



**EAST WEST UNIVERSITY**

**Course: Database Systems**

**SQL Database Project**  
**Project Report**

**Project Name: Healthcare Management System**

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## **1. Abstract:**

Healthcare Management System is a DBMS (Database Management System) website-based software solution designed to various operational tasks within a one-stop solution in DBMS. This system provides an efficient platform for storing Structured Query Language (SQL) to manage patient's data and log in records, appointments, doctor's data and patient's appointment records and giving prescriptions as per analysis. It also saves the records in database.

## **2. Introduction:**

Healthcare Management System is an integrated, high-performance system. today's ever-changing Healthcare landscape, managing patient's data, doctor's data, appointment information, administrative tasks, and more requires a robust and easy to use system. It combines the power of multiple technologies to deliver a seamless, interactive experience for the patient, the Healthcare professional, the administrator. The system ensures data integrity and minimizes redundancy. the Healthcare Management System represents a pivotal tool for Healthcare professionals, administrators, and patients alike. This project has the solution of evolving demands of the Healthcare industry, offering a foundation for efficient, secure, and patient centered Healthcare management. As technology continues to play a central role in Healthcare transformation. The system facilitates complex queries, reporting, and analytics, empowering Healthcare professionals to make informed decisions. The system is developed using a powerful combination of SQL, HTML, CSS, PHP, Bootstrap, and JavaScript, which represents an integrated solution for the efficient administration and organization of Healthcare related data.

### **3. Project Objectives:**

Our objectives are improving Healthcare process, enhance efficiency, and provide better patient care. Here are several ways that it will be beneficial for us:

- Utilizing the patient management features to maintain comprehensive records, including medical history, prescriptions, and appointments.
- Optimizing appointment scheduling using the system's capabilities, allowing for efficient allocation of resources and reduced wait times.
- Real-time updates to manage appointment changes or cancellations.
- Improving workflows by automating processes, such as prescription management.
- Generate customized reports for administrators and Healthcare providers.
- Ensure secure access to patient information by implementing user authentication and role-based access controls.
- Limit access to sensitive data based on user roles (Admin, Doctor, Patient).
- Taking advantage of the responsive design with Bootstrap, allowing Healthcare professionals to access the system from various devices.
- Enhancing user experience with a user-friendly interface designed using HTML, CSS, and JavaScript. Use SQL to maintain data integrity and enforce privacy standards.
- Ensure compliance with Healthcare regulations by implementing security measures in the system.
- Using the system to engage with patients through features like online appointment scheduling, secure messaging, and access to their own health records.
- Provide Healthcare professionals with remote access to patient data for timely decision-making. Regularly update and analyze system usage for improvement.

By effectively utilizing the features of the Healthcare Management System, Healthcare facilities can be improved overall with efficiency, data accuracy, and patient care, leading to efficient Healthcare management process.

## **4. Implementation:**

**Tools:** XAMPP, MySQL, Localhost, PhpMyAdmin, Visual Studio Code, An Internet Browser.

### **Implementing Process:**

To implement this SQL database system, we need some tools and programs, such as -

1. First, starting Apache & MySQL server on XAMPP. Then setting up to run on Browser.
2. Going to XAMPP directory where XAMPP is installed. Example. ("C:\xampp ")
3. Opening the folder named 'htdocs'.
4. Going to address bar and type "localhost/phpMyAdmin/"
5. Creating a database and inside that write SQL command to create a data table.
6. Opening a new folder over there named (Ex: HealthcareProject).
7. Going to web browser and typing on address bar: "localhost/HealthcareProject/"
8. Adding the required Html, CSS, PHP, Javascript, Bootstrap code in Visual Studio Code.

## **System Architecture:**

### **Step 1: Database Design (SQL)**

- Designing the database schema with tables for entities like Patient, Doctor, Admin, Appointments etc.
- Creating the database and tables using SQL commands or a database management tool in phpMyAdmin.

### **Step 2: Back-End Development (PHP)**

- Creating a connection script to connect PHP to the database.
- Implementing PHP scripts for CRUD operations (Create, Read, Update, Delete) for each entity.
- Coding logic for appointment scheduling.

### **Step 3: Front-End Development (HTML, CSS, Bootstrap)**

- Designing HTML pages for different functionalities (patient management, appointment scheduling, etc.).
- Applying CSS for styling and layout.
- Using Bootstrap for a responsive design and pre-built components.

### **Step 4: Front-End Interactivity (JavaScript)**

- Enhancing user experience with JavaScript for form validations, dynamic content updates, and asynchronous requests.

### **Step 5: User Authentication (PHP, SQL)**

- Implementing a secure user authentication system with PHP and SQL.
- Creating user roles (Admin, Doctor, Patient).
- Control access to different sections based on user roles.

### **Step 6: Integration**

- Integrating the front-end and back-end components.
- Ensuring proper communication between the user interface and the server.

### **Step 7: Testing**

- Conducting thorough testing, including functionality and usability testing.
- Identifying for any fix bugs or issues.

## **5. SQL Operations:**

**Database:** These are our database tables created in “localhost/phpMyAdmin/”.

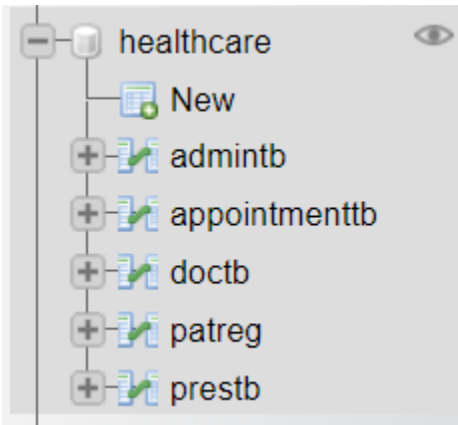


	Table ▾	Action
<input type="checkbox"/>	admin	★ Browse Structure Search
<input type="checkbox"/>	appointment	★ Browse Structure Search
<input type="checkbox"/>	doctor	★ Browse Structure Search
<input type="checkbox"/>	patient	★ Browse Structure Search
<input type="checkbox"/>	prescription	★ Browse Structure Search
	5 table(s)	Sum

## **Admin’s Username And Password:**

username	password
admin	admin123



### Doctors Table:

username	password	doctorname	email	spec	docFees
Dr Sayem	password	Dr Sayem Chowdhury	Sayem@gmail.com	Gastroenterologist	350
Dr Sayeed	pass	Dr Abu Sayeed	Sayeed@gmail.com	General	300
Dr Asad	pass	Dr Asad Ahmed	Asad@gmail.com	Neurologist	400
Dr Shihab	pass	Dr Shihab Hasan	Shihab@gmail.com	Pediatrician	250
Dr Sifat	pass	Dr Sifat Uddin	sifat@gmail.com	Cardiologist	440

### Patients Table:

pid	fname	lname	gender	email	contact	password	cpassword
1	Sabbir	Khan	Male	sabbir@gmail.com	012741000	pass	pass
2	Emran	Ahmed	Male	emran@gmail.com	012222222	123456	123456
3	Habib	Aslam	Male	rahmat@gmail.com	012744444	pass	pass
4	Amir	Hossain	Male	amir@gmail.com	012702454	pass	pass
5	Wasim	Al Zubaer	Male	wasim@gmail.com	012789984	pass	pass
6	Zarif	Haydar	Male	zarif@gmail.com	012753000	pass	pass
7	Yamin	Chowdhury	Male	yamin@gmail.com	012785000	pass	pass
8	Deehan	Iftekhhar	Male	deehan@gmail.com	012730145	pass	pass
9	Hasibul	Hasan	Male	hasib@gmail.com	012702696	pass	pass
10	Tawhid	Akram	Male	tawhid@gmail.com	012790012	pass	pass

### Appointment Table:

pid	ID	fname	lname	gender	email	contact	doctor	docFees	appdate	apptime
1	21	Sabbir	Khan	Male	sabbir@gmail.com	012741000	Dr Shihab	0	2023-12-18	10:00:00

### Prescription Table:



doctor	pid	ID	fname	lname	apptime	apptime	disease	allergy	prescription
Dr Shihab	1	21	Sabbir	Khan	2023-12-18	10:00:00	No disease found.	No allergies found.	Eat nutritious food like fruit.

## **6. Frontend and Backend Works:**

**Language used:** SQL, HTML, CSS, PHP, JavaScript, Bootstrap.

### **Frontend Implementation:**

#### **Step 1: Design UI Layout (HTML, CSS, Bootstrap)**

Designing HTML pages for different modules (for patient management, appointment scheduling). Applying CSS styles for layout and aesthetics. Utilizing Bootstrap for responsive design and pre-built components.

#### **Step 2: Patient Management Module**

Creating an HTML page for viewing and managing patient information. Implementing dynamic elements using JavaScript for interactive features.

#### **Step 3: Appointment Scheduling Module**

Developing an HTML page for appointment scheduling. Using Bootstrap's date and time picker components for a user-friendly interface. Adding JavaScript for dynamic content updates and form validations.

#### **Step 4: Prescription Management Module**

Designing an HTML page for prescription management. Using CSS to enhance the visual appeal. Adding JavaScript for real-time updates and interactive features.

#### **Step 5: User Authentication (HTML, CSS)**

Creating login and registration pages using HTML and CSS. Applying Bootstrap for consistent styling.

## **Backend Implementation:**

### **Step 6: Set Up Database (SQL)**

Designing the database schema with tables for patients, doctors, appointments, prescriptions, etc. Using SQL commands or a database management tool to create the database and tables.

### **Step 7: Establish Database Connection (PHP)**

Creating a PHP script to connect to the database. Ensuring secure handling of database credentials.

### **Step 8: Implement CRUD Operations (PHP)**

Writing PHP scripts for CRUD operations (Create, Read, Update, Delete) for each entity (patient, doctor, appointment, prescription).

### **Step 9: User Authentication (PHP, SQL)**

Adding PHP scripts for user authentication and authorization. Adding secure password hashing for control access based on user roles (Admin, Doctor, Patient).

### **Step 10: Server-Side Processing (PHP)**

Adding server-side processing for appointment scheduling, prescription management, and other dynamic functionalities.

### **Step 11: Integrate Frontend and Backend**

Linking HTML pages to PHP scripts for server-side processing. Creating asynchronous communication between the frontend and backend.

### **Step 12: Testing**

Testing frontend and backend components by hosting the system on a web browser.

This step-by-step process provides a structured guide for implementing the frontend and backend of a Healthcare Management System.

