

Hospital Management System

Database Management Systems Laboratory

CS39202

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Overview

The hospital management system is a web application designed to manage patient information and healthcare professionals at a hospital. This system provides a centralized database for storing patient information, scheduling appointments, maintaining diagnostic tests and treatments, and storing admission and discharge information about patients.

Users

I. Front Desk Operators

Front desk operators can register, admit, and discharge patients.

II. Data Entry Operators

Data entry operators can enter patient data about tests and treatments.

III. Doctors

Doctors can query patient information.

IV. Database Administrator

Database administrators can add or delete users.

Functionality

I. Patient Registration, Discharge, and Doctor Appointment/Test Scheduling:

The hospital management system provides the functionality to register new patients, schedule appointments based on availability, and assign rooms based on availability for admitted patients. The system notifies doctors about the scheduled appointments through a dashboard. The workflow also supports scheduling diagnostic tests and treatments prescribed by doctors. The system also maintains information about discharged patients, preserving their information while updating room occupancy.

II. Patient Data Entry

The system allows data entry operators to record patient health information, including test results and treatments. The system can also support storing and displaying images such as X-rays, CT scans, etc.

III. Dedicated Dashboards for every User

A. Doctor's Dashboard

The system offers doctors a dashboard that shows all the patient data. The doctor has access to all patient data and can track any medications or therapies that have been given. The system has the ability to automatically email weekly reports to doctors about the health details of the patients.

B. Front Desk Operator Dashboard

Front desk staff can handle patient registration, admission, and discharge using their dashboard. Operators can allocate available rooms to patients who have been admitted. Operators can handle appointments based on availability and prioritization.

C. Data Entry Operator Dashboard

The system provides a dashboard for data entry operators to manage patient information. The data entry dashboard allows operators to enter and manage patient data, such as diagnostic test results and treatments administered. Additionally, the data entry dashboard supports the storage and display of test images.



IV. Database Administration

The system allows database administrators to add or delete new users. Additionally, the system also implements a data security policy with suitable access control, ensuring that the system's data is secure and that only authorized users can access it.

Tech-Stack Employed

- I. Frontend -
 - A. Languages Used - HTML, CSS, Javascript
 - B. Libraries and Tools Used - Bootstrap, FontAwesome
- II. Backend -
 - A. Language Used - Python (Django Framework)
 - B. Libraries and Tools Used - mysqlclient, mysql-connector-python
- III. Database - MySQL

Data Model

To represent the entities and connections between them in a hospital management system, we define the following classes:

- The DB_User class represents the different types of users in the system. It has a one-to-one relationship with the built-in User class in Django. The DB_User class has properties like type, address, and mobile. It also has methods to get the user's name and ID.
- The Patient class represents a patient in the hospital. It has properties like name, address, mobile, roomNumber, admitDate, dischargeDate, and status. The roomNumber property has a foreign key relationship with the Room class, which represents a room in the hospital. The status property represents the patient's current status, which can be admitted, discharged, or registered. The Patient class also has methods to get the patient's name and ID.
- The Appointment class represents an appointment between a patient and a doctor. It has foreign key relationships with the Patient and DB_User classes. The appointmentDateSlot property represents the date and time of the appointment, and the description property is a text field for any additional information about the appointment.
- The Prescription class represents a prescription given to a patient by a doctor. It has foreign key relationships with the Patient and DB_User classes. The medicine_name property represents the name of the medicine, and the medicine_description property is a text field for any additional information about the medicine.
- The Room class represents a room in the hospital. It has properties like room_number and room_status. The room_status property represents whether the room is available or occupied.
- The Test_Results class represents the results of a medical test given to a patient by a doctor. It has foreign key relationships with the Patient and DB_User classes. The test_name property represents the name of the test, and the test_results property is a text field for the results of the test. The image_results property is an image field for any images related to the test. The test_slot property represents the date and time of the test.

Tables - Used

User - Default Django-table of registered users . It contains the name and email of users.

