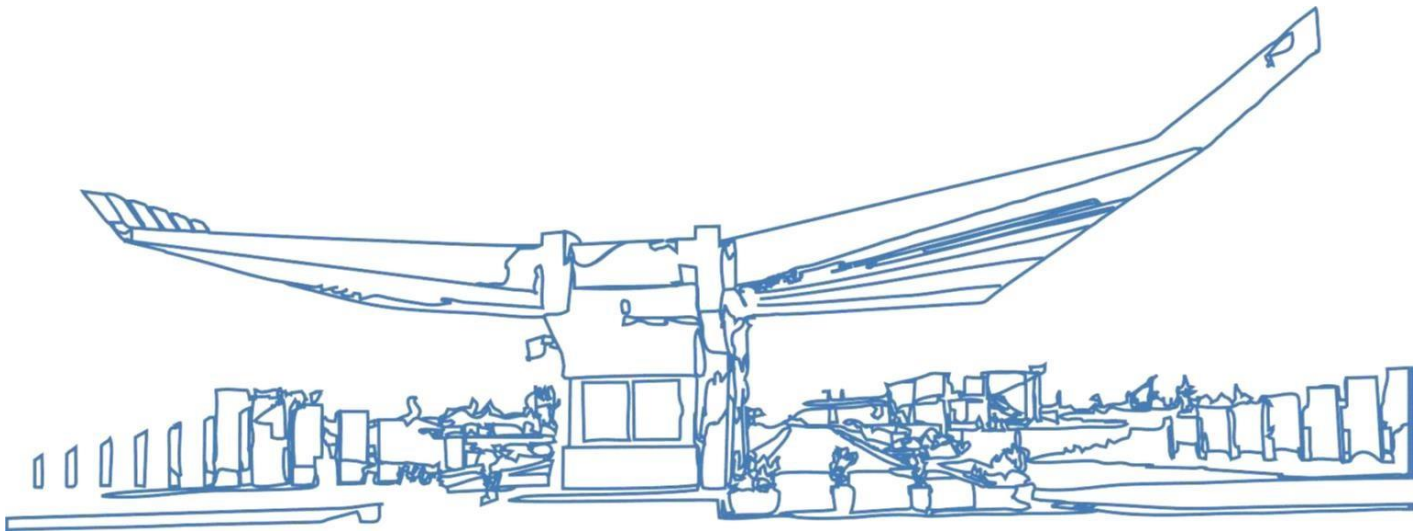


Project Report

**Epoka University
Faculty of Architecture and Engineering
Software Engineering**

CEN 342 – User Interface Design

HOSPITAL MANAGEMENT SYSTEM



Group members :

- Argela Milo
- Iris Rrucaj
- Lorena Lera
- Stela Saraci

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Team members and their role

1. Argela Milo:

She played a significant role in the development process by actively engaging in various tasks. Argela began by undertaking the crucial responsibility of gathering requirements, meticulously collecting and documenting the specific needs and expectations of the project. This involved conducting thorough research, engaging with stakeholders, and understanding the target audience to ensure that all relevant factors were considered. Based on the thorough understanding of the project requirements and user scenarios, she skillfully prioritized and identified the most important functionalities that the website needed to incorporate. In addition to gathering requirements and identifying functionalities, she also took charge of designing the prototype. Further more she did also the code implementation.

2. Iris Rrucaj:

She excelled in the role of gathering requirements and conducting research, making a significant impact on the project, where she took part in engaging with stakeholders and did the questions of the research. Her diligent efforts in gathering requirements helped streamline the decision-making process by providing us with a clear understanding of what functionalities the website needed to incorporate. Moreover, her contribution extended to the design process, where her insights and expertise proved invaluable. By actively participating in the design discussions she helped make the design process more efficient, optimizing the user experience. Furthermore, the individual demonstrated their versatility by also assisting with frontend development.

3. Lorena Lera:

Played a crucial role in the design phase by providing design sketches that were aligned with the project's requirements. Leveraging her creative abilities and understanding of user-centric design principles, she crafted visual representations that captured the intended look and feel of the website. These design sketches served as a valuable starting point for further discussions and iterations, allowing the team to visualize and refine the overall design concept. Additionally, she made a valuable contribution to the heuristic evaluation process. Lorena actively participated in evaluating the user interface and user experience against established usability principles and heuristics.

4. Stela Saraci:

Made significant contributions to the project by actively engaging in task analysis and research. She collaborated closely with the team to perform a detailed task analysis, systematically breaking down complex processes into manageable tasks. Through her meticulous approach, she gained a deep understanding of the user's needs and behaviors, which proved instrumental in informing the design and development decisions. In addition to her contributions in task analysis and research, she also played a crucial role in setting up the website's database by working closely with the development team to establish an efficient and secure database structure that would effectively support the website's functionalities and data storage needs.

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Problem & Solution

Overview

The need for an effective and user-friendly hospital management system is the issue being addressed. In order to manage patient information, schedule appointments, coordinate staff, and guarantee efficient operations, hospitals must overcome numerous obstacles. Old-fashioned manual systems and out-of-date software can cause inefficiencies, mistakes, and problems with accessing vital data.

The implementation of a Hospital Management System (HMS) website can solve this issue. We will talk about the issues hospitals face in this section, along with the solutions provided by an HMS website.

Problems and solutions proposed for each problem

- **Manual Record-Keeping:** Traditional paper-based record-keeping methods are still used by many hospitals, but they take a lot of time and are prone to mistakes. It becomes difficult to efficiently manage and retrieve patient data.

Solution: A database for keeping track of patient records, medical histories and other pertinent data is offered by an HMS website. It does away with the need for manual record-keeping and makes patient information accessible from anywhere at any time.

- **Appointment Scheduling and Management:** Conventional methods of scheduling appointments frequently result in lengthy wait times, confusion, and missed appointments, which is inconvenient for both patients and staff.

Solution: A system for scheduling online appointments is available on the HMS website. Patients can easily schedule appointments through the website, and the system handles the scheduling, ensuring effective resource utilization and reducing wait times.

- **Lack of Collaboration and Communication:** Delays in patient care and treatment errors may be the result of poor coordination and communication between various departments and healthcare professionals.

Solution: Doctors, administrators, and other staff members can communicate and work together easily thanks to the HMS website. It has features that facilitate efficient teamwork and prompt decision-making, including secure messaging, shared calendars, and real-time updates on patient conditions.

Research goals, Stakeholders & Participants

Goals

Designing, developing, and assessing the efficiency and usability of a Hospital Management System (HMS) website is the main goal of this study. The following objectives are the focus of the research:

1. Analyze how the HMS website affects a hospital's ability to operate more efficiently and provide better patient care.
2. Review the HMS website's usability and user experience from the perspective of various stakeholders.

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3. Determine any potential obstacles, restrictions, or opportunities for development in the development and uptake of the HMS website.
4. To inform upcoming website improvements and iterations, gather opinions and insights from stakeholders.

Stakeholders

A number of stakeholders who are important to the hospital management system are involved in the research. These parties involved include:

1. **Hospital administrators** are in charge of making strategic decisions, allocating resources, and ensuring that rules are followed. They supervise the hospital's general operations. Their opinions are essential in determining how the system will affect operational effectiveness and financial management.
2. **Patients:** They are crucial stakeholders because they use the HMS website to schedule appointments, access medical records, and obtain care.
3. **Healthcare Professionals:** Doctors, nurses, technicians, and other medical personnel involved in patient care are included in the category of healthcare professionals. In order to assess the system's usability, effect on clinical workflows, and overall patient outcomes, it is imperative that they provide feedback.
4. **IT Department:** The HMS website is implemented, managed, and maintained in large part thanks to the IT department. For assessing the system's dependability and performance, it is crucial to consider their perspectives on system integration, data security, and technical support.