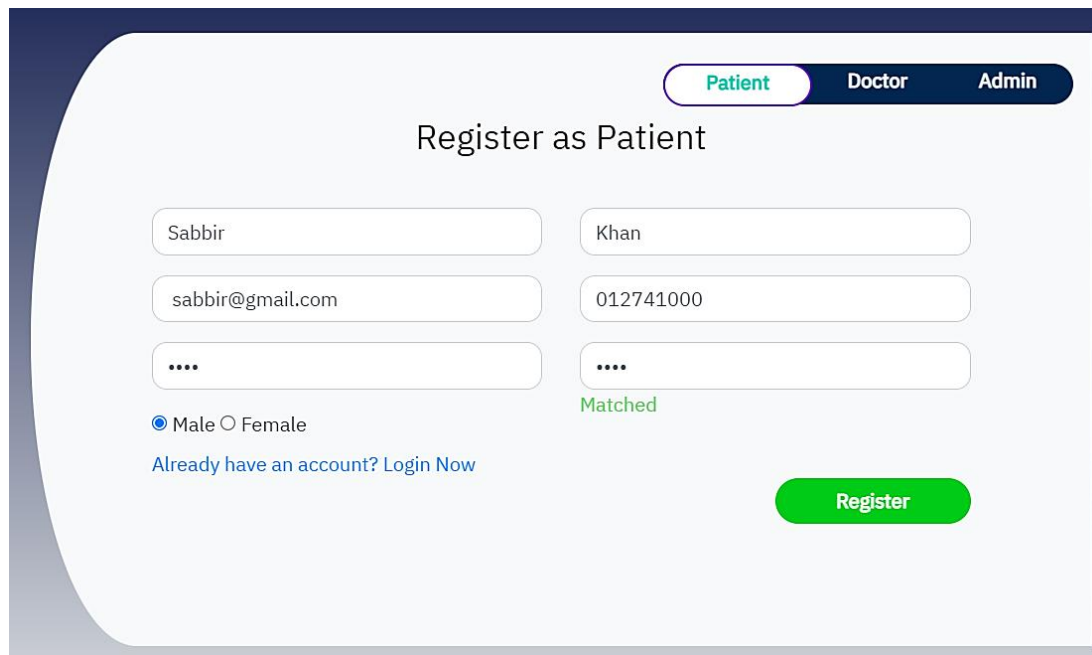
## **7. User Interface:**

### **Home Page and Patient Registration:**

The screenshot displays the user interface of a Healthcare Management System. At the top, a dark blue header contains the text "HEALTHCARE MANAGEMENT SYSTEM" next to a small icon. Below the header, the page is divided into two main sections. On the left, a dark blue sidebar with a gradient background contains the word "Welcome" in white. On the right, a white rounded rectangle contains the registration form. At the top of this form, there are three tabs: "Patient" (highlighted in green), "Doctor", and "Admin". Below the tabs, the title "Register as Patient" is centered. The form consists of several input fields: "First Name \*" and "Last Name \*" in the first row; "Your Email \*" and "Contact \*" in the second row; and "Password \*" and "Confirm Password \*" in the third row. Below these fields, there are radio buttons for "Male" (selected) and "Female". At the bottom left of the form, there is a link that says "Already have an account? Login Now". At the bottom right, there is a green button labeled "Register".

Here, we can see this is the home page and patient registration form.

### **Filling Patient Data in Patient Registration:**



The image shows a web form titled "Register as Patient". At the top, there are three tabs: "Patient" (highlighted in green), "Doctor", and "Admin". The form contains two columns of input fields. The left column has fields for "Name" (containing "Sabbir"), "Email" (containing "sabbir@gmail.com"), and "Password" (containing four dots). The right column has fields for "Last Name" (containing "Khan"), "Phone Number" (containing "012741000"), and "Confirm Password" (containing four dots). Below the left column, there are radio buttons for "Male" (selected) and "Female", and a link "Already have an account? Login Now". A green "Register" button is at the bottom right. A green "Matched" label is positioned between the two password fields.

Patient Doctor Admin

### Register as Patient

Sabbir Khan

sabbir@gmail.com 012741000

....

