Industrial Training Report

A SUMMER TRAINING REPORT

HOSPITAL MANAGEMENT SYSTEM

Submitted by

Moirangthem Satyabrata

24MCA20343

in partial fulfillment for the award of the degree of

MASTER OF COMPUTER APPLICATION

IN

DEPARTMENT OF COMPUTER APPLICATION

Chandigarh University

May 2025 – July 2025

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BONAFIDE CERTIFICATE

Certified that this Summer Training report **HOSPITAL MANAGEMENT SYSTEM** is the bonafide work of **MOIRANGTHEM SATYABRATA** who carried out the Summer Training work under my/our supervision.

Signature of the Training Supervisor

Manvinder Singh

Senior Technical Instructor

EVA Solutions Pvt. Ltd.

Submitted for the Summer Training viva – voce examination held in July 2025.

INTERNAL EXAMINER **HEAD OF DEPARTMENT**

EVA Solution Pvt. Ltd.

EVA Solutions Pvt. Ltd., located at SCO-26, Kishore Street, Bhupindra Road, Patiala, Punjab, is a dynamic and ISO 9001:2008 certified Information Technology services and consulting company. Established with a vision to deliver innovative digital solutions, EVA Solutions specializes in software development, website designing, e-commerce development, mobile application development, graphic designing, and digital marketing services.

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These training programs aim to bridge the gap between academic learning and industry expectations, fostering employable skills and real-world project experience for aspiring IT professionals.

For more information:
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Ref: EVA/2025/3042 **Dated: 26.05.25**

To

Training and Placement Officer,
Department of Computer Science & Engineering,
Chandigarh University, Mohali.

Sub: Six Weeks Training.

Dear Sir,

This is to your reference letter

Mr. Moirangthem Satyabrata student of MCA of your Institute is permitted to undergo Industrial Training in our Company **w.e.f June 2025 for Six Weeks.**

Further the student may please be informed to bring the following documents at the time of joining with us.

- College Identity Card for Identity Proof.
- The photocopy of this letter duly signed by the Training & Placement Officer.
- Joining Letter duly signed by the Training & Placement Officer.

This also brings to your notice that no stipend will be paid to the trainee.

Yours faithfully,

SCO-26, Kishore Street, Bhupindra Road, Patiala
Mobile: +91 94638-37896, +91 62392-98977
www.evasolution.com eva.solutions@yahoo.com business@evasolution.com

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REFERENCES

ACKNOWLEDGEMENT

CHAPTER 1

INTRODUCTION

1.1. Identification of Client /Need / Relevant Contemporary issue

Hospitals need an efficient digital system to manage patients, appointments, billing, and records. The demand for automation and digital healthcare has increased after the COVID-19 pandemic.

1.2. Identification of Problem

Manual hospital systems are inefficient, leading to delays, human errors, data loss, and miscommunication between departments.

1.3. Identification of Tasks

- Design user roles (Admin, Doctor, Patient)
- Create appointment system
- Build database
- Implement billing and e-prescription features
- Test functionality

1.4. Timeline

- Week 1 – 2 :- Requirement Gathering
- Week 3 – 4 :- Database & UI Design
- Week 5 – 6 :- Module Development
- Week 7 :- Testing
- Week 8 :- Final Documentation

1.5. Organization of the Report

The report is organized into five core chapters addressing system analysis, literature, design, implementation, and future enhancements.

CHAPTER 2

LITERATURE REVIEW / BACKGROUND STUDY

2.1. Timeline of the reported problem

2.2. Existing solutions

Several Hospital Management Systems (HMS) have been developed and implemented across healthcare institutions. These include :-

- Medixcel EMR :- A cloud-based platform that offers comprehensive EMR services including patient management, lab integrations, and billing. However, it's costly and tailored for large hospitals.
- Practo Ray :- Known for appointment scheduling, digital prescriptions, and follow-ups. It is user-friendly but lacks full administrative modules.
- OpenMRS :- An open-source medical record system targeted at low-resource settings. While feature-rich, it has a steep learning curve for implementation and customization.

These solutions, while effective, either target large-scale institutions or lack flexibility, customization, and affordability for smaller clinics and hospitals.

