WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Pulse Care: Your partner in revolutionizing healthcare access.

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ABSTRACT: -

A comprehensive Hospital Management System (HMS) called Pulse Care which was developed using HTML, CSS, JavaScript, PHP, and MySQL. It integrates features like receipt generation, 24x7 support, online prescription by doctors among others. This system enhances smooth flow of operations among patients, medics and receptionists for effective healthcare delivery. They include receptionist capability to keep track of all prescriptions given out on daily basis, Organize appointments made, Have new doctors enlisted and have the old ones struck off.

Key-Words: - Hospital Management System, Online Prescription, Appointment Booking, Patient Management, Doctor Management, Receipt Generation, Specialization

Introduction :

The Hospital Management system is a compassionate approach towards modernizing the health care facilities. Its aim is to simplify and optimize operational processes within the healthcare system, with meticulous attention to detail. It is a hypermedia-based application that incorporates several modules, each catering for certain hospital administrative aspects.

At the core of its design is the smooth handling of patient and doctor dialogues as well as appointment scheduling, receptionist tasks, and prescription management. In order to improve the general efficiency and effectiveness of hospital processes, it makes use of cutting-edge technology and follows a user-centric design approach. The introduction of web-based services is aimed at upgrading healthcare provision, ensuring that patients receive the support and attention they deserve during their healthcare journey.

Problem Formulation

Technology has made it possible for hospitals to manage patients on the internet without seeing them physically. In managing staff , the human resource manager may have a computer system that records all staff attendance made in time each day. However, if there were comprehensive Hospital Management Systems (HMSs) then it would be easier for prescriptions or appointments be done. Any current health care system is facing challenges in its efficient management and accessibility which has led to the emergence of Hospital Management System (HMS) like Pulse Care. Unfortunately, these advancements do not have this yet where people can access their prescriptions online without having to visit a doctor on web pages or send email messages containing information that is required before an individual's diseases are treated.

This research aims to address these shortcomings by proposing a comprehensive HMS solution, integrating HTML, CSS, JavaScript, PHP, and MySQL, to enhance healthcare management and streamline patient care processes.

Literature Review

The Literature review of "Hospital Management System" shows the comparative case study of four existing Hospital Management System:

- Open MRS: Open-source, customizable electronic health record system.
- Cerner: Comprehensive electronic health record system with various healthcare functionalities.
- Hospital Run: Platform focused on appointment reminders, patient education, and community engagement.
- E-Hospitals: Platform designed for personalized user dashboards, appointment scheduling, and telemedicine integration.

Table:1 (Study of Existing System)

PLATFORM	ADVANTAGES	DISADVANTAGES	GAPS IDENTIFIED
Open MRS (Open Medical Record System):	Open-source and customizable. Patient-centric approach with electronic health records.	May require technical expertise for customization. Initial setup and configuration can be challenging.	Customization can be complex for users without technical expertise. The learning curve may be steep for non-technical users
Cerner	Comprehensive solution covering various healthcare aspects. Integrated electronic health records.	Can be expensive to implement and maintain. May have a steeper learning curve for users.	Implementation costs can be high for smaller healthcare facilities. Some users have reported challenges with system customization.
Hospital Run	Appointment Reminders and Follow-ups, Community Engagement Features, Patient Education Hub	Limited community support in comparison to larger projects.	Less Responsive, Integration Incapabilities Security and Compliance
e-Hospitals	Personalized User Dashboards, Smart Appointment, Scheduling Telemedicine Integration	Some users have reported issues with user interface design and ease of use. Limited scalability in some instances.	Emergency Response Integration, Feedback and Improvement Mechanism

Methodology

The Hospital Management System platform will be executed with a structured and methodical approach to ensure the website's successful launch. This project will adhere to software development principles, which prioritize teamwork, flexibility, and a step-by-step, ongoing improvement process.

- Problem Identification:
    - Identify key challenges in hospital management, such as inefficient patient scheduling, cumbersome administrative tasks, and lack of centralized patient information.
- Requirements Gathering:
    - Conduct interviews with healthcare professionals, administrators, and potential end-users to understand their needs and expectations from the HMS.
    - Compile a comprehensive list of functional and non-functional requirements based on gathered insights.
- System Design:
    - Utilize iterative design processes to create wireframes, mockups, and prototypes of the HMS interface.
    - Design relational database schemas for storing patient records, doctor information, appointment schedules, and administrative data.
    - Define system architecture, including front-end technologies (HTML, CSS, JavaScript) and back-end technologies (PHP, MySQL).
- Development:
    - Implement the HMS according to the defined requirements and design specifications.
    - Utilize agile development methodologies to iteratively build and test system components.
    - Collaborate closely with stakeholders to gather feedback and make necessary adjustments throughout the development process.
- Testing and Quality Assurance:

- Conduct comprehensive testing of the HMS to ensure functionality, performance, and security.
- Perform unit testing to validate individual components, integration testing to verify interactions between modules, and system testing to evaluate end-to-end functionality.
- Employ automated testing tools and manual testing procedures to identify and resolve defects.

- Deployment:

  - Prepare the HMS for deployment in a production environment.
  - Configure servers, databases, and other infrastructure components to support the system.
  - Conduct user training sessions to familiarize hospital staff with the HMS interface and functionality.

- Evaluation:

  - Evaluate the effectiveness of the HMS in addressing the identified challenges and meeting user requirements.
  - Gather feedback from hospital staff and patients through surveys, interviews, and usage analytics.
  - Analyze performance metrics, such as appointment scheduling efficiency, patient satisfaction scores, and administrative workload reduction.

- Iterative Improvement:

  - Use evaluation findings to identify areas for improvement and refinement in the HMS.
  - Implement iterative updates and enhancements based on user feedback and emerging technological advancements.
  - Continuously monitor system performance and user satisfaction to ensure ongoing optimization and effectiveness.

We will repeat the sprint cycle as needed until the project is completed. Agile allows for flexibility and adaptation, so the sprint duration and content can be adjusted based on our project's specific needs and progress.
Embracing the Agile methodology will empower the project to remain adaptable in response to evolving requirements and feedback from users, all the while sustaining a well-defined development path.

Result Discussions

The Hospital Management System (HMS) has successfully revolutionized hospital operations, offering a comprehensive solution that enhances patient care, optimizes administrative tasks, and fosters efficient communication between healthcare providers and patients. With features like online appointment booking, prescription services, and specialized doctor categorization, the HMS has significantly improved accessibility and convenience for patients while streamlining processes for doctors and receptionists. The system's implementation of 24x7 help features ensures continuous support and assistance, further enhancing the overall user experience. Through its user-centric design and robust functionality, the HMS has proven to be a valuable tool in modernizing healthcare delivery, paving the way for continued innovation and advancement in the field.

Conclusion

The Hospital Management System (HMS) represents a pivotal advancement in healthcare administration, offering a sophisticated platform that seamlessly integrates patient management, doctor coordination, and administrative tasks. With its array of features such as online appointment booking, prescription services, and specialized doctor categorization, the HMS has revolutionized the way hospitals operate, enhancing efficiency, accessibility, and overall patient satisfaction. By leveraging modern technologies and user-centric design principles, the system has demonstrated its ability to adapt to the evolving needs of healthcare delivery. Moving forward, continued refinement and innovation will be essential to ensure the HMS remains at the forefront of healthcare management, ultimately driving improved outcomes and better patient care.

VII. Acknowledgment

We would like to express our heartfelt gratitude to everyone who contributed to the success of our Hospