Milestone 1

Mockups and Requirement Analysis

Patient Data Mobile App with Flutter

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Group 5

(MAPD-722) Mobile Web Development

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Project Description

The project to be undertaken is to design a Flutter App and integrate a REST API Service for a Patient Clinical Data Management Application which will help the Health Care Providers to manage patient data and provide service accordingly. The product needs to be a Mobile Client built using Flutter. Basically it is a Mobile App that will support Health Care Providers to manage their patients.

Requirements have been provided to satisfy the relevant business needs. Therefore the requirements that need to be satisfied by the application are,

- The system will provide features to add, update and view patient details to track and monitor them.
- Users should be able to view a detailed list of an individual patient's clinical data.
- Users should be able to find critically ill patients using the system.
- Users should be able to add and update clinical data to patients' records and flag them if they are in critical condition.
- The data in the patients clinical file should include (Not limited to) the following,
    - Date/Time
    - Medical Data and its Measurement Reading/Value
    - The following readings should be added to the patients' clinical file (But not limited to)
        - Blood Pressure - X/Y mmHg
        - Respiratory Rate - X/min
        - Blood Oxygen Level - (X%)
        - Heartbeat Rate (X/min)

And as far as the system goes the following views/functionalities are required, but again not limited to,

- Add and Update Patient
- View Patient
- List All Patients
- Add and Update Patient Record
- View Patient Records

Therefore to implement the client and Rest APIs we will be using Flutter and Node JS. Therefore the user interface elements can be individually designed and implemented while the backend services to Add and Fetch data can be implemented with Rest APIs. The main advantage of using APIs for the backend service is that both the Frontend and the Backend of the application are allowed to evolve independently. Further, Rest APIs provide a great deal of flexibility, because they are not bound to any resources or methods, therefore they can be changed to accommodate any format of data and updated to fit into any form of structure as long as it handles correct implementation of hypermedia.