Participants

To ensure a thorough understanding of all stakeholder perspectives, participants for the research will be chosen from each group.

1. Healthcare Professionals

Background: Doctors, nurses, technicians, and support staff were among the healthcare professionals who were observed and questioned. They each had varying degrees of knowledge and skill in their specialized fields.

Environment: The observations and interviews happened in a hospital setting, which included clinical spaces like waiting rooms, operating rooms, labs, and nursing stations. The participants were watched as they went about their daily business and interacted with patients, medical devices, and computer systems.

2. Hospital administrators

Background: Important decision-makers including the chief executive officer (CEO), chief medical officer (CMO) made up the administrators who were observed and interviewed. They had a wealth of management and strategic planning experience in hospitals.

Environment: Administrator interviews took place in the hospital's conference rooms or administrative offices. These settings offered an ideal forum for in-depth discussions of hospital management techniques, difficulties, and opportunities.

3. Patients

Background: The patients who were observed and who were interviewed represented a wide range of demographics and illnesses. They were all familiar with the hospital and its management system to varying degrees.

Environment: The patient interviews and observations were conducted in a variety of hospital settings,

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including waiting areas, consultation rooms, and patient wards. These settings made it possible to record their interactions with hospital staff, their registration procedure, their ability to schedule appointments, and their access to medical records.

The goal of the study was to record stakeholders' viewpoints and experiences as they occurred in their actual work and care environments. A thorough understanding of participants' backgrounds, behaviors, and interactions within the hospital management system could be obtained by watching and interviewing participants in their natural environments.

Interview question asked

A number of interview questions were used during the design research process to elicit insights and viewpoints from the participants. Here are some instances of actual interview questions:

For Health Care Workers:

- Can you describe the standard process you use to set up patient appointments?
- What difficulties do you run into when coordinating patient care between various departments?
- Currently, how do you interact and work together with other healthcare providers who are involved in patient care?
- What typical challenges do you encounter when integrating patient data from different systems?
- Can you give any examples of how poor communication or inconsistent information has harmed patient care?

For hospital administrators:

- What are the main difficulties you face in overseeing the hospital's overall operations and resources?
- How do you currently monitor and guarantee adherence to healthcare laws and privacy rules?
- Do the procedures for patient admission, discharge, or transfer have any inefficiencies or bottlenecks?
- What are your goals and priorities for the hospital management system's data reporting and analytics capabilities?
- How do you see the system facilitating tactical planning and decision-making?

To Patients:

- How well have you managed your healthcare appointments and appointment scheduling in the past?
- Have you had any trouble contacting healthcare professionals or getting access to your medical records?
- How about learning more about your medical condition and recommended course of treatment?
- Could you describe any difficulties you've had with the billing and money-related aspects of your healthcare experience?
- Do you have any specific features or functionalities in mind for a patient portal or online healthcare management system?

The purpose of these interview questions was to learn about the participants' perspectives, experiences, and difficulties with the hospital management system. Informing the design and development of the HMS website, they offered insightful information about the stakeholders' expectations, pain points, and current practices.

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Tasks, problems uncovered

Task: Effective appointment scheduling, patient care coordination, and resource optimization.

Problems: Lack of system integration, poor patient education and follow-up, inaccurate financial management and billing, difficulties with inventory tracking, and data security issues.

Opportunities for improvement

1. Putting in place an online appointment scheduling system to speed up reservations, shorten wait times, and maximize resource use.
2. Improving channels of communication and tools for teamwork among healthcare professionals to enable seamless information exchange.
3. Implementing an integrated inventory management system to streamline reordering procedures, track stock levels, and guarantee the availability of critical medical supplies.
4. Constructing a comprehensive patient portal that offers post-discharge instructions, appointment reminders, and educational materials for patients to use for better self-care.
5. To protect patient information, data security measures must be improved and healthcare regulations must be followed.

Difficulties establishing the rapport & getting the desired information

During the research, there were some issues getting along with participants and getting the information we needed from them. These difficulties included:

Time Restrictions: Hospital administrators and healthcare professionals have busy schedules, making it difficult to schedule specific time for interviews or observations. Finding suitable times that didn't interfere with their regular duties required careful planning and flexibility.

Hesitancy to Share Critical Feedback: Some participants, particularly healthcare administrators and professionals, were at first reluctant to share critical feedback or openly voice their concerns. They might have been worried about the consequences or how their organization would be perceived. To overcome this obstacle, it was essential to establish trust and ensure confidentiality.

Complexity and technical jargon: The field of hospital management involves complex workflows and technical terminology. To ensure that participants from various backgrounds could understand the questions and effectively communicate their experiences, it was crucial to adapt the language and methodology.

Patient Privacy Issues: Privacy and confidentiality issues were crucial whenever patients were involved in interviews or observations. Clear communication and adherence to ethical standards were necessary to ensure that participants felt secure disclosing their experiences and data without jeopardizing their privacy.

To overcome these challenges and raise participant involvement:

Building a rapport with participants was a priority, and this was done by outlining the goals of the study, assuring confidentiality, and highlighting the significance of their contributions. Establishing rapport required active listening, empathy, and the creation of a nonjudgmental environment.

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Clear Communication: Participants were better able to understand the questions and express their ideas when simple language and technical jargon were used instead. Participants were more motivated and encouraged to provide the desired information when the research objectives and the potential impact of their input were made clear.

Flexibility and Convenience: By working around the participants' schedules as much as possible and providing them with a variety of ways to participate, such as in-person interviews, online surveys, or remote observations, it was easier for them to contribute and less time was wasted.

The research team was able to foster effective communication, build rapport, and get the information they needed from the participants by addressing these issues.

Changes in the plan based on what we learned

The research plan can be altered to include the following changes in light of the design research's insights:

Refining Design Objectives: The results of the study may help to clarify the particular requirements, difficulties, and opportunities in the hospital management system. Based on this comprehension, the design objectives can be improved or widened to more effectively address the tasks, issues, or opportunities revealed.

Iterative Design and Development: The research might point out areas where the HMS website's initial design can be enhanced or changed. The research team can incorporate user feedback, address usability issues, and iteratively improve the system to better align with the needs and expectations of stakeholders by using an iterative design approach.

Enhanced User Experience: In light of the research's findings, the HMS website's user experience design can be modified to increase usability, streamline processes, and boost user satisfaction. The redesign process can be guided by the learnings from the perspectives and actions of stakeholders, creating a more logical and user-friendly interface.

Prioritization of Features: Based on their influence on operational effectiveness, patient care, and user satisfaction, certain features or functionalities may be prioritized using the research findings. The design research plan can be modified to concentrate on the most important features that address the identified needs and provide the greatest value to the stakeholders by understanding the tasks, problems, and opportunities uncovered.

Collaboration Among Stakeholders: The research's findings may highlight the significance of ongoing collaboration and stakeholder involvement throughout the design and development process. The research plan can be changed in response to their comments and recommendations in order to ensure active involvement from stakeholders, foster a sense of ownership, and increase the likelihood that the HMS website will be successfully adopted and implemented.