DB_User - Table to store information regarding Frontdesk operator , Dataentry operator and Doctor . This table contains a field type to specify the respective users from the three types mentioned above.

Patient - Patient-details(name ,address , mobile ,admitDate ,dischargeDate etc.)

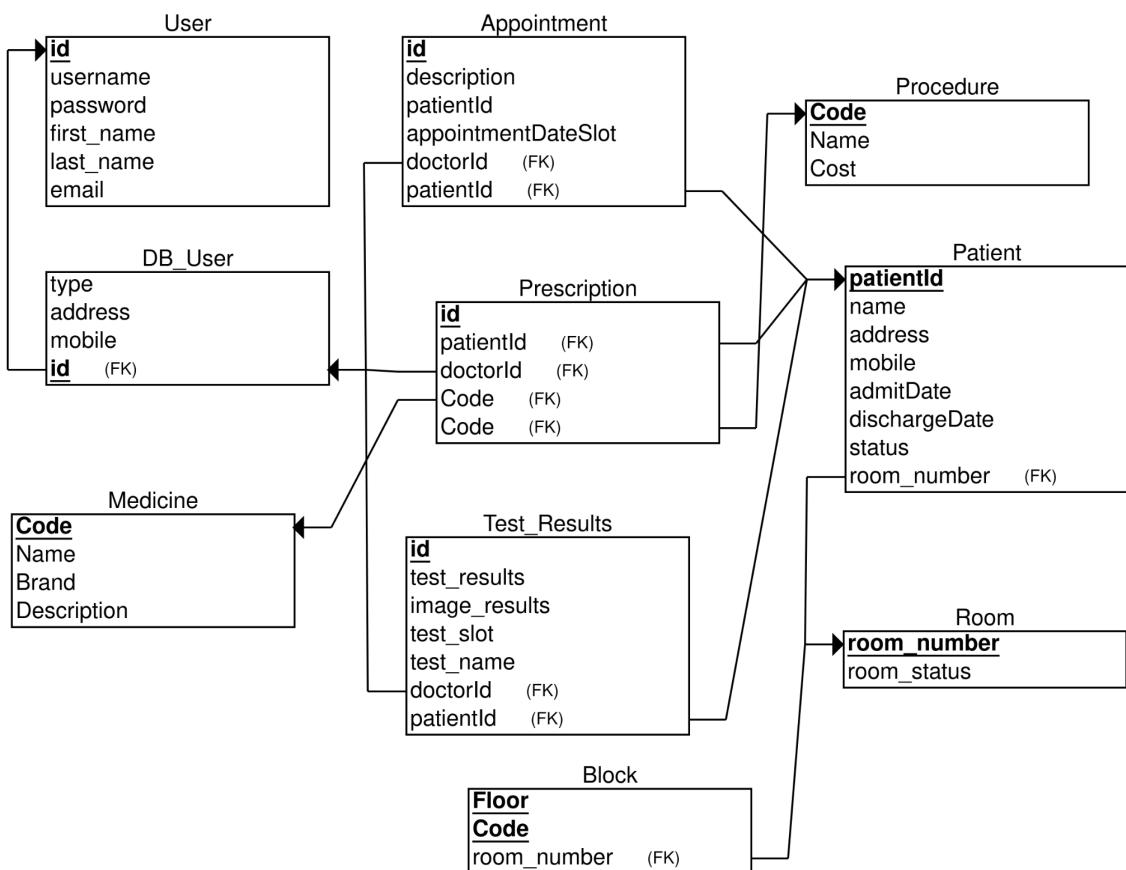
Appointment - Appointment details (doctorId , patientId , appointmentDateSlot etc.)

Prescription - Prescribed details(patientId , doctorId)

Room - Room-details (room_number , room_status - (Available / Occupied))

Test_Results - Test Details (patientId , doctorId etc.)

Schema Diagram:



MySQL Queries Used

1. Admit Patient:

```
SELECT `hospital_room`.`room_number`, `hospital_room`.`room_status` FROM
`hospital_room` WHERE `hospital_room`.`room_status` = Available
```

2. Doctor Notification:

```
SELECT `hospital_appointment`.`id`, `hospital_appointment`.`patient_id`,
`hospital_appointment`.`doctor_id`, `hospital_appointment`.`appointmentDateSlot`,
`hospital_appointment`.`description` FROM `hospital_appointment` WHERE
`hospital_appointment`.`doctor_id` = 1
```

3. Get prescription:

```
SELECT `hospital_prescription`.`id`, `hospital_prescription`.`patient_id`,
`hospital_prescription`.`doctor_id`, `hospital_prescription`.`medicine_name`,
`hospital_prescription`.`medicine_description` FROM `hospital_prescription` WHERE
`hospital_prescription`.`patient_id` = 1
```

4. Get test result:

```
SELECT `hospital_test_results`.`id`, `hospital_test_results`.`patient_id`,
`hospital_test_results`.`doctor_id`, `hospital_test_results`.`test_name`,
`hospital_test_results`.`test_results`, `hospital_test_results`.`image_results`,
`hospital_test_results`.`test_slot` FROM `hospital_test_results` WHERE
`hospital_test_results`.`patient_id` = 1
```

5. Get doctor appointments:

```
SELECT `hospital_appointment`.`id`, `hospital_appointment`.`patient_id`,
`hospital_appointment`.`doctor_id`, `hospital_appointment`.`appointmentDateSlot`,
`hospital_appointment`.`description` FROM `hospital_appointment` WHERE
`hospital_appointment`.`doctor_id` = 2
```

6. Get pending tests:

```
SELECT `hospital_test_results`.`id`, `hospital_test_results`.`patient_id`,
`hospital_test_results`.`doctor_id`, `hospital_test_results`.`test_name`,
`hospital_test_results`.`test_results`, `hospital_test_results`.`image_results`,
`hospital_test_results`.`test_slot` FROM `hospital_test_results` WHERE
(`hospital_test_results`.`patient_id` = 1 AND `hospital_test_results`.`test_results`
IS NULL)
```

