UNIVERSITY OF NORTH TEXAS

COMPUTER SCIENCE DEPARTMENT

CSCE 5350 FUNDAMENTALS OF DATABASE SYSTEMS

Project Group Number - 8

ELECTRONIC HOSPITAL MANAGEMENT SYSTEM

Group Members

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Project Description:

The electronic Hospital Management system is an organized computerized application that is developed and configured to handle day-to-day hospital operations and management. This system comprises patient registration, their data storage in the system, as well as automated billing in the pharmacy and labs for tests assigned by doctors to them. The program may assign each patient a unique identifier and automatically save the patient's and staff's (Doctor, Nurse, Lab Technician, Accountant) information. A username and password are required to access the Hospital Management System and an administrator has access to modify those data in the Hospital database. Patients can log in and make an appointment with the Doctor choosing the appropriate specialty of the Doctor for their treatment. Doctors can view and manage the appointment according to their schedule and update the data required for patient treatment and can assign the various tests required for the patients to identify the patient condition. The lab technician can be able to view the various tests assigned by Doctors to the patients and can act accordingly. It's designed for multispecialty hospitals and covers a wide range of administrative and management tasks. It is a completely integrated end-to-end hospital management system that effortlessly transmits crucial information across the hospital to aid successful decisionmaking for patient care, hospital administration, and vital financial accounting, as well as ensuring a glitch-free experience for patients.

Tools and Technologies used:

<u>Technologies & Frameworks:</u>

PHP, HTML, CSS, AJAX, BOOTSTRAP, MySQL and JavaScript

Tools & Utilities:

Visual Studio Code and XAMPP

Installation and Deploying of the Project:

Steps involved in Deployment:

- 1. Install Xampp software to act as a local host and a server.
- 2. Install Visual Studio Code you can use it to run the project in the Terminal and correct errors displayed in the Output Area

Steps involved in Running the Application:

- 1. Download the Zip file
- 2. Extract the files to the htdocs folder located in Xampp which resides in the C drive.
- 3. Head over to Xampp software and start Apache and MySQL modules services.
- 4. Create a hospital database and import the SQL file into the database folder.
- 5. Run the below localhost script by placing it in any of your browsers. (http://localhost/FDB/UntFdbProjectEHMS2022/Source%20Code/Front-End/VIEW/HTML/index.php)

Navigation Menu:

About Us: Displays Hospital Information and its Staff Demographical data.

Contact Info: Provides the privilege to connect with Hospital Management by

Sharing information to contact.

Register: It accommodates a new screen for the registration by taking some

Information.

Log In: It redirects to the new screen where you have the privilege to log in to

different dashboards as per the type of the user.

Home Page:



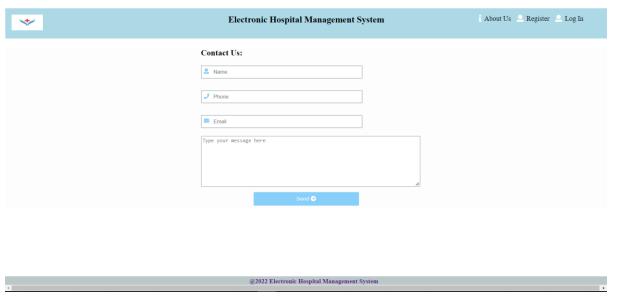
On the Home page, the user (patient) who utilizes this application can navigate to Register to get registration, can navigate to different screens through contact info and About Us links, Log in to different dashboards and perform different tasks such as making appointments, managing patient's information, etc.

About Us page:



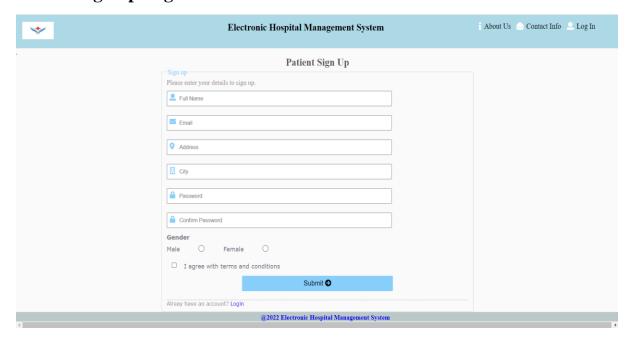
About Us, the page provides the information relevant to the Hospital and its staff i.e. How many active Physicians, Nurses are available, parking and transportation details, etc.

Contact Info Page:



Contact info page prompts the Name, Phone, Email, and Message they want to write from the user. So, that Management can view those and answer their queries.

Patient Sign up Page:



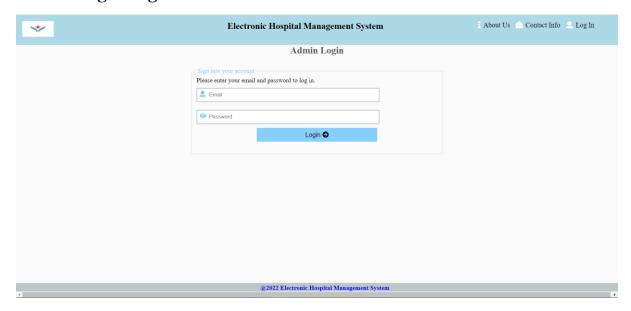
The patient Sign up page is directed by the register link from the Home page where the patient will have the privilege to do registration for the first time and can access the application relentlessly to perform their tasks.

Log in Page:



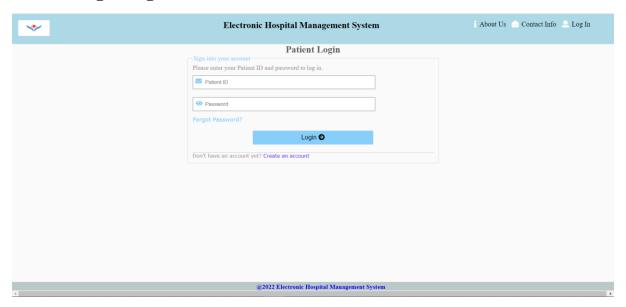
Login link from Home Page directs Login Page accommodate the facility to log in different login for the type or role of the user for accessing respective dashboard and perform their tasks.

Admin Login Page:



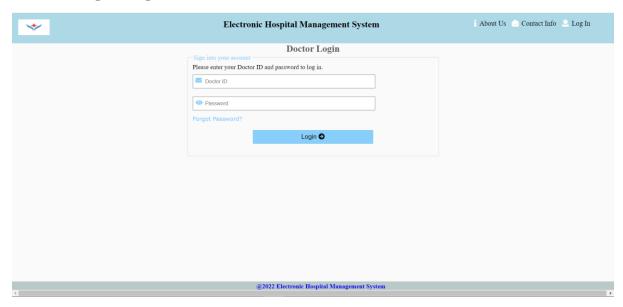
Admin login is where the admin i.e. Hospital Management staff can log in using their username or email along with password and can access their dashboard.

Patient Login Page:



The patient Login page is directed when the patient navigates to the Patient Login of the Login Page. They can be logged in to the application by providing a Patient ID and password.

Doctor Login Page:

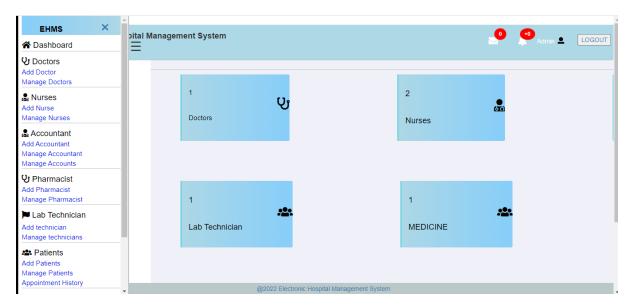


Doctor Login page is directed from the Login page where doctors provide their ID and password to access the application and can perform tasks such as managing appointments, Patient Visits, etc.

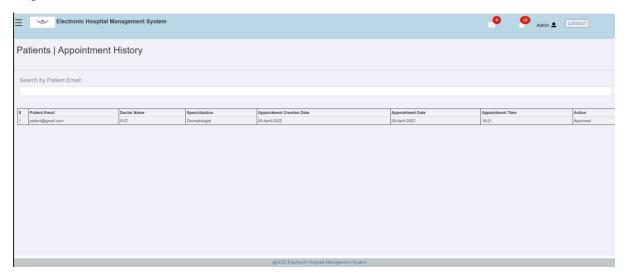
Admin Dashboard:



Admin Dashboard is accessible to the Hospital Management (Admin) where can they have access to view and update the data of Patients, Nurses, Doctors, Lab technicians, Medicine, and Payments.



