A PROJECT ON

"HOSPITAL MANAGEMENT SYSTEM"

SUBMITTED IN
PARTIAL FULFILLMENT OF THE REQUIREMENT
FOR THE COURSE OF
DIPLOMA IN ADVANCED COMPUTING FROM CDAC

SUNBEAM

SUNBEAM INSTITUTE OF INFORMATION TECHNOLOGY
Hinjawadi

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1. INTRODUCTION TO PROJECT

The web based 'Hospital Management System' project is an attempt to stimulate the basic concepts of providing service to the patient. This software will help the company to be more efficient in registration of their patients and manage appointments, records of patients. The purpose of this project is to computerize all details regarding patient details and hospital details.

The Hospital Management System is a software solution designed to automate and integrate various processes within a hospital or healthcare institution. It encompasses functionalities such as patient registration, appointment scheduling, medical records management, billing, Ward Details.

The project Hospital Management system includes registration of patients, storing their details into the system, and also computerized billing. It includes a facility to know the availability beds in each ward room. The Hospital Management System can be entered using a username and password. It is accessible by an administrator, receptionist, Doctor, Accountant according to their functionality and can add data into the database. The data can be retrieved easily. The interface is very user-friendly. The data are well protected for personal use and makes the data processing very fast.

The Hospital Management System is designed for any hospital to replace their existing manual paper based system. The new system is to control the information of patients. Room availability, staff and operating room schedules and patient invoices. These services are to be provided in an efficient, cost effective manner, with the goal of reducing the time and resources currently required for such tasks .

2. AIM OF THE PROJECT

- The establishment and improvement of doctor-patient interaction system is a very important requirement, especially now when the communication technology is developing rapidly.
- The advantages of web can be made full use of to make up the time and distance gap between doctors and patients and to provide fast and adequate medical services.
- Our Web Application helps health care organizations to manage their day to day operations, patients record, employee records, appointments and other administrative tasks.
- he platform, Web services and database technology are all gradually maturing, so that we can develop a doctor patient interaction system on web application platform to meet the needs of the patient and provide doctors more efficient and convenient means of communication with patients
- The goal of HMS Project is to simplifies the work of healthcare professionals and improve patient care by providing a centralized platform for managing all hospital-related task.

2. END USER

- **Admin**:- Admin is the highest privileged user, who can Manage all Resources and Activities of Hospital Management System.
- **Patient**:- Patient can easily book appointment and able to access medical History.
- **Doctor**:- Doctors can check scheduled Patients and also give prescription to their Patient.
- **Receptionist**:- Receptionist can admit and discharge the patient with concern of doctor. Also Schedule doctor to patients as per their primary symptoms mentioned by patient while booking appointment. Also Allocate Ward to Patient while admitting him.
- **Accountant** :- Accountant can generate Invoice (In pdf format) and Manage all transactions.

3. MODULES:

The entire project mainly consists of 5 modules, which are

- Admin Module
- Patient Module
- Doctor Module
- Accountant Module
- Receptionist Module

3.1 Admin module:

Manage department of Hospitals, Patient, Doctor, Accountant, Receptionist.
Availability of Bed, ward, medicine status of hospital stock.

3.2 Patient module:

Status with doctors, View prescription details, View medication from doctor, View operation history, View admit history. like bed, ward icu etc., Manage own profile.

3.3 Doctor module:

Manage patient. Account opening and updating, Create, Manage appointment with patient, Create prescription for patient, Provide medication for patients, Manage own profile.

3.4 Accountant module:

Accountant module, Create invoice for payment, Order invoice to patient, Take payment, Watch payment history of patients.

3.5 Receptionist module:

Manage Patient like Add Patient , Update , Assign ward , Assign Doctor to the patient as per diagnosis.

Once payment is done then release patient.

4. REQUIREMENTS

4.1 FUNCTIONAL REQUIREMENTS

Functional requirements define the specific capabilities and features that a system must possess to meet the needs of its users. In the context of a Hospital Management System (HMS) project, these requirements outline the various functions and operations the system should be able to perform. Here are some key functional requirements for a hospital management system:

1. **Patient Management**:
   - Registration: Allow staff to register new patients, capturing personal and medical information.
   - Medical Records: Maintain a comprehensive digital record of patient medical history, diagnoses, treatments, and prescriptions.
2. **Staff Management**:
   - User Accounts: Create and manage user accounts with different roles (doctor, Accountant, Receptionist, etc.).
   - Roles and Permissions: Define access levels and permissions based on staff roles.
3. **Medical Supplies & Stock Monitoring**:
   - Keep Track Medicine stock.
   - Stock Monitoring: Alert staff when inventory levels are low to prevent shortages.
4. **Billing and Payments:**:
   - Invoicing: Generate bills for medical services, treatments, and procedures.
   - Payment Recording: Record and manage patient payments
5. **Security and Data Privacy**:
   - User Authentication: Implement secure login mechanisms for authorized access.
   - Data Encryption: Ensure that patient data is encrypted both during transmission and storage..

6. Search and Retrieval:
   - Provide efficient search functionality to retrieve patient records, Employees, and other data..
   - Data Encryption: Ensure that patient data is encrypted both during transmission and storage..
7. Notification and Alerts:
   - Gives alerts/PopUp for Successful Login , Update , Delete the Data.
   - Inserting Wrong Details (Like username , password) or any invalid Entry gives Alert message.

4.2 NON FUNCTIONAL REQUIREMENTS

To be used efficiently, all computer software needs certain hardware components or the other software resources to be present on a computer. These pre-requisites are known as(computer) system requirements and are often used as a guideline as opposed to an absolute rule.

4.2.1 HARDWARE REQUIREMENTS FOR PRESENT PROJECT

PROCESSOR: Intel dual Core, i3

RAM: 1 GB

HARD DISK: 80 GB

4.2.2 SOFTWARE REQUIREMENTS/USED FOR PRESENT PROJECT

Software Requirements deal with defining software resource requirements and pre-requisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or pre-requisites are generally not included in the software installation package and need to be installed separately before the software is installed.

OPERATING SYSTEM: Windows 7/8 +, Linux

FRONT END: Html, CSS, Java Script, React JS

SERVER SIDE SCRIPT: Spring Boot 2.5.6

DATABASE: MySQL

5. DESIGN

5.1 Database Design

The following table structures depict the database design.

Table1: Users

SR.NO	Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
1	id	int	10	0
2	cell_no	Varchar	255	1
3	email	Varchar	255	1
4	first_name	Varchar	255	1
5	last_name	Varchar	255	1
6	password	Varchar	255	1
7	role	Varchar	255	1
8	security_answer	Varchar	255	1
9	security_question	Varchar	255	1

Table2: employees

SR.NO	Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
1	id	int	10	0
2	dob	date	yyyy-mm-dd	1
3	hire_date	Date	yyyy-mm-dd	1
4	salary	Double	10	0
5	user_id	int	10	1

Table3: Patient

SR.NO	Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
1	Id	int	10	0
2	bed_alloted	int	10	0
3	blood_group	Varchar	255	1
4	date_of_admission	date	yyyy-mm-dd	1
5	Dob	Date	yyyy-mm-dd	1
6	patient_problem	Varchar	255	1
7	payment_status	Varchar	255	1
8	doctor_id	int	10	1
9	user_id	int	10	1
10	ward_id	int	10	1

Table4: wards

SR.NO	Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
1	id	int	10	0
2	availability	double	10	0
3	charges	double	10	0
4	max_capacity	double	10	0
5	type	varchar	255	1

Table5: doctors

SR.NO	Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
1	id	Int	10	0
2	charges	double	10	0
3	emp_id	int	10	1

Table6: doctor_visits

SR.NO	Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
1	id	int	10	0
2	visits	int	10	0
3	doctor_id	int	10	1
4	pat_id	int	10	1

Table7: medicines

SR.NO	Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
1	id	int	10	0
2	name	varchar	255	1
3	price	double	10	1

Table8: medicines_assigned

SR.NO	Column Name	Data Type	Length	Allow Null (1=Yes;0=No)
1	id	int	10	0
2	medicines_qty	Int	10	0
3	prescription	Varchar	255	1
4	medicine_id	int	10	1
5	pat_id	int	10	1

6. CODING STANDARDS IMPLEMENTED

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	Doctor, Patient, User	Class names should be based on "objects" or "real things" and should generally be **nouns**. No '_' signs allowed. Do not use type prefixes like 'C' for class.
Method	Camel	getEmployeeDetails, getAllPatient	Methods should use **verbs** or verb phrases.
Parameter	Camel	hireDate, bloodGroup	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	DoctorDao, PatientDao, MedicineDao	Do not use the '_' sign
Property	Pascal	FirstName	Use a noun or noun phrase to name properties.
Exception Class	Pascal with "Exception" suffix	EmployeeAlreadyExistException, CentralExceptionHandler	

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.

7. TEST REPORT

Another group called Linux did the testing and the report of the testing is given hereunder.

GENERAL TESTING:

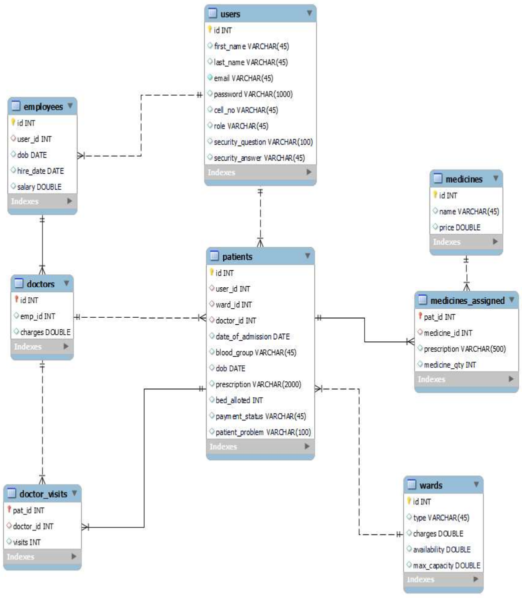
SR-NO	TEST CASE	EXPECTED RESULT	ACTUAL RESULT	ERROR MESSAGE
1	Login Page	Redirected to Next page	OK	Nothing
2	Forget Password	Password will be changed and updated in database	Ok	Please enter username and password again .
3	Update Password	Only users password will be reseted	Ok	Nothing
4	Email Exist	If already use then gives Error Sms using popup	Ok	Nothing
5	Add Employee	Add New Employee in DB	Ok	Nothing
6	Update Employee	To Update employee details	Ok	Nothing
7	Delete Employee	Existing Employee will be deleted	Ok	Nothing
8	Get all Employee	Get list Of employee	Ok	Nothing
9	Get Patient	List All patient assign to particular Doctor	Ok	Nothing
10	Add Patient	Register new patient in DB to provide services	Ok	Nothing
11	Add Prescription	Whenever Doctor update the prescription ,visit count should be increased.	Ok	Nothing
12	Get all medicines	Showing liost of medicines	ok	nothing
13	Add new medicine	To add new medicine in stock	Ok	Nothing
14	Add medicine to patient	To doctor will assign the medicine to patient	Ok	Nothing
15	Delete patient	Once patient status is paid then Receptionist should be deleted the patient from DB	Ok	Nothing
16	Update patient status	To update the status of payment whether it is paid or pending	Ok	Nothing
17	Get charges	It will generate the bill of payment from date of admission to date of released		Nothing
18	Logout	It will logout from all profile.	Ok	Nothing