☒ Male ☐ Female

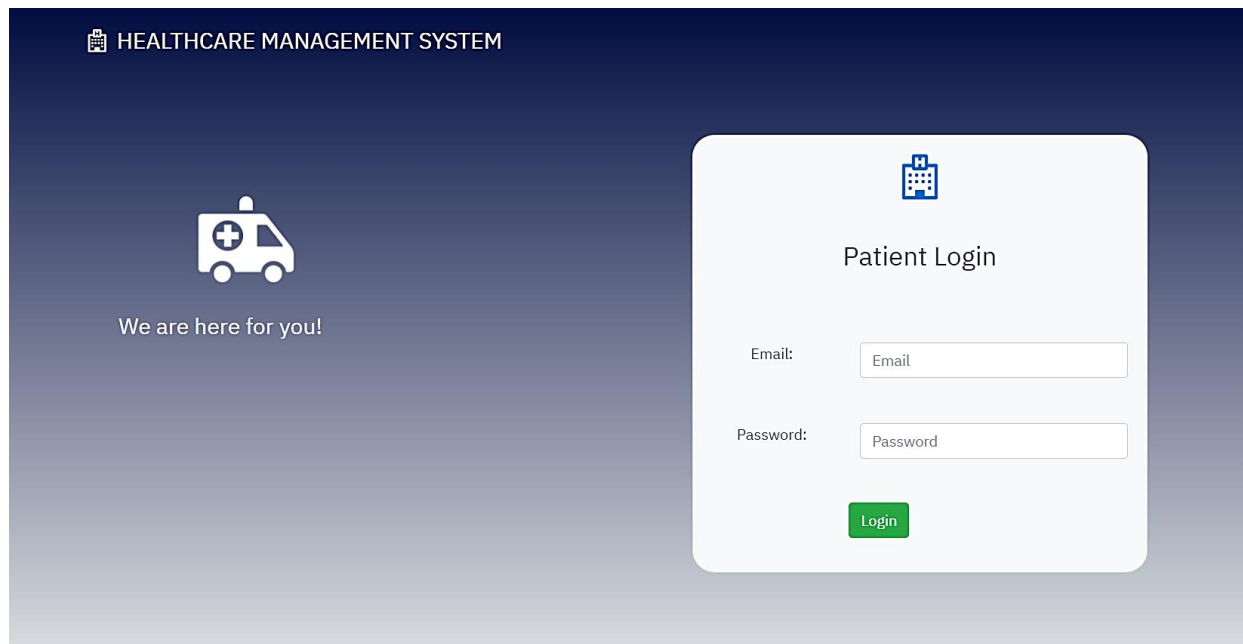
Already have an account? [Login Now](#)

Matched

Register

Here, filling the required data as a patient in registration form.

### **Patient's Log in page:**



The image shows a web page titled "HEALTHCARE MANAGEMENT SYSTEM" with a clipboard icon. On the left, there is an ambulance icon and the text "We are here for you!". On the right, there is a "Patient Login" form with a hospital icon. The form has fields for "Email" and "Password", and a green "Login" button.

HEALTHCARE MANAGEMENT SYSTEM

We are here for you!

Patient Login

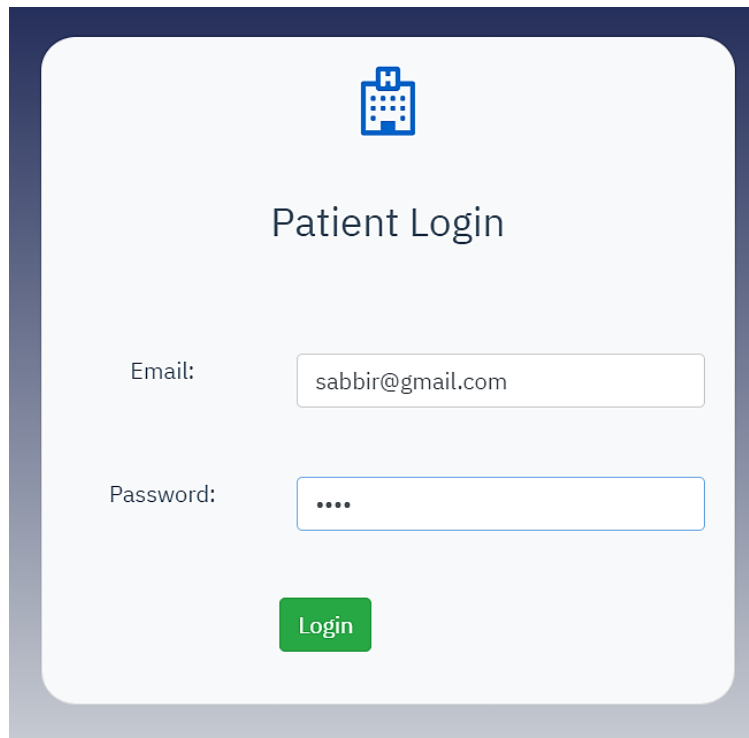
Email: Email

Password: Password

Login

This is patient's log in page. Only Email and Password is required to log in.

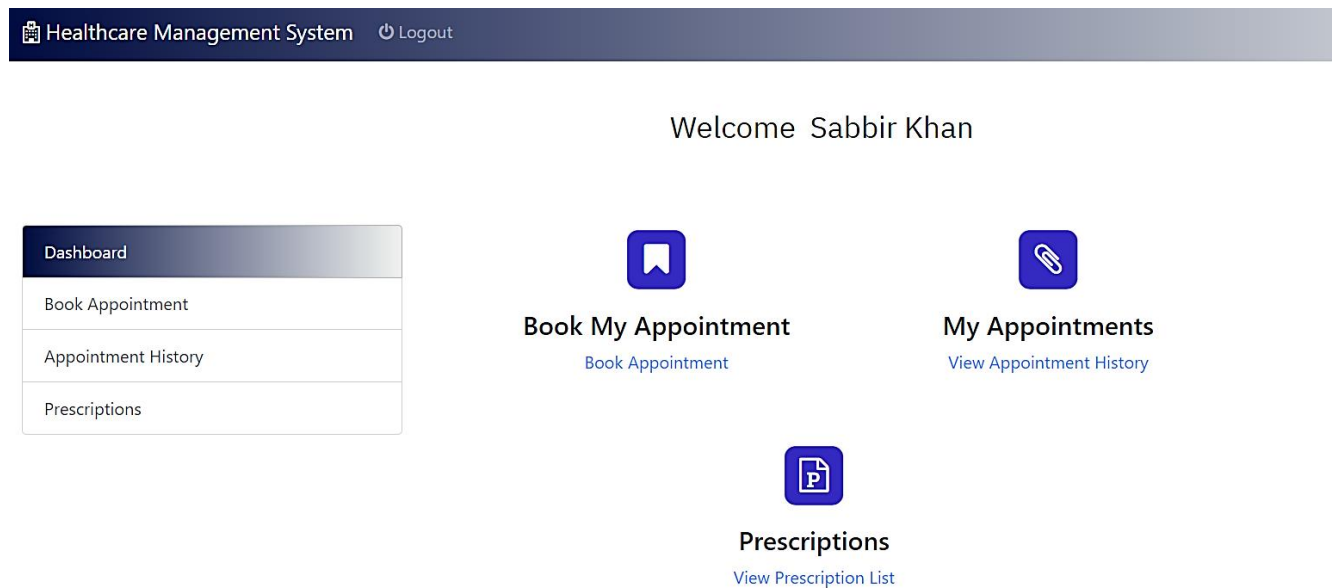
### **Patient Log in with Email and Password:**