2.3. Bibliometric analysis

Feature	Observed in Existing Systems	Effectiveness	Drawbacks
Patient Registration	Yes	Reduces paperwork	Limited customization
Appointment Management	Yes	Improves time efficiency	Some systems lack auto-reminder support
Medical History Management	Yes	Helpful in diagnosis	Security concerns in cloud-only solutions
Billing and Payment	Yes	Automated billing saves time	Integration with local systems is limited
Role-Based Access	Yes	Enhances security	Often only available in premium versions
E-Prescription	Yes	Accurate & fast delivery	Requires structured training to use properly

2.4. Review Summary

The literature review emphasizes a gap in the market for a cost-effective, user-friendly, and secure HMS tailored to small-to-medium clinics. Existing solutions are either too complex or expensive. The current summer training project addresses this gap by designing a system with essential HMS features such as :-

- User Authentication
- Appointment Scheduling
- Doctor/Patient Interaction
- Billing and Reports

2.5. Problem Definition

- What is to be done :-
  Design and develop a web-based Hospital Management System with essential functionalities for administration, doctor, and patient users.
- How it is to be done :-
  Using HTML, CSS, JS, PHP, and MySQL to build a modular system with role-based dashboards, patient records, billing, and appointment management. The project will follow full-stack development principles and be hosted in a local environment (XAMPP).
- What is not to be done :-
  The system does not cover :-
  - Real-time chat or telemedicine modules
  - Integration with insurance providers or pharmacy inventory
  - Mobile app or offline support

2.6. Goals/Objectives

- Build a login-based access system for multiple roles (Admin, Doctor, Patient).
- Design a patient registration and appointment booking module.
- Implement electronic medical records and prescription management.
- Develop billing and invoice generation features.
- Ensure a responsive UI for accessibility and ease of use.
- Test the entire system with dummy entries to validate accuracy and workflow.

These goals are :-

- Narrow and specific :- Each goal targets a particular functionality.
- Precise :- Clearly outlines deliverables (e.g., "invoice generation").

- Tangible and Concrete :- Demonstrable through modules/screens.
- Measurable :- System can be tested for functionality, responsiveness, and error-handling.

CHAPTER 3

DESIGN FLOW / PROCESS

3.1. Evaluation & Selection of Specifications/Features

Based on the literature and existing solutions reviewed in Chapter 2, the following features were identified as essential, desirable, or optional :-

Feature	Importance	Included in Final Design
User Authentication	Essential	Yes
Role-Based Dashboard	Essential	Yes
Patient Registration	Essential	Yes
Appointment Scheduling	Essential	Yes
Medical History / EMR	Essential	Yes
E-Prescriptions	Desirable	Yes
Billing and Invoice	Essential	Yes
Real-time Chat	Optional	No
Feedback Mechanism	Desirable	Yes
Reports & Analytics	Desirable	Yes
Integration with Pharmacy	Optional	No

3.2. Design Constraints

- Regulatory Compliance :- The system does not store or transmit real patient data; therefore, HIPAA/NDHM compliance is not applicable during development but should be considered for future deployment.
- Economic :- The solution must be free and use open-source tools (PHP, MySQL, HTML, CSS, JS).
- Environmental :- Minimal energy/resource usage; hosted locally via XAMPP.
- Health/Safety :- No physical hazards; UI designed to minimize cognitive load.
- Manufacturability :- Code is modular and reusable; can be deployed to any compatible server.
- Professional Ethics :- Data privacy and login security implemented to protect user data.
- Social/Political :- The system is intended to improve access to healthcare management without discrimination.

- Cost Constraints :- No commercial software or hardware dependencies — strictly open-source stack used.

3.3. Analysis of Features and Finalization Subject to Constraints

Feature	Final Decision	Justification
Real-time Chat	Removed	Adds complexity, requires backend socket support
Integration with Pharmacy	Removed	Beyond the training scope, requires external API
Advanced Security (2FA)	Modified	Only role – based access added
Reports	Simplified	Export in basic Excel or PDF format

3.4. Design Flow

Alternative 1:- Monolithic Web Application

- All functionalities (login, patient data, appointments, billing) handled in a single PHP-based structure.
- Pros :- Simple, easy to maintain, faster to develop.
- Cons :- Less scalable, tightly coupled.

Alternative 2 :- Modular Web Application with Role-Based Views

- Separate modules for Admin, Doctor, Patient.
- Distinct PHP files and access control for each role.
- Pros :- Scalable, secure, maintainable.
- Cons :- Slightly higher development time.