Data analysis and insight generation: The research results will guide the analysis of gathered data and insight creation. In order to effectively capture and use the insights derived from the data in the ensuing design and development phases, the analysis process can be adjusted to prioritize the identified key findings and patterns.

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Research results

The design research produced a number of significant findings and revealed recurring themes, issues, and behaviors among the participants who were observed and interviewed. These findings offer insightful information that will help shape the hospital management system's design. The findings of the study include:

Description of key findings:

Challenges with documentation: The research uncovered problems with record-keeping and documentation. Participants cited inefficiencies and potential mistakes caused by manual data entry problems, voluminous paperwork, and challenges finding and retrieving patient records.

Regulation adherence: Adherence to healthcare regulations has become a major concern. To maintain patient confidentiality and trust, participants stated that the system must support data privacy, security, and compliance with pertinent laws and regulations.

Reporting and analytics: Participants emphasized the significance of the system's strong reporting and analytics capabilities. They emphasized the need for customizable reports and real-time data insights to help with strategic planning and informed decision-making.

Ineffective appointment management: Participants cited difficulties with scheduling and overseeing patient appointments, which led to lengthy wait times and insufficient resource use.

Gaps in communication and cooperation: Delays in patient care and decision-making resulted from a lack of efficient communication channels and collaboration tools that prevented smooth information exchange and coordination among healthcare professionals.

Issues with accessing and integrating data across various information systems were noted by the participants, which resulted in inconsistencies and unnecessary effort.

Participants

Several parties were involved in the research, including healthcare workers like doctors, nurses, technicians, and support personnel. Additionally, CEOs, CMOs, and CFOs of hospitals were observed and questioned. In order to learn about patients' perspectives on and experiences with the hospital management system, participants from a range of demographics and medical conditions were invited.

High-level Problems and Themes:

The following were some of the common themes and issues that participants' practices revealed:

- Resource allocation and appointment management are ineffective.
- Interprofessional communication and collaboration problems.
- Challenges with data integration and accessibility.
- Inadequate patient education and engagement.
- Inefficiencies in billing and financial management.

These themes, issues, and practices point to significant tasks that the hospital management system must

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be designed for. To address the identified issues and provide practical solutions for the stakeholders, the design process should prioritize tasks like streamlining appointment scheduling, enhancing communication channels, enhancing data integration and accessibility, implementing patient engagement features, addressing billing and financial management processes, and optimizing inventory tracking.

The design of the hospital management system can be modified to meet the unique needs and difficulties discovered during the research by comprehending and taking into account these key findings, leading to a more effective and user-friendly system.

Task analysis

Task 1: Scheduling appointments

Users: Patients and doctors

Current tasks: At the moment, making and keeping appointments involves manual processes like phone calls and in-person interactions, which results in inefficiencies and possible mistakes in managing and coordinating appointments.

Desired Tasks: Users should be able to conveniently schedule, reschedule, and cancel appointments using an online appointment scheduling system.

Task Learning: Through an intuitive interface with clear instructions, users can learn the task. Onboarding assistance and training materials are available.

Location of Task: Both staff members and patients can access the HMS website or a separate appointment scheduling portal to complete the task.

Tools: Access to a computer or mobile device with an internet connection will be available to users.

Communication: Users can communicate with one another through the system by sending reminders and appointment confirmations via website by using their email.

Frequency: Users frequently perform the task because they have to make appointments for a variety of medical services.

Time Restrictions: The task should be finished in a timely manner, with an emphasis on cutting down on waiting times and ensuring effective resource allocation.

Challenges: The complexity of managing multiple appointment slots, ensuring availability, and taking into account different scheduling preferences can make the task moderately difficult.

Task 2: Access to patient information

Users: Doctors and admin

Current task: At the moment, accessing patient data requires navigating through various systems or physical records, which can cause delays and possibly inconsistent data.

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Desired task: The creation of a centralized system that allows authorized users to securely access thorough and current patient information is one of the desired tasks.

Task Learning: To ensure appropriate access and confidentiality, users should receive training on the system's user interface and authentication processes.

Location of the Task: The task is typically carried out on hospital property, either at designated workstations or through point-of-care access through mobile devices.

Tools: To access the system, users will need computers, tablets, or smartphones with secure login credentials.

Communication: Using the system's secure messaging or electronic health record notes, healthcare professionals can exchange information about patients.

Frequency: As healthcare professionals must review patient records for diagnosis, treatment planning, and monitoring, the task is frequently carried out.

Time constraints: In order to support prompt decision-making and guarantee continuity of care, the task should enable quick access to patient information.

Challenges: Because patient information must be efficiently searched for and retrieved, data privacy must be maintained, and data from various sources must be integrated, the task can be moderately challenging.

Task 3: Patient Doctor Information Review

Users: Patients, admin

Current tasks: Currently, it can be difficult for patients to find accurate information about doctors, including their specialties, credentials, experience, and patient testimonials. They frequently rely on constrained sources, such as informal recommendations or broad directories, which might not offer enough information to allow for informed choice.

Desired tasks: Providing patients with a user-friendly and educational system that enables them to access and review comprehensive information about doctors, including their specialties, credentials, experience, patient testimonials, and overall ratings is the desired task.

Task Learning: Patients should be instructed on how to use the system's user interface, look through doctor profiles, decipher the information provided, and come to decisions based on their individual needs and preferences in terms of healthcare.

Task Location: Using computers, tablets, or smartphones with internet connectivity, the task can be completed on the hospital's website or a specific patient portal.

Tools: In order to browse and retrieve doctor information, patients will need secure login credentials to access the online platform.

Communication: The system might provide avenues for patients to offer comments, post reviews, or pose queries about particular doctors or their experiences.

Frequency: When patients are looking for a new doctor, specialist, or determining whether a particular healthcare provider is right for their needs, the task may be carried out.

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Time Restrictions: The task must provide a seamless and effective information retrieval experience, giving patients complete and trustworthy doctor information to help them make decisions.

Proposed design sketches/mockups

Design sketch 1: Book an Appointment

A user-friendly interface in the design sketch for booking an appointment makes it easier for patients to make appointments with doctors. Patients can enter their preferred doctor's name, specialty, or preferred appointment date in the design's user-friendly search bar. As users type, the interface's intelligent search feature suggests appropriate medical professionals and specialties. Patients are shown an availability calendar that highlights available time slots for the chosen doctor after entering their search criteria, making it simple to choose and modify appointments. In order to ensure a seamless flow for entering and validating patient information, the design also prompts patients to provide their personal information, including name, contact information, and the reason for the visit. after the meeting

Book an Appointment

Fill the form below

Name	Gender
Email	Phone
Date	Time
Doctor	Department
Message	
SUBMIT	

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Design sketch 2: Access to Medical Patient Data

The second design sketch shows a safe and simple interface that doctors can use to access patient data. Doctors can view a patient's medical history, test results, treatment plans, and other pertinent information using the well-designed patient dashboard, which has tabs that are simple to navigate. The layout places a strong emphasis on an easy-to-use search function for quickly locating particular patient records. Additionally, it has communication features that allow doctors and other healthcare professionals to work together and leave notes in patient records. With the help of this design, doctors will be able to quickly access and review patient data to deliver individualized and effective medical care.