8. PROJECT MANAGEMENT RELATED STATISTICS

DATE	WORK PERFORMED	*SLC Phase*	Additional Notes
APR 12,2023	Project Allotment and User Requirements Gathering	Feasibility Study	Our team met the client Mr. Nitin Kudale (CEO, SIIT Pune) to know his requirements.
APR 17,2023	Initial SRS Document Validation And Team Structure Decided	Requirement Analysis (Elicitation)	The initial SRS was presented to the client to understand his requirements better
APR 29,2023	Designing the use-cases, Class Diagram, Collaboration Diagram, E-R Diagram and User Interfaces	Requirement Analysis & Design Phase	Database Design completed
MAY 21,2023	Business Logic Component design Started	Design Phase	----------------------
JUNE 01,2023	Coding Phase Started	Coding Phase	70% of Class Library implemented.
JUNE 28,2023	Implementation of Web Application and Window Application Started	Coding Phase	Class Library Development going on.
JULY 22, 2023	Off	Off	Off
AUG 23, 2023	Implementation of Web Application and Window Application Continued	Coding Phase and Unit Testing	Class Library Modified as per the need.
AUG 16, 2023	Implementation of Web Application and Window Application Continued	Coding Phase and Unit Testing	--
AUG 22, 2023	After Ensuring Proper Functioning the Required Validations were Implemented	Coding Phase and Unit Testing	Module Integration was done by the Project Manager
AUG 25, 2023	The Project was Tested by the respective Team Leaders and the Project Manager	Testing Phase (Module Testing)	--
AUG 28, 2023	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
AUG 30, 2023	The Errors Found were Removed	Debugging	The Project was complete for submission
SEPT 01, 2023	Final Submission of Project		

Appendix A

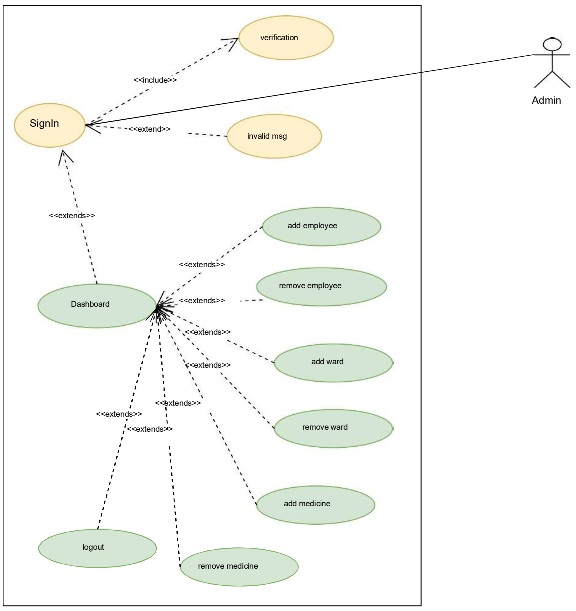
Entity Relationship Diagram



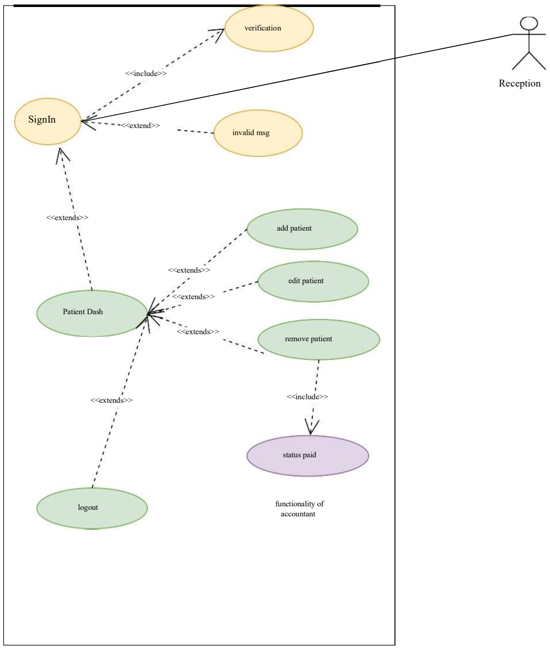
Appendix B

Use Case Diagram

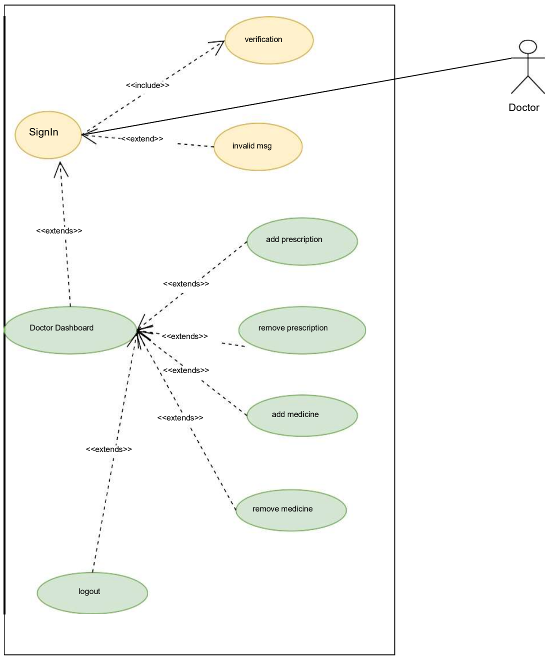
- **ADMIN**



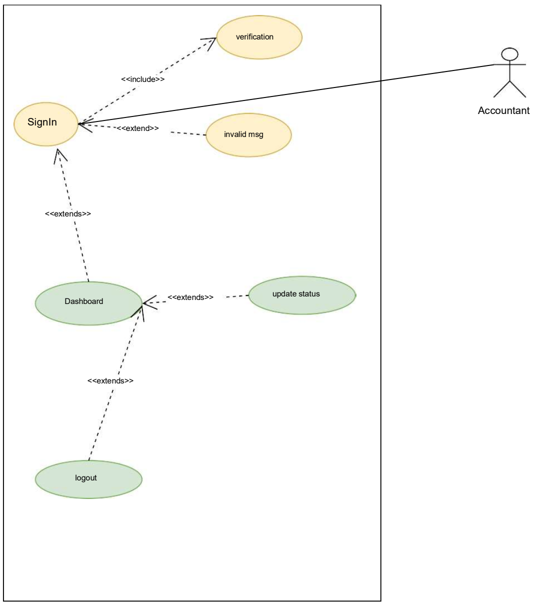
- **RECEPTION**



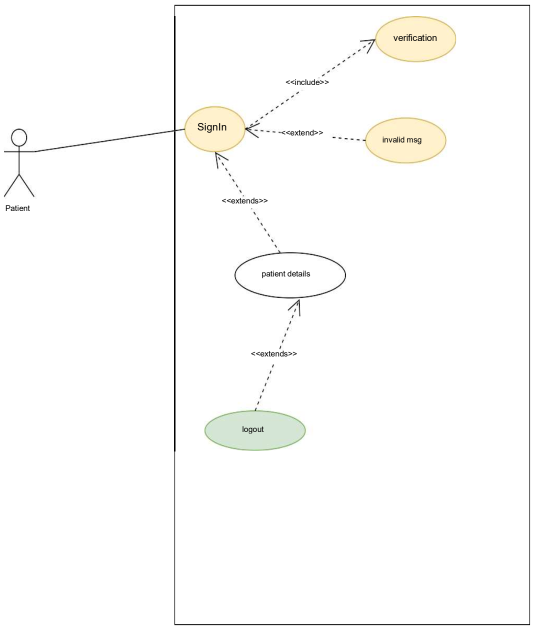
- **DOCTOR**



- **ACCOUNTANT**

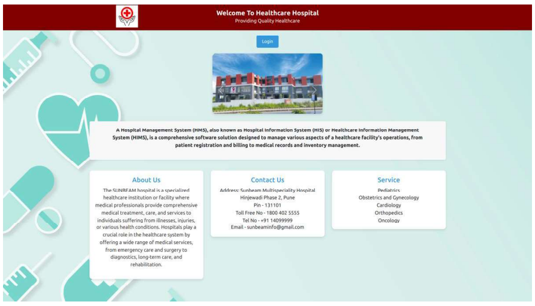


- **PATIENT**



UI Diagram:

- **Home Page**



Welcome To Healthcare Hospital
Providing Quality Healthcare

A Hospital Management System (HMS), also known as Hospital Information System (HIS) or Healthcare Information Management System (HIMS), is a comprehensive software solution designed to manage various aspects of a healthcare facility's operations, from patient registration and billing to medical records and inventory management.

About Us

The SUNBEAM hospital is a specialized healthcare institution or facility where medical professionals provide comprehensive medical treatment, care, and services to individuals suffering from illnesses, injuries, or various health conditions. Hospitals play a crucial role in the healthcare system by offering a wide range of medical services, from emergency care and surgery to diagnostics, long-term care, and rehabilitation.

