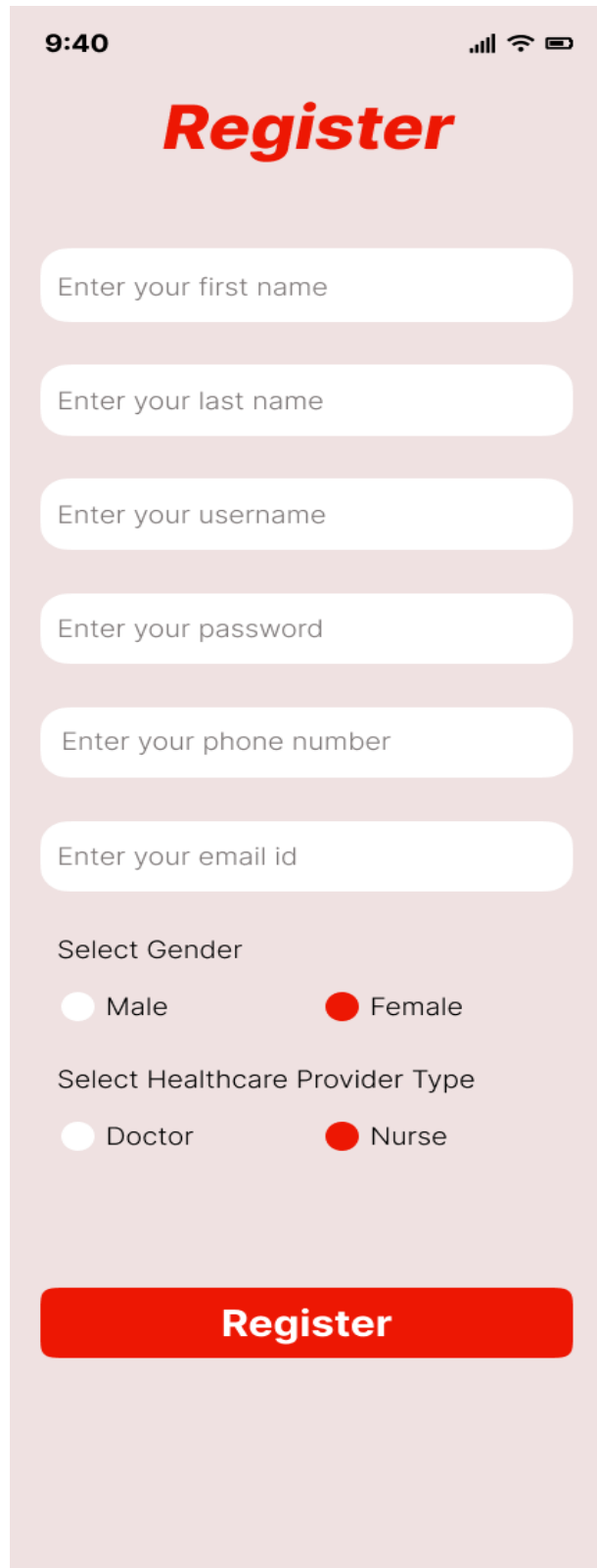
- Delete clinical test data:
 - Actor: Healthcare Provider
 - Description: Permits healthcare providers to delete clinical test data for a specific patient when necessary. Deletion should be done securely and logged for auditing.
- Identify critical patients:
 - Actor: Healthcare Provider
 - Description: The system has a feature to identify patients in critical condition based on specific health parameter criteria, such as blood pressure. Critical patient identification should be reliable and immediate.

4. Mockups

- **Mockup link:** <https://www.figma.com/proto/T15RHQKRQOVbWO5hcV5VjP/React-native?type=design&node-id=4-27&t=lhAmfU63DxqMZdo4-1&scaling=scale-down&page-id=0%3A1&mode=design>
- **Initial page**



- **Registration page**

A mobile application registration screen with a light pink background. At the top, the status bar shows the time 9:40, signal strength, Wi-Fi, and battery icons. The title 'Register' is displayed in a large, bold, red, italicized font. Below the title are six white rounded rectangular input fields with gray placeholder text: 'Enter your first name', 'Enter your last name', 'Enter your username', 'Enter your password', 'Enter your phone number', and 'Enter your email id'. Below the input fields are two sections of radio button options. The first section is labeled 'Select Gender' and has two options: 'Male' with an unselected white radio button and 'Female' with a selected red radio button. The second section is labeled 'Select Healthcare Provider Type' and has two options: 'Doctor' with an unselected white radio button and 'Nurse' with a selected red radio button. At the bottom of the screen is a large red rounded rectangular button with the word 'Register' in white bold text.

9:40

Register

Enter your first name

Enter your last name

Enter your username

Enter your password

Enter your phone number

Enter your email id

Select Gender

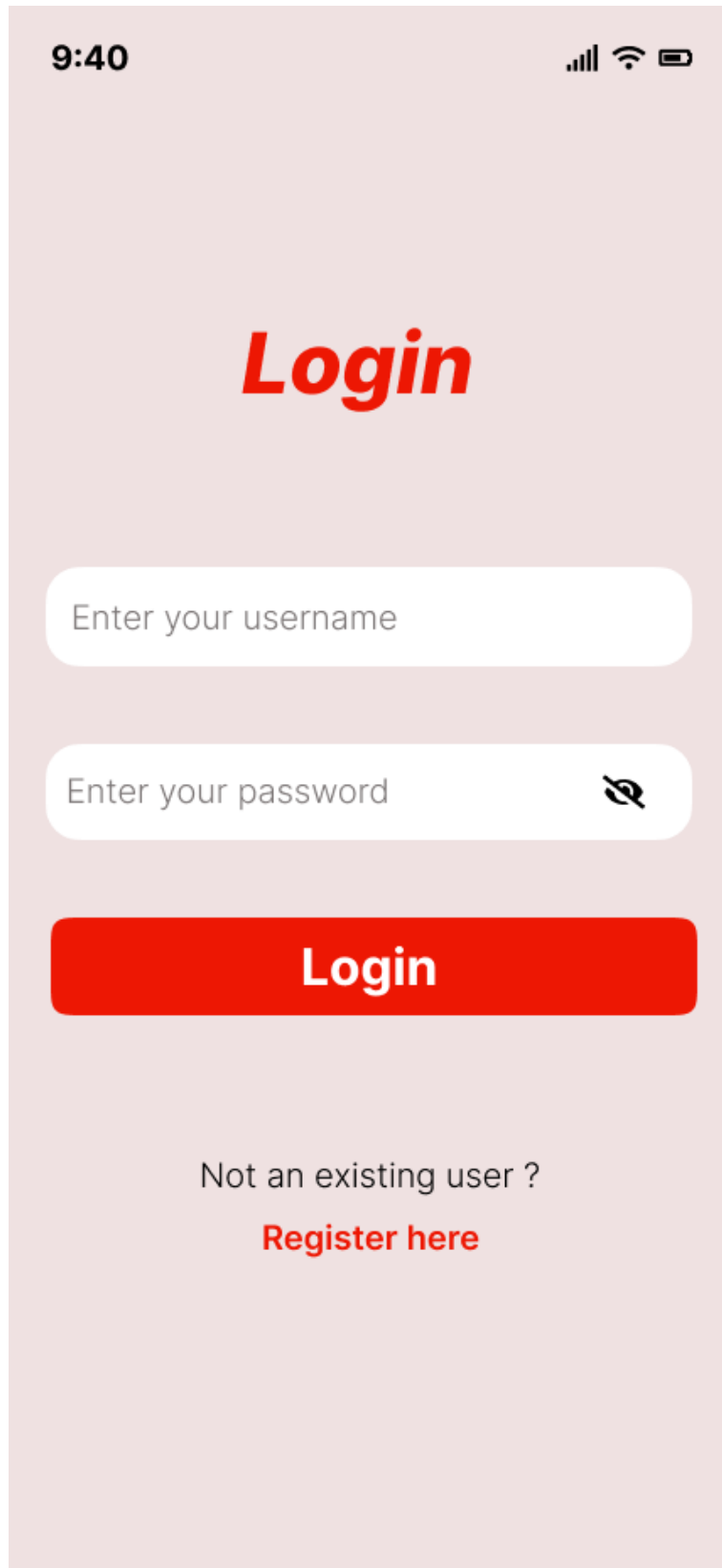
☐ Male ☒ Female

Select Healthcare Provider Type

☐ Doctor ☒ Nurse

Register

- Login page




A mobile app login screen with a light pink background. At the top, the status bar shows the time 9:40, signal strength, Wi-Fi, and battery icons. The word "Login" is displayed in a large, bold, red, italicized font. Below it are two white rounded rectangular input fields. The first field contains the placeholder text "Enter your username". The second field contains the placeholder text "Enter your password" and a small black eye icon to its right. Below the input fields is a large red rounded rectangular button with the word "Login" in white. At the bottom, the text "Not an existing user ?" is followed by a red link "Register here".

