

SECURE HOSPITAL SYSTEM

By Debesh Mishra

The purpose of this project is to develop a secure hospital system which handles various hospital related functionalities.

OVERVIEW

The application has six different roles which are: Administrator, Doctor, Hospital Staff, Lab Staff, Insurance Staff and Patient.

While signing up, the users can only be assigned the Patient role, however Admins can change the role to anything else.

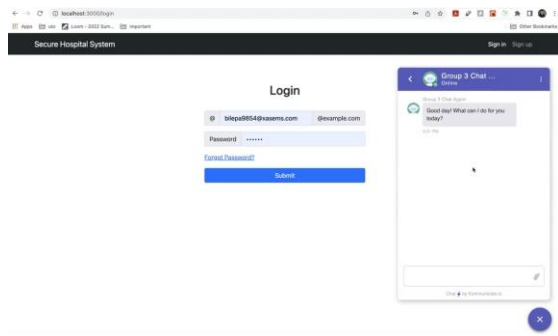


Figure 1: Login Page along with Chatbot UI

ADMINISTRATOR

The admins have access to all the functionalities that other staff members also have except the ability to create diagnosis and take appointments which only Doctors can do. In this section only the functionalities that Admin has access to will be covered and others will be covered in their own roles section.

View all Users: Admins have the ability to view all users regardless of their role as shown in the figure below. This UI is same for other roles for viewing Patients but they cannot edit the users and only Patients are in the list.

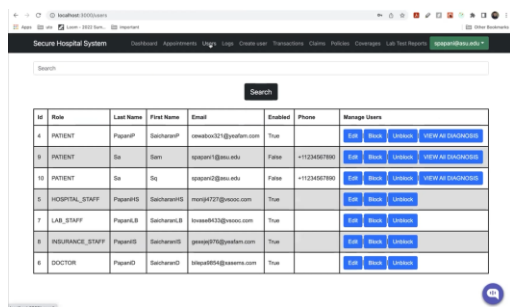


Figure 2: Admin View All Users UI

View Logs: Admins have the ability to check login logs of any user that has logged in. The date and the time of login will be logged.

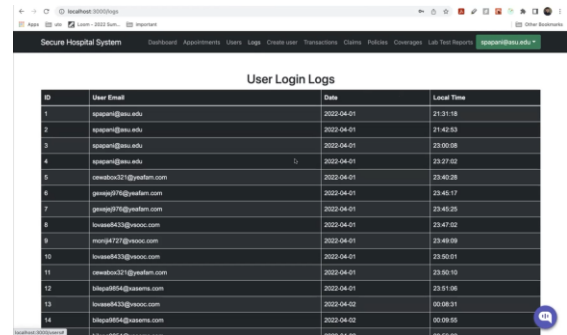


Figure 3: Admin View User Logs UI

Create new User: Admins have the ability to create a new user and assign any role to them. This UI is same during Sign Up or when Hospital Staff is trying to create a Patient. In that case, the Role field will not appear in the UI and the default Patient role will be assigned.

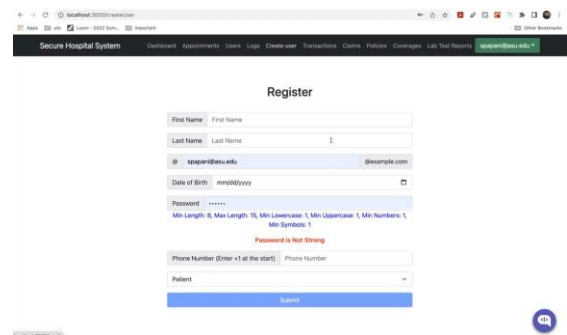


Figure 4: Create New User UI with Role visible

DOCTOR

The doctors can check their appointments, write diagnosis and prescription to their patients and also recommend lab tests.

View Appointments: In this UI, they can check their current and past appointments.