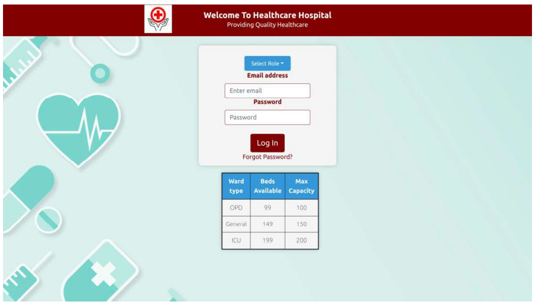
Contact Us

Address: Sunbeam Multispeciality Hospital
Hinjewadi Phase 2, Pune
Pin - 131101
Toll Free No - 1800 402 5555
Tel No - +91 14099999
Email - sunbeaminfo@gmail.com

Service

Pediatrics
Obstetrics and Gynecology
Cardiology
Orthopedics
Oncology

- **Login Page:**



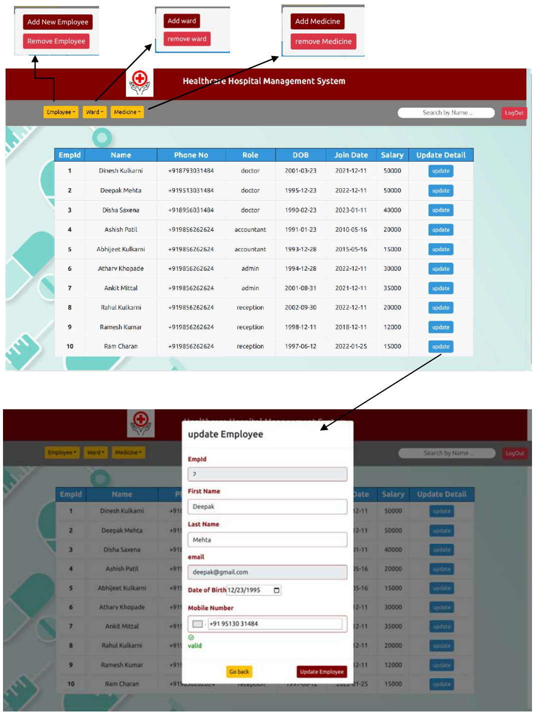
Welcome To Healthcare Hospital
Providing Quality Healthcare

Email address: Enter email

Password: Password

Ward type	Beds Available	Max Capacity
OPD	99	100
General	149	150
ICU	199	200

- **Admin Login**



Healthcare Hospital Management System

EmpId	Name	Phone No	Role	DOB	Join Date	Salary	Update Detail
1	Dinesh Kulkarni	+918793031484	doctor	2001-03-23	2021-12-11	50000	update
2	Deepak Mehta	+919513031484	doctor	1995-12-23	2022-12-11	50000	update
3	Disha Saxena	+918956031484	doctor	1990-02-23	2023-01-11	40000	update
4	Ashish Patil	+919856262624	accountant	1991-01-23	2010-05-16	20000	update
5	Abhijeet Kulkarni	+919856262624	accountant	1993-12-28	2015-05-16	15000	update
6	Atharv Khopade	+919856262624	admin	1994-12-28	2022-12-11	30000	update
7	Ankit Mittal	+919856262624	admin	2001-08-31	2021-12-11	35000	update
8	Rahul Kulkarni	+919856262624	reception	2002-09-30	2022-12-11	20000	update
9	Ramesh Kumar	+919856262624	reception	1998-12-11	2018-12-11	12000	update
10	Ram Charan	+919856262624	reception	1997-06-12	2022-01-25	15000	update