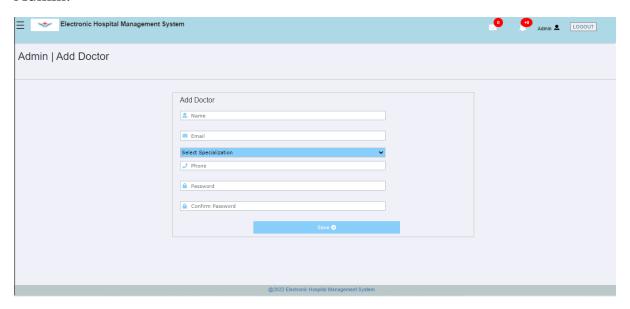
This Dashboard has a menu item to manage various tasks where the admin can perform updating the Doctor, Nurses, Patients, etc. existing data and also add new records to their respective tables.



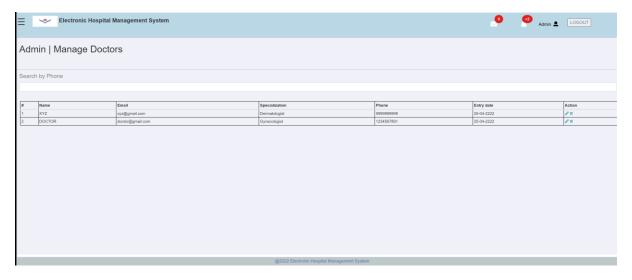
On click of Notifications, the Appointment history page will be visible to the admin i.e. Hospital Management.



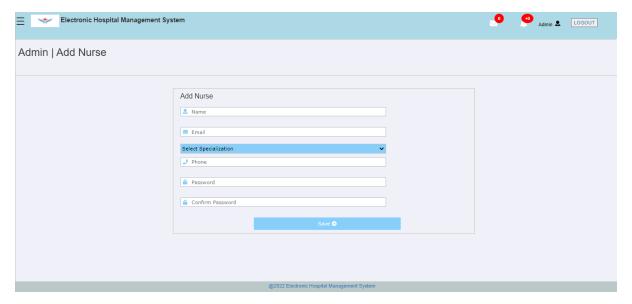
When Admin clicks the queries, the Patient queries page will be visible to the Admin.



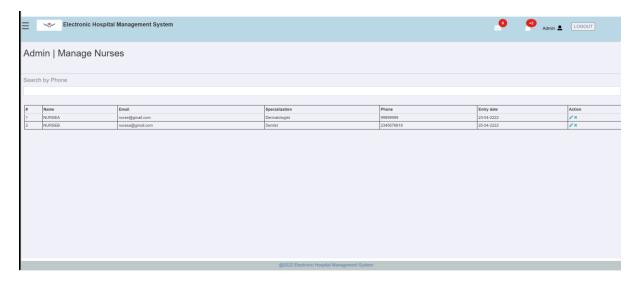
On click of Add Doctor present under doctors in the side Navigation menu. Add Doctor page will be visible to the admin so that add new doctor by providing the information related to Doctor.



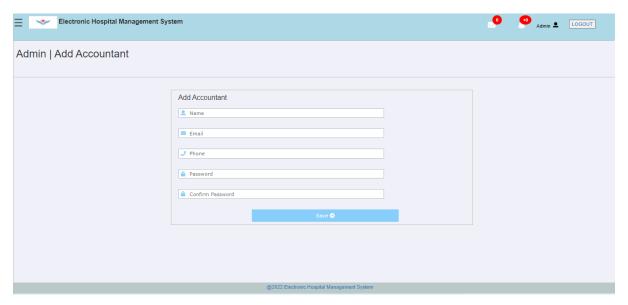
Admin will be able to see the Manage Doctors screen by navigating to the Manage Doctors menu item under the Doctors section in the sidebar of the Admin Dashboard.



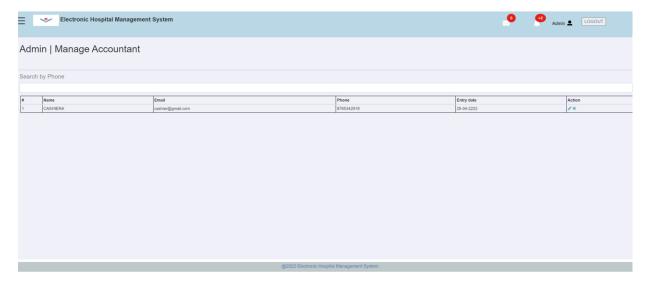
On click of Add Nurse present under Nurses in the side Navigation menu. Add Nurse page will be visible to the Admin so that add new doctor by providing the information related to Nurse.



Admin will be able to see the Manage Nurses screen by navigating to the Manage Nurses menu item under the Nurses section in the sidebar of Admin Dashboard.



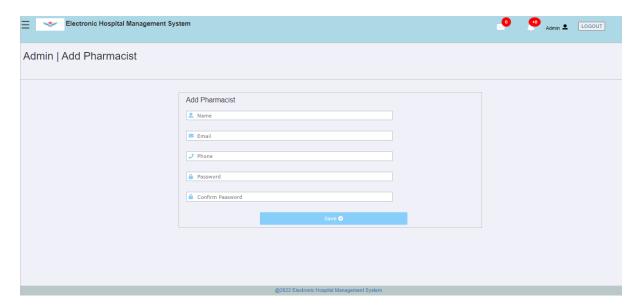
On click of Add Accountant present under Accountant in the side Navigation menu. Add Accountant page will be visible to the Admin so that add new doctor by providing the information related to Accountant.



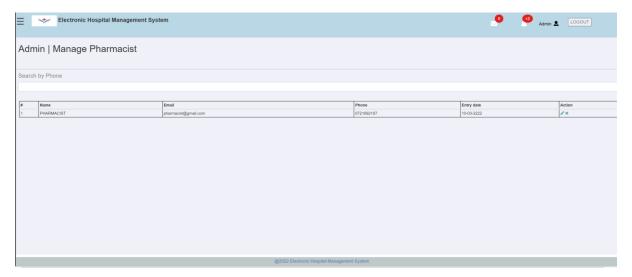
Admin will be able to see the Manage Accountant screen by navigating to the Manage Accountant menu item under the Accountant section in the sidebar of Admin Dashboard.



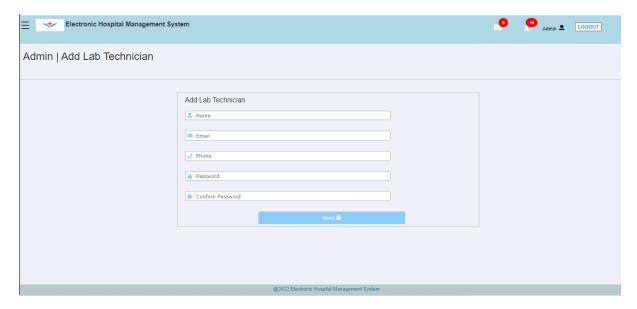
Admin will be able to see the Manage Accounts screen by navigating to the Manage Accounts menu item under the Accountant section in the sidebar of the Admin Dashboard.



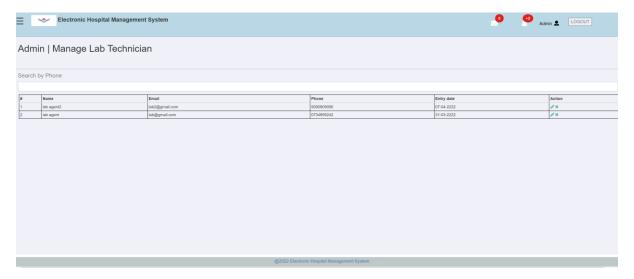
On click of Add Pharmacist present under Pharmacist in the side Navigation menu. Add Pharmacist page will be visible to the Admin so that add new doctor by providing the information related to Pharmacist.



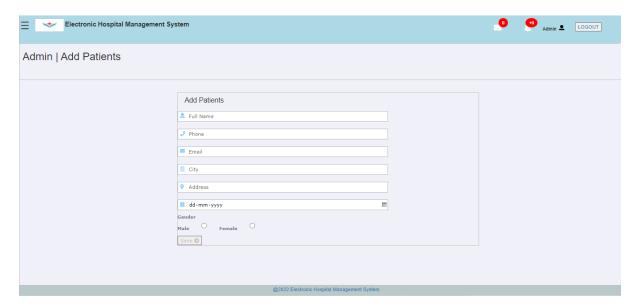
Admin will be able to see the Manage Pharmacist screen by navigating to the Manage Pharmacist menu item under the Pharmacist section in the sidebar of Admin Dashboard.