Use Case Model

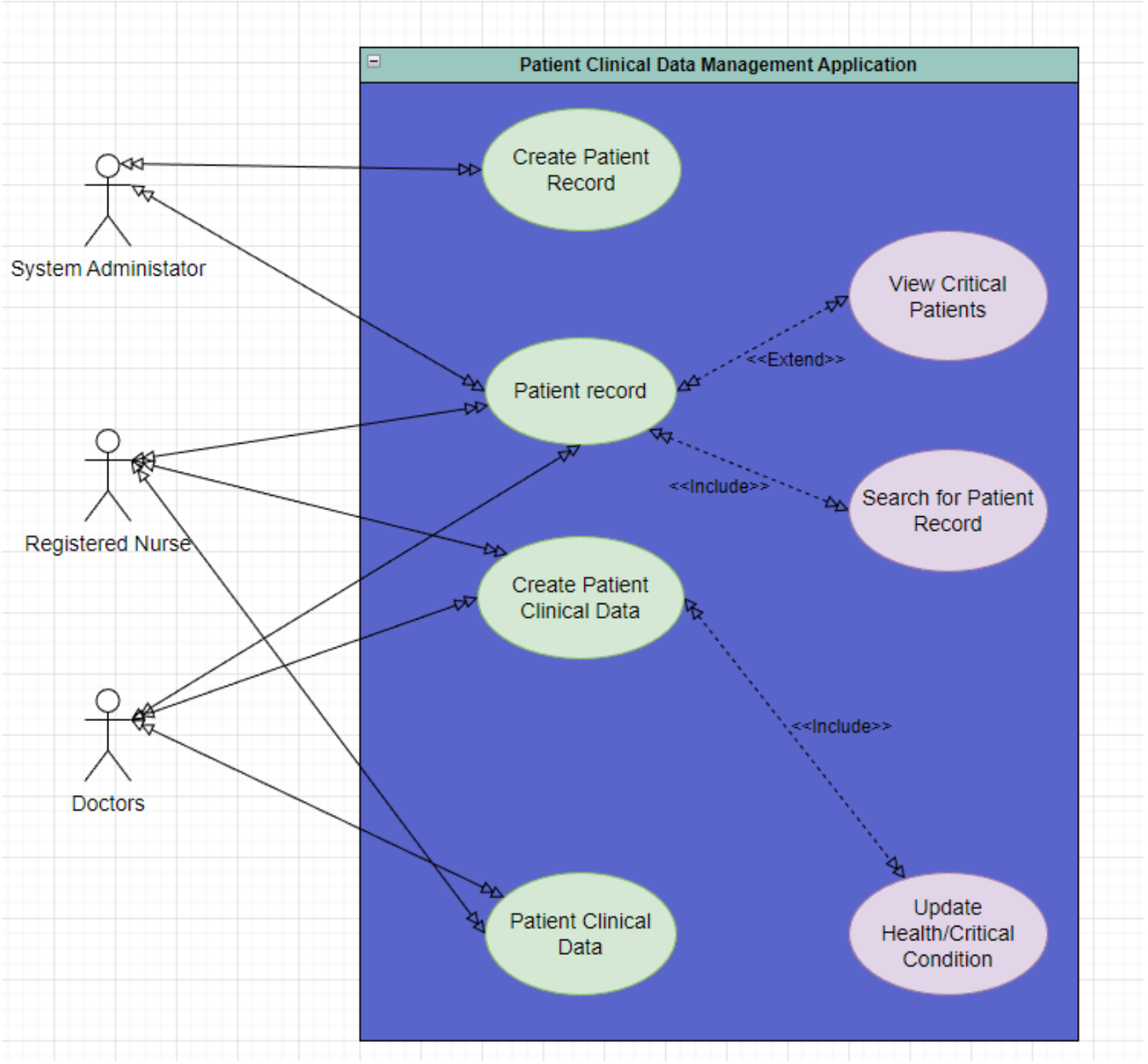

Fig1:- Use Case Model

Functionality

Let's take a detailed look at the functionalities of the system.

Feature	Data Input/Output	Description
Add a New Patient	Inputs • Patient Name • Patient DOB • Address • Contact Number • E-Mail • Emergence Contact Person • Emergency Contact Number Actions • Submit Button	There will be a view to add new patient details. This is where the administrator will enter and submit/save the personal details of the Patient. And this data will be available to be viewed/accessed by the doctor and registered nurse in a separate view.
Update Existing Patient	Inputs • Patient Name • Patient DOB • Address • Contact Number • E-Mail • Emergence Contact Person • Emergency Contact Number Actions • Submit Button	There will be a view to update existing patient details. This is where the administrator will update and submit/save the personal details of the Patient. And this data will be available to be viewed/accessed by the doctor and registered nurse in the same view.
List All Patients	Outputs • List of all patients • Results of search input Actions • View Patient Records Button	This view will list all patients in the system and allow the user to click the “View Patient Records” button and navigate to the individual patient’s personal details view.
Search Patient	Inputs • Patient First/Last Name • Patient ID Outputs • List matching patients in view	The search feature included in the “List All Patients” view will enable the user to search for a particular patient in a large database of patients.
View Patient	Outputs • Lists all the patient’s personal details Actions • View Patient Clinical Data Button	In this view the user will be able to view an individual patient’s personal details and also navigate via the “View Patient Clinical Data” Button to navigate to add clinical data, or view the data.
Add Patient Clinical Record	Inputs • Date/Time • Blood Pressure - X/Y	This is a view for the Doctors and Registered Nurses to add the clinical data of the patient. These

	mmHg ● Respiratory Rate - X/min ● Blood Oxygen Level - (X%) ● Heartbeat Rate (X/min) ● Critical Status of Patient Actions ● Submit Button	details will be saved and be available to be accessed in a separate view.
“Status of The Patient” Flag	Inputs ● “Select a patient status” dropdown	This dropdown will be included in the “Add Patient Clinical Record” view for the user to flag a patient if they are in a very critical condition or not. This flag will be used to fetch these critical patients and list them in a separate view for the users to quickly identify those in urgent medical care.
View Patient Clinical Record	Outputs ● Lists all the Clinical data of the patient ● Displays the critical condition of the patient	This is the view that displays all the clinical data of an individual patient. Also the user can find out if the particular patient requires urgent care by looking at the “Critical Status of the Patient” field.
List All Critical Patients	Outputs ● List of all critically ill patients ● Results of search input Actions ● View Patient Records Button	This view will list all patients in critical condition flagged by the system and allow the user to click the “View Patient Records” button and navigate to the individual patient’s personal details view. Also the user will be able to perform a search function in this view.
Search in “List All Critical Patients” view	Inputs ● Patient First/Last Name ● Patient ID Outputs ● List matching patients in view	The search feature included in the “List All Critical Patients” view will enable the user to search for a particular critically ill patient in the database flagged by the system.
User Login and User Registration	Inputs ● User name ● Password Actions ● Submit button	The login screen will allow the user to login to the system and the user registration screen will allow a new user to register to the system.