update Employee

EmpId: 2

First Name: Deepak

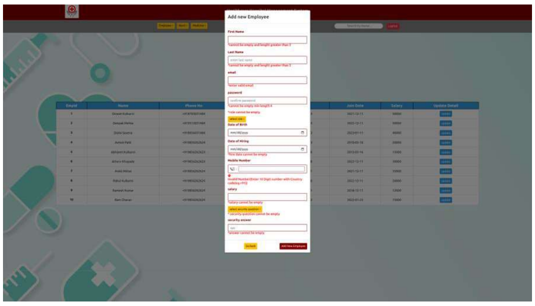
Last Name: Mehta

email: deepak@gmail.com

Date of Birth: 12/23/1995

Mobile Number: +91 95130 31484

valid



Add new Employee

First Name

Last Name

email

password

Date of Birth

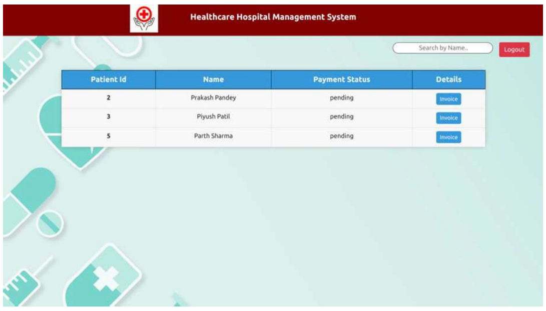
Date of Hiring

Mobile Number

salary

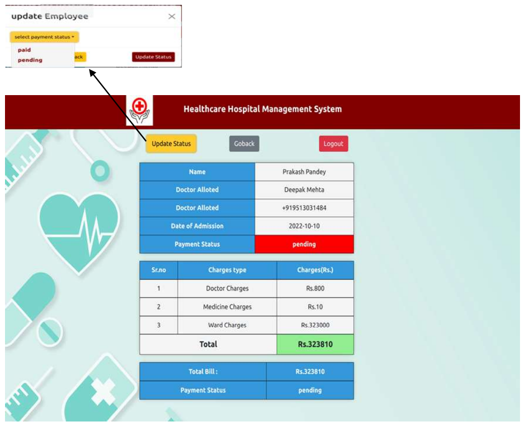
security answer

- **When Accountant Login**



Healthcare Hospital Management System

Patient Id	Name	Payment Status	Details
2	Prakash Pandey	pending	Invoice
3	Piyush Patil	pending	Invoice
5	Parth Sharma	pending	Invoice



update Employee

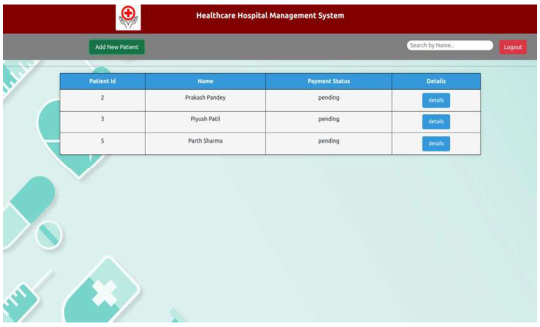
Healthcare Hospital Management System

Name	Prakash Pandey
Doctor Alloted	Deepak Mehta
Doctor Alloted	+919513031484
Date of Admission	2022-10-10
Payment Status	pending

Sr.no	Charges type	Charges(Rs.)
1	Doctor Charges	Rs.800
2	Medicine Charges	Rs.10
3	Ward Charges	Rs.323000
Total		Rs.323810

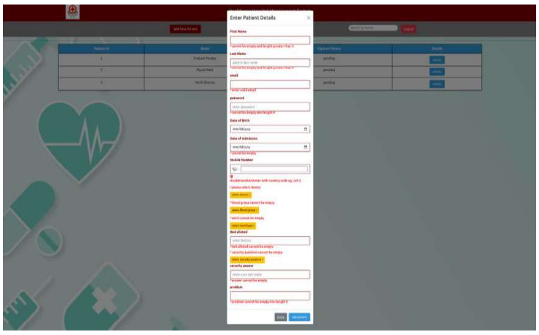
Total Bill :	Rs.323810
Payment Status	pending

- **Receptionist Login**



Healthcare Hospital Management System

Patient Id	Name	Payment Status	Details
2	Prakash Pandey	pending	details
3	Piyush Patil	pending	details
5	Parth Sharma	pending	details