Health CR

Manager

OPD

- Register patients
- patients list
- Payment

IPD

- Register patients
- patients list
- Paieiment

Medicin

List all

OP Patient view

Name : Abc

Age : 12

Address : Address

Gender : Male

Blood group : A+ (or) not

Department

Department-name

Doctor

abc

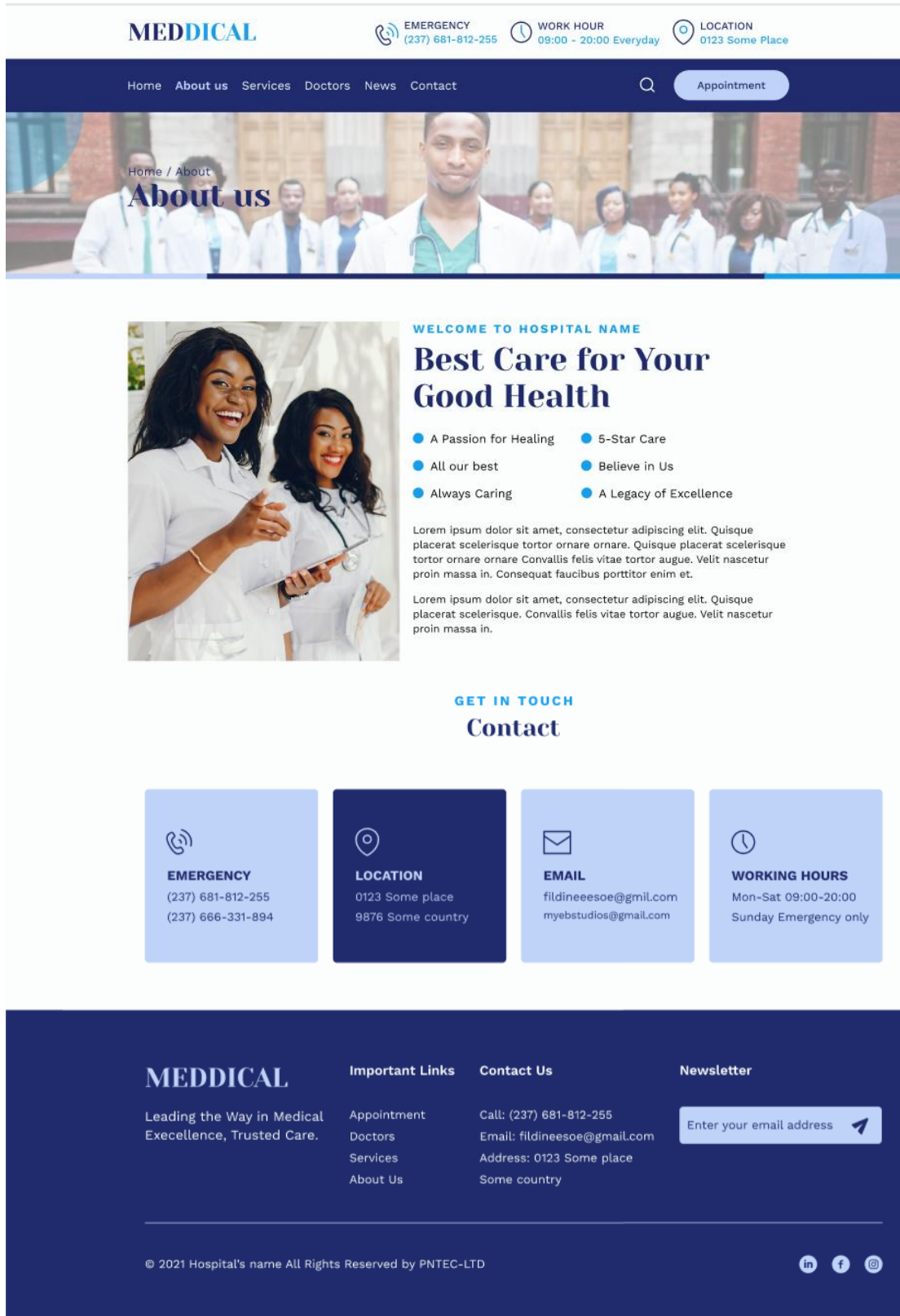
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Design sketch 3: Homepage

The homepage of the Hospital Management System (HMS) website features a clean header with a logo and navigation menu. The hero section showcases a visually appealing image representing the hospital's mission. It includes sections for services, appointment booking, testimonials, news updates, and contact information, providing users with essential information and easy access to important functionalities.

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Written scenarios

Scenario 1: Contact us feature

- The patient accesses the hospital website and finds the "Contact Us" section, which is typically located in the footer.
- A form with fields for the patient's name, email address, phone number, and a message or inquiry description is presented in the design.
- The patient ensures the accuracy of the contact information for a response by providing the necessary information.
- The patient enters their message or request in the appropriate text box, including all pertinent information to allow for an effective response to their concern.
- The patient clicks the "Submit" or "Send" button on the layout to submit their message.
- The design shows a confirmation message after submission informing the user that the message was successfully sent.

Scenario 2: Admin modifies the webpage

- Using their specific credentials, the administrator logs into the admin panel of the hospital management system.
- The admin is taken to the admin dashboard after logging in, which offers a summary of various administrative options and tasks.
- The administrator goes to the homepage customization module or the website management section.
- A section or component of the homepage that the administrator wants to change, such as a banner image, a list of featured services, or a call-to-action button, is chosen.
- The admin can update the content and change the styling thanks to the design's editing options for the chosen element.
- The administrator makes the required updates, such as text updates, new image additions, or sectional order changes.
- The admin then clicks "Save" or "Update" to apply the changes to the website homepage after reviewing the changes.
- A confirmation message indicating that the changes have been successfully saved and updated on the live website is displayed in the design.
- The administrator can visit the live website to make sure the changes are showing up correctly on the home page.

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- The administrator can repeat the procedure as necessary to make additional changes to the homepage's other sections or components.

Scenario 3: Admin adds doctors

- The administrator enters their specific login information into the hospital management system.
- The admin is then taken to the admin dashboard, where they can access a number of administrative tasks, after logging in.
- The administrator moves through the admin panel to the "Doctor Management" and clicks "Add Doctor" section.
- The layout shows a form with areas for the administrator to fill in the doctor's personal information, including name, contact information, specialty and credentials.
- The administrator completes the necessary information, making sure that it is accurate.
- To add the doctor to the system, the admin clicks the "Save" or "Add Doctor" button.
- A confirmation message that the doctor has been successfully added to the system is displayed in the design.
- The system has now made the newly added doctor's profile, contact information and their specialty.

Scenario 4: Book appointment

- The patient uses clicks "Book appointment" on the hospital website.
- The patient chooses from the available options a suitable date and time for the appointment.
- The layout asks the patient to confirm the accuracy of their chosen appointment's details, such as the time, date, and doctor's name.
- By selecting the "Book Appointment" or "Confirm" button, the patient confirms the appointment.
- A confirmation message that the appointment has been successfully scheduled is displayed by the design.

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Low fidelity prototype

Booking an Appointment:

The "Book Appointment" button on the homepage leads to a new page with a search interface.

The page shows a simple form where the user can enter their preferred criteria, such as doctor, specialty, or date.

Below the form, there are sample search results displaying doctors' names, specialties, and available time slots.

