

## **1.INTRODUCTION TO PROJECT**

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Hospital Management System provides the benefits of streamlined operations, enhanced administration, control, superior patient care, strict cost control and improved profitability. HMS is powerful, flexible, and easy to use and is designed and developed to deliver real conceivable benefits to hospitals. More importantly it is backed by reliable and dependable support. The project 'Hospital Management System' is based on the database, object oriented and networking techniques.

Hospital Management System is custom built to meet the specific requirement of the mid and large size hospitals across the globe. All the required modules and features have been particularly built to just fit in to your requirement. Entire application is web based and built on 3 tier architecture using the latest technologies. The sound database of the application makes it more users friendly and expandable. The package is highly customizable and can be modified as per the needs and requirements of our clients.

The purpose of this project is to automate or make online, the process of day to-day activities like Room activities; Admission of New Patient, Discharge of Patient, Assign a Doctor, and finally compute the bill etc. We have tried our best to make the complicated process Hospital Management System as simple as possible using Structured Modular technique Menu oriented interface.

We have tried to design the software in such a way that user may not have any difficulty in using this package further expansion is possible without much effort. We have used React at our front end for user interface and Spring boot for backend. We have used MySql as our database.

## 2.REQUIREMENTS

### 2.1 FUNCTIONAL REQUIREMENTS

#### 2.1 Admin Account

Admin manages the whole system. He is responsible for employee management. He is interested into tracking revenue. There are major roles that admin has to handle Like doctor, receptionist, patient, lab manager. The functionalities are as following. After login admin can see his/her profile information.

##### □ **Appoint employee:**

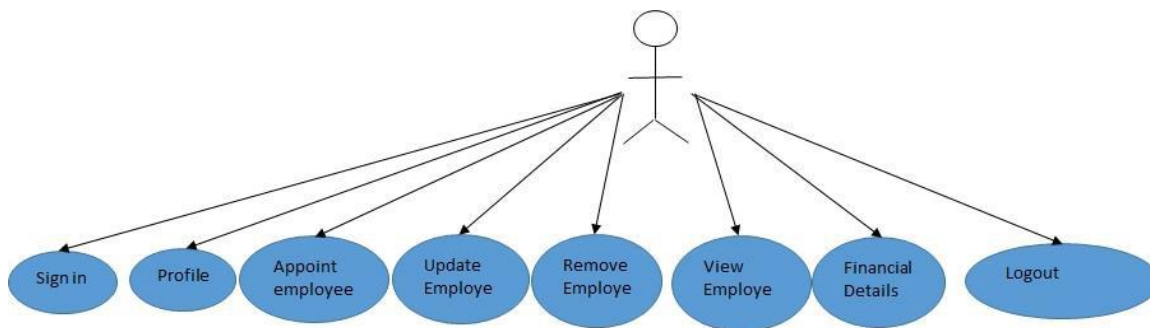
Admin add the detail of employee like name, email, password date of birth, contact number and then select the gender, role and department .

##### □ **View, update and remove employee :**

When admin click on view employee button he can view the name and role of employee. He can update and also delete the details of employee

##### □ **Payment history :**

When admin click on Payment history he can view the revenue as per consultation, ward, test charges in graph format.



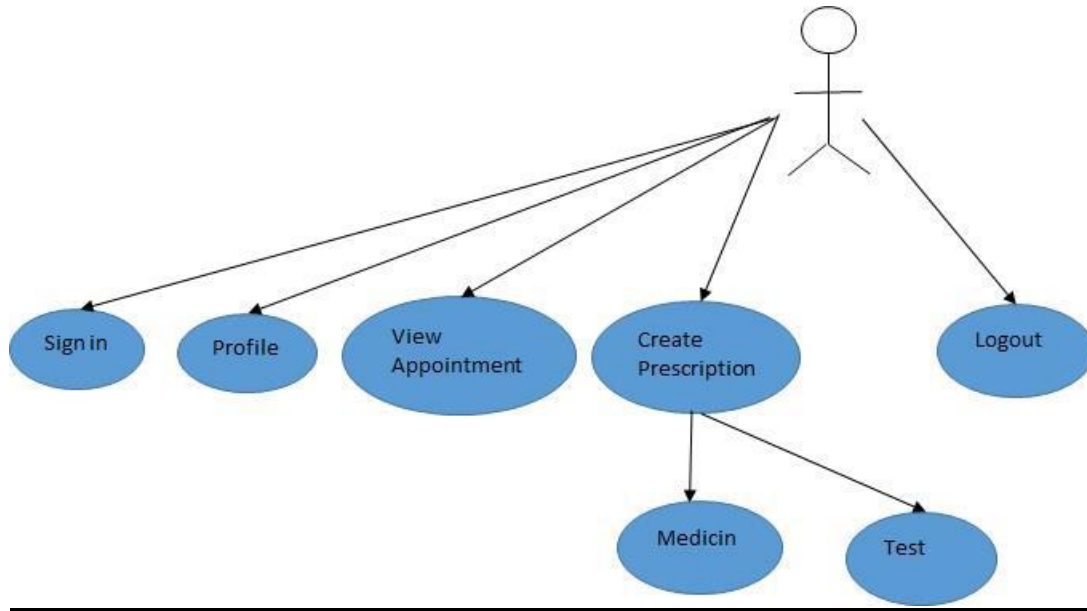
**Fig.2.1.Admin Functionalities**

#### 2.2 Doctor Account

Doctor can able to see appointments booked by patients. After login he can see his profile as well as following functionalities.

##### □ **View appointments :**

When doctor click on view appointments he can able to see the appointments for current date only. He can able to see the patient id , appointment date, patient name. Doctor can create prescription for medicine as well as test. While creating medicine he has to select quantity and medicine from list , for creating he can select the test from test list.



**Fig.2.2 Doctor's Functionalities**

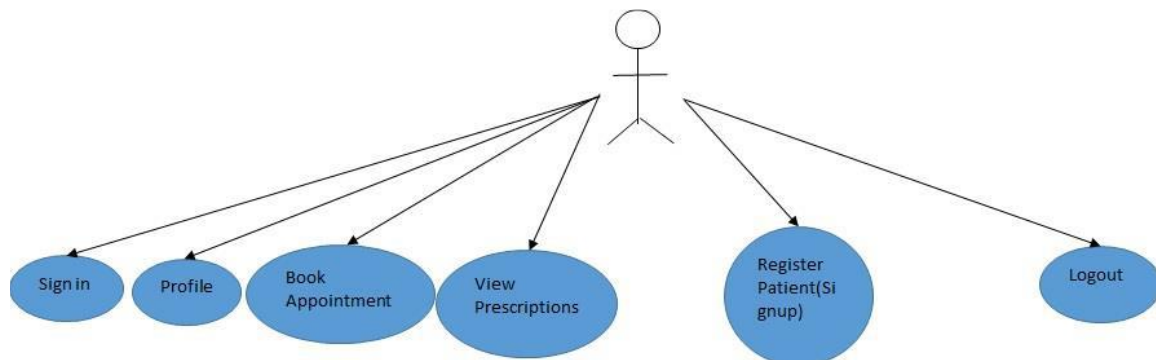
## 2.3 Patients Account

### □ View appointments :

Patient first need to sign up by clicking on book appointment. He/she need to feel the details like name, gender, email and password. After he /she can login and book the appointment.

### □ Book appointments :

After login patient can select the doctor and particular appointment date, patient need to pay the charges and he will get notification that appointment has booked.



**Fig.2.3.Patient's Functionalities**

## 2.4 Receptionist Account

### □ View appointments :

After login receptionist can see her profile just by clicking on home. she can view the doctor wise and date wise appointments.

### □ Admit patient :

Receptionist will able to see the details made by patients using book appointments.

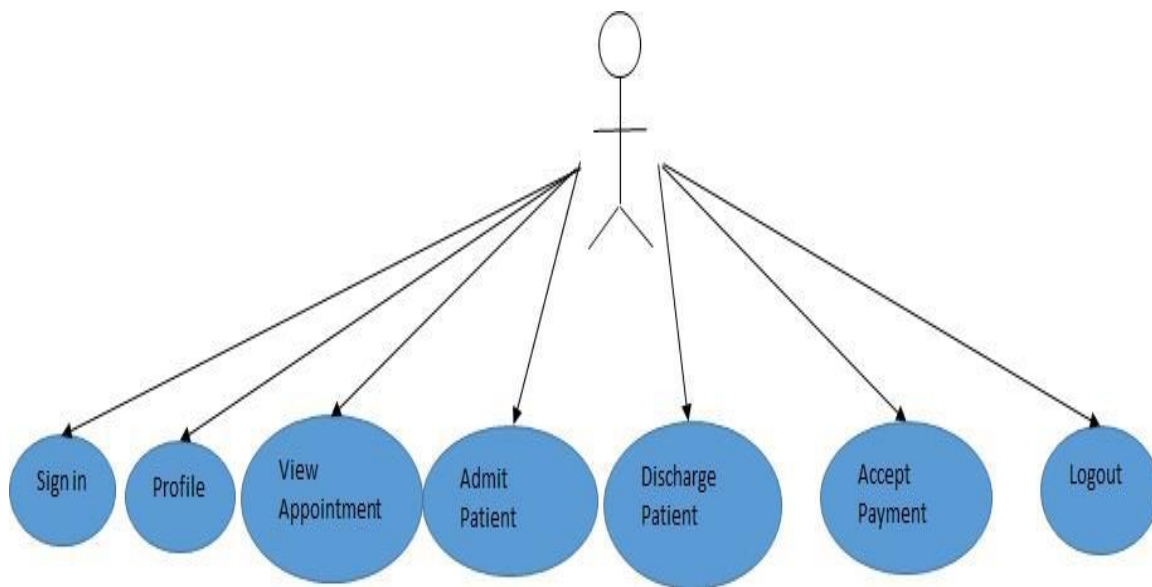
According to that list she will be able to admit the patient.

### □ Discharge Patient :

When the patient is get admitted that list is visible to receptionist and she can discharge that particular patient.

### □ Accept payment :

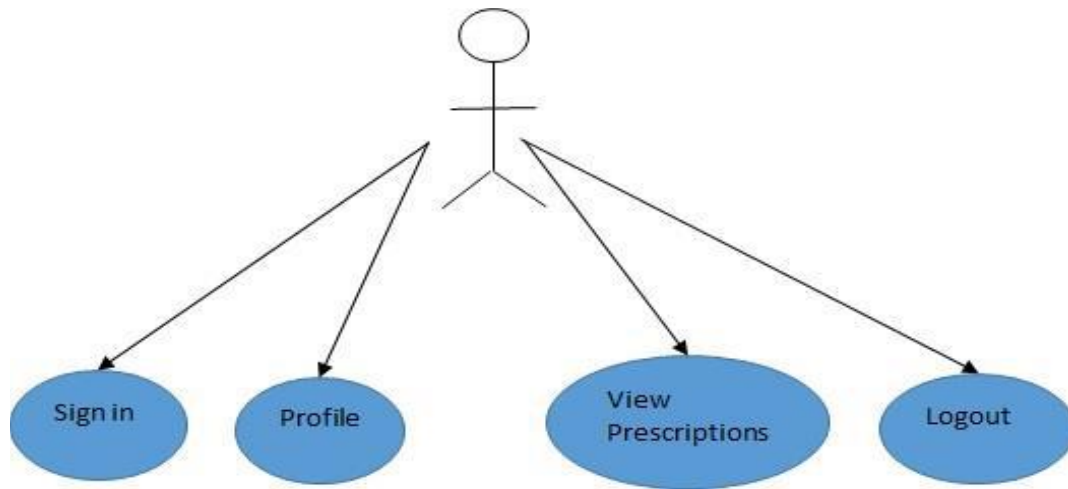
As per patient id and appointment she will take ward charges and lab test charges.



**Fig.2.4.Receptionist Functionalities**

## 2.5 Lab manager Account

Lab manager can view the prescription of test by using patient id. He can also able to see list of tests. The test are suggested by doctor to patient are visible to him by view prescription.



**Fig.2.5.LabManager Functionalities**

## **2.2 NON FUNCTIONAL REQUIREMENTS**

### **2.2.1 Interface**

Go to Appendix B for user interfaces

### **2.2.2 Performance**

HMS shall be able to handle at least 1000 transactions/inquiries per second.

### **2.2.3 Constraint**

HMS shall be able to handle at least 1000 transactions/inquiries persecond.

### **2.2.4 Other Requirements:**

#### **▪ Hardware Interfaces**

The SPMS is expected to function on Intel PIII 900 MHz Processor equivalent or above, 128 MB RAM, 20 GB HDD.

#### **▪ Software Interfaces**

The SPMS shall work on MS Windows operating systems family (MS Windows 98, MS Windows NT Workstation, MS Windows 2000, MS Windows XP). It configures to work with Mysql database. This System works on Apache Tomcat server.

We used Spring tool suit(STS) for coding purpose at backend(version: 3.9.18.RELEASE). Visual Studio for front end (version : 1.71.2) and MySql database .

### 3. DESIGN

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#### 3.1 Database Design

The following table structures depict the database design.

**Table1: admit\_patients**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
Admit_date	Date	3	1
discharge_date	Date	3	1
appt_id	int	4	1
dept_id	int	4	1
patient_id	int	4	1

**Table2: Appointments**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
appt_id	int	4	1
doc_id	int	4	1
patient_id	int	4	1

**Table3: Departments**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
name	varchar	20	1

**Table4: Employees**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
Contact	varchar	20	1
email	varchar	20	1
gender	varchar	255	1
name	varchar	20	1
password	varchar	20	1
dob	Date	3	1
role	varchar	255	1
dept_id	int	4	1

**Table5: med\_presc**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
presc_date	date	3	1
doc_id	int	4	1
patient_id	int	4	1

**Table6:medical tests**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
charge	double	8	0
name	varchar	20	1
Test_presc_id	int	4	1



**Table7:medicine item qty**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
qty	int	-	0
med_presc_id(primary)	int	4	0
Med_id(primary)	int	4	0
id	int	4	0
Medicine_id	int	4	1

**Table8:medicines**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
name	varchar	20	1
Price_per_tab	double	8	0

**Table9:patients**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
Contact	varchar	20	1
email	varchar	20	1
gender	varchar	255	1
name	varchar	20	1
password	varchar	20	0
age	int	4	0
Blood_group	varchar	10	1
city	varchar	20	1

**Table10:payments**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
consultation_charges	double	8	0
test_charges	double	8	0
ward_charges	double	8	0
appt_id	int	4	0
patient_id	int	4	0
Last_pay_date	int	3	1

**Table11:test\_presc**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
presc_date	date	3	1
doc_id	int	4	1
patient_id	int	4	1

**Table12:test\_reports**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
ID(primary key)	int	-	0
content_type	date	3	1
data	longblob	-	1
name	varchar	255	1
med_test_id	int	4	1
test_presc_id	int	4	1

**Table13:test\_reports**

Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
Presc_id(primary)	int	4	0
test_id(primary)	int	4	0

**E-R Diagram:**

Go to Appendix A

## 4. CODING STANDARDS IMPLEMENTED

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### Naming and Capitalization

Below summarizes the naming recommendations for identifiers in Pascal casing is used mainly (i.e. capitalize first letter of each word) with camel casing (capitalize each word except for the first one) being used in certain circumstances.

Identifier	Case	Examples	Additional Notes
Class	Pascal	Employees, Patients	Class names should be based on "objects" or "real things" and should generally be <b>nouns</b> . No ' _ ' signs allowed. Do not use type prefixes like 'C' for class.
Method	Camel	getId, getRole	Methods should use <b>verbs</b> or verb phrases.
Parameter	Camel	patientId	Use descriptive parameter names. Parameter names should be descriptive enough that the name of the parameter and its type can be used to determine its meaning in most scenarios.
Interface	Pascal with "I" prefix	IDoctorService	Do not use the ' _ ' sign
Property	Pascal	Role, Gender	Use a noun or noun phrase to name properties.
Exception Class	Pascal with "Exception" suffix	WebException,	

## **Comments**

- Comment each type, each non-public type member, and each region declaration.
- Use end-line comments only on variable declaration lines. End-line comments are comments that follow code on a single line.
- Separate comments from comment delimiters (apostrophe) or // with one space.
- Begin the comment text with an uppercase letter.
- End the comment with a period.
- Explain the code; do not repeat it.

## 5. TEST REPORT

### GENERAL TESTING:

SR-NO	TEST CASE	EXPECTED RESULT	ACTUAL RESULT	ERROR MESSAGE
1	Register Page	Redirected to Next page	OK	Nothing
2	Login Page	Pop-up will come	Ok	Please enter username and password again .
4	Sign in of patient	Need to fill the information and password	Ok	Nothing
5	Booking appointment	All the fields should be filled for submission	Ok	Nothing
6	Checking login or not	User is logged in or not	Ok	Nothing
7	Edit profile for patient	Update the information	Ok	Nothing
8	All profile of employees and patients	Visible after login	Ok	Nothing
9	Payment add	After adding payment result is payment booked	Ok	Nothing
10	Admin add and remove employee	Data gets added into database according to the role	Ok	Nothing
11	View test reports	Lab manager can view test list according to patient id	Ok	Nothing
12	Create prescription by doctor	List of medicines and test gets added	Ok	Nothing
13	Revenue generation	When payment gets added into account it is visible according to type of charges in graph	Ok	Nothing
14	View appointment of doctor	Only today's appointment is visible to doctor	Ok	Nothing
15	View appointment of receptionist	Doctor wise and date wise appointments are visible to receptionist	Ok	Nothing

16	Accept payment by receptionist	Ward charges and test charges get accepted	Ok	Nothing
17	Discharge patient	After clicking on discharge patient data get removed from database	Ok	Nothing
18	Admit patient	She can able see the booked appointment and select the date and department and can admit it	Ok	Nothing
19	Logout	It will logout from user profile.	Ok	Nothing
	<b>STATIC TESTING</b>			
<b>SR-NO</b>	<b>Deviation</b>	<b>Program</b>		
	Commenting not followed	All Web Application		

## 6. PROJECT MANAGEMENT RELATED STATISTICS

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DATE	WORK PERFORMED	SLC Phase	Additional Notes
MAY 6, 2022	Project Allotment and User Requirements Gathering	Feasibility Study	We discussed about project to know the requirements.
MAY10,2022	Initial SRS Document Validation And Team Structure Decided	Requirement Analysis (Elicitation)	The initial SRS was presented to the client to understand his requirements better
MAY 22,2022	Designing the use-cases, Class Diagram, Collaboration Diagram, E-R Diagram and User Interfaces	Requirement Analysis & Design Phase	Database Design completed
JUN 19,2022	Business Logic Component design Started	Design Phase	-----
SEPT 5,2022	Coding Phase Started	Coding Phase	70% of Class Library implemented.
SEPT 8,2022	Implementation of Web Application and Window Application Started	Coding Phase	Class Library Development going on.
SEPT 10, 2022	Implementation of Web Application and Window Application Continued	Coding Phase and Unit Testing	Class Library Modified as per the need.
SEPT 12, 2022	The Project was Tested by the respective Team Leaders and the Project Manager	Testing Phase (Module Testing)	--
SEPT 19, 2022	The Project was Submitted to Other Project Leader of Other Project Group For Testing	Testing Phase (Acceptance Testing)	The Project of Other Team was Taken up by the Team for Testing

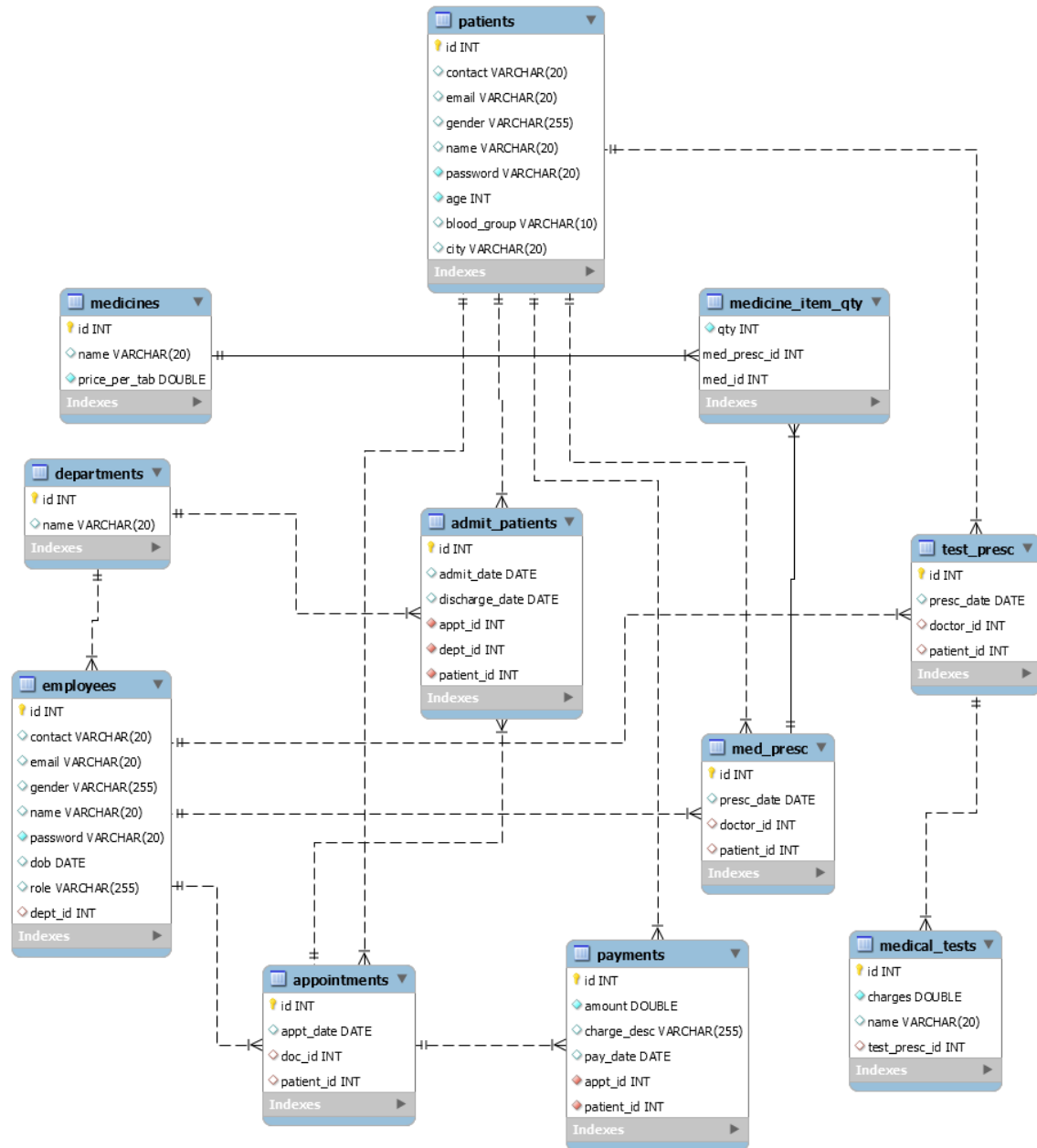


*Online Hospital Management System*

SEPT 28, 2022	The project was deployed on AWS	Deploying	The Project was complete for submission
SEPT 28, 2022	Final Submission of Project		