Table1:- Functionalities

Mockups

Add Patient - Screen

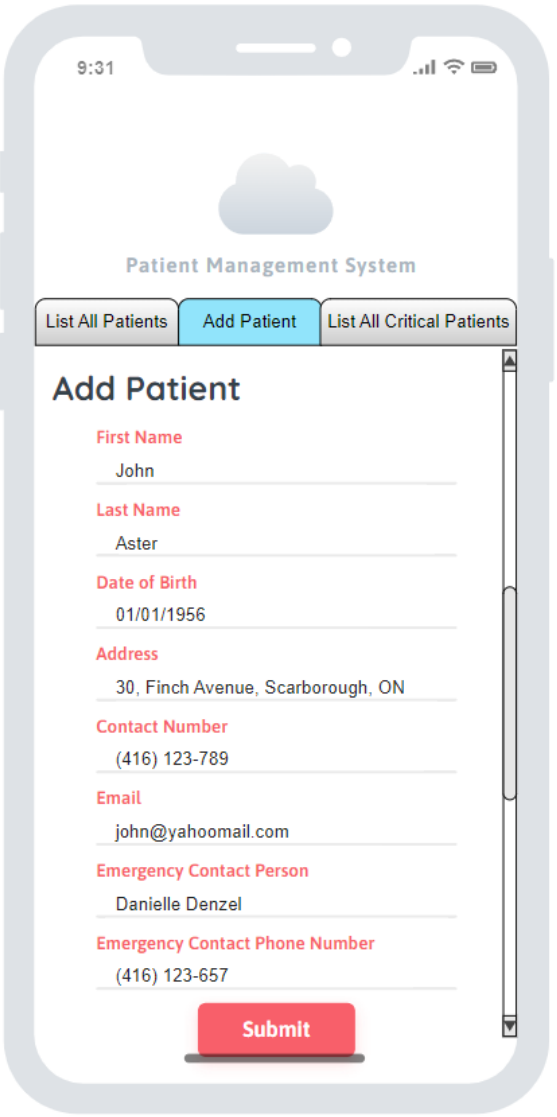

Fig-2:- Add Patient - Screen

Description

This is the mockup for the “Add Patient” view. We have gone with a very basic design for all following layouts as well. More focus we would like to give to the functionality. The colour palette of this screen will be shared across the application for consistency. We are planning to make some upgrades to the design if time permits in the future. We have not decided on the background yet at this time.

This screen has the System title and the logo on top and will be one of 3 screens that will have a tab layout. This will be the tab to enter new patient details. The label and text inputs are aligned and coloured so that it is easy to differentiate between them. The submit button is at the bottom of the form. If the length of the form increases there will be a scroll bar to scroll down to click the submit button.