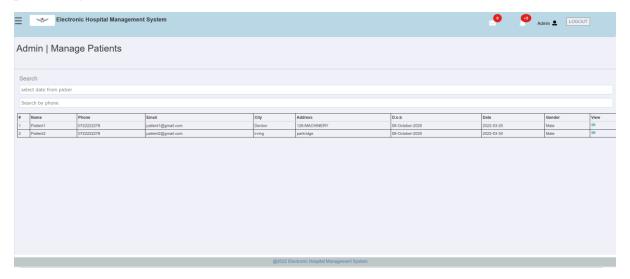
On click of Add Lab Technician present under Lab Technician in the side Navigation menu. Add Lab Technician page will be visible to the Admin so that add new doctor by providing the information related to Lab Technician.



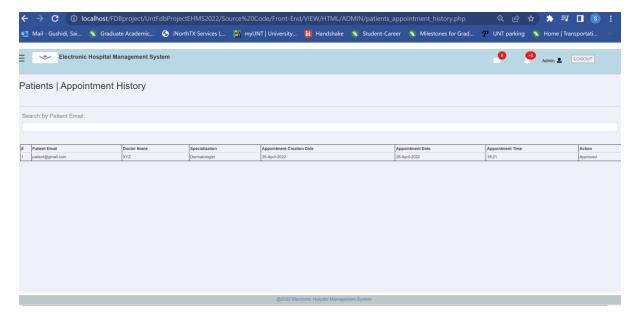
Admin will be able to see Manage Lab Technician screen by navigating to the Manage Lab Technician menu item under the Lab Technician section in the sidebar of the Admin Dashboard.



On click of Add Patients present under Accountant in the side Navigation menu. Add Patients page will be visible to the Admin so that add new doctors by providing the information related to Patients.



Admin will be able to see the Manage Patients screen by navigating to the Manage patient menu item under the Patients section in the sidebar of the Admin Dashboard.



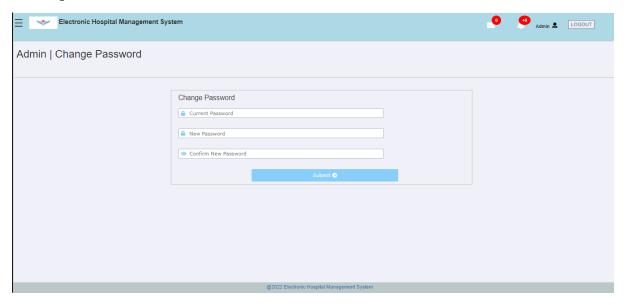
Admin will see the Appointment History screen by navigating to the Appointment History menu item under the Patients section in the sidebar of the Admin Dashboard.



Admin will see Feedback screen by navigating to Feedback menu item under inquiries section in the sidebar of Admin Dashboard.



Admin will see the Queries screen by navigating to the Queries menu item under the Inquiries section in the sidebar of the Admin Dashboard.

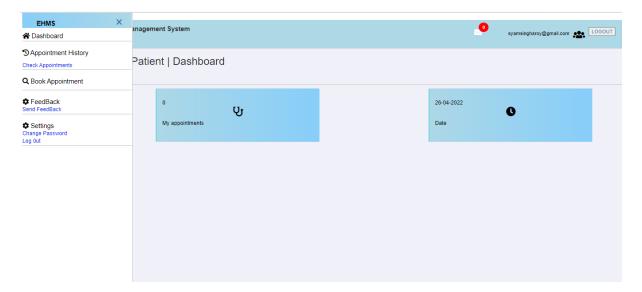


On click of Change Password present under Settings in the side Navigation menu. Change Password page will be visible to the Admin so that they can update the new password.

Patient Dashboard:



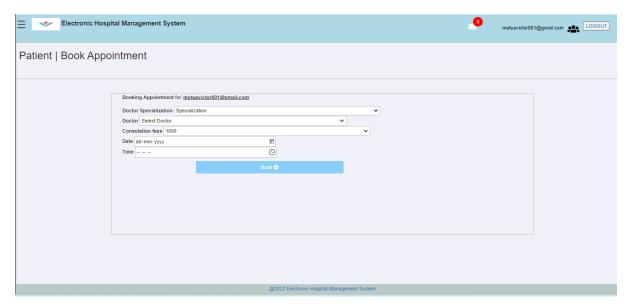
This patient dashboard is accessible to the patient when he logged in to the application where he can view the appointment that patient made i.e. future and history of them.



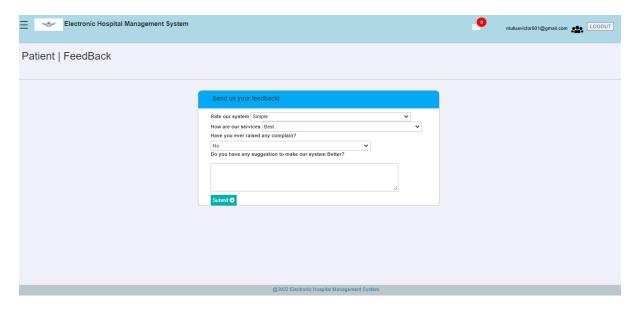
There is a menu item available as a side bar on the dashboard of the patient where he can book an appointment and the history of the appointments that are made by that patient.



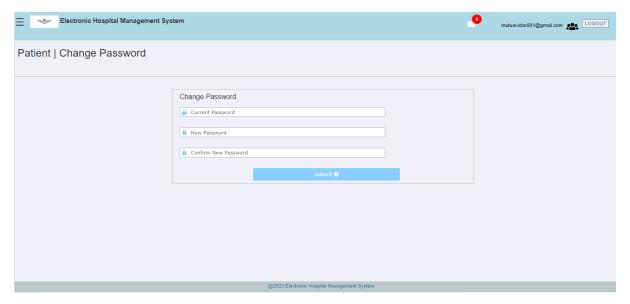
Admin will see the Appointment History screen by navigating to the Check appointments menu item under the Appointment History section in the sidebar of Admin Dashboard.



On click of the Book Appointment menu item present in the sidebar of Navigation, menu Patients will be directed to the Book Appointment page in which they can make appointments.



On click of Send Feedback menu item present in the sidebar of Navigation, menu Feedback will be directed to the Patient Feedback page in which they can make appointments.

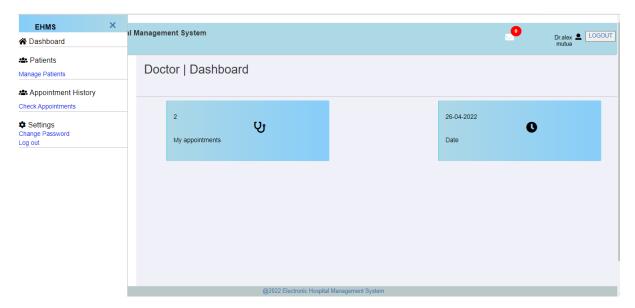


On click of Change Password present under Settings in the side Navigation menu. Change Password page will be visible to the Patient so that they can update the new password.

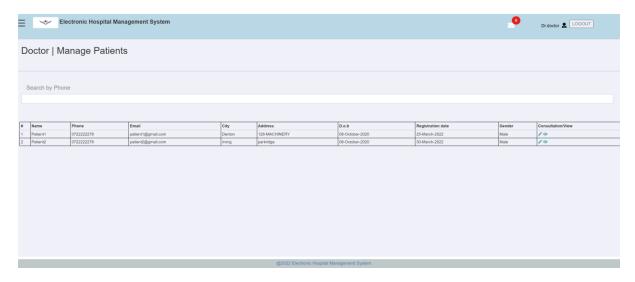
Doctor Dashboard:



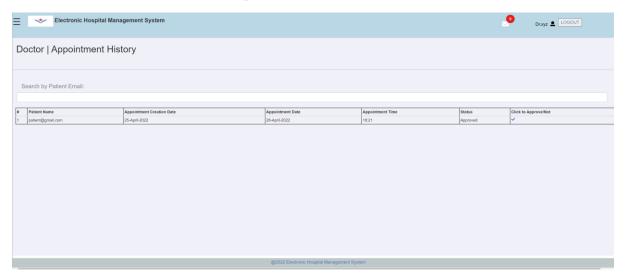
This Doctor dashboard is accessible to the Doctor when he logged in to the application where he can view the appointment that patients made with them i.e. future and history.



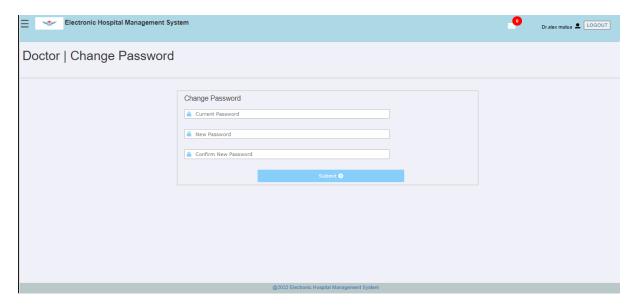
There is a menu item available as a sidebar in the dashboard of the Doctor where he can check the appointments that are made by patients and he can manage the patient regarding their consultation.



The doctor will be able to see the Manage Patients screen by navigating to the Manage patients menu item under the Patients section in the sidebar of the Doctor Dashboard. So that he can be up to date with the consultation.



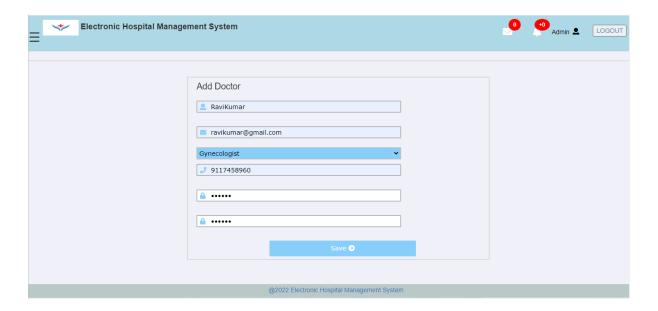
On click of the Check Appointment menu item present under the Appointment History section Doctor will be able to see Appointment History Page.



On click of Change Password present under Settings in the side Navigation menu. Change Password page will be visible to the Doctor so that they can update the new password.

Database CRUD Operations

Inserting doctors data to doctor table.



Data saved into table

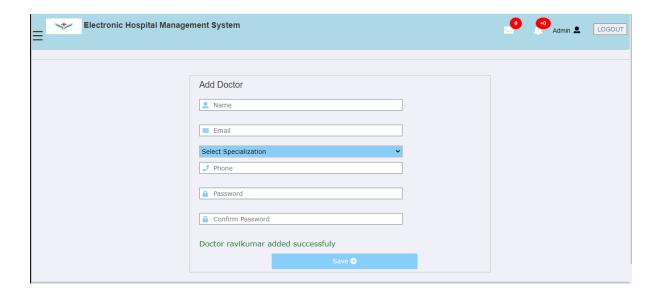
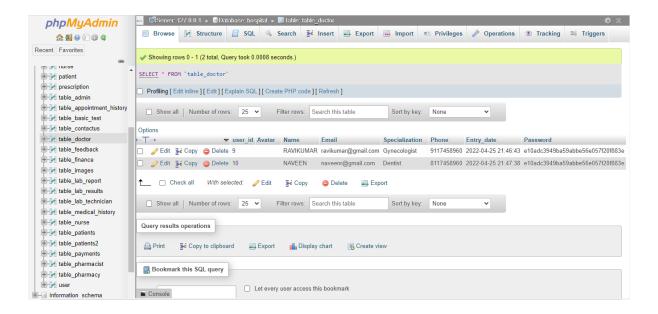


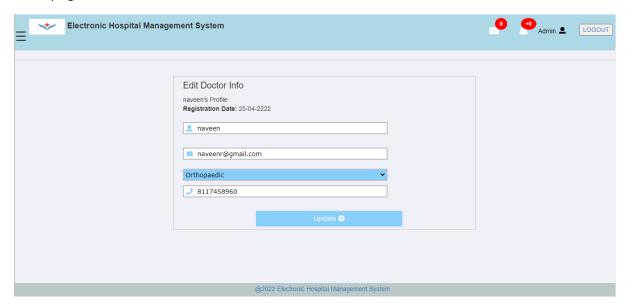
Table after successfully inserting data.



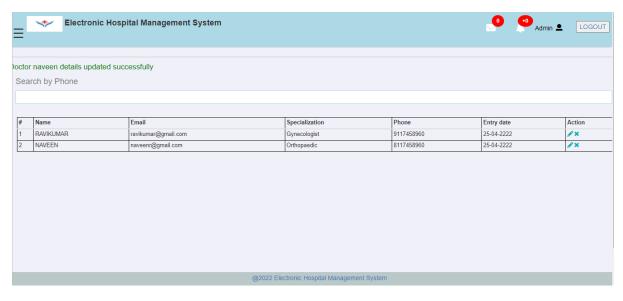
Data updated in database.



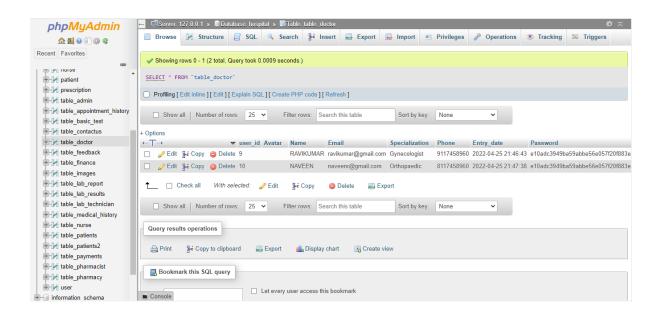
Modifying data in doctor table



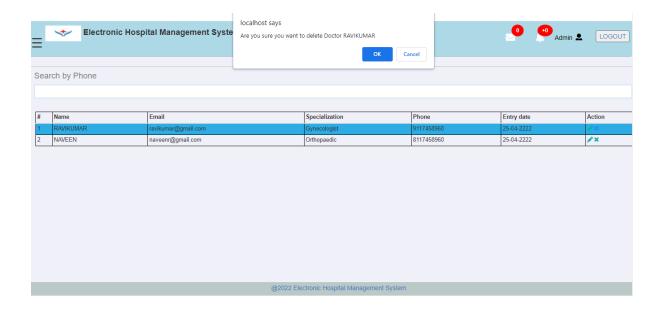
After modifying doctor table



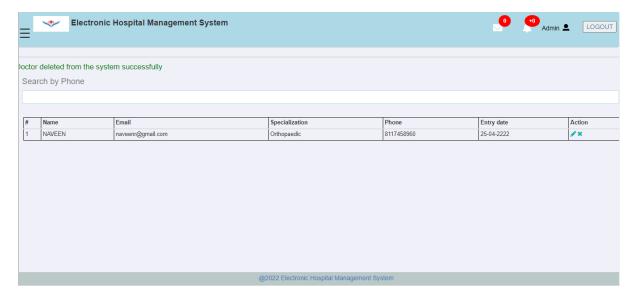
Data modified succefully in database.



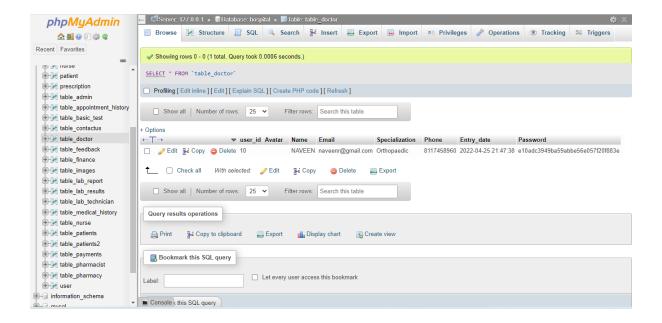
Deleting data from doctor table.



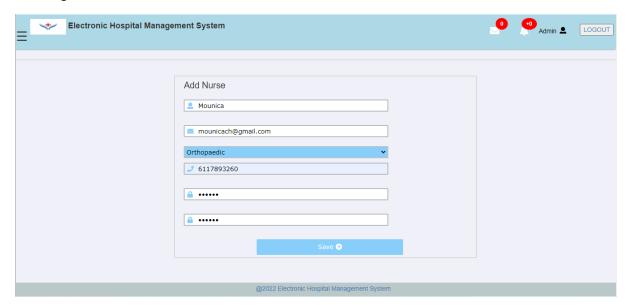
Deleting data successfully from doctor table.



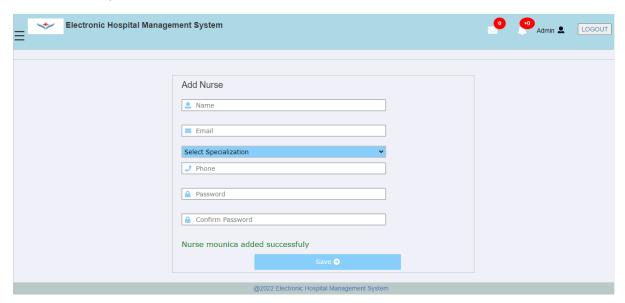
Deleted data reflected in database.