A hand-drawn low-fidelity prototype of a booking form on a piece of paper. The form is titled "Appointment Scheduling" at the top. On the left side, there are two vertical labels: "Appointment History" and "Medical History". The main form area contains the following elements: a "Book Appointment" button, a "Doctor Specialization" label, a text input field with "Select Specialization" inside, a "Doctors" label, a text input field with "Select Doctor" inside, a "Consultancy Fees" label, a shaded rectangular area representing a fee input, a "Date" label, a text input field, a "Time" label, a text input field with "1:15 PM" inside, a small example text "eg: 10.00PM" below the time field, and a "Submit" button at the bottom.

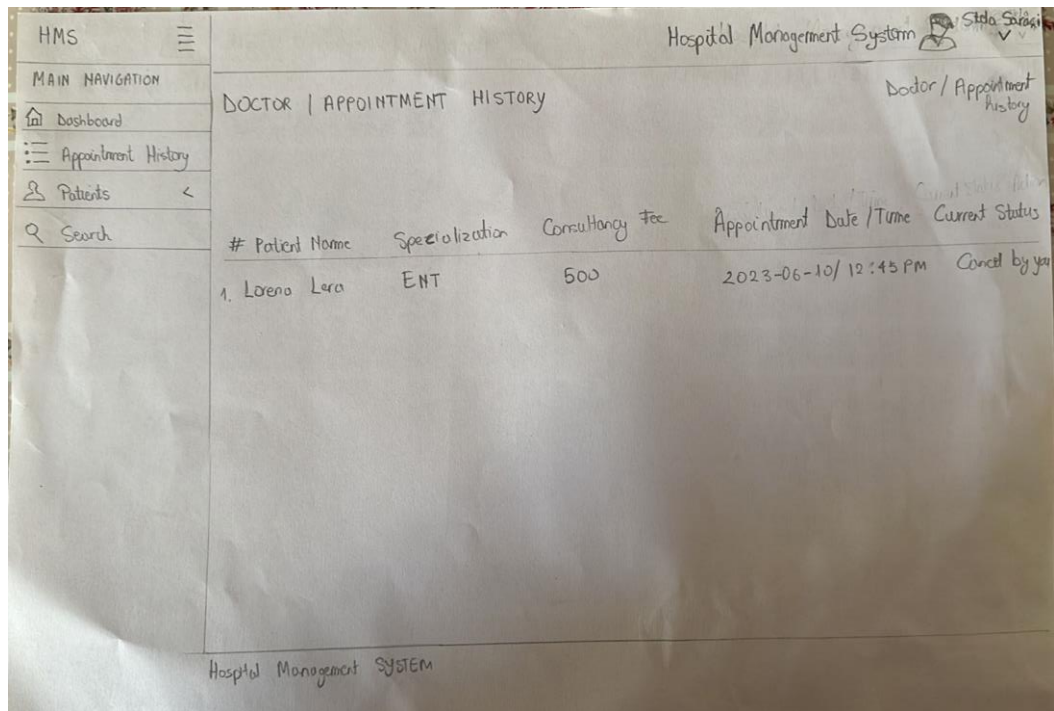
Viewing Appointment Details:

After booking an appointment, the user can navigate to the "Appointments" section.

The page displays a list of upcoming appointments with basic details such as date, time, and doctor's name.

Each appointment entry has a clickable area (represented by a box or underline) that, when clicked, reveals additional information about the appointment.

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Add Patients:

The main design of the patient management section of the HMS website is shown in the overview image of the low-fidelity paper prototype. The form to add a new patient is one of its crucial components, along with the header, navigation menu, and patient list.

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HMS

Hospital Management System

MAIN NAVIGATION

PATIENT | ADD PATIENT

Patient / Add Patient

Dashboard

Appointment History

Patients

Add Patient

Manage Patient

Search

Add Patient

Patient Name

Enter Patient Name

Patient Contact No

Enter Patient Contact No

Patient Email

Enter Patient Email id

Gender

☐ Female ☐ Male

Patient Address

Enter Patient Address

Patient Age

Add

Heuristic evaluation

Visibility of System Status: System status is visible to users thanks to the website's clear loading indicators and progress messages during data retrieval or processing. This helps users feel less uncertain about the system's operations.

Match Between System and the Real World: The HMS website uses common medical terminology and patient-centered language, which makes it simpler for users to enter accurate information and navigate the system.

User Control and Freedom: Users have the freedom to move freely between sections of the website thanks to an intuitive and reliable navigation menu. An additional navigational tool is breadcrumbs.

Consistency and Standards: To aid in user comprehension and effective usage, the website maintains a consistent design pattern with standardized layout and placement of elements like patient records, appointment scheduling, and administrative features across different pages.

Error prevention: Required form fields are clearly marked as required, and the website provides inline validation to catch any missing or incorrect input prior to submission. This ensures accurate data entry and assists users in avoiding mistakes.

Recognition Rather than Recall: Key patient data and medical records are consistently displayed, reducing the need for users to recall information and fostering a thorough understanding of patient history

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and treatment. Recognition rather than Recall.

Flexibility and Effectiveness of Use: To accommodate both inexperienced and seasoned users and to maximize their effectiveness, the HMS website provides features like customized dashboards, saved search options, and quick access to frequently performed tasks.

Aesthetic and Minimalist Design: The website embraces a visually appealing design with a clear and organized layout that concentrates on key components while maintaining a calm and professional aesthetic.

Help and Documentation: Users have access to a thorough knowledge base or help section that provides tutorials, answers frequently asked questions, and details how to get support.

Recovery of Errors: The website clearly highlights problematic fields, provides informative error messages, and offers advice on corrective actions in the event of form submission errors or system issues, ensuring a smooth and trouble-free user experience.

Design that is Mobile-Friendly: The HMS website features a responsive design that guarantees optimal usability and readability across a range of devices, including smartphones and tablets, making it easy for healthcare professionals to access and use the system.

Trust and Credibility: The website might include patient reviews, certifications, or endorsements from reputable healthcare organizations, instilling confidence in the system's dependability, security, and standard of patient care.

Usability testing

A crucial step in assessing a design's efficacy and user-friendliness is conducting usability testing using a high-fidelity mockup. The usability test is discussed here, along with the roles of the team members, the test procedure, participant information, and the learnings from the testing process.

Team Member Roles:

Test moderator: guides the usability test, gives participants instructions, and makes the session run smoothly.

Observer(s): Attends the usability test session, records any problems or observations, and takes notes.

Note taker: Takes thorough notes throughout the test, recording participant behavior, feedback, and any usability issues that are encountered.

Description and Purpose of the Test: The high-fidelity mockup's usability, efficiency, and user satisfaction will be evaluated during the usability test. Through the participation of a participant, the test is able to spot usability problems, comprehend user expectations, and collect feedback for future development.

Description of the test protocol

Introduce the participant to the goal and process of the usability test.

Pre-test inquiries: Ascertain the participant's familiarity with hospital management systems, their

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expectations, and any particular tasks or scenarios they would like to complete during the test by asking them a few background questions.

Scenario-based Tasks: Give the participant a list of pertinent and realistic tasks to finish while utilizing the high-fidelity mockup. The primary attributes and capabilities of the hospital management system application should be covered by these tasks.

Results

Task	Success Rate (%)	Time to Complete (minutes)	Issues/Feedback
Patient Records	95%	3:25	- Interface layout was intuitive and easy to navigate. Requested option to sort records by date.
Appointment Scheduling	85%	4:10	- Some confusion regarding selecting available time slots. Suggested adding a calendar view for easier date selection.
Accessing Medical Records	100%	2:45	- User praised the clear presentation of medical records. Suggested adding search functionality for faster retrieval.
User Registration	80%	5:20	- User struggled with password complexity requirements. Requested clearer instructions during the registration process.

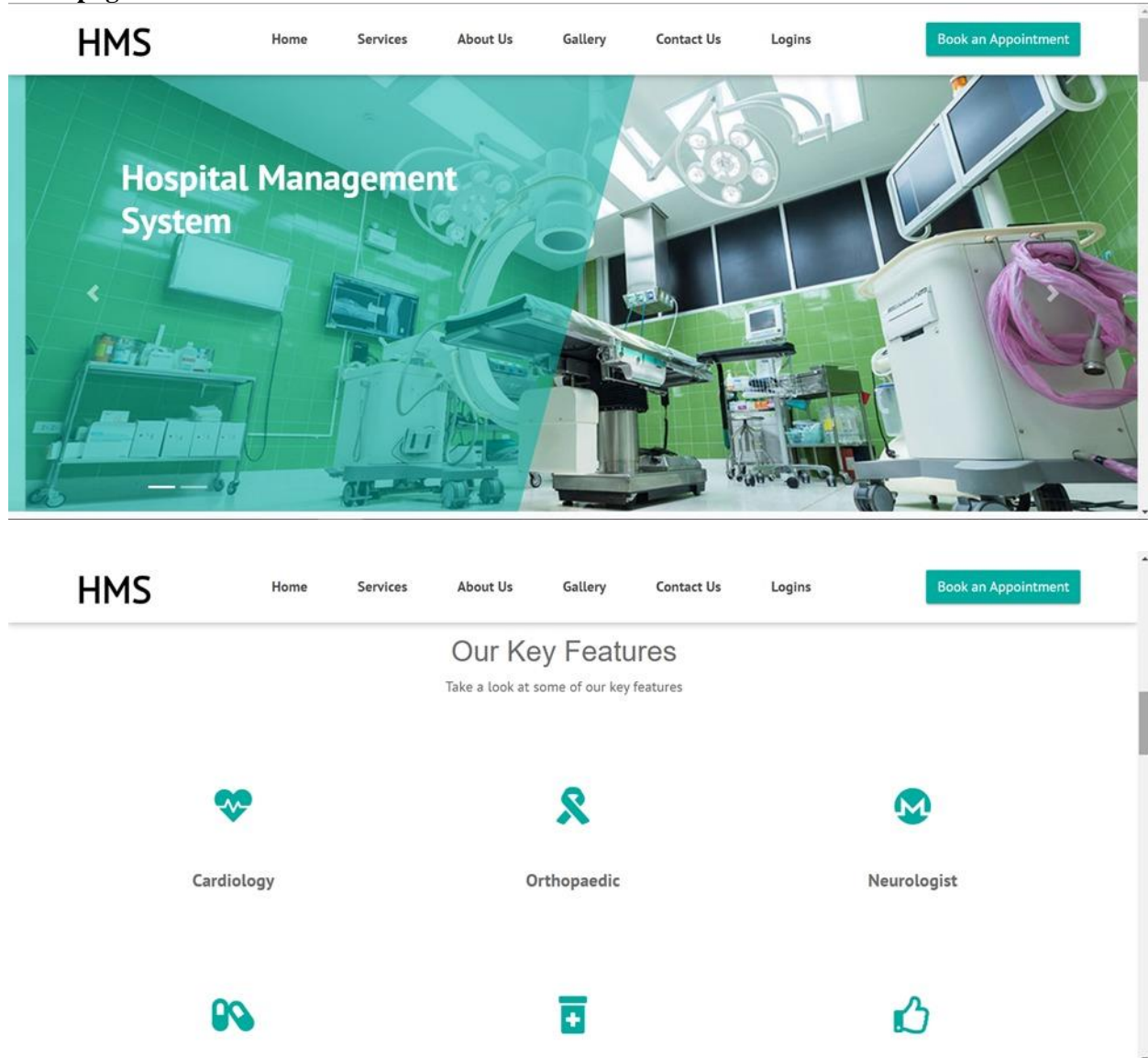
Implementation of the system and final designs

To create the website we used HTML, CSS and PHP for most of the functionalities.

Project Report

Pages

Homepage



Project Report



Pharma Pipeline



Pharma Team



High Quality treatments

Our Gallery

[View Our Gallery](#)

- [All](#)[Dental](#)[Cardiology](#)[Neurology](#)[Laboratry](#)




Project Report

Login

HMS


[Home](#)[Services](#)[About Us](#)[Gallery](#)[Contact Us](#)[Logins](#)[Book an Appointment](#)

Logins




Patient Login

[Click Here](#)



Doctors login

[Click Here](#)




Admin Login


[Click Here](#)

HMS | Patient Login

Sign in to your account

Please enter your name and password to log in.





[Forgot Password ?](#)

[Login](#)

Don't have an account yet? [Create an account](#)


HOSPITAL MANAGEMENT SYSTEM

Project Report

Contact us

HMS

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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.

HMS

[Home](#)[Services](#)[About Us](#)[Gallery](#)[Contact Us](#)[Logins](#)[Book an Appointment](#)

Contact Form

Enter Name :

Email Address :

Mobile Number:

Enter Message:

[Send Message](#)

HMS

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[Send Message](#)

Useful Links

[About us](#)[Services](#)[Logins](#)[Gallery](#)[Contact us](#)

Contact Us

Tirana, Albania

Phone: 1122334455

Email: info@gmail.com

Timing: 9 am To 8 Pm

Hospital Management System

Project Report

Admin dashboard

HMS

MAIN NAVIGATION

Dashboard

Doctors

Users

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Appointment History

Contactus Queries

Doctor Session Logs

User Session Logs

Reports

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Patient Search

Hospital Management System

Admin

Admin / Dashboard

ADMIN | DASHBOARD

Manage Users

Total Users :1

Manage Doctors

Total Doctors :1

Appointments

Total Appointments :1

Manage Patients

Total Patients :3

New Queries

Total New Queries :1

Manage patients

HMS

MAIN NAVIGATION

Dashboard

Appointment History

Patients

Search

Hospital Management System

Stela Saraci

Doctor / Manage Patients

DOCTOR | MANAGE PATIENTS

Manage Patients

#	Patient Name	Patient Contact Number	Patient Gender	Creation Date	Updation Date	Action
1.	Lola	1231231230	female	2023-06-06 12:58:18		Edit View
2.	Lola	92383883	female	2023-06-06 13:08:43		Edit View
3.	Ana	933838	female	2023-06-06 13:09:30		Edit View

Project Report

Add doctor specialization

HMS

MAIN NAVIGATION

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Doctor Specialization

Add Doctor

Manage Doctors

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Contactus Queries

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User Session Logs

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Hospital Management System

Admin

Admin / Add Doctor Specialization

ADMIN | ADD DOCTOR SPECIALIZATION

Doctor Specialization

Doctor Specialization

Enter Doctor Specialization

Submit

Manage Doctor Specialization

#	Specialization	Creation Date	Updation Date	Action
1.	Orthopedics	2023-06-06 01:28:22		✎ ✕

HMS

MAIN NAVIGATION

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Doctor Specialization

Add Doctor

Manage Doctors

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Admin / Add Doctor Specialization