Enter Patient Details

First Name

Last Name

email

password

Date of Birth

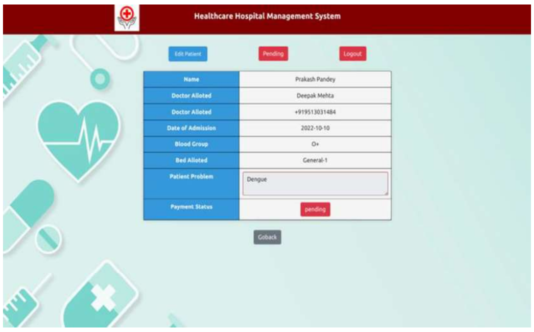
Date of Admission

Mobile Number

Bed alloted

security answer

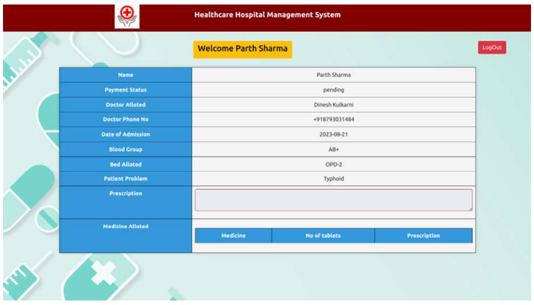
problem



Healthcare Hospital Management System

Name	Prakash Pandey
Doctor Alloted	Deepak Mehta
Doctor Alloted	+919513031484
Date of Admission	2022-10-10
Blood Group	O+
Bed Alloted	General-1
Patient Problem	Dengue
Payment Status	pending

- **Patient Login**

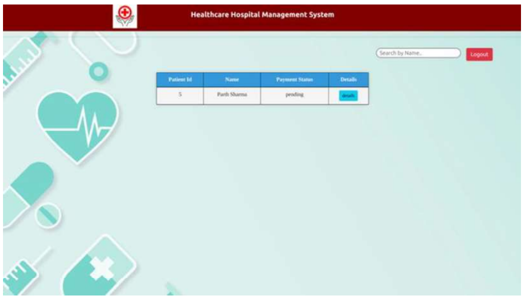


Healthcare Hospital Management System

Welcome Parth Sharma

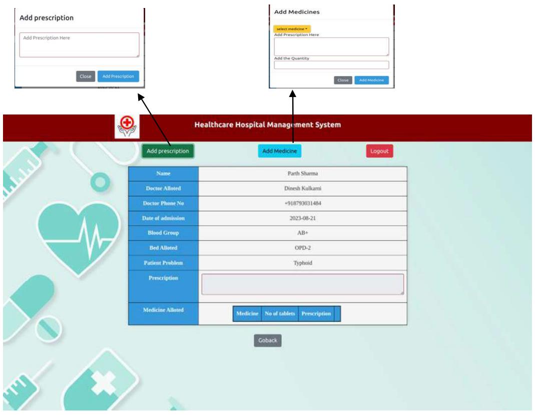
Name	Parth Sharma
Payment Status	pending
Doctor Alloted	Dinesh Kulkarni
Doctor Phone No	+918793031484
Date of Admission	2023-08-21
Blood Group	AB+
Bed Alloted	OPD-2
Patient Problem	Typhoid
Prescription	
Medicine Alloted	Medicine | No of tablets | Prescription

- **Doctor Login**



Healthcare Hospital Management System

Patient Id	Name	Payment Status	Details
5	Parth Sharma	pending	details



Add prescription

Add Prescription Here

Add Medicines

Add Prescription Here

Add the Quantity

Healthcare Hospital Management System

Name	Parth Sharma
Doctor Alloted	Dinesh Kulkarni
Doctor Phone No	+918793031484
Date of admission	2023-08-21
Blood Group	AB+
Bed Alloted	OPD-2
Patient Problem	Typhoid
Prescription	
Medicine Alloted	Medicine | No of tablets | Prescription

8. REFERENCES:

- https://www.himss.org/
- https://www.healthit.gov/
- https://www.aha.org/
- https://www.researchgate.net/publication/283413289_Design_and_Implementation_of_Hospital_Management_System
- https://en.wikipedia.org/wiki/Hospital_management_system