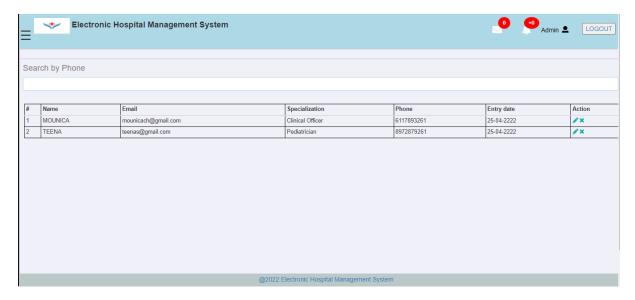
Inserting data into Nurse table



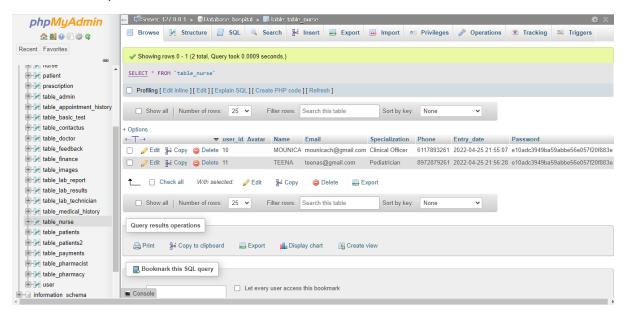
Data successfully saved



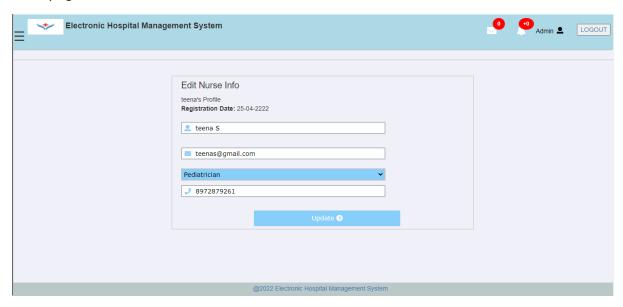
Data inserted into nurse table



Data successfully inserted into database



Modifying nurse table



Modified successfully saved into table



Deleting data from nurse table

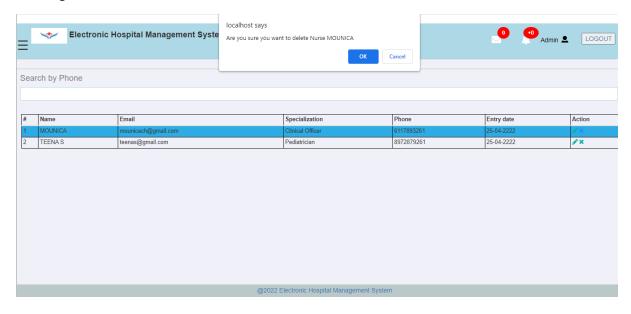
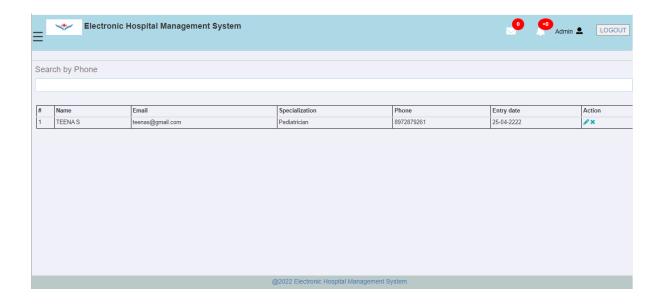
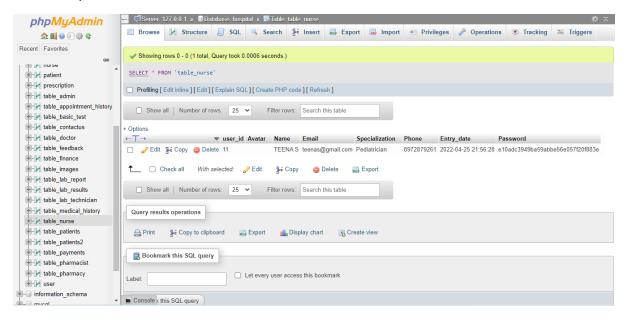


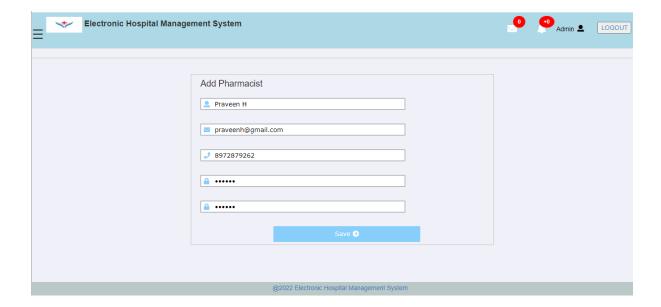
Table after deleting a tuple in nurse table