9:40

Login

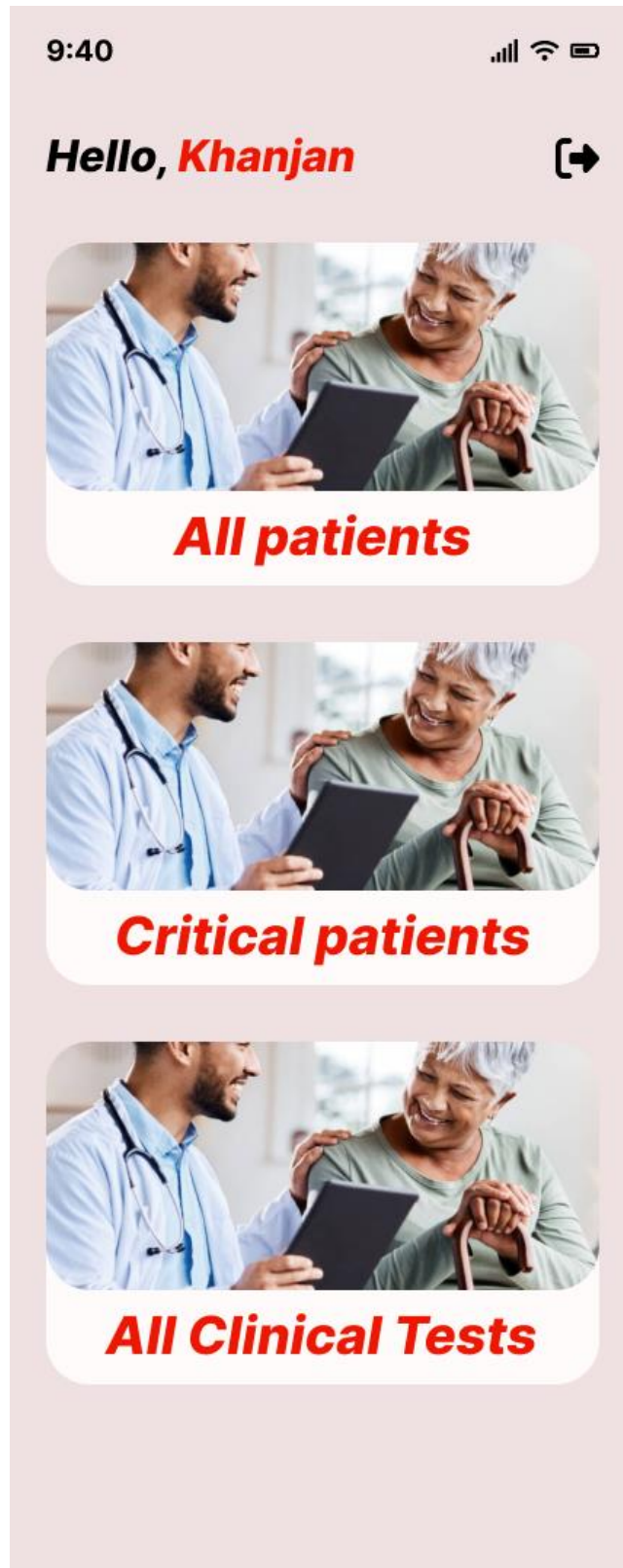
Enter your username

Enter your password 

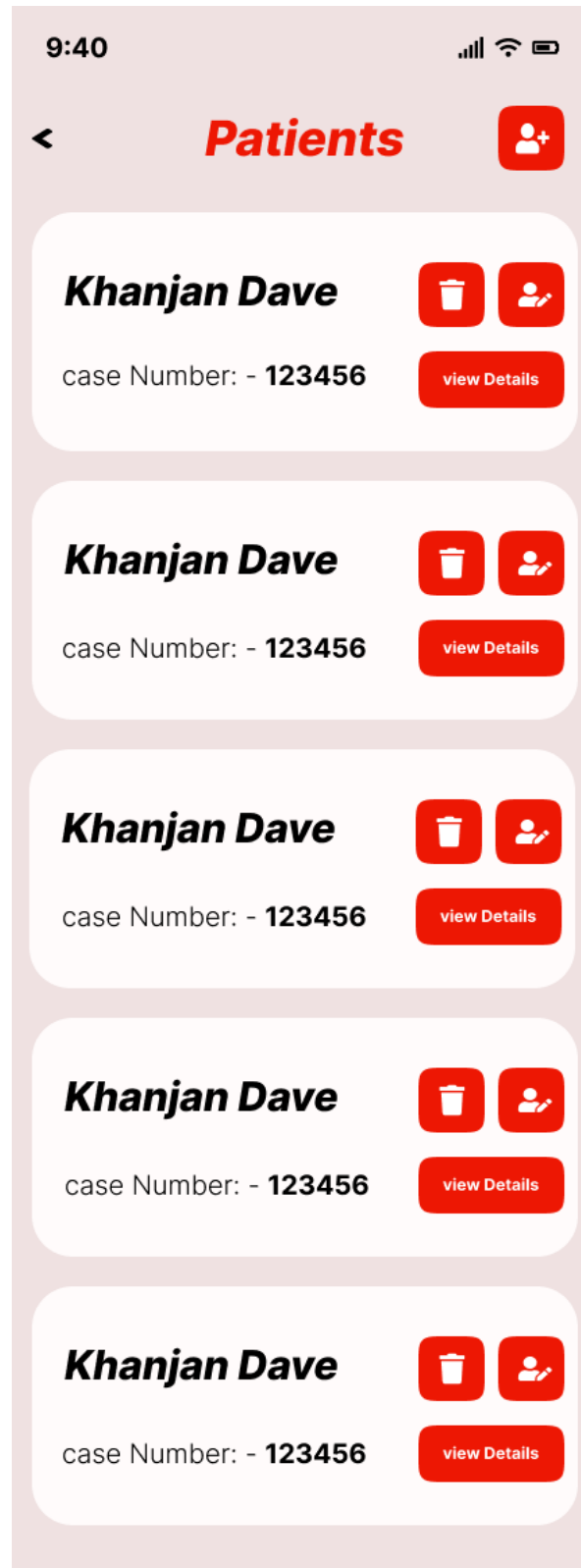
Login

Not an existing user ?
Register here

- Home page



- Patient lists



- **Add patients**

A mobile application interface for adding patient details. The screen has a light pink background. At the top, the status bar shows the time 9:40, signal strength, Wi-Fi, and battery icons. Below the status bar is a navigation bar with a back arrow and the title 'Add Patient Details' in red. The form consists of several white rounded rectangular input fields stacked vertically: 'Enter patient first name', 'Enter patient last name', 'Enter patient email address', 'Enter patient phone number', 'Enter patient weight in KG', 'Enter patient height in CM', and a larger 'Enter patient address' field. Below these fields is a 'Select Gender' section with two radio buttons: 'Male' (unselected) and 'Female' (selected). At the bottom is a red button with the text 'Add Details' in white.