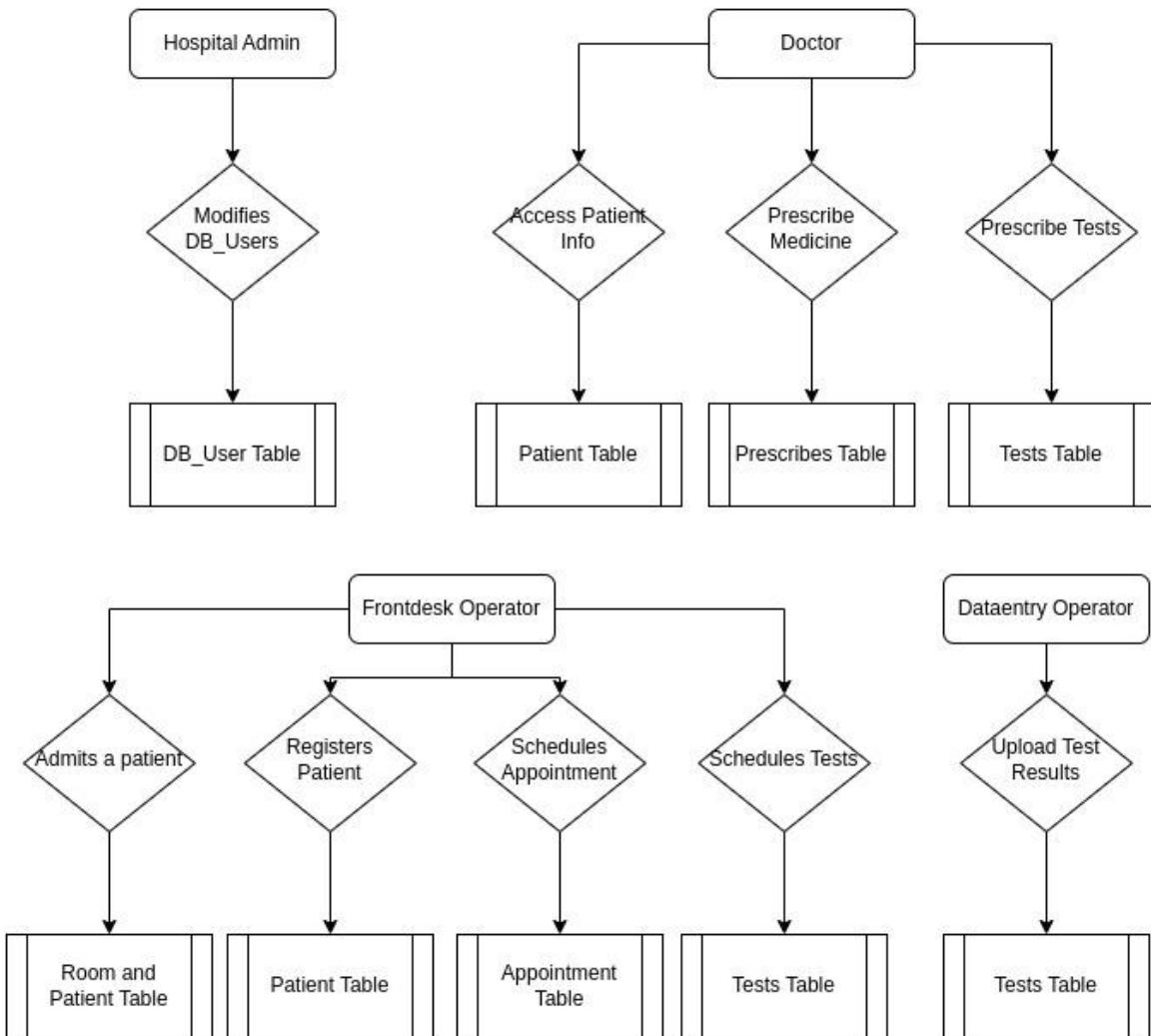
7. Get available slots:

```
SELECT `hospital_test_results`.`id`, `hospital_test_results`.`patient_id`,  
`hospital_test_results`.`doctor_id`, `hospital_test_results`.`test_name`,  
`hospital_test_results`.`test_results`, `hospital_test_results`.`image_results`,  
`hospital_test_results`.`test_slot` FROM `hospital_test_results` WHERE  
(`hospital_test_results`.`test_name` = sugar AND `hospital_test_results`.`test_slot`  
IS NULL)
```

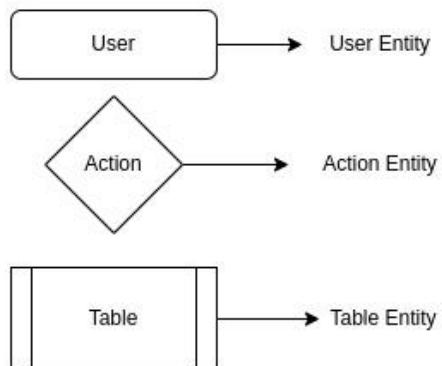
8. Discharge Patient:

```
SELECT `hospital_room`.`room_number`, `hospital_room`.`room_status` FROM  
`hospital_room` WHERE `hospital_room`.`room_number` = 102
```

Workflow Demonstration

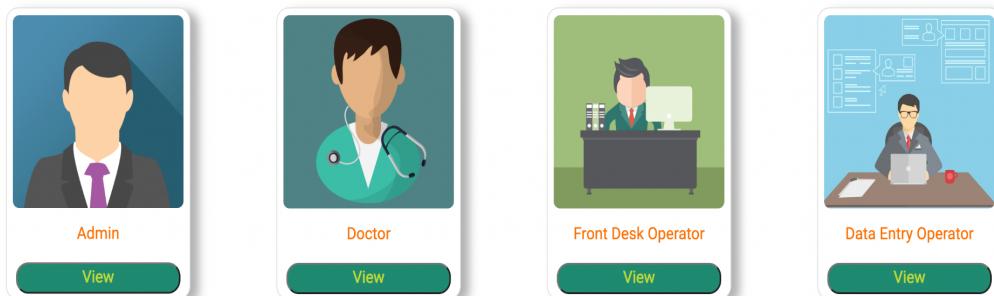
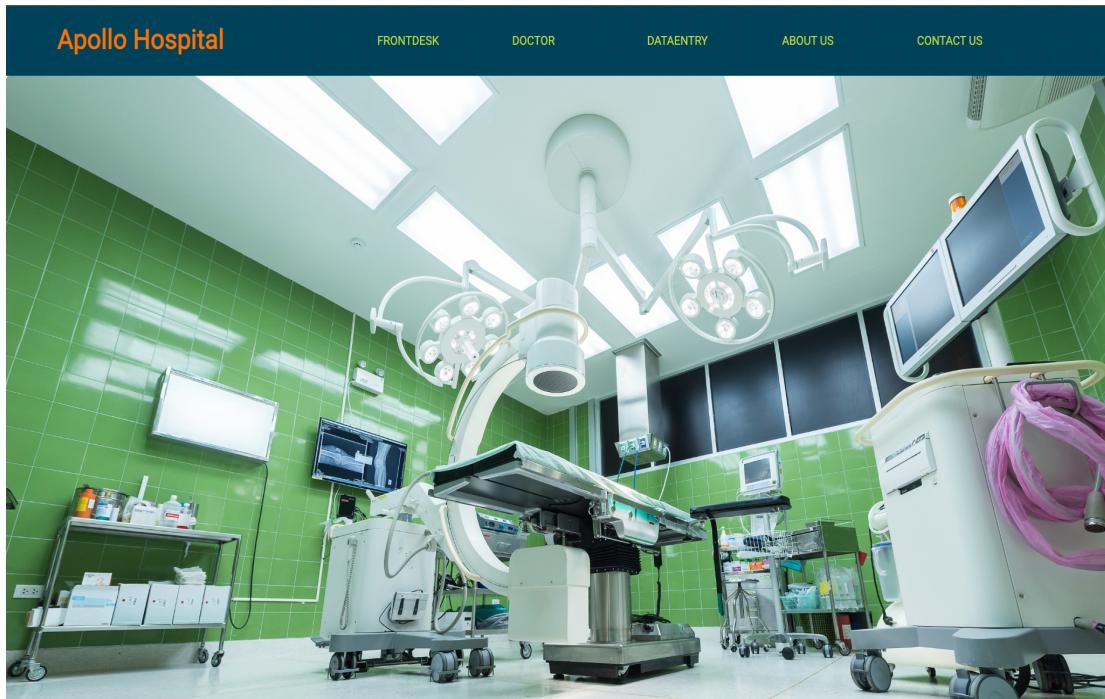


Legends -



Snaps

Homepage:



Frontdesk-Login:

Apollo Hospital

FRONDESK

DOCTOR

DATAENTRY

ABOUT US

CONTACT US

Username:

username

Password:

password

Login

Useful Links



- About Us
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Latest News

- Feb 27, 2023
15 more beds added for Covid Care.
- Mar 1, 2023
We will start giving Covishield to the elderly

Newsletter

Sign Up to Our Newsletter to Get Latest
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Frontdesk-Dashboard:

The dashboard features a sidebar on the left with the following navigation links:

- Dashboard
- Add Patient
- Schedule Appointment
- Schedule Test

The main content area is divided into four sections:

- Patients:** A table showing patient details. Columns include S.No., Name, Room Number, and Status. Data rows:

S.No.	Name	Room Number	Status
1	Priya Patel	101	Discharge
2	Vikas	102	Discharge
3	Amit Patel	103	Discharge
4	Akash Patel	104	Discharge
5	Arjun Patel	105	Discharge
6	Ashu Patel	106	Discharge
7	Sunita	107	Discharge
- Appointments Scheduled for Today:** A table showing appointment details. Columns include S.No., Patient Name, Doctor Name, Time, and Description. Data rows:

S.No.	Patient Name	Doctor Name	Time	Description
1				No appointment today
- Tests Scheduled for Today:** A table showing test details. Columns include S.No., Patient Name, Date, and Test Name. Data rows:

S.No.	Patient Name	Date	Test Name
1			No test scheduled today
- Rooms:** A table showing room availability. Columns include S.No., Room Number, and Status. Data rows:

S.No.	Room Number	Status
1	101	Occupied
2	102	Occupied
3	103	Available
4	104	Available
5	105	Available
6	106	Available
7	107	Available
8	108	Available
9	109	Available
10	110	Available

Frontdesk-Add_Patient:

The page features a sidebar on the left with the following navigation links:

- Dashboard
- Add Patient
- Schedule Appointment
- Schedule Test

The main content area displays a form for adding a patient:

Name:	<input type="text"/>
Patient Name:	<input type="text"/>
Address:	<input type="text"/>
Address:	<input type="text"/>
Mobile:	<input type="text"/>
	<input type="button" value="Add Patient"/>

Frontdesk-Schedule_Appointment:

The screenshot shows a web-based medical management system. On the left is a dark green sidebar with icons for Dashboard, Add Patient, Schedule Appointment, and Schedule Test. The main area has a light green header with a logo and a Logout button.

Patients:

#	Name	Mobile	Address
1	Priya Patel	9895531910	G 202, Wadi
2	Vimal	8991220007	G 123, MP Hall
3	Suhana	8991232100	GF

Showing 1 to 3 of 3 entries | Previous | Next

Doctors:

Doctor Id	Name	Mobile	Address
1	Umesh Mehta	9429547612	A 331, Araval Hall of Residence
2	Kiran Raj	9429547613	A 332, Araval Hall of Residence
3	Sunita Rawat	8991231007	A 333, Araval Hall of Residence
4	Priya Patel	8991231007	A 334, Araval Hall of Residence
5	Sangeet Patel	9429547613	A 335, Araval Hall of Residence

Showing 1 to 5 of 5 entries | Previous | Next

Schedule Form:

This form allows scheduling an appointment. It includes fields for Patient Id (Patient Id), Doctor Id (Doctor Id), Description (Description), Date (Date - set to 01/01/2027), and Time (Time - set to 00:00:00). A "Schedule" button is at the bottom.

Frontdesk-Schedule_Tests:

The sidebar and header are identical to the previous screenshot, showing the same navigation links and user interface elements.

Unscheduled Tests:

# No.	Patient Name	Test Name	Doctor Name	Schedule Test
No data available in table.				

Showing 0 to 0 of 0 entries | Previous | Next

Schedule Form:

This form allows scheduling a test. It includes fields for Patient Name (Patient Name), Test Name (Test Name), Doctor Name (Doctor Name), and a "Schedule Test" button.

Doctor-Login:

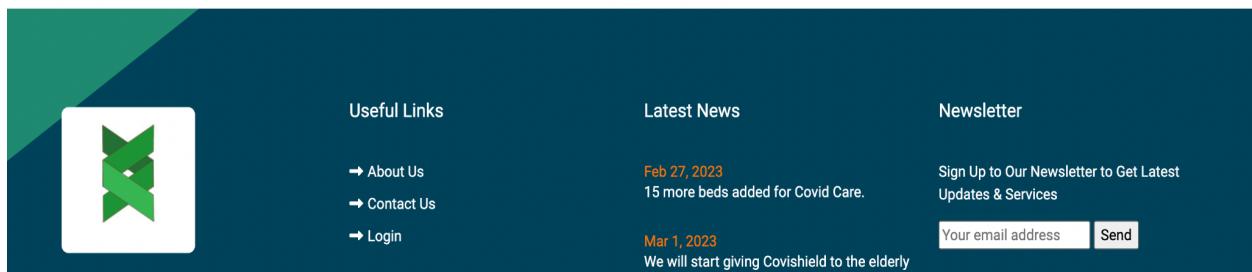
Apollo Hospital

FRONTPDESK DOCTOR DATAENTRY ABOUT US CONTACT US

Username:
username

Password:
password

Login



Doctor-Dashboard:

Aarogyam Dhan Sampada

Swapnil Yasasvi

Dashboard

+91 9328209239

Patients

Search:

Sr.No	Name	View Details	Prescribe
5.	Aditya Jha	Details →	Medicines → / Tests →
6.	Sudhakar	Details →	Medicines → / Tests →

Showing 1 to 2 of 2 entries

Previous 1 Next

Patient-Details:

The screenshot shows a web-based medical application interface. On the left, a dark green sidebar contains a logo, the text "Aarogya Dhan Sampada", a "Swapnil Yasavi" button, a "Dashboard" link, and a phone number "+91 9328309239". The main content area has a blue header with a user icon and a "Logout" button. Below the header, a summary box displays patient details: Id: 5, Name: Aditya Jha, Address: Jamshedpur, Mobile: 9032537610, Room Number: 101, Admit Date: March 6, 2023, Discharge Date: March 6, 2023, and Status: Admitted. Below this is a section titled "Test Results" with a search bar and a table header for "Index", "Test Name", "Test Results", "Test Image", and "Test Slot". A message indicates "No data available in table". Below the table is a "Prescriptions" section with a search bar and a similar table header for "Index", "Medicine Name", and "Medicine Description". Both sections show "Showing 0 to 0 of 0 entries" and include "Previous" and "Next" navigation links.

Medicines-Prescribed:

This screenshot shows the same application interface as the previous one. The sidebar and header are identical. The main content area now includes a "Prescribe" button next to the "Prescription" input field in the "Prescriptions" section. The rest of the interface remains the same, displaying the patient's details and the absence of prescription data.

Tests-Prescribed:

The screenshot shows a medical application interface. On the left, a sidebar has a logo, the text "Aarogyam Chan Sampada", and a "Swapnil Yasavi" button. The main area has a "Logout" button at the top right. It displays a patient profile with Id: 5, Name: Aditya Jha, Address: Jamshedpur, Mobile: 9032557610, Room Number: 101, Admit Date: March 6, 2023, Discharge Date: March 6, 2023, and Status: Admitted. To the right, there is a form with a "Name:" field containing "Test Name", a "Prescribe" button, and a "Logout" button.

Notification (Doctor):

The screenshot shows a medical application interface. On the left, a sidebar has a logo, the text "Aarogyam Chan Sampada", and a "Swapnil Yasavi" button. The main area has a "Logout" button at the top right. It displays a heading "Today's Appointments" in orange. Below it is a search bar labeled "Search: []". A table header includes columns for "S>No", "Patient Name", "Slot", and "Description". A message "No data available in table" is shown below the header. At the bottom, it says "Showing 0 to 0 of 0 entries" and has "Previous" and "Next" buttons.

Data Entry-Dashboard:

The screenshot shows a dashboard interface for managing pending tests. On the left, a sidebar has a logo, the text "Aarogyam Dhan Sampada", the name "Saurabh Jaiswal", a "Dashboard" button, and a phone number "+91 9328209229". The main content area is titled "Pending Tests" and contains a table with two entries. The table columns are "SrNo", "Patient Name", "Doctor Name", "Test Name", "Test Slot", and "Add Results". The first entry is for "Pranav Nyati" with "Utsav Mehta" as the doctor, "Blood Pressure" as the test, and "March 6, 2023, 1 p.m." as the slot. The second entry is for "Sudhakar" with "Swapnil Yesavi" as the doctor, "blood test" as the test, and "March 6, 2023, 5 p.m." as the slot. There are "Add" buttons next to each row. A search bar at the top of the table says "Search: ". At the bottom, it says "Showing 1 to 2 of 2 entries" and has "Previous" and "Next" buttons.