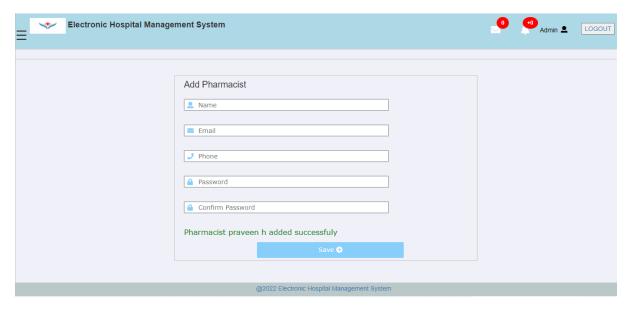
Successfully data deleted in database



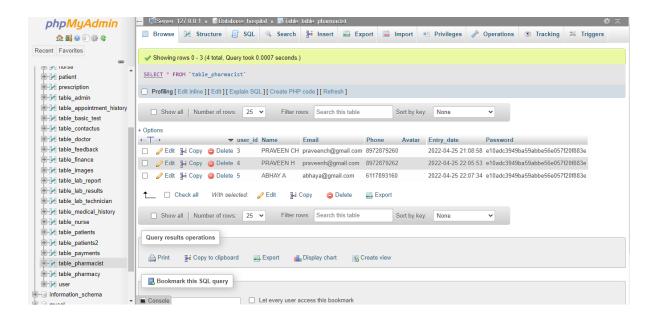
Insert data into Pharmacist table



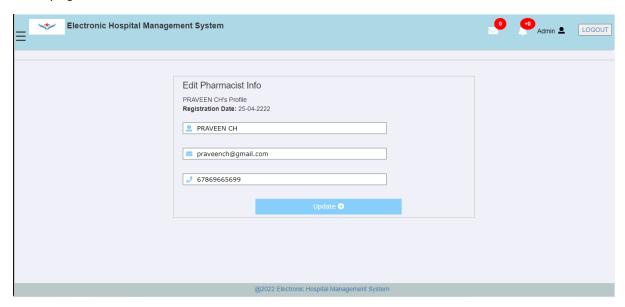
Data saved into table successfully



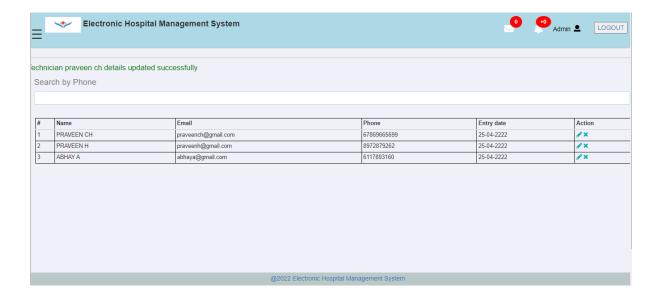
Data reflected successfully in database



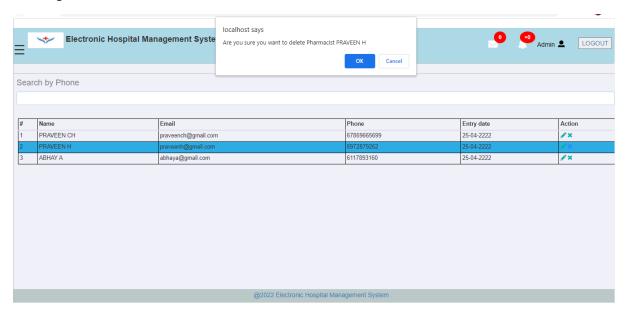
Modifying Pharmacist table



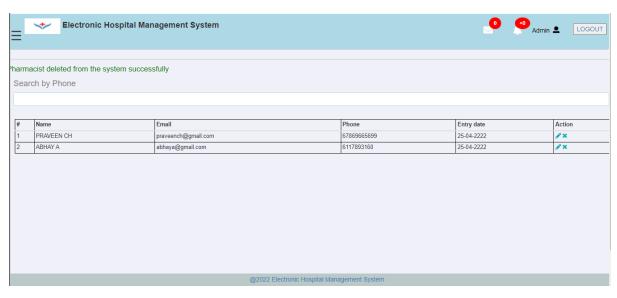
Successfully modified Pharmacist table



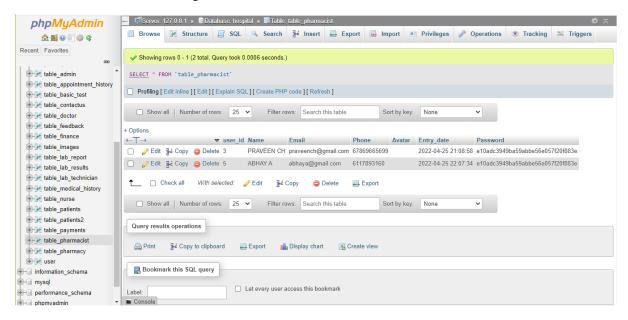
Deleting data in Pharmacist table



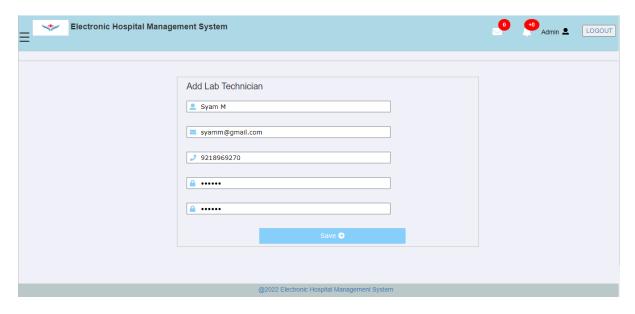
Successfully deleted the data from table



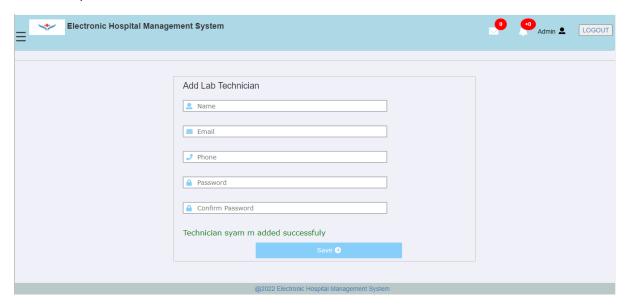
Pharmacist table after deleting data.



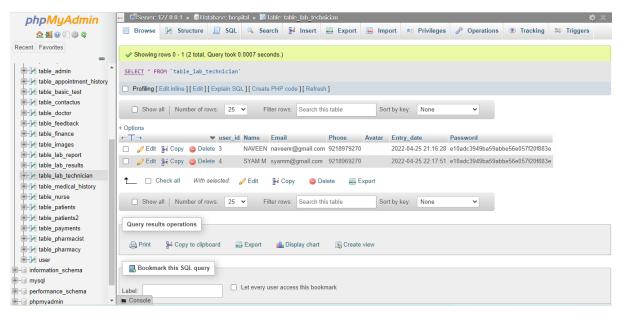
Insert data into Lab Technician table



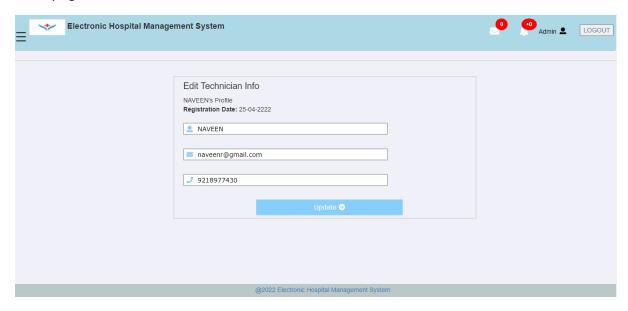
Successfully added into Lab Technician table



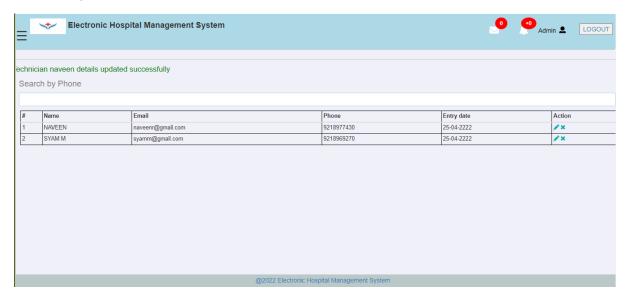
Lab Technician table after inserting data.



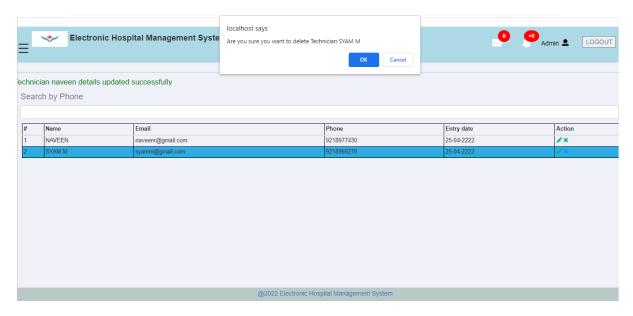
Modifying Technician table



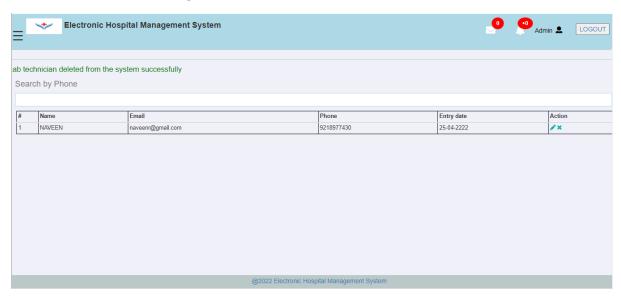
Successfully saved modified details



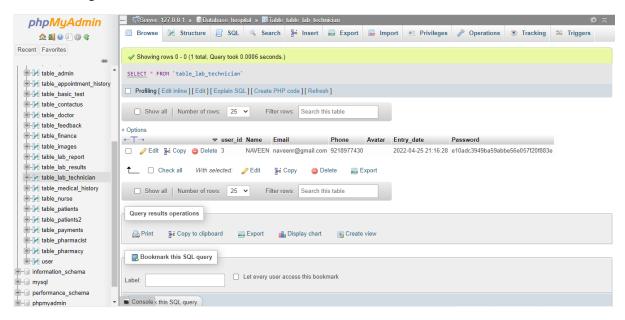
Delete data from Technician table.



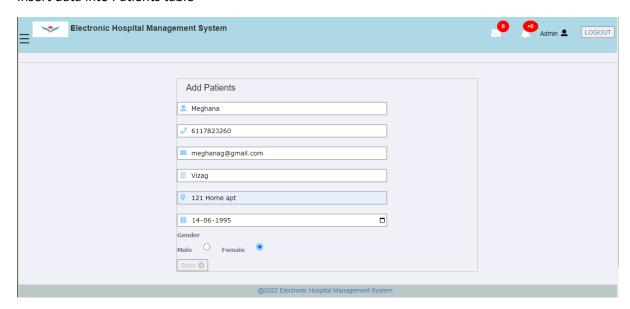
Technician table after deleting data.



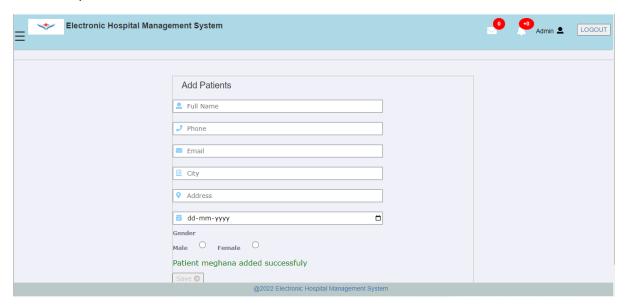
After deleting data in technician table



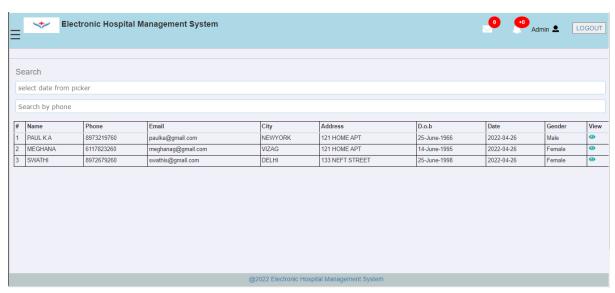
Insert data into Patients table



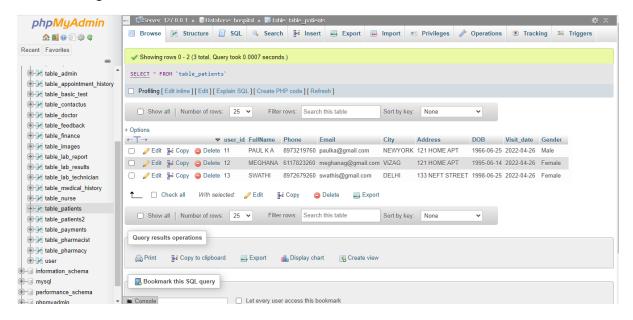
Successfully added data into Patients table