List All Patients - Screen

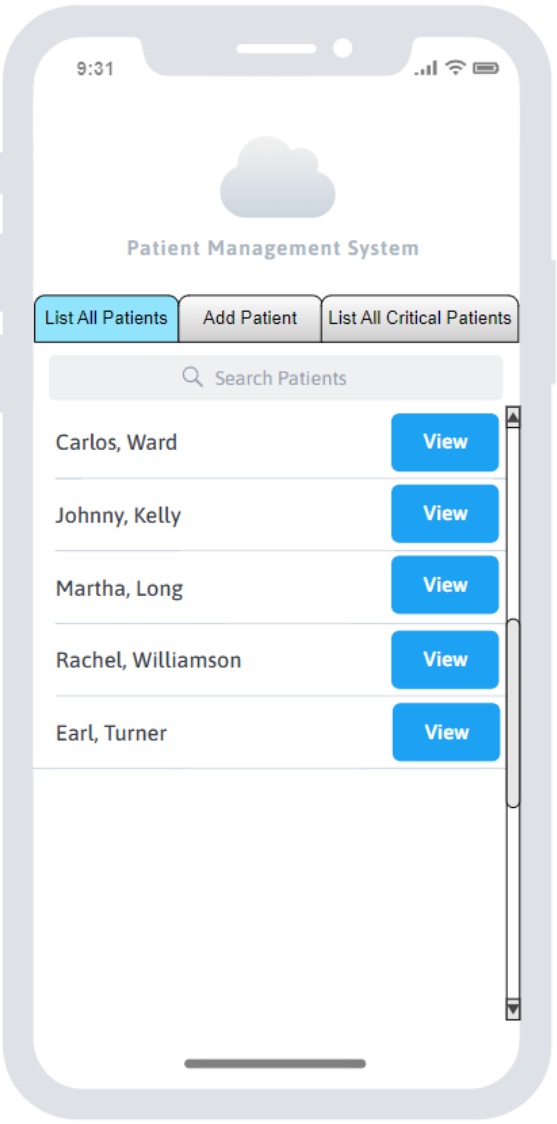

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Fig 3:-List All Patients - Screen

Description

This will be by default the home screen. This is also one of the screens that is part of the tab layout. This page will have a search bar on top under the System Logo and Title. A list view will display the search results or the entire list of patients if there is no search text present. A different coloured “View” button is placed here so that users can differentiate the button and can tap and navigate to the “View Patient Details” screen.

View Patient Details - Screen

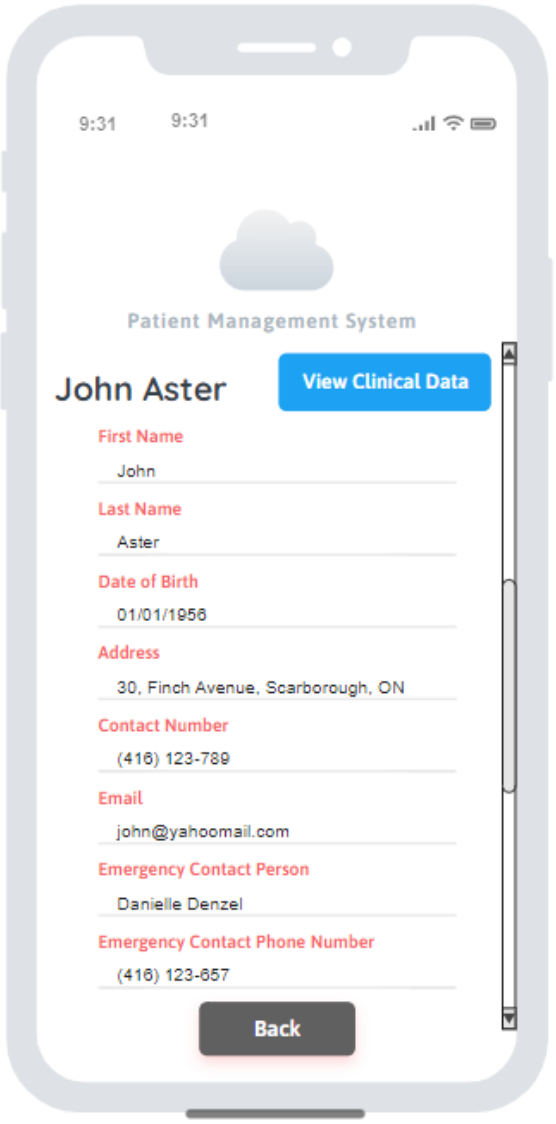

Fig 4:- View Patient Details - Screen

Description

This is the "View Patient Details" screen. Here the layout follows the data display theme of the system with the same consistent colour theme. The name of the patient is displayed on the top left under the system name and logo. And on the top right a button is placed so it is easily identifiable and quickly allies navigation to the Clinical Data views. By tapping the "View Clinical Data" button, there are 2 possibilities of screens,

1. If no Clinical data exists for patients, the "Add Patient Clinical Records" screen will be displayed.
2. If Clinical data exists for patients, the "View Patient Clinical Records" screen will be displayed.