9:40

< **Add Patient Details**

Enter patient first name

Enter patient last name

Enter patient email address

Enter patient phone number

Enter patient weight in KG

Enter patient height in CM

Enter patient address



Select Gender

☐ Male ☒ Female

Add Details

- View patient details

9:40



<

Patient Details

KHANJAN DAVE

Case number: -

123456

Height: -

170 CM

Weight: -

80 KGs

Gender: -

Male

phone number: -


+ 1 (111) 111 1111


email address: -

abcd@gmail.com

Address : -

**56 storey place,
Markham,
Ontario
L3S 3B4**





- **Edit patient details**

9:40

< **Edit Patient Details**

Enter patient first name

Enter patient last name

Enter patient email address

Enter patient phone number

Enter patient weight in KG

Enter patient height in CM

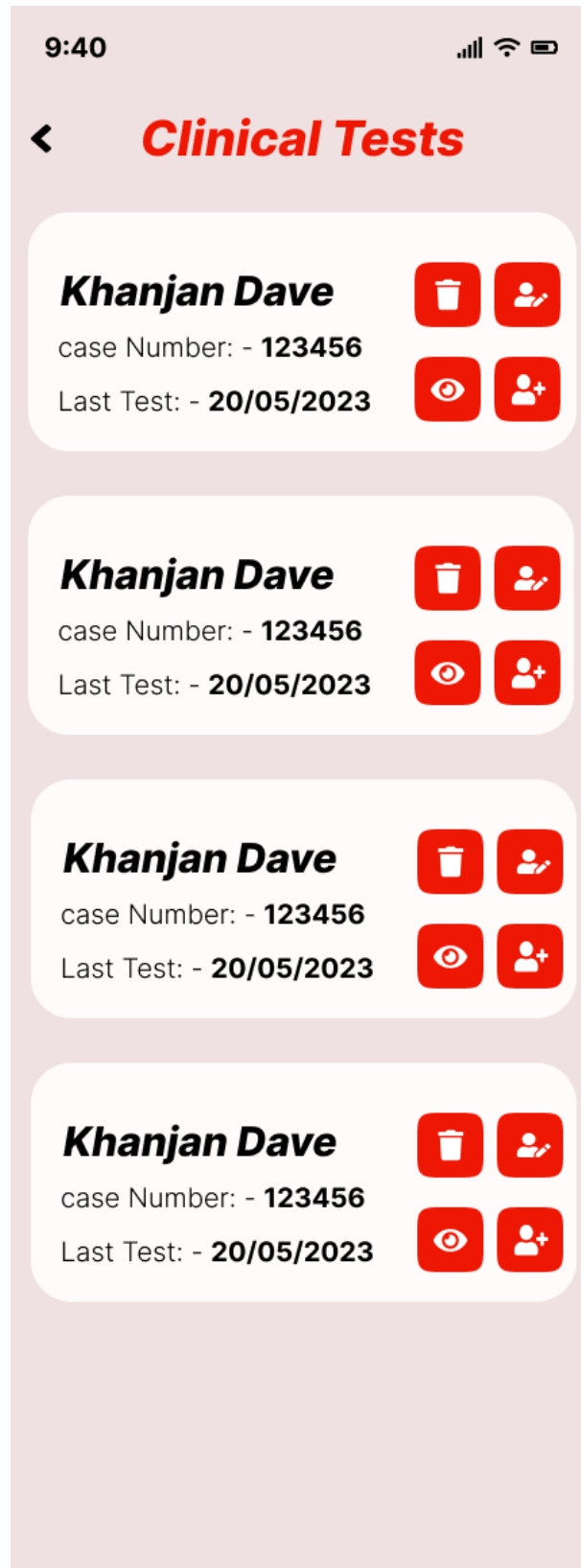
Enter patient address

Select Gender

☐ Male ☒ Female

Update

- Clinical test list



- **Add clinical test**

9:40

<

Add Test Details

Patient name: -

Khanjan Dave

case Number: -

123456

Enter Blood Pressure (X/Y mmHg)

Enter Respiratory Rate (X/min)

Enter Blood Oxygen Level (X%)

Enter Heartbeat Rate (X/min)