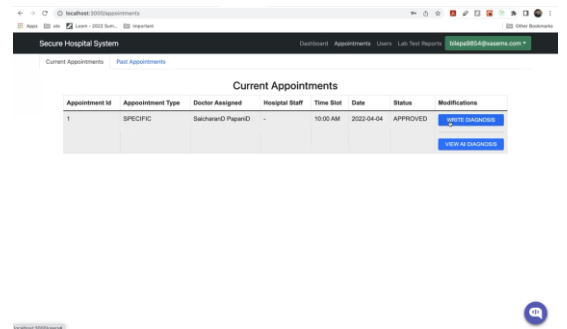


Figure 5: View all Appointments

Write Diagnosis: After clicking the button in appointment UI, they will see the diagnosis form shown below where they can write the diagnosis, prescription and recommend lab tests.

Figure 6: Writing Diagnosis

HOSPITAL STAFF

The hospital staff can approve/deny appointments, create and view patients and approve/deny transactions after appointment is completed.

Approve/Deny Appointments: The staff can approve/deny appointments raised by patient as shown below:

Figure 7: Approve/Deny Appointments

Approve/Deny Transactions: The staff can approve/deny transaction requests raised by the patients to pay the bill.

Figure 8: Approve/Deny Transactions

LAB STAFF

The lab staff can approve/deny lab test requests raised by doctor, write lab reports and create new lab tests.

Approve/Deny Lab Reports: In this UI, the lab staff can see the list of lab test requests raised can subsequently approve/deny them.

Report ID	Patient Name	Doctor Name	Staff Name	LabStaff Notes	Test ID	Test Name	Fee	Result	Status	Manage Reports
1	SachinP.PapariP	SachinD.PapariD	SachinL.B.PapariL.B	Sam	1	Test1	100	Sam	COMPLETED	Update & Submit
2	SachinP.PapariP	SachinD.PapariD	SachinL.B.PapariL.B	Sam	2	Test2	15	Sam	COMPLETED	Update & Submit

Figure 9: Approve/Deny Lab Test Reports

Writing Lab Reports: After clicking the update button on above page, they will be redirected to page below where they can update the details.

Figure 10: Edit Lab Reports

Create new Lab Tests: In this UI, the lab staff can view the existing lab tests as well as create new ones.

Figure 11: Lab Tests UI

INSURANCE STAFF

Insurance staff can create coverages, policies, approve/deny claims and check user diagnosis to check if claims are valid.

Create Coverage: Insurance staff can create coverages and also view existing coverages in same UI.

Sno	Coverage Name	Coverage Description
1	Vehicle1	Test

Create Coverage

Coverage Name:

Coverage name should be unique!

Description:

Figure 12: Coverage UI

Create Policies: Similar to coverages, they can create and view policies.

Policy Name	Policy Type	Maximum Claim Amount	Insurance Provider	Coverages
Policy1	BASIC	10000	Santam	Vehicle1, Vehicle2

Create Policy

Policy Name:

Select policy type:

Maximum Amount:

Insurance Company Name:

Select Coverages: ☒ Vehicle1 ☒ Vehicle2

Figure 13: Policies UI

Approve/Deny Claims: Insurance staff can approve/deny the claims made by patients.

Claim Id	Patient Name	Policy Name	Appointment Id	Amount Required	Status	Tasks
1	SaicharanP PapanIP	Policy1	3	100	PENDING	<input type="button" value="Approve Claim"/> <input type="button" value="Deny Claim"/> <input type="button" value="View Patient"/>

Figure 14: Approve/Deny Claims UI

View Patient Details: This page is accessible to Insurance Staff, Doctors and Hospital Staff for their own reasons as all of the data related to

the patient can viewed here as shown in below screenshot.

Secure Hospital System

User Name: Role:

Appointments

Appointment No. 1 - Date: 2022-04-04

Type: SPECIFIC Start Time: 10:00 AM Fee: 100

Status: PENDING Staff Notes:

Diagnosis Info

Diagnosis Information: Medical Prescription:

Lab Test Results

Lab Test Name	Lab Test Cost	Lab Test Status
Test1	100	PENDING
Test2	10	PENDING

Figure 15: Patient Details

PATIENT

Patients can book appointments, raise claims, enroll in policies and pay bills.

Booking Appointments: Patients have the option to either book an appointment with specific doctor or just a generic appointment.