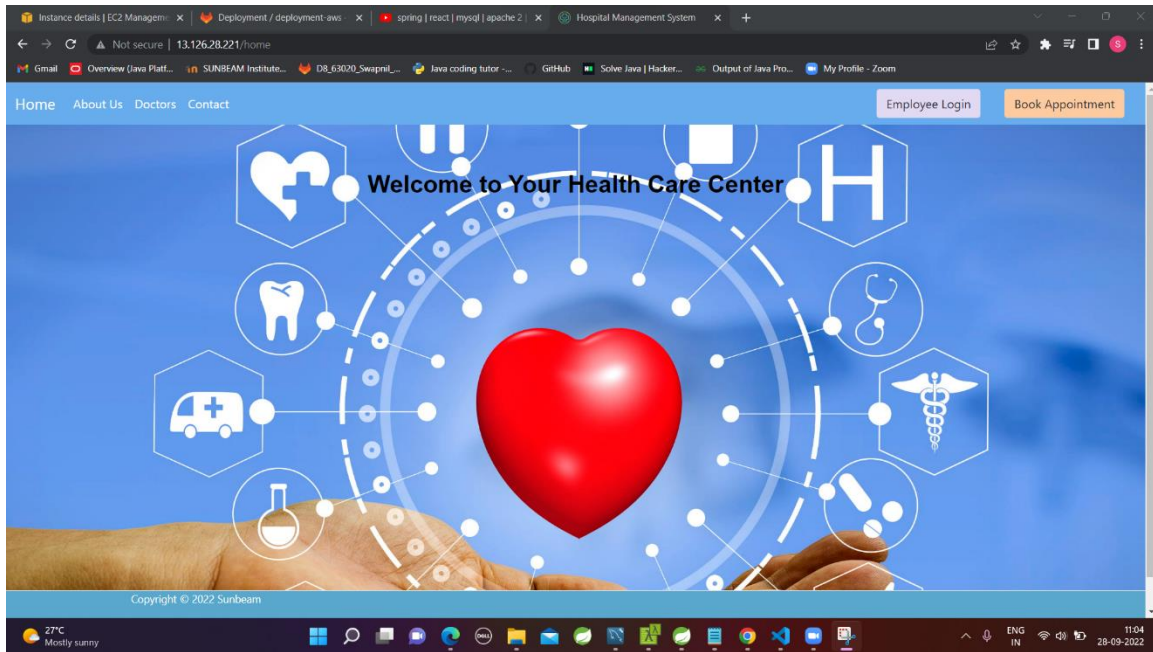
## Appendix A

### Entity Relationship Diagram

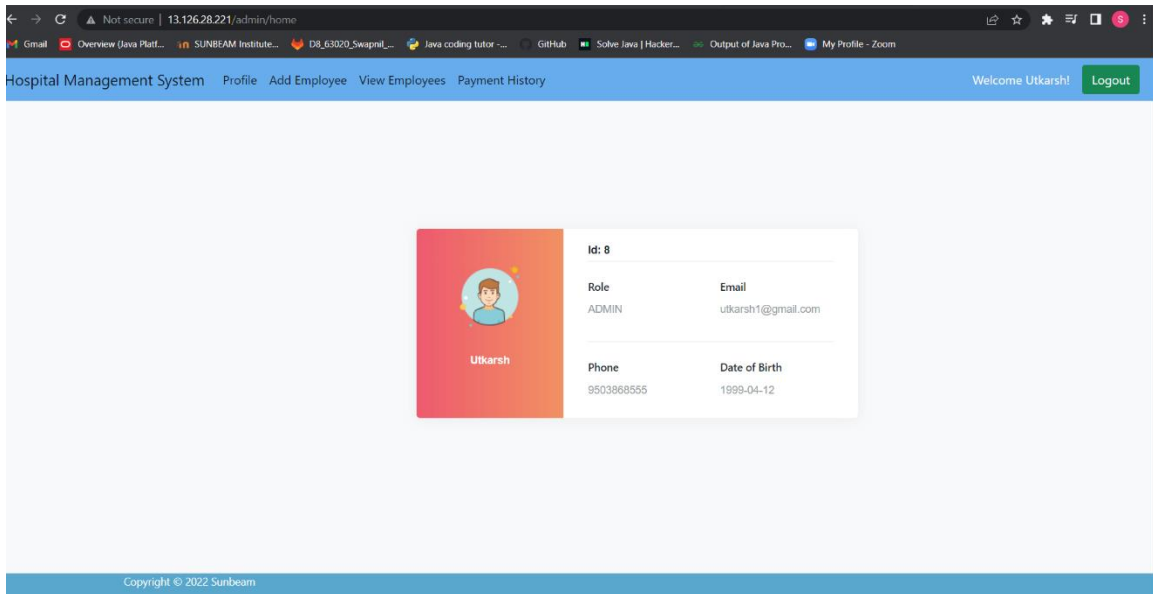


## Appendix B

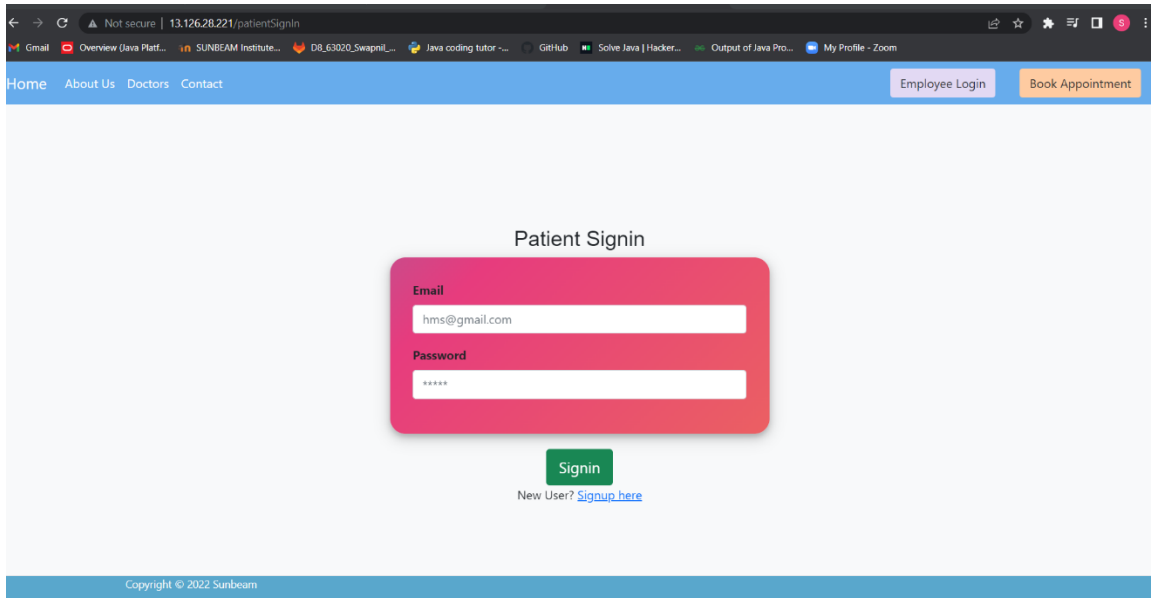
### Homepage:



### Admin\_HomePage:

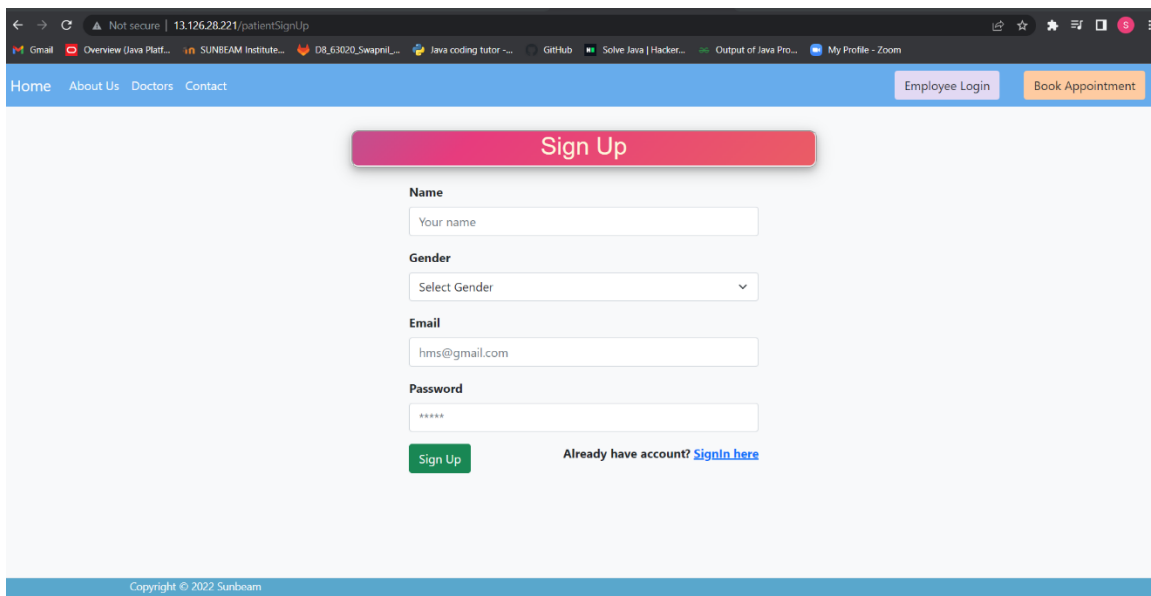


## Patients Signin:



The screenshot shows a web browser window with the URL `13.126.28.221/patientSignin`. The page has a blue header with navigation links: Home, About Us, Doctors, and Contact. On the right side of the header are two buttons: "Employee Login" and "Book Appointment". The main content area is light gray and features a pink rounded rectangle titled "Patient Signin". Inside this rectangle are two input fields: "Email" with the value `hms@gmail.com` and "Password" with masked characters. Below the inputs is a green "Signin" button. Underneath the button is a link: "New User? [Signup here](#)". The footer is a blue bar with the text "Copyright © 2022 Sunbeam".

## Patients SignUp:



The screenshot shows a web browser window with the URL `13.126.28.221/patientSignUp`. The page has a blue header with navigation links: Home, About Us, Doctors, and Contact. On the right side of the header are two buttons: "Employee Login" and "Book Appointment". The main content area is light gray and features a pink rounded rectangle titled "Sign Up". Inside this rectangle are four input fields: "Name" with the placeholder "Your name", "Gender" with a dropdown menu showing "Select Gender", "Email" with the value `hms@gmail.com`, and "Password" with masked characters. Below the inputs is a green "Sign Up" button. To the right of the button is a link: "Already have account? [Signin here](#)". The footer is a blue bar with the text "Copyright © 2022 Sunbeam".