Also a "Back" button is provided to navigate back to the home screen.

Add Patient Clinical Records - Screen

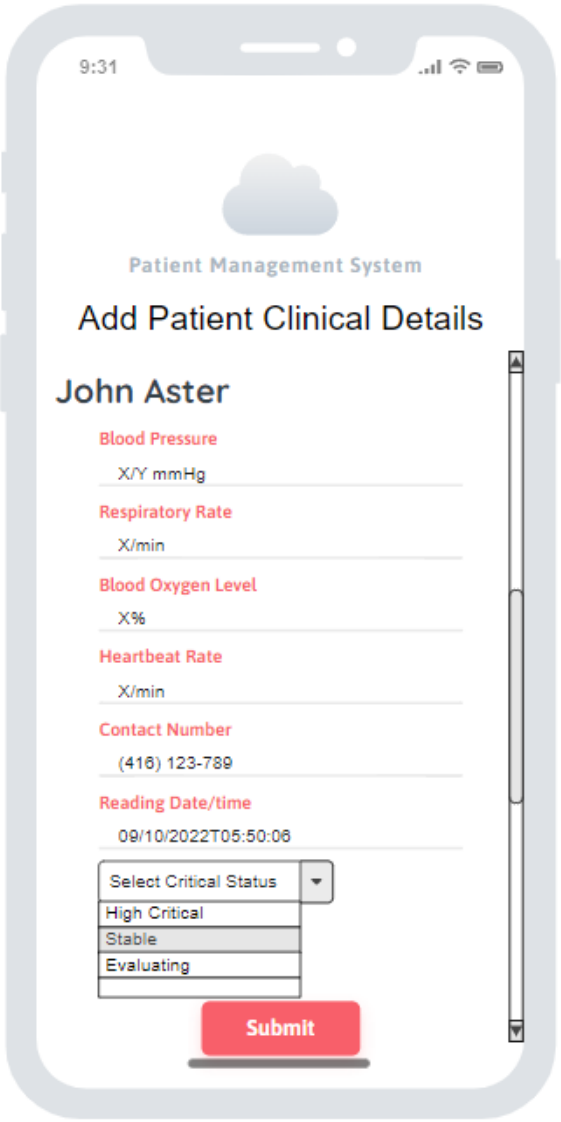

Fig 5:- Add Patient Clinical Records - Screen

Description

This is the view where the Clinical data is entered. Just like the previous forms, this will follow the same structure and colour theme. This will have a page title under the system logo and title. The patient name is printed under the page title. Labels and text input fields are identifiable because of the different colours and indentation. A drop down button enables the user to select the patient's critical condition from a drop down list. The “Submit” button will be placed under the form, therefore if the form is longer than the screen, the user will be able to use the scroll bar to the right to scroll down and tap the button.