Patient's chief complaint

Patient's past medical history

medical diagnosis

medical prescription

Add Details

- **Edit patient tests**

9:40

<

Edit Test Details

Patient name: -

Khanjan Dave

case Number: -

123456

Enter Blood Pressure (X/Y mmHg)

Enter Respiratory Rate (X/min)

Enter Blood Oxygen Level (X%)

Enter Heartbeat Rate (X/min)

Patient's chief complaint

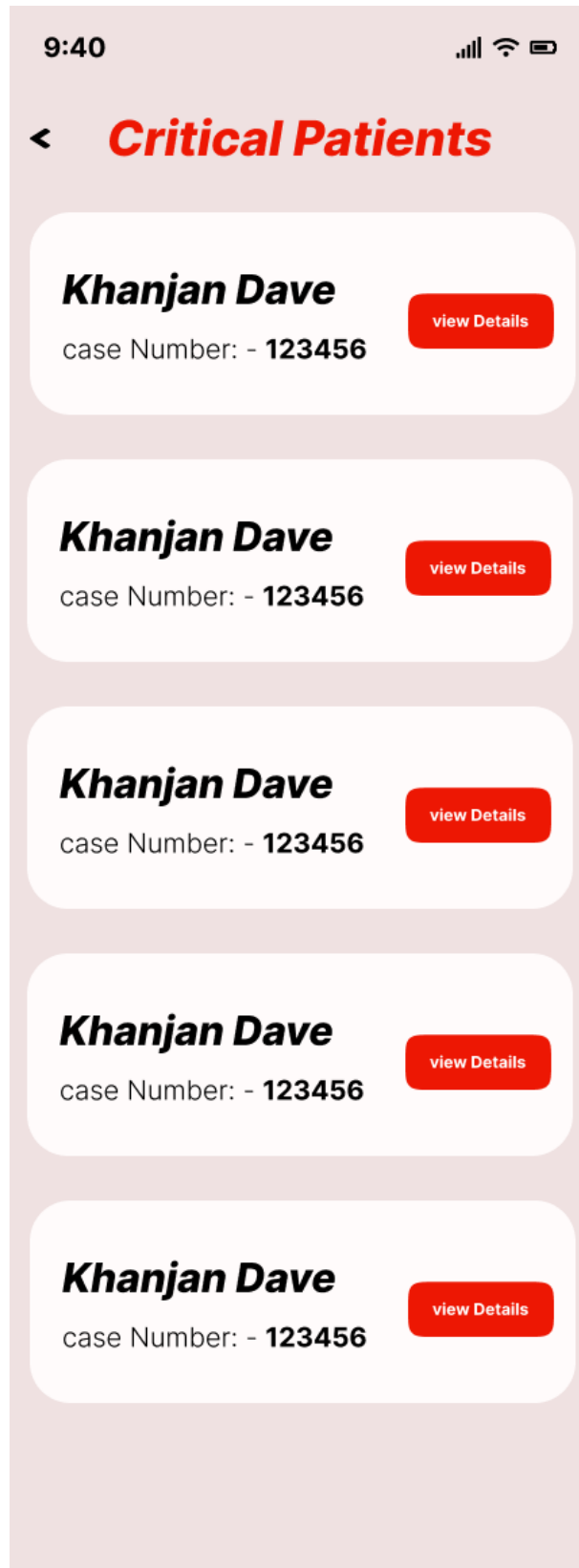
Patient's past medical history

medical diagnosis




medical prescription


Update

- Critical patient list



- Critical patient details

9:40   

 **Critical Patient Details**

KHANJAN DAVE

Case number: -	123456
Height: -	170 CM
Weight: -	80 KGs
Gender: -	Male
phone number: -	+ 1 (111) 111 1111
email address: -	abcd@gmail.com
Address : -	56 storey place, Markham, Ontario L3S 3B4
Blood Pressure: -	130
Respiratory Rate: -	80
Blood Oxygen Level: -	80
Heart Rate: -	80
Gender: -	Male
Chief complaint: -	Headache and little bit fever
Past Medical History: -	Headache and little bit fever
Medical Diagnosis: -	Headache and little bit fever
Medical Prescription : -	Headache and little bit fever