Secure Hospital System

localhost:3000 says Success

Book Appointment

☒ Specific Appointment ☐ General Appointment

Select Doctor:

Choose Date:

Select Time:

Figure 16: Booking Appointments

Enrolling in Policies: Patients can enroll in various policies provided by the hospital from the below UI.

Secure Hospital System

localhost:3000 says Congratulations Policy is Enroll!

ENROLL IN POLICY

Policy Name	Insurance Provider Name	Maximum Claim amount	Coverages
Policy1	Santam	10000	Vehicle2, Vehicle1

Select a Policy:

Figure 17: Enrolling in Policies

Raising Claims/Pay Bill: After an appointment is completed, the patient has an

option to either pay the bill or raise a claim for the policies they have taken.

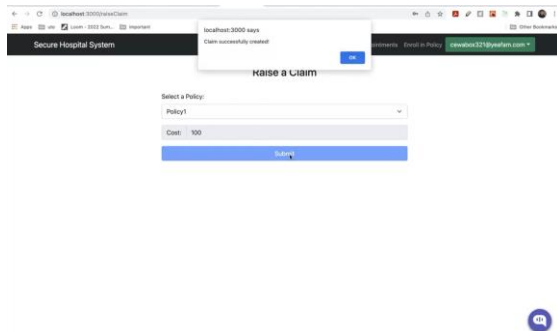


Figure 18: Raising a Claim

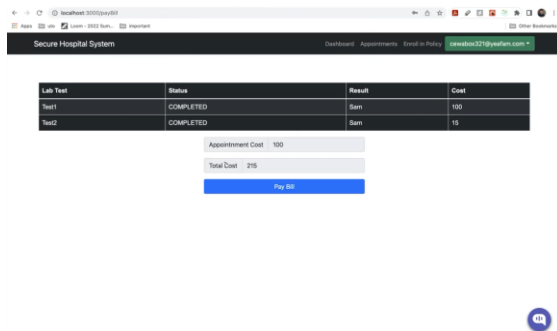


Figure 19: Paying Bill

CONTRIBUTIONS MADE BY ME

Backend Development

1. Login logs implementation for Admins.
 - a. The backend implementation of logging all the users who are logging into the application and storing their date and time of login in the database.
2. Lab Tests backend table and APIs.
 - a. The lab tests repository and the backend APIs like createNewLabTest and viewAllLabTests were created by me.
3. Implemented DOB integration to the User table.
 - a. The initial design of User table didn't have date of birth functionality which was later added by me.

Frontend Development

1. Edit Account UI for all roles.

- a. The UI to view and edit fields by clicking on account was implemented by me.

Edit Account

First Name	Saicharan
Last Name	Papani
Email	spapani@asu.edu
Phone	+11234567890
<input type="button" value="Submit"/> <input type="button" value="Cancel"/>	

Figure 20: Edit Account

2. Lab Tests functionality along with linking APIs with backend.
 - a. The UI, backend and linking of APIs was all done by me. (Figure 11)
3. Various frontend UI including View all Transactions, Create User page and Pay Bill Page (Figures 8, 4 and 19) and Forgot Password were made by me.

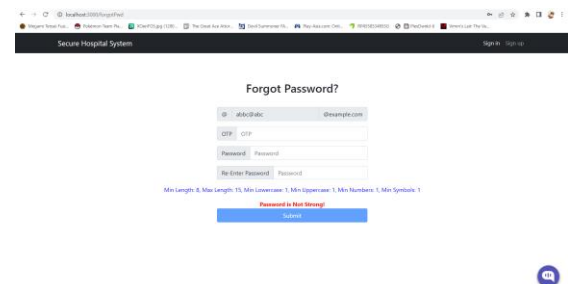


Figure 21: Forgot Password UI

General Contributions

1. Weekly Reports were made by me which included in gathering the progress made by other members.
2. Maintaining JIRA sprints which contained all the user stories as well as documenting Gantt charts.

LESSONS LEARNED

1. How to work with the team and manage the team members (Team Management)
2. Learnt basics of ReactJS and Spring Boot while doing development.
3. Best practices of Agile methodologies.