Add-Tests(Data Entry):

The screenshot shows a page for adding test results. The sidebar is identical to the previous dashboard, with the "Add" button highlighted. The main content area is titled "Test Results" and contains a form. It has a "Results" input field containing placeholder text "Results" and a file upload field labeled "Choose file" with the message "No file chosen". Below the file field is an "Add" button.

About Us:

Apollo Hospital

FRONTDESK DOCTOR DATAENTRY ABOUT US CONTACT US

Apollo Hospital

Vision

Apollo's vision for the next phase of development is to 'Touch a Billion Lives'.

Mission Statement

"Our mission is to bring healthcare of International standards within the reach of every individual. We are committed to the achievement and maintenance of excellence in education, research and healthcare for the benefit of humanity"

Our History

Apollo Hospitals was established in 1983 by Dr. Prathap C Reddy, renowned as the architect of modern healthcare in India. As the nation's first corporate hospital, Apollo Hospitals is acclaimed for pioneering the private healthcare revolution in the country. Apollo Hospitals has emerged as Asia's foremost integrated healthcare services provider and has a robust presence across the healthcare ecosystem, including Hospitals, Pharmacies, Primary Care & Diagnostic Clinics and several retail health models. The Group also has Telemedicine facilities across several countries, Health Insurance Services, Global Projects Consultancy, Medical Colleges, Medvarsity for E-Learning, Colleges of Nursing and Apollo Hospital and a Research Foundation. In addition, ASK Apollo - an online consultation portal and Apollo Home Health provide the care continuum. The cornerstones of Apollo's legacy are its unstinting focus on clinical excellence, affordable costs, modern technology and forward-looking research & academics. Apollo Hospitals was among the first few hospitals in the world to leverage technology to facilitate seamless healthcare delivery. The organization embraced the rapid advancement in medical equipments across the world, and pioneered the introduction of several cutting edge innovations in India. Recently, South East Asia's first Proton Therapy Centre commenced operations at the Apollo Centre in Chennai. Since its inception, Apollo Hospitals has been honoured by the trust of over 150 million individuals who came from 140 countries. At the core of Apollo's patient-centric culture is TLC (Tender Loving Care), the magic that inspires hope amongst its patients. As a responsible corporate citizen, Apollo Hospitals takes the spirit of leadership well beyond business and has embraced the responsibility of keeping India healthy. Recognizing that Non Communicable Diseases (NCDs) are the greatest threat to the nation, Apollo Hospitals is continuously educating people about preventive healthcare as the key to wellness. Likewise, envisioned by Dr. Prathap C Reddy, the "Billion Hearts Beating Foundation" endeavours to keep Indians heart-healthy.



Aarogyam Dhan Sampada

 9011216869

 Mon - Sun 8.00 - 21.00

Useful Links

- About Us
- Contact Us
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Latest News

Feb 27, 2023
15 more beds added for Covid Care.

Mar 1, 2023
We will start giving Covishield to the elderly from 3rd March.

Newsletter

Sign Up To Our Newsletter to Get Latest Updates & Services

Send

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Contact Us:

A screenshot of a contact form titled "Apollo Hospital". The form has a dark blue header with the hospital's name in orange. Below the header, there are four navigation links: FRONTDESK, DOCTOR, DATAENTRY, and ABOUTUS, followed by CONTACT US. The main body of the form is white and contains three input fields: "Name:" with a placeholder "Your Name", "Email:" with a placeholder "Email Address", and "Message:" with a placeholder "Description". At the bottom right is an orange "Send Message" button.

The footer of the website features a dark teal background with green diagonal stripes. On the left, there is a logo consisting of a stylized green 'A' and 'D' intertwined, with the text "Aarogyam Dhan Sampada" below it. To the right, there are three columns: "Useful Links" with links to About Us, Contact Us, and Login; "Latest News" with a recent update about new Covid Care beds; and a "Newsletter" sign-up form. At the very bottom, there is a copyright notice for 2023 and links to Terms & Conditions and Privacy Policy.