View Patient Clinical Records - Screen

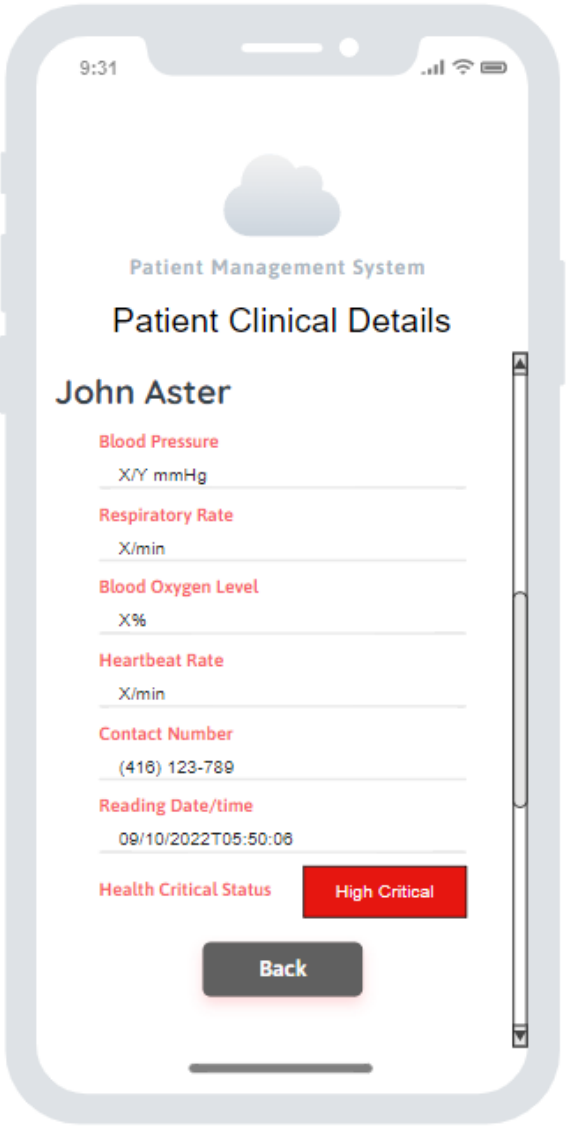

Fig 6:- View Patient Clinical Records - Screen

Description

Just like the “View Patient Details” screen, this will also follow the same format. Page title is shown under the system logo and title. Name is printed on the top left in large font under the page title. The fields will be editable labels. The patients health criticality will be displayed here for reference in relative colours (Red for Critical, and Green for Stable, and Grey for Evaluating). A back button here is placed to navigate back to the home screen.

List All Critical Patients - Screen

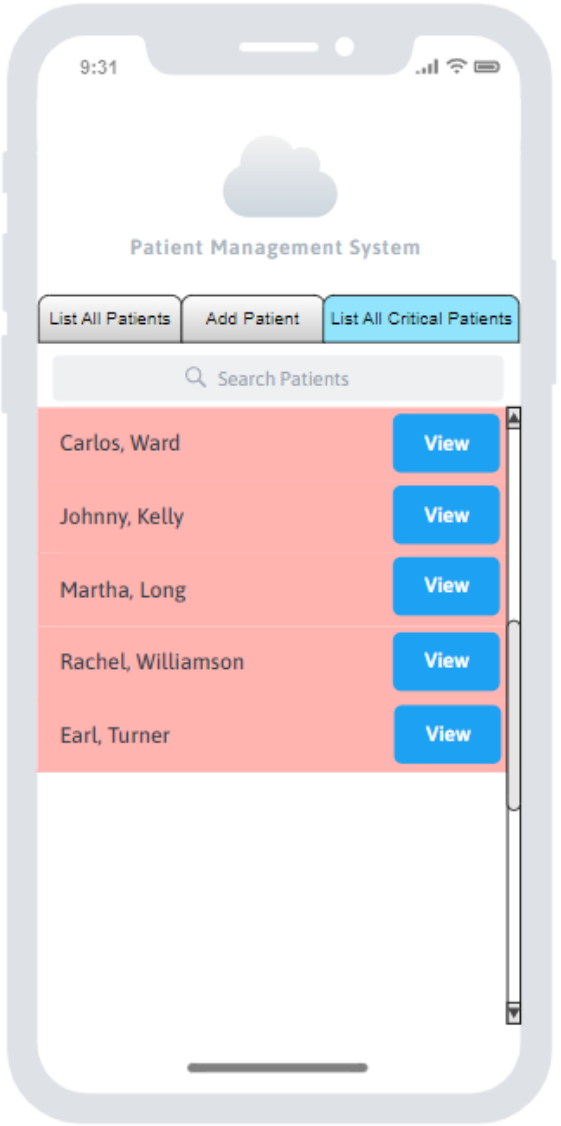

Fig 7:- List All Critical Patients - Screen

Description

This is the final view of the screens that are part of the tab view. This is the view that loads and displays the list of patients that are in High Critical condition. Therefore the list will be highlighted in a colour that represents urgency. Also a search bar is placed under the navigation tabs to search for patients flagged as Critical condition. A “View” button is also placed here so that users can easily navigate to the “View Patient Details” screen.