## Book appointment:

The screenshot shows a web browser at the URL 13.126.28.221/bookAppointment. The page has a blue header with navigation links: 'Welcome to Hospital', 'Home', 'View Prescriptions', 'Book Appointment', and 'edit profile'. On the right of the header, it says 'Welcome abc' and a 'Logout' button. The main content area is light blue and features a pink modal box titled 'Book Appointment'. Inside the modal, there is a 'Select Doctor' dropdown menu with 'Select Doctor' as the placeholder text, and an 'Appointment Date' input field with a calendar icon and the placeholder 'dd-mm-yyyy'. Below the modal is a blue button labeled 'Pay and Book'. At the bottom of the page, a blue footer contains the text 'Copyright © 2022 Sunbeam'.

## Payment successful:

This screenshot shows the same 'Book Appointment' page as before, but with a payment modal open. The modal is white with a close button in the top right corner. It contains three input fields: 'Email', 'Card number', and 'MM / YY' (with a calendar icon) and 'CVC'. Below these fields is a blue 'Pay' button. The background of the page is dimmed, and the 'Pay and Book' button is still visible at the bottom.

## Edit\_Patients\_Profie:

Welcome to Hospital | Home | View Prescriptions | Book Appointment | edit profile | Welcome abc | Logout

### Edit Profile

Name: abc Gender: MALE

Email: abc@gmail.com Password: \*\*\*\*\*

Age: 0 Phone:

Blood Group: City:

Update

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## View Employee By Admin:

Hospital Management System | Profile | Add Employee | View Employees | Payment History | Welcome Utkarsh! | Logout

### List of Employees

Id	Name	Role	Delete	Update
2	Sanket	DOCTOR	Delete	Update
3	Swapnil	DOCTOR	Delete	Update
7	Suraj	LABMANAGER	Delete	Update
4	Prathmesh	LABMANAGER	Delete	Update
9	Goldie	RECEPTIONIST	Delete	Update
10	Akash	DOCTOR	Delete	Update
8	Utkarsh	ADMIN	Delete	Update

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## Add employee at admin login:

The screenshot shows the 'Add Employee' form in the Hospital Management System admin interface. The form is titled 'Add Employee' in a pink box. It contains the following fields:

- Name:** Text input field.
- Contact No:** Text input field.
- Email:** Text input field with the value 'test@test.com'.
- Gender:** Dropdown menu with the option 'Select Gender'.
- Password:** Text input field with masked characters '\*\*\*\*\*'.
- Role:** Dropdown menu with the option 'Select Role'.
- Date of birth:** Text input field with the placeholder 'dd-mm-yyyy' and a calendar icon.
- Department Id:** Dropdown menu with the option 'Select Department'.

At the bottom of the form is a green 'Add Employee' button. The page header includes the system name 'Hospital Management System', navigation links (Profile, Add Employee, View Employees, Payment History), a welcome message 'Welcome Utkarsh!', and a 'Logout' button. The footer shows 'Copyright © 2022 Sunbeam'.

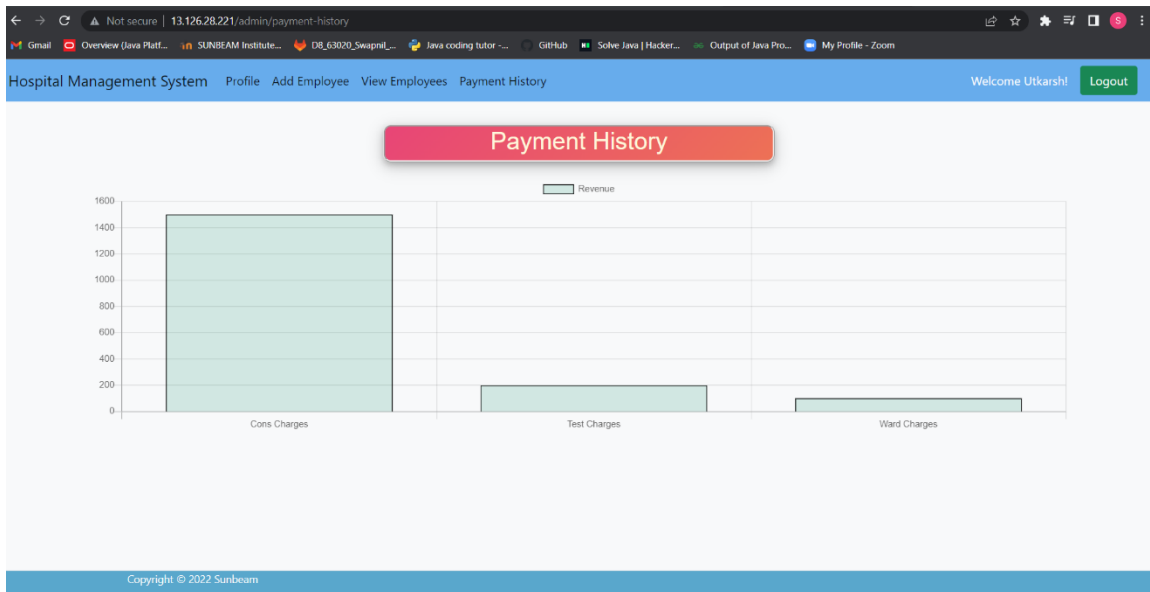
## Remove employee by Admin:

The screenshot shows the 'List of Employees' table in the Hospital Management System admin interface. The table is titled 'List of Employees' in a pink box. It contains the following data:

Id	Name	Role	Delete	Update
2	Sanket	DOCTOR	<a href="#">Delete</a>	<a href="#">Update</a>
3	Swapnil	DOCTOR	<a href="#">Delete</a>	<a href="#">Update</a>
7	Suraj	LABMANAGER	<a href="#">Delete</a>	<a href="#">Update</a>
4	Prathmesh	LABMANAGER	<a href="#">Delete</a>	<a href="#">Update</a>
9	Goldie	RECEPTIONIST	<a href="#">Delete</a>	<a href="#">Update</a>
10	Akash	DOCTOR	<a href="#">Delete</a>	<a href="#">Update</a>
8	Utkarsh	ADMIN	<a href="#">Delete</a>	<a href="#">Update</a>

The page header includes the system name 'Hospital Management System', navigation links (Profile, Add Employee, View Employees, Payment History), a welcome message 'Welcome Utkarsh!', and a 'Logout' button. The footer shows 'Copyright © 2022 Sunbeam'.

## Revenue generation at admin login:



## Doctors view appointment:

Appointments

Appointment id	Date	Patient id	Patient name	Action
8	2022-09-28	3	abc	<button>Create Medicine Prescription</button> <button>Create Test Prescription</button>

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## Doctor create medicines prescription:

The screenshot shows a web browser at the URL 13.126.28.221/doctor/med\_list. The page has a blue header with 'Hospital Management System', 'Home', 'View Appointment', 'Welcome Swapnil !', and a 'Logout' button. Below the header is a pink 'List' button. The main content area has an orange 'Select Medicines' header. A table lists three medicines: Dolo, Combifalm, and Ozee. Each row has a 'Quantity' input field and 'Add' and 'Remove' buttons. A green 'Submit' button is at the bottom of the table.

Medicine id	Medicine name	Quantity	Action
1	Dolo	<input type="text" value="1"/>	<button>Add</button> <button>Remove</button>
2	Combifalm	<input type="text" value="3"/>	<button>Add</button> <button>Remove</button>
3	Ozee	<input type="text" value="2"/>	<button>Add</button> <button>Remove</button>

Submit

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## Doctor create tests prescription:

The screenshot shows a web browser at the URL 13.126.28.221/doctor/test\_list. The page has a blue header with 'Hospital Management System', 'Home', 'View Appointment', 'Welcome Swapnil !', and a 'Logout' button. Below the header is a pink 'List' button. The main content area has an orange 'Select Tests' header. A table lists three tests: RTPCR, Blood-Test, and Urine-Test. Each row has a 'Test charge' input field and 'Add' and 'Remove' buttons. A green 'Submit' button is at the bottom of the table.

Test id	Test name	Test charge	Action
1	RTPCR	<input type="text" value="1000"/>	<button>Add</button> <button>Remove</button>
2	Blood-Test	<input type="text" value="500"/>	<button>Add</button> <button>Remove</button>
3	Urine-Test	<input type="text" value="100"/>	<button>Add</button> <button>Remove</button>

Submit

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## Receptionist's\_view\_appointment:

Today's All Appointments

Select Doctor

Swapnil

Appointments

App Id	App date	Patient Name
8	2022-09-28	abc

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## Admit\_patient:

Admit Patient

Select Date

dd-mm-yyyy

Department Id

Select Department Id

Appt Id	Appt Date	Patient Name	Admit
1	2022-09-15	abc	Admit
3	2022-09-21	abc	Admit
5	2022-09-19	xyz	Admit
6	2022-09-19	vikas	Admit
7	2022-09-24	abc	Admit
8	2022-09-28	abc	Admit

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## Lab\_manager\_view\_prescription:

The screenshot shows a web browser window with the URL `13.126.28.221/lab/viewPrescriptions`. The page has a blue header with the text "Welcome to Hospital" and navigation links "Home" and "View Prescriptions". On the right, it says "Welcome Prathmesh" and has a "Logout" button. The main content area has a pink header "Prescriptions". Below it, there is a form titled "Enter Patient Id" with a text input field containing "Patient id" and a green "View Prescription" button. Below the button, it says "No Prescriptions". The footer of the page says "Copyright © 2022 Sunbeam".

## Accept\_payment\_by\_receptionist:

The screenshot shows a web browser window with the URL `13.126.28.221/receptionist/accept-payment`. The page has a blue header with the text "Hospital Management System" and navigation links "Home", "View Appointments", "Admit Patient", "Discharge Patient", and "Accept Payment". On the right, it says "Welcome Goldie" and has a "Logout" button. The main content area has a pink header "Accept Payment". Below it, there is a form with four input fields: "Appt Id" (dropdown menu with value 5), "Patient Id" (dropdown menu with value 4), "Ward Charges" (text input field with value 200), and "Lab Charges" (text input field with value 500). Below the input fields, there is a green "Make Payment" button. The footer of the page says "Copyright © 2022 Sunbeam".

## Discharge\_Patient:

The screenshot shows a web browser window with the URL `13.126.28.221/receptionist/discharge-patient`. The browser's address bar and tabs are visible at the top. Below the browser window, the application interface is shown. It features a blue navigation bar with the text "Hospital Management System" and several menu items: "Home", "View Appointments", "Admit Patient", "Discharge Patient", and "Accept Payment". On the right side of the navigation bar, it says "Welcome Goldie" and has a "Logout" button. The main content area has a pink header that says "Discharge Patient". Below this header is a table with the following data:

Id	Aadmit Date	Patient Id	Dept Id	Discharge
10	2022-09-28	3	2	<button>Discharge</button>

At the bottom of the application, there is a blue footer bar with the text "Copyright © 2022 Sunbeam".

**7.REFERENCES:**

<http://www.google.com>

<http://www.w3.org>

<http://www.wikipedia.org>

<http://www.delta.com>