After inserting data into Patient table



After inserting data into Patient table



Insert data into Accountant table

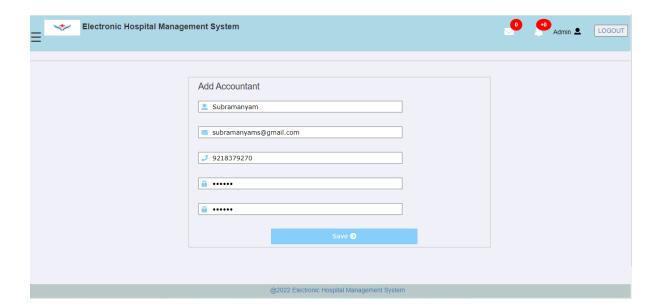
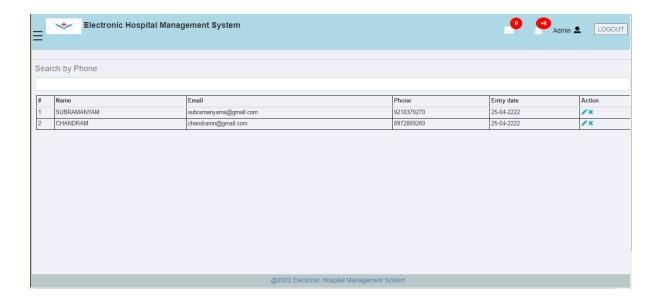
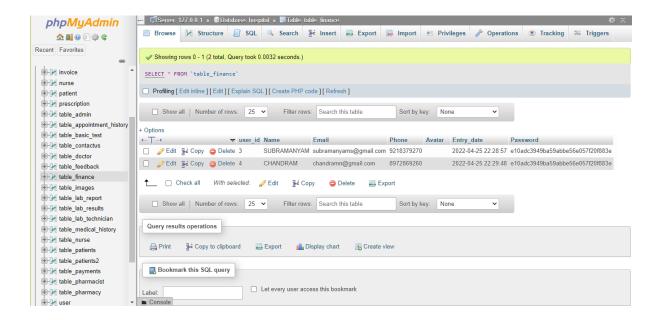


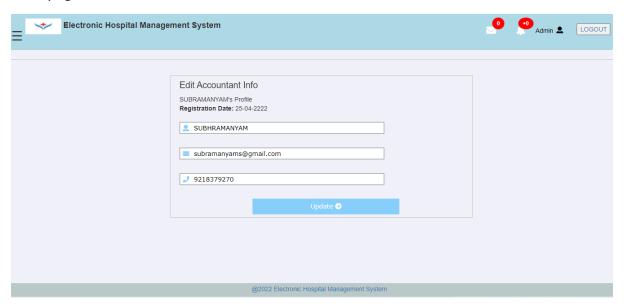
Table after inserting the data into Accountant table



Data reflected in database after inserting data



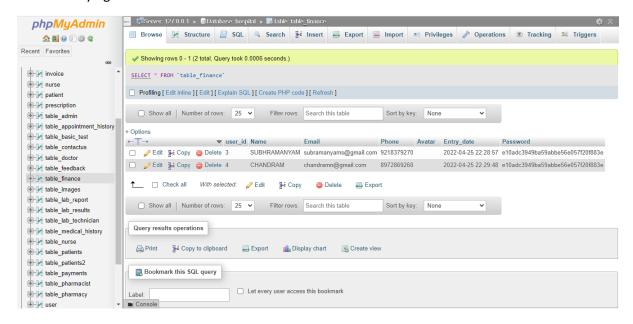
Modifying Accountant table



Data saved successfully into Accountant table



After modifying Accountant table



Deleting data from Accountant table

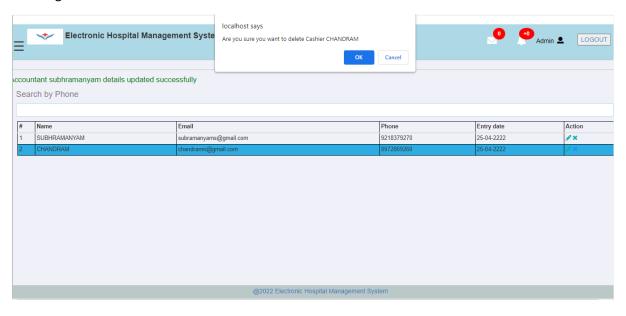
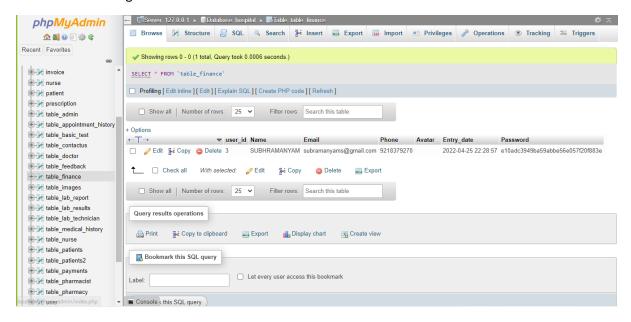
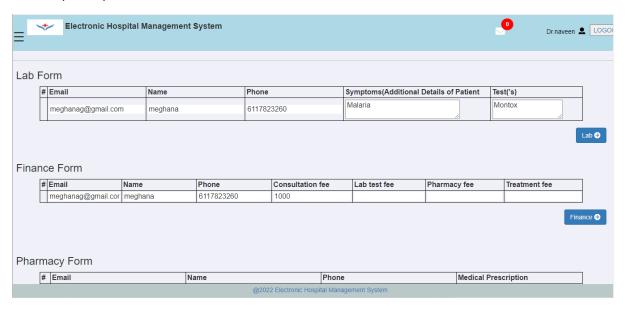


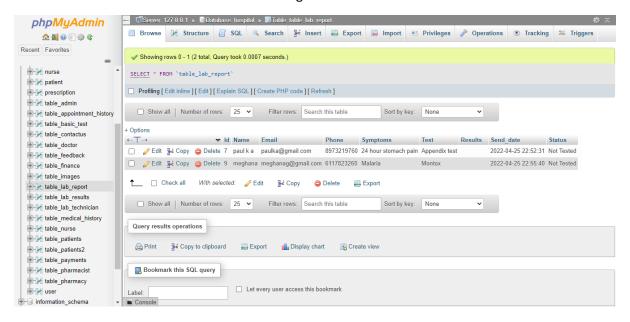
Table after deleting data from Accountant table



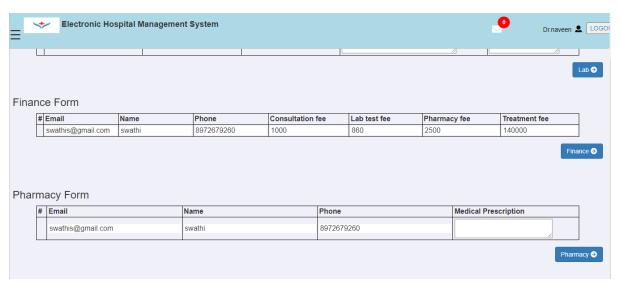
Doctors prescription



Data reflected in Database after doctor inserting data



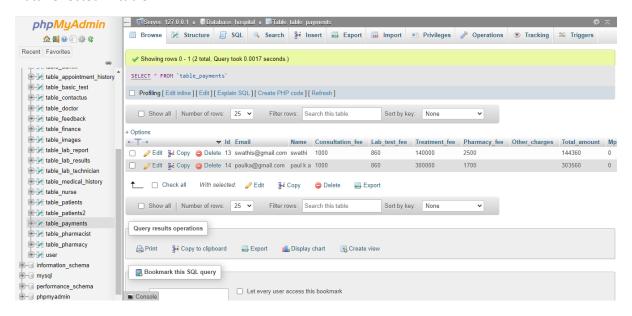
Doctor able to insert the fee for patient



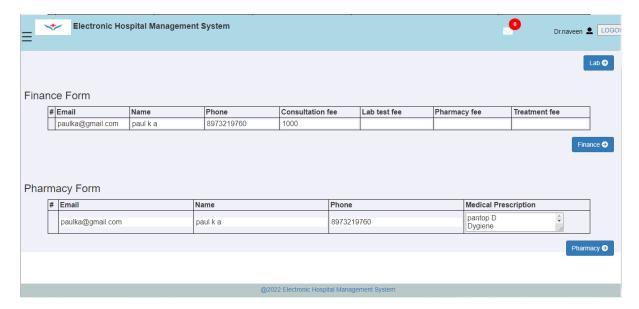
System notifies doctor that he successfully charged the fee to patient.