ADMIN | ADD DOCTOR SPECIALIZATION

Doctor Specialization

Doctor Specialization

Enter Doctor Specialization

Submit

Manage Doctor Specialization

#	Specialization	Creation Date	Updation Date	Action
1.	Orthopedics	2023-06-06 01:28:22		✎ ✕
2.	Internal Medicine	2023-06-06 01:28:22		✎ ✕
3.	Obstetrics and Gynecology	2023-06-06 01:28:22		✎ ✕
4.	Dermatology	2023-06-06 01:28:22		✎ ✕
5.	Pediatrics	2023-06-06 01:28:22		✎ ✕
6.	Radiology	2023-06-06 01:28:22		✎ ✕
7.	General Surgery	2023-06-06 01:28:22		✎ ✕
8.	Ophthalmology	2023-06-06 01:28:22		✎ ✕
9.	Anesthesia	2023-06-06 01:28:22		✎ ✕
10.	Pathology	2023-06-06 01:28:22		✎ ✕
11.	ENT	2023-06-06 01:28:22		✎ ✕
12.	Dental Care	2023-06-06 01:28:22		✎ ✕

Add patients

Project Report

HMS

MAIN NAVIGATION

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Add Patient

Manage Patient

Search

Hospital Management System

Stela Saraci

Patient / Add Patient

PATIENT | ADD PATIENT

Add Patient

Patient Name

Enter Patient Name

Patient Contact no

Enter Patient Contact no

Patient Email

Enter Patient Email id

Gender

Female

Male

Patient Address

Enter Patient Address

Patient Age

Enter Patient Age

Medical History

Enter Patient Medical History(if any)

Add

Project Report

Appointment view

HMS

MAIN NAVIGATION

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Book Appointment

Appointment History

Medical History

Hospital Management System

Lorena Lera

USER | APPOINTMENT HISTORY

User / Appointment History

#	Doctor Name	Specialization	Consultancy Fee	Appointment Date / Time	Appointment Creation Date	Current Status	Action
1.	Stela Saraci	ENT	500	2023-06-10 / 12:45 PM	2023-06-06 00:00:00	Cancel by Doctor	Canceled

HOSPITAL MANAGEMENT SYSTEM

Medical history view

Project Report

HMS

MAIN NAVIGATION

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Book Appointment

Appointment History

Medical History

Hospital Management System

Lorena Lera

Users / View Medical History

USERS | MEDICAL HISTORY

View Medical History

#	Patient Name	Patient Contact Number	Patient Gender	Creation Date	Updation Date	Action
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View patients

HMS

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Manage Patients

Patient Details

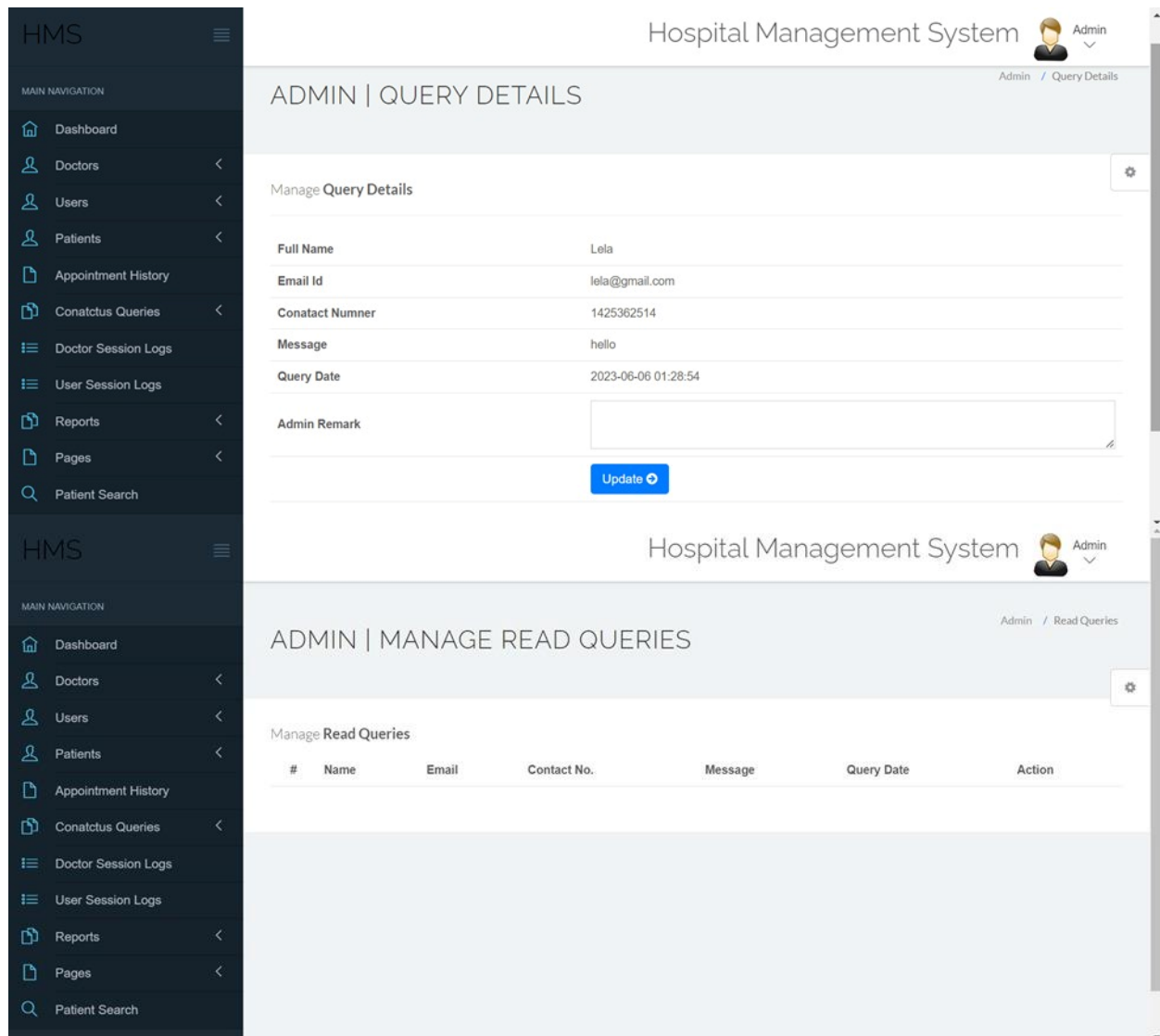
Patient Name	Lola	Patient Email	lola@gmail.com			
Patient Mobile Number	1231231230	Patient Address	Durrës			
Patient Gender	female	Patient Age	35			
Patient Medical History(if any)	NA	Patient Reg Date	2023-06-06 12:58:18			

Medical History

#	Blood Pressure	Weight	Blood Sugar	Body Temprature	Medical Prescription	Visit Date
1	80/120	85	120	98	Test	2023-06-06 00:00:00