3.5. Design Selection

Chosen Design: Alternative 2 - Modular Web Application

Criteria	Alternative 1 (Monolithic)	Alternative 2 (Modular)
Scalability	Low	High
Maintainability	Moderate	High
Security	Basic	Role – based access
Suitability for future	Low	High

Reason for Selection :-
The modular design provides a clean separation of concerns, better access control, and aligns with full-stack development best practices. It supports future enhancements like API integrations or mobile app extensions.

3.6. Implementation Plan / Methodology

System Development Life Cycle (SDLC) Model :- Waterfall Model

Implementation Steps :-

1. Requirement Analysis :- Identify user roles, modules, and data needs.
2. Database Design :- Entity-Relationship Diagram (ERD) created for Patients, Doctors, Appointments, Billing.
3. UI/UX Design :- HTML/CSS wireframes for all role-based dashboards.
4. Backend Development :- PHP scripts developed for CRUD operations.
5. Integration :- Linking front-end forms to MySQL database.
6. Testing :- Dummy data used for unit and functional testing.

Flowchart of HMS Workflow :-

START

↓

USER LOGIN (Admin / Doctor / Patient)

↓

ROLE-BASED DASHBOARD

↓

→ If Admin → Manage users / departments / reports

→ If Doctor → View patients / write prescriptions

→ If Patient → Book appointment / view records

↓

PERFORM ACTION → DB Interaction

↓

SHOW RESPONSE / CONFIRMATION

↓

LOGOUT

↓

END

CHAPTER 4

RESULT ANALYSIS AND VALIDATION

4.1. Implementation of Solution

The Hospital Management System (HMS) was implemented using a modern full-stack web development approach, utilizing a variety of tools for analysis, design, coding, testing, and reporting. The results of the summer training work are validated below based on different stages of development and deployment.

Analysis Tools Used

- Requirement Analysis was conducted through user role breakdown (Admin, Doctor, Patient).
- Functional and non-functional requirements were clearly documented using structured tables and flow logic.
- Database normalization was applied to eliminate redundancy and improve data integrity.

Design Tools and Schematics

- Wireframes & UI Mockups were created using hand sketches and web browser previews.
- Database Design :- ER Diagrams and relational schemas were designed using phpMyAdmin and visualized through MySQL Workbench.
- Modular UI Structure :- Bootstrap was used to create responsive and mobile-friendly layouts.
- Navigation Flow :- Clearly defined through navbar links and dashboard segmentation for each user role.

Report Preparation Tools

- Microsoft Word and LaTeX were used to structure the project documentation.
- Diagrams and flowcharts were created using draw.io.
- Code was version-controlled and shared through GitHub :- GitHub Repository

Training Management and Communication Tools

- XAMPP was used as the local development and testing environment.
- phpMyAdmin allowed GUI-based database management.

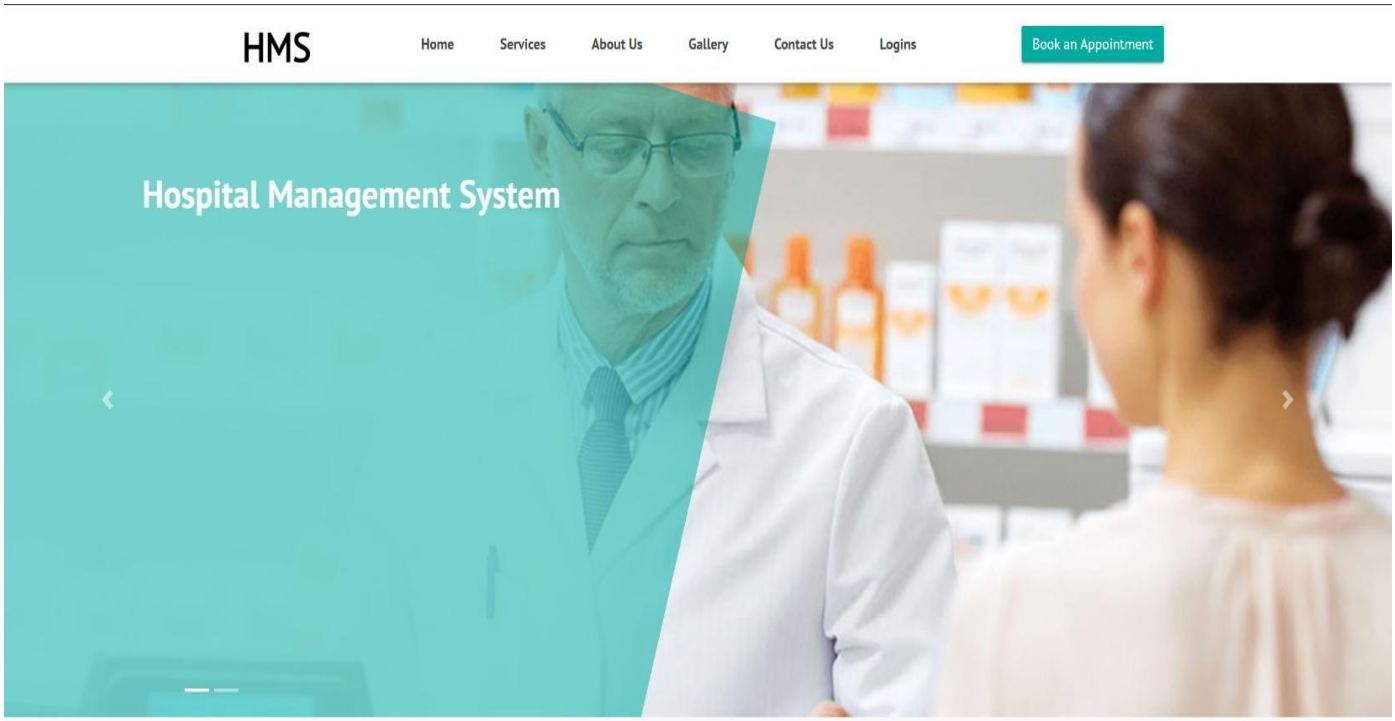
- Internal communication with the project supervisor was conducted via email and Google Docs comments during feedback cycles.
- All stages of development were recorded in a task sheet for progress tracking.

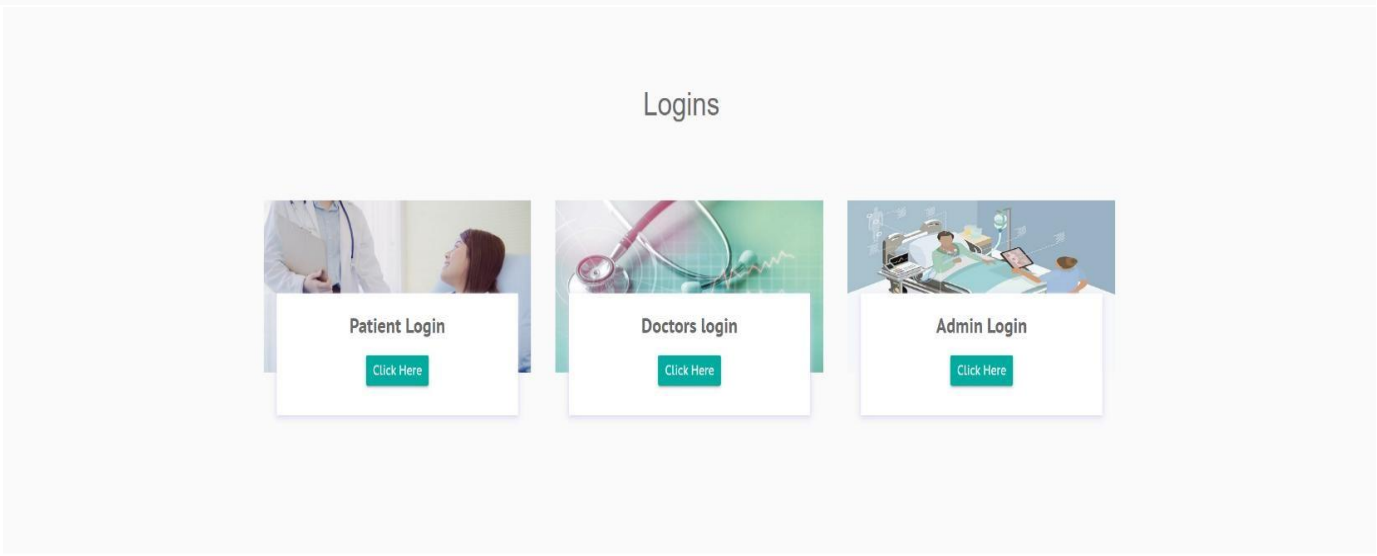
Testing, Characterization, and Data Validation

Validation Summary :-

- Dummy users (patients/doctors/admins) were used to test login and dashboard functionalities.
- Sample appointment records were created to simulate real-world hospital scheduling.
- Medical records and prescriptions were inserted and retrieved successfully.
- All modules integrated without data corruption or workflow failure.

Screenshots and Output :-





Our Key Features

Take a look at some of our key features

- Cardiology
- Orthopaedic
- Neurologist
- Pharma Pipeline
- Pharma Team
- High Quality treatments

About Our Hospital

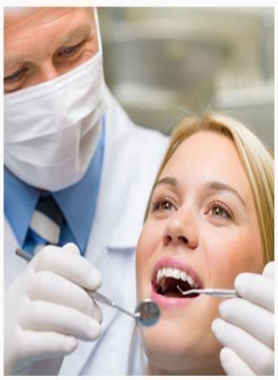
The Hospital Management System (HMS) is designed for Any Hospital to replace their existing manual, paper based system. The new system is to control the following information; patient information, room availability, staff and operating room schedules, and patient invoices. These services are to be provided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

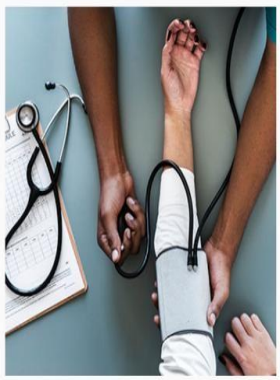
A significant part of the operation of any hospital involves the acquisition, management and timely retrieval of great volumes of information. This information typically involves; patient personal information and medical history, staff information, room and ward scheduling, staff scheduling, operating theater scheduling and various facilities waiting lists. All of this information must be managed in an efficient and cost wise fashion so that an institution's resources may be effectively utilized HMS will automate the management of the hospital making it more efficient and error free. It aims at standardizing data, consolidating data ensuring data integrity and reducing inconsistencies.

Our Gallery

View Our Gallery

All | Dental | Cardiology | Neurology | Laboratry





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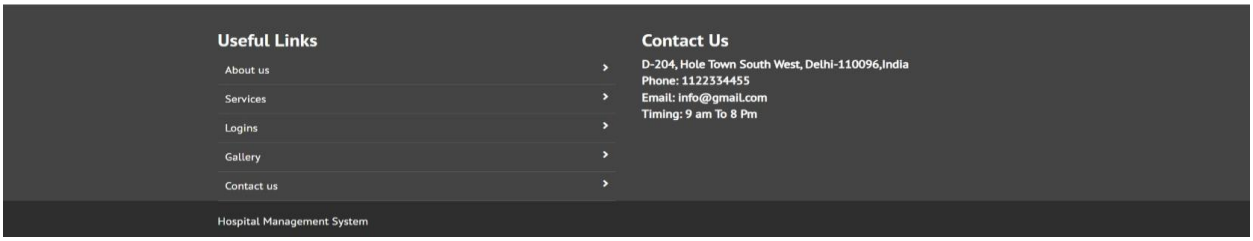
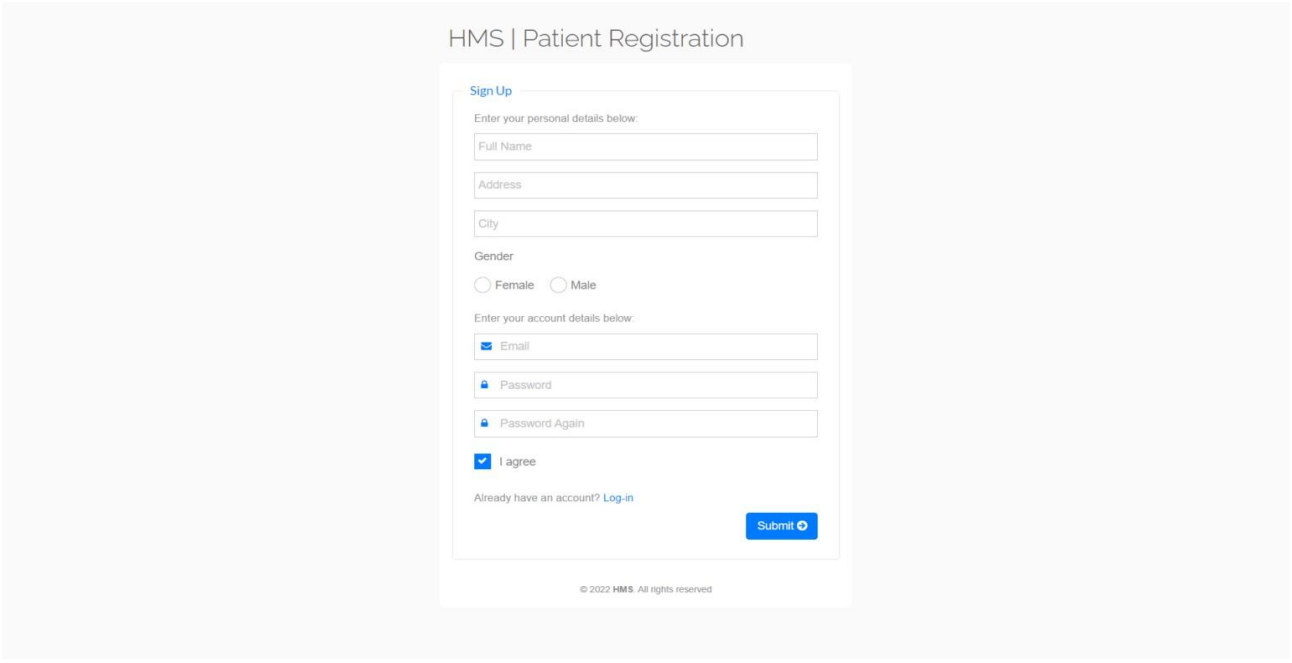
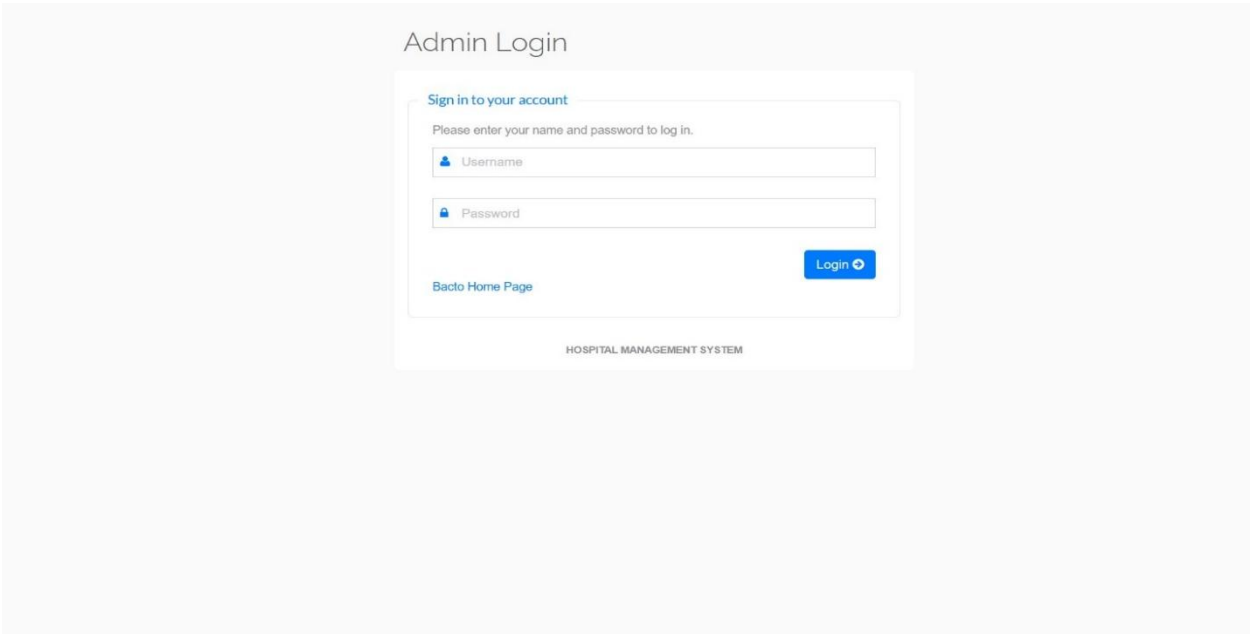
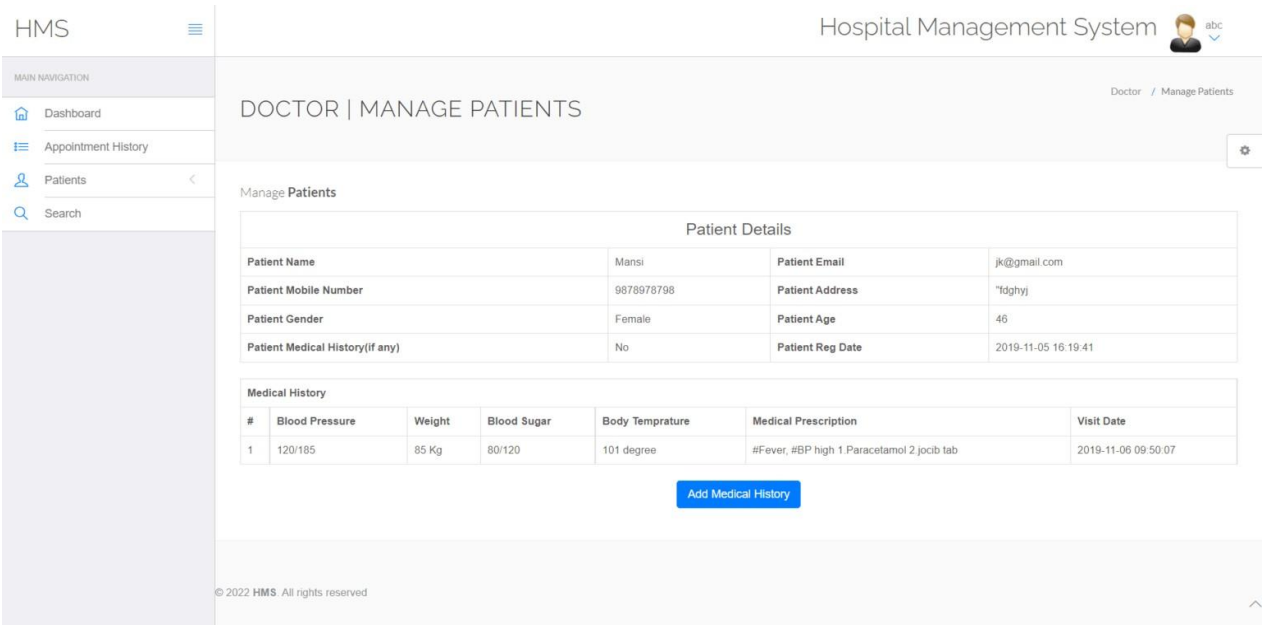
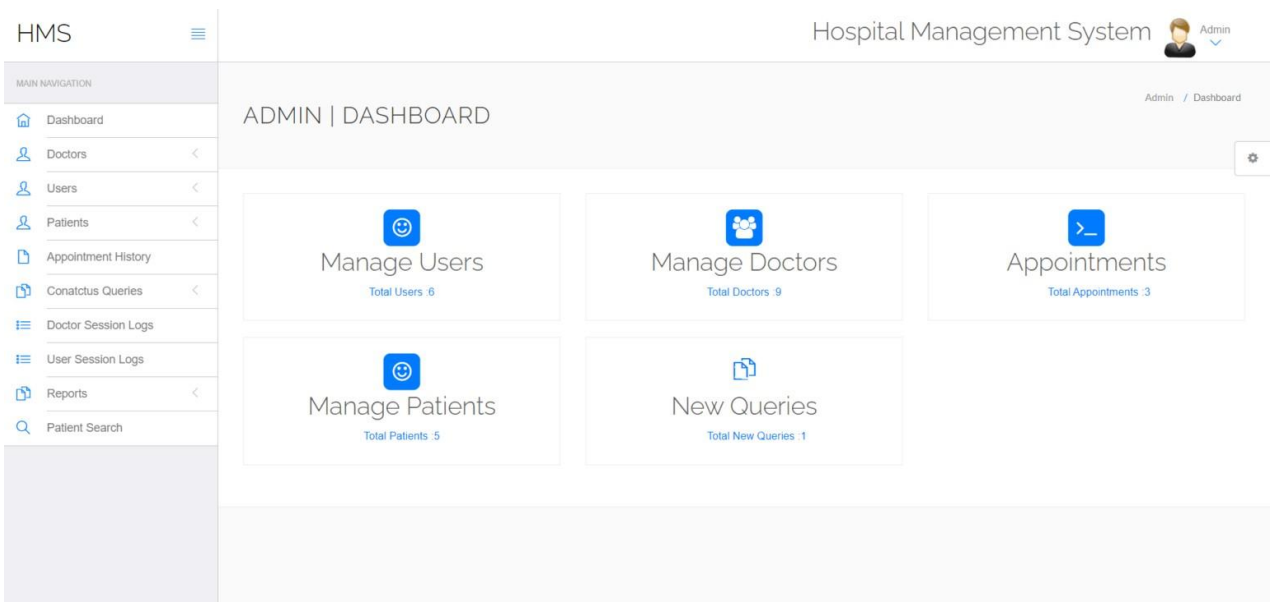





Admin Login
Sign in to your account
Please enter your name and password to log in.
Username
Password
Login
Bacto Home Page
HOSPITAL MANAGEMENT SYSTEM


HMS
Hospital Management System
abc
MAIN NAVIGATION
Dashboard
Appointment History
Patients
Search
DOCTOR | MANAGE PATIENTS
Doctor / Manage Patients
Manage Patients
Patient Details
Patient Name
Mansi
Patient Email
jk@gmail.com
Patient Mobile Number
9878978798
Patient Address
"fdghyj
Patient Gender
Female
Patient Age
46
Patient Medical History(if any)
No
Patient Reg Date
2019-11-05 16:19:41
Medical History
Blood Pressure Weight Blood Sugar Body Temprature Medical Prescription Visit Date
1 120/185 85 Kg 80/120 101 degree #Fever, #BP high 1.Paracetamol 2.jocib tab 2019-11-06 09:50:07
Add Medical History
© 2022 HMS. All rights reserved


HMS
Hospital Management System
Admin
MAIN NAVIGATION
Dashboard
Doctors
Users
Patients
Appointment History
Conatctus Queries
Doctor Session Logs
User Session Logs
Reports
Patient Search
ADMIN | DASHBOARD
Admin / Dashboard
Manage Users
Total Users :6
Manage Doctors
Total Doctors :9
Appointments
Total Appointments :3
Manage Patients
Total Patients :5
New Queries
Total New Queries :1

CHAPTER 5

CONCLUSION & FUTURE WORK

5.1. Conclusion

The Hospital Management System project provides an effective solution for managing hospital operations digitally, reducing manual effort and improving efficiency across departments. It brings together key functionalities such as patient registration, appointment scheduling, billing, and medical record management into one user-friendly platform. By applying web development skills and internet programming concepts, the system demonstrates how technology can streamline healthcare processes and improve the overall patient experience. This project not only enhances our understanding of full-stack development but also highlights the importance of automation in modern healthcare environments.

5.2. Future Work

The current HMS solution serves as a solid foundation for small to mid-sized clinics or hospitals. However, there are several enhancements and future directions that can extend its capability, usability, and reach :-

Required Modifications :-

- Implement data encryption for sensitive information (e.g., patient records and prescriptions).
- Add password recovery mechanism using email/OTP.

Change in Approach (if scaled) :-

- Migrate from local (XAMPP) to a cloud-based environment (e.g., AWS, Heroku).
- Use MVC architecture or frameworks (e.g., Laravel) for better code structure and scalability.
- Implement RESTful APIs for interoperability with other systems (e.g., pharmacy or insurance).

Suggestions for Extension :-

- Mobile Application :- Build Android/iOS apps to increase accessibility for patients and doctors.
- Real-time Features :- Add live chat between doctor and patient for teleconsultation.
- Analytics Dashboard :- Include charts for tracking revenue, patient demographics, and treatment success rates.

- Voice and OCR Input :- Use voice-to-text or Optical Character Recognition for faster data entry

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Acknowledgement

" Opportunity to work and learn in a professional environment. I'm thankful to my mentors and colleagues for their guidance and feedback. I also thank Chandigarh University and the Training & Placement Department for facilitating this training."

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Ref: EVA/2025/6029 **Dated: 07.07.2025**

TO WHOM IT MAY CONCERN

This is to certify that **Mr. Moirangthem Satyabrata** of Department of Masters of Computer Applications, Chandigarh University, Mohali, has undergone six weeks industrial training **18th May-2025 to 5th July-2025** at our organization to fulfill the requirements for the award of degree of MCA.

During the training, he worked on the project **Hospital Management System** in Front End Technology development using UI/UX under my supervision.

During his tenure, we found him sincere and hard working.

We wish him a great success in the future.

For EVA Solution Pvt. Ltd.

Authorized Signatory

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