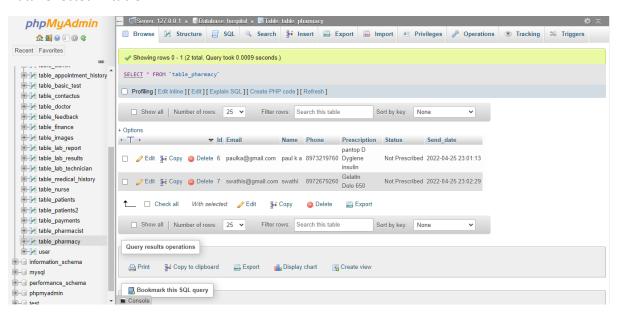
Data reflected in table



Doctor able to insert the medicine for the patient



Data reflected in table



2. 0 SQL STATEMENTS OF ELECTRONIC HOSPITAL MANAGEMENT SYSTEM TABLES (USING MYSQL DATABASE)

2.1 Admin Table

CREATE TABLE admin(

Admin_Id int(15) NOT NULL,

Email varchar(255) NOT NULL,

firstName varchar(255) NOT NULL,

lastName varchar(255) NOT NULL,

Phone int(15) NOT NULL,

Password varchar(255) NOT NULL,

PRIMARY KEY (Admin Id)) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4

2.2 Ambulance Table

CREATE TABLE ambulance(

amb_Id int(15) NOT NULL,

reg_no varchar(255) NOT NULL,

PRIMARY KEY (amb_Id)) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4

2.3 Bed Table

CREATE TABLE bed(

bed Id int(15) NOT NULL,

bed No int(15) NOT NULL,

bed Location varchar(255) NOT NULL,

PRIMARY KEY ('bed_Id')) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4

2.4 Cleaner Table

```
CREATE TABLE cleaner (
Cl Id int(15) NOT NULL,
firstName varchar(255) NOT NULL,
Surname varchar(255) NOT NULL,
PRIMARY KEY ('Cl Id') ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.5 Department Table
CREATE TABLE department(
dep_Id int(15) NOT NULL,
dep_Name varchar(255) NOT NULL,
PRIMARY KEY (dep ld) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.6 Doctor table:
CREATE TABLE doctor (
Doctor_Id int(15) NOT NULL,
firstName varchar(255) NOT NULL,
lastName varchar(255) NOT NULL,
Phone int(15) NOT NULL,
Password varchar(255) NOT NULL,
sp_Id int(15) NOT NULL,
sp_name varchar(255) NOT NULL,
PRIMARY KEY (Doctor_Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.7 Driver Table
CREATE TABLE driver (
dr_Id int(15) NOT NULL,
dr_fname varchar(255) NOT NULL,
dr Iname varchar(255) NOT NULL,
PRIMARY KEY ('dr_Id') ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
```

```
2.8 Floor Table
CREATE TABLE floor (
floor Id int(15) NOT NULL,
floor_Name varchar(255) NOT NULL,
PRIMARY KEY (floor_Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb
2.9 Insurance Table
CREATE TABLE insurance (
Insurance_Id int(15) NOT NULL,
Insurance_Name varchar(255) NOT NULL,
PRIMARY KEY (Insurance_Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.1.0 Laboratory Table
CREATE TABLE laboratory(
lab_Id int(15) NOT NULL,
lab_Name varchar(255) NOT NULL,
PRIMARY KEY (lab_ld) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb
2.1.1 Lab Technician
CREATE TABLE lab technician (
tech_Id int(15) NOT NULL,
fname varchar(255) NOT NULL,
Iname varchar(255) NOT NULL,
PRIMARY KEY (tech Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.1.2 Medicine Table
CREATE TABLE medicine (
me name text NOT NULL,
me exp date NOT NULL ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb
2.1.3 Nurse Table
CREATE TABLE nurse (
nu Id int(15) NOT NULL,
nu fname varchar(255) NOT NULL,
```

PRIMARY KEY (nu_Id)) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4

nu Iname varchar(255) NOT NULL,

```
2.1.4 Patient Table
CREATE TABLE patient (
Patient Id int(15) NOT NULL,
firstName varchar(255) NOT NULL,
lastName varchar(255) NOT NULL,
Phone int(20) NOT NULL,
Password varchar(255) NOT NULL,
PRIMARY KEY (Patient Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.1.5 Payment Table
CREATE TABLE payment
(pa Id int(11) NOT NULL,
'pay Name' varchar(255) NOT NULL,
pa_amount varchar(255) NOT NULL,
`pa_Date` date NOT NULL,
PRIMARY KEY ('pa_Id') ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.1.6 Receipt Table
CREATE TABLE receipt (
receipt_Id int(15) NOT NULL,
receipt_date date NOT NULL,
PRIMARY KEY (receipt Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.1.7 In Patient table:
CREATE TABLE In patient (
Patient Id int(15) NOT NULL,
room_Id int(15) NOT NULL,
room_no varchar(255) NOT NULL,
stay_Id int(15) NOT NULL,
start_Date date NOT NULL,
discharge Date date NOT NULL,
PRIMARY KEY (Patient Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
```

```
2.1.8 Test Table
CREATE TABLE test (
te_Id int(15) NOT NULL,
te_result varchar(255) NOT NULL,
te_date date NOT NULL,
PRIMARY KEY (te Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.1.9 Time Slot Table
CREATE TABLE timeslot (
slot_Id int(15) NOT NULL,
time_Range time NOT NULL,
PRIMARY KEY (slot Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.2.0 Treatment Table
CREATE TABLE treatment (
tr_Id int(15) NOT NULL,
issue varchar(255) NOT NULL,
tr date date NOT NULL,
PRIMARY KEY (tr_Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
2.2.1 Ward Table
CREATE TABLE ward (
wa Id int(15) NOT NULL,
```

PRIMARY KEY (wa_Id)) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4

wa Name varchar(255) NOT NULL,

Normalizing the tables

Doctor table:

```
CREATE TABLE doctor (
Doctor Id int(15) NOT NULL,
firstName varchar(255) NOT NULL,
lastName varchar(255) NOT NULL,
Phone int(15) NOT NULL,
Password varchar(255) NOT NULL,
sp_Id int(15) NOT NULL,
sp_name varchar(255) NOT NULL,
PRIMARY KEY (Doctor Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
Here the Doctor Id is the candidate key sp id, sp name, transitively dependent on doctor id
which violates 3NF so dividing the tables as follow:-
Doctor Table
CREATE TABLE doctor (
Doctor_Id int(15) NOT NULL,
firstName varchar(255) NOT NULL,
lastName varchar(255) NOT NULL,
Phone int(15) NOT NULL,
Password varchar(255) NOT NULL,
 PRIMARY KEY ('Doctor_Id') ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
Doctor Specialty Table
CREATE TABLE doctor speciality (
sp Id int(15) NOT NULL,
sp_name varchar(255) NOT NULL,
PRIMARY KEY (sp_Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
Payment Table
CREATE TABLE payment
(pa_Id int(11) NOT NULL,
pay_Name varchar(255) NOT NULL,
```

```
pa_amount varchar(255) NOT NULL,

pa_Date date NOT NULL,

PRIMARY KEY (pa_Id) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
```

Payment table is further normalized into payment table and payment method table

Payment Table

```
CREATE TABLE payment

(pa_Id int(11) NOT NULL,

pa_amount varchar(255) NOT NULL,

pa_Date date NOT NULL,

PRIMARY KEY (`pa_Id`) ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
```

Payment Method Table

```
CREATE TABLE payment_method (
pay_Id int(15) NOT NULL,
pay_Name varchar(255) NOT NULL ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4
```

In_Patient table:

CREATE TABLE `In_patient` (`Patient_Id` int(15) NOT NULL, `room_Id` int(15) NOT NULL, `room_no` varchar(255) NOT NULL, stay_Id` int(15) NOT NULL, `start_Date` date NOT NULL, `discharge_Date` date NOT NULL, PRIMARY KEY (`Patient_Id`)) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4

Here the whenever the data inserted for the room and details about staying, results as redundancy of data which violates 1NF.So divided the tables into room and stay table

Room Table

CREATE TABLE `room` (`room_Id` int(15) NOT NULL, `room_no` varchar(255) NOT NULL, PRIMARY KEY (`room_Id`)) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4

Stay Table

CREATE TABLE `stay` (`stay_Id` int(15) NOT NULL, `start_Date` date NOT NULL, `discharge_Date` date NOT NULL, PRIMARY KEY (`stay_Id`)) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4

 $\textbf{Repo Url}: \underline{https://github.com/abhayarora23UNT/UntFdbProjectEHMS2022/tree/main}$