The image shows a 'Patient Login' form. At the top is a blue icon of a hospital building. Below it, the text 'Patient Login' is centered. There are two input fields: 'Email:' with the value 'sabbir@gmail.com' and 'Password:' with four dots. A green 'Login' button is at the bottom.

After typing the registered email and password, a patient can log in.

### **Patient's Logged in Dashboard:**



The dashboard has a dark blue header with 'Healthcare Management System' and a 'Logout' button. Below the header, it says 'Welcome Sabbir Khan'. On the left is a 'Dashboard' sidebar with links to 'Book Appointment', 'Appointment History', and 'Prescriptions'. The main area has three cards: 'Book My Appointment' with a 'Book Appointment' link, 'My Appointments' with a 'View Appointment History' link, and 'Prescriptions' with a 'View Prescription List' link.

After successfully logging in, patients can fix their appointment timing and selecting a specialized doctor for specific health issues.

## Book My Appointment:

Welcome Sabbir Khan

Dashboard	<b>Book Appointment</b>
Appointment History	
Prescriptions	

### Book Appointment

Specialization:

Doctors:

Consultancy Fees

Appointment Date

Appointment Time

[Create new entry](#)

Here, a patient successfully fixed the time of appointment with the specialized doctor.

Welcome Sabbir Khan

Dashboard	#	Doctor	Fees	Date	Time	Status	Action
Book Appointment	1	Dr Shihab	\$0	2023-12-18	10:00:00	Active	<a href="#">Cancel</a>
Appointment History							
Prescriptions							

Patients can check their Appointment History and also can cancel the appointment.

## Doctor's Log in page:

HEALTHCARE MANAGEMENT SYSTEM

Welcome

PatientDoctorAdmin

Login as Doctor

User Name \*

Password \*

Login

This is the Log in page of Doctor where registered username and password is needed for log in.

**Doctor Log in with Username and Password:**

PatientDoctorAdmin



Login as Doctor

Dr Shihab

....

Login

## Doctor's Dashboard:


 Healthcare Management System  Logout


Welcome Dr Shihab

Dashboard

Appointments

Prescription List

  
**View Appointments**  
[Appointment List](#)

  
**Prescriptions**  
[Prescription List](#)

This is Doctor's Dashboard after logging in. Here, Doctors can check the pending appointment requests coming from patients. And also, Doctors can prescribe and can view the given prescriptions.

Welcome Dr Shihab

Dashboard

Appointments

Prescription List

#	Patient	Gender	Email	Contact	Date	Time	Status	Action	Prescribe
1	Sabbir Khan	Male	sabbir@gmail.com	012741000	2023-12-18	10:00:00	Active	<a href="#">Cancel</a>	<a href="#">Prescribe</a>

Doctors can check the appointment schedules of patients. There is a green box of Prescribe where doctors can give prescription to patients.



Disease:

No disease found.

Allergies:

No allergies found.

Prescription:

Eat nutritious food like fruit and vegetables. Try to sleep 8 hours everyday.

Prescribe

This is the Prescribe box where doctor can write prescriptions for a specific patient.

### Prescription from Doctor's side:

Dashboard						
Appointments						
Prescription List						
#	Patient	Appointment Date	Appointment Time	Disease	Allergy	Prescribe
1	Sabbir Khan	2023-12-18	10:00:00	No disease found.	No allergies found.	Eat nutritious food like fruit and vegetables. Try to sleep 8 hours everyday.

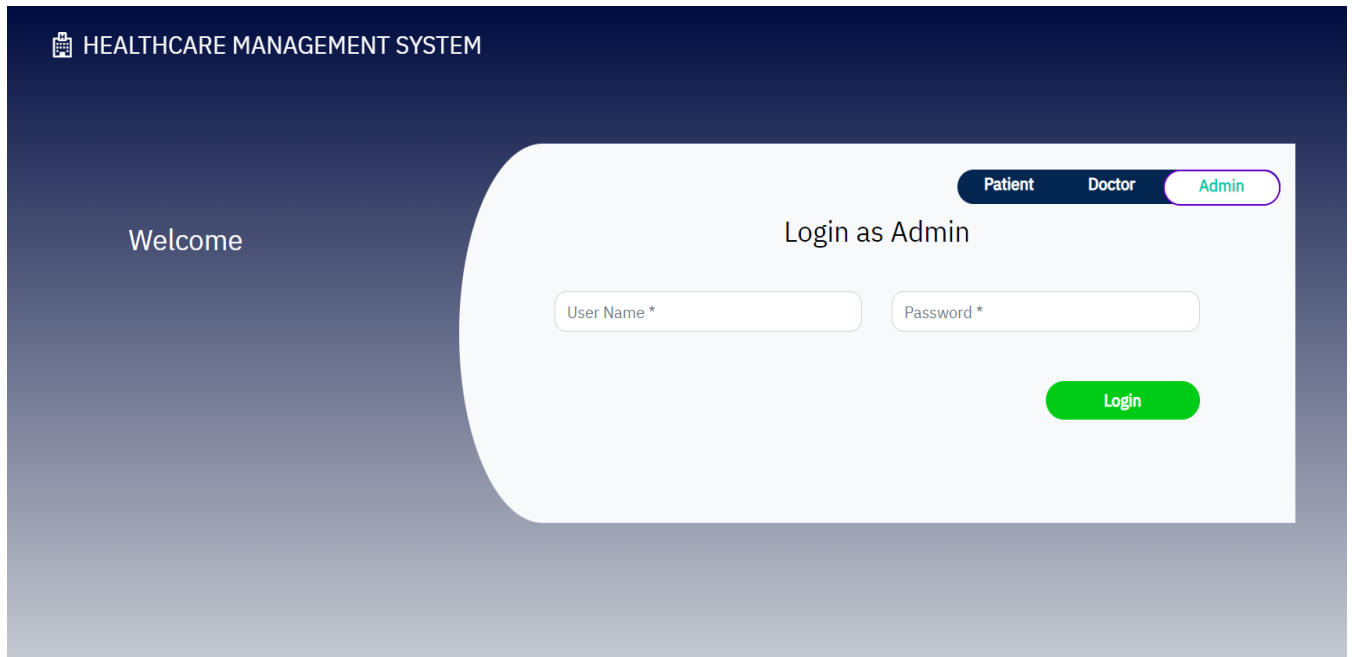
After submitting a prescription, it looks like this.

### Prescription from Patient's side:

Dashboard					
Book Appointment					
Appointment History					
Prescriptions					
Doctor	Appointment Date	Appointment Time	Diseases	Allergies	Prescriptions
Dr Shihab	2023-12-18	10:00:00	No disease found.	No allergies found.	Eat nutritious food like fruit and vegetables. Try to sleep 8 hours everyday.

This is the look of prescribed prescription from patient's side.

### Admin's Log in page:



HEALTHCARE MANAGEMENT SYSTEM

Welcome

Patient Doctor Admin

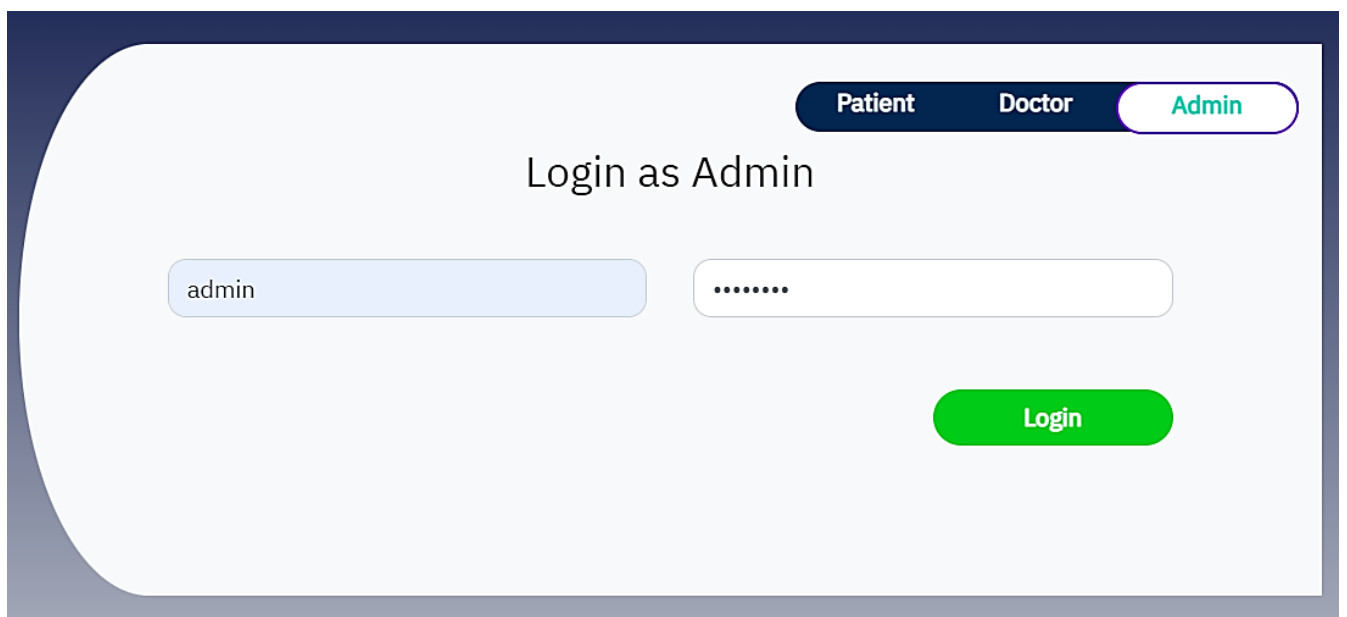
Login as Admin

User Name \*

Password \*

Login

This screenshot shows the login interface for an Admin user. The page has a dark blue header with the text 'HEALTHCARE MANAGEMENT SYSTEM'. On the left, the word 'Welcome' is displayed. On the right, there is a white login box with a dark blue header containing three tabs: 'Patient', 'Doctor', and 'Admin'. The 'Admin' tab is selected. Below the tabs, the text 'Login as Admin' is centered. There are two input fields: 'User Name \*' and 'Password \*'. A green 'Login' button is located at the bottom right of the login box.



Patient Doctor Admin

Login as Admin

admin






.....

Login






This screenshot shows the same login interface as the previous one, but with the 'User Name' field filled with the text 'admin' and the 'Password' field filled with seven dots. The 'Login' button remains green.

Admin have to log in the dashboard by using username and password.

WELCOME ADMINISTRATOR

Dashboard			
<a href="#">View Doctors</a>	<b>Doctor List</b> <a href="#">View Doctors</a>	<b>Patient List</b> <a href="#">View Patients</a>	<b>Appointment Details</b> <a href="#">View Appointments</a>
<a href="#">View Patients</a>			
<a href="#">Appointment Details</a>			
<a href="#">Prescription List</a>			
<a href="#">Add Doctor</a>	<b>Prescription List</b> <a href="#">View Prescriptions</a>	<b>Manage Doctors</b> <a href="#">Add Doctors</a>   <a href="#">Delete Doctors</a>	
<a href="#">Delete Doctor</a>			

This is the dashboard's look of Admin.

Dashboard			
<a href="#">View Doctors</a>	<b>Doctor List</b> <a href="#">View Doctors</a>	<b>Patient List</b> <a href="#">View Patients</a>	<b>Appointment Details</b> <a href="#">View Appointments</a>
<a href="#">View Patients</a>			
<a href="#">Appointment Details</a>			
<a href="#">Prescription List</a>			
<a href="#">Add Doctor</a>	<b>Prescription List</b> <a href="#">View Prescriptions</a>	<b>Manage Doctors</b> <a href="#">Add Doctors</a>   <a href="#">Delete Doctors</a>	
<a href="#">Delete Doctor</a>			

As we can see the Admin's dashboard has many segments such as Doctor List is for viewing how many doctors work there, Patient List is for watching the serial of registered patients, Appointment Details is for viewing how appointments are issued. Prescription List is for viewing every given prescription from the doctor's side. Add Doctor is a segment for adding new doctor in the system. And Delete Doctor is for deleting a doctor from the system.

## WELCOME ADMINISTRATOR

Dashboard	Doctor Name:	<input type="text"/>
View Doctors	Username:	<input type="text" value="I"/>
View Patients	Specialization:	<input type="text" value="Select Specialization"/>
Appointment Details	Email ID:	<input type="text"/>
Prescription List	Password:	<input type="text"/>
<b>Add Doctor</b>	Confirm Password:	<input type="text"/>
Delete Doctor	Consultancy Fees:	<input type="text"/>

This is the Add Doctor segment where a new doctor can be added in the system by admin. Several details of a Doctor have to add on those boxes of Add Doctor section.

## WELCOME ADMINISTRATOR

Dashboard	Email ID:	<input type="text"/>
View Doctors	<input type="button" value="Delete Doctor"/>	
View Patients		
Appointment Details		
Prescription List		
Add Doctor		
<b>Delete Doctor</b>		

This is Delete Doctor option where only Email ID of a doctor is needed to remove a doctor.



Logged Out Successfully!

[Back to Login Page](#)

After clicking Log Out, this shows up as a Log Out confirmation from Admin's side. Admin, Patient, Doctor has the Log Out segment. When any data added in the four sides (Admin, Patient, Doctor, Prescription) from this website, then all of those data are also interlinked and stored in SQL's database (localhost/phpMyAdmin/) as well.

After seeing the work process and screenshots from our database project, we can say that we have successfully visualized this project and fulfilled the required proposal, prerequisites, objectives, implementations correctly. Our Healthcare Management System project is successfully working.

## **8. Healthcare Management System E-R diagram:**

### **Entity:**

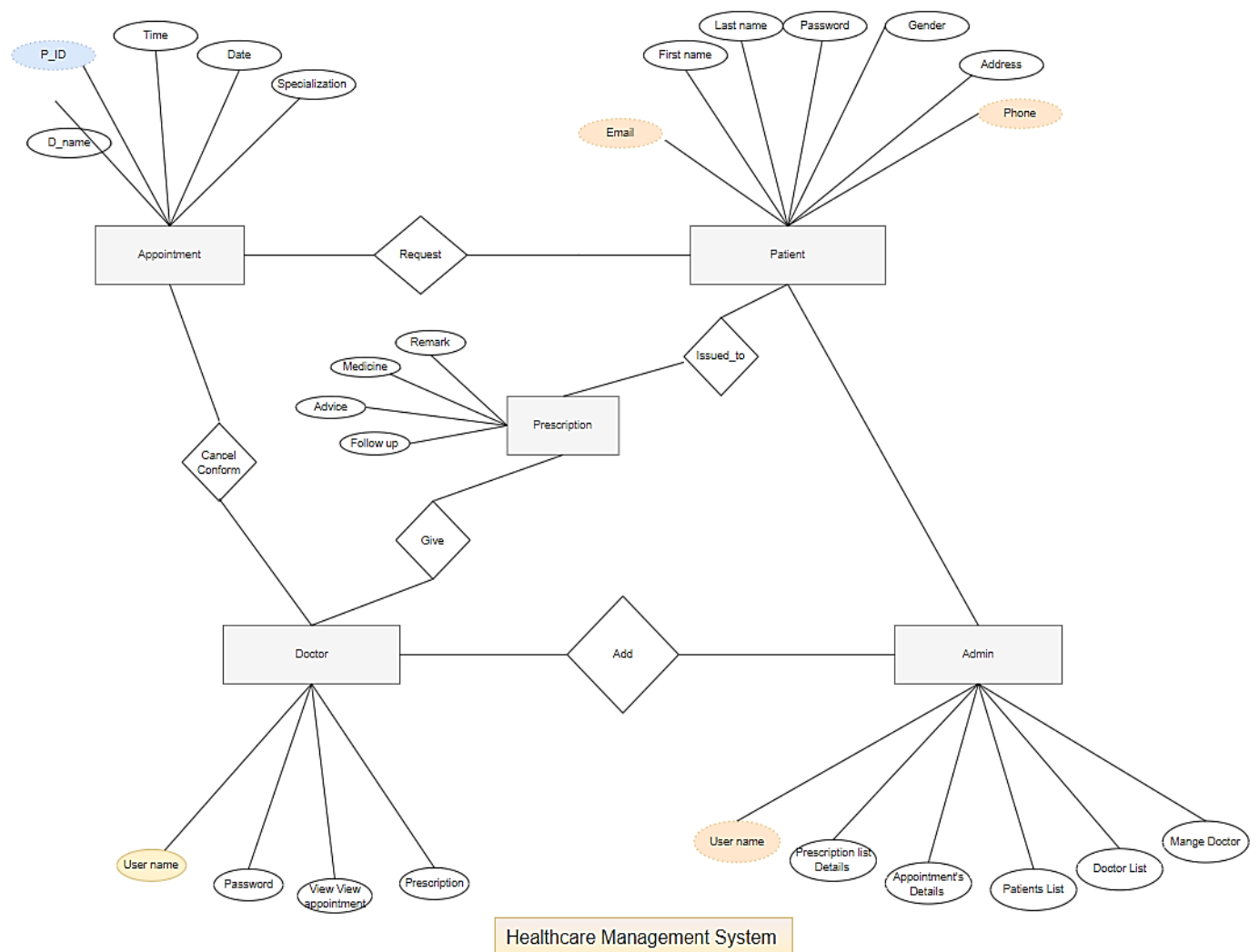
**1. Patient:** i. Patient Registration:- First Name, Last Name, Email, Contact, Password, Confirm Password, Gender.

ii. Patient Log In:- Email, Password, Book My Appointments, My Appointments, Prescriptions.

**2. Doctor:** i. Doctor Log in:- User Name, Password, View Appointment, Prescriptions.

**3. Admin:** i. Admin Log in:- User Name, Password, Doctors List, Patient List, Appointment Details, Prescription List, Manage Doctor ( Add Doctor & Delete Doctor )

**4. Appointment:** Patient's Name, Specialization, Doctor's Name, Time, Date.



## 9. Relationships:

- i.** One-to-Many relationship between Patient and Appointment (One patient can have multiple appointments, but each appointment is associated with one patient).
- ii.** One-to-Many relationship between Doctor and Appointment (One doctor can have multiple appointments, but each appointment is associated with one doctor).
- iii.** One-to-Many relationship between Patient and Prescription (One patient can have multiple prescriptions, but each prescription is associated with one patient).

**iv.** One-to-Many relationship between Doctor and Prescription (One doctor can issue multiple prescriptions, but each prescription is associated with one doctor).

**v.** Many-to-Many relationship between Admin and Patient (An admin can manage multiple patients, and a patient can be managed by multiple admins. This relationship could represent activities like registration, data updates, etc.).

**vi.** Many-to-Many relationship between Admin and Doctor (An admin can manage multiple doctors, and a doctor can be managed by multiple admins)

## **10. Conclusion:**

We have successfully developed the Healthcare Management System project by the help of SQL, HTML, CSS, PHP, Bootstrap and JavaScript. This project represents a transformative solution for Healthcare facilities for patients and it has operational efficiency, data management, and patient care. This user-friendly platform that addresses various aspects of Healthcare services. The use of SQL organized the database structure. HTML, CSS, and Bootstrap contributes the creation of responsive user interface. PHP enables dynamic server, logic and communication between the front-end and back-end components. JavaScript enhances interactivity, real-time updates. The advantages of this project defined patient management, appointment scheduling, and responsive workflows,

reducing administrative burdens. The system's ability to generate insightful reports for improvement in Healthcare sector. User authentication and role-based access controls ensures data security with privacy standards. The responsive design of the system accommodates the dynamic needs of Healthcare facilities. This system can save time and promotes patient engagement through features like easy to access the system. In future this project can be updated and new features can be added for the betterment for Healthcare system. The Healthcare Management System represents itself as an essential tool for doctors, Healthcare professionals, administrators and patients. This project proves that, it is a successful implementation of Healthcare Management System in DBMS which can fulfill the evolving demands of the Healthcare industry.