View queries

Project Report



Admin views user and doctor session logs

Project Report

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Hospital Management System

Admin

ADMIN | DOCTOR SESSION LOGS

Admin / Doctor Session Logs

#	User id	Username	User IP	Login time	Logout Time	Status
1.		gfdgdf	::1	2023-06-06 00:00:00		Failed
2.	2	jdjkk@test.com	::1	2023-06-06 00:00:00	01:26:43	Success
3.	2	kjsk@test.com	::1	2023-06-06 00:00:00	01:26:43	Success
4.	2	jsjk@test.com	::1	2023-06-06 00:00:00	01:26:43	Success
5.	1	anujk123@test.com	::1	2023-06-06 00:00:00	01:26:43	Success
6.	2	sjsj@test.com	::1	2023-06-06 00:00:00	01:26:43	Success
7.	1	anujk123@test.com	::1	2023-06-06 00:00:00	01:26:43	Success
8.		stela@gmail.com	::1	2023-06-06 13:05:43		Failed
9.		ssaraci@gmail.com	::1	2023-06-06 13:05:50		Failed
10.		stela@gmail.com	::1	2023-06-06 13:06:11		Failed

Hospital Management SystemAdmin

ADMIN | USER SESSION LOGS

Admin / User Session Logs

#	User id	Username	User IP	Login time	Logout Time	Status
1.	1	johndoe12@test.com	::1	2023-06-06 00:00:00		Success
2.	1	johndoe12@test.com	::1	2023-06-06 00:00:00	2023-06-06	Success
3.		amitk@gmail.com	::1	2023-06-06 00:00:00	2023-06-06	Failed
4.	2	amitk@gmail.com	::1	2023-06-06 00:00:00	2023-06-06	Success
5.	1	johndoe12@test.com	::1	2023-06-06 12:58:47	06-06-2023 04:30:20 PM	Success
6.	1	lorena@gmail.com	::1	2023-06-06 13:00:29	06-06-2023 04:35:29 PM	Success
7.	1	lorena@gmail.com	::1	2023-06-06 13:14:06	06-06-2023 04:46:40 PM	Success

Admin can view reports

Project Report

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BETWEEN DATES | REPORTS

Between Dates / Reports

Between Dates Reports

From Date:

mm/dd/yyyy

To Date:

mm/dd/yyyy

Submit

Project Report

Admin can modify the webpage

The image displays two screenshots of the Hospital Management System (HMS) admin interface, showing the 'Update the About Us Content' form.

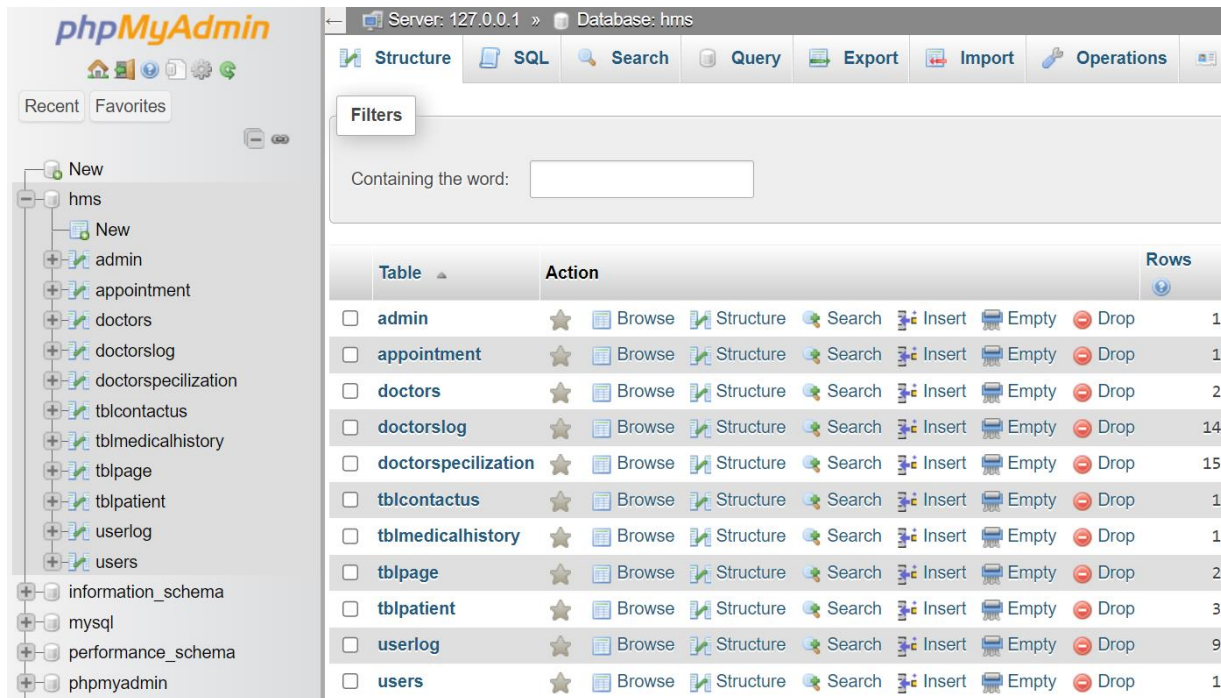
Screenshot 1 (Top): The form is titled 'ADMIN | UPDATE THE ABOUT US CONTENT'. It includes a 'Page Title' field with the value 'About Us' and a 'Page Description' field containing two paragraphs of text. The text in the description field is: 'The Hospital Management System (HMS) is designed for Any Hospital 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.'

Screenshot 2 (Bottom): The form is titled 'Hospital Management System' and 'Admin'. It includes a 'Page Title' field with the value 'Contact Details' and a 'Page Description' field containing the text 'Tirana, Albania'. Below the description field, there are fields for 'Email Address' (info@gmail.com) and 'Mobile Number' (1122334455). An 'Update' button is visible at the bottom of the form.

Database

The website's database is created using MySQL, which is made available by XAMPP on the local machine. We created a database with the name "hms" and imported the file hms.sql from the database folder in order to implement the MySQL code into the domain of the database (localhost/phpmyadmin).

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Discussion

Several important lessons were learned during the design research process for the hospital management system website, and the iterative design approach was instrumental in determining the final design. Here are some important things to think about:

Learnings from Iterative Design: The team was able to gather input, make adjustments, and improve the design at each stage thanks to the iterative design process. It gave insightful information about the requirements, preferences, and problems of the user. The team improved the user experience by incorporating necessary changes as they learned more about the user requirements with each iteration.

Shaping the final design: The iterative design process was crucial in forming the final design, which was influenced by it. The design changed as a result of user, stakeholder, and usability testing data collection to take into account their needs and preferences. User-centered design was integrated into the final design through iterative design, making the system more user-friendly and intuitive.

Evolution of Tasks: Based on user feedback and iterative improvements, the tasks that were initially identified at the start of the design process may have undergone significant changes. The team gained insights into the tasks that were significant to users and discovered any issues or opportunities related to them through user research, task analysis, and usability testing. The tasks were therefore improved and optimized to match user objectives and expectations.

Potential for Additional Iterations: Although the design has undergone numerous iterative revisions to get to where it is now, it is important to remember that design is a continuous process. Additional research and development iterations may result in more insights and advancements. Future iterations of the design can adapt and change to meet changing user needs and technological advances thanks to user feedback, ongoing usability testing, and post-launch evaluation.

In conclusion, the iterative design process enabled the team to improve the design based on user feedback,

Project Report

learn from each iteration, and create the final version of the hospital management system website. To better meet user needs and expectations, the tasks were adjusted and improved. Although the design has reached an important milestone, there is still room for additional iterations, ensuring ongoing development and adaptation to produce a user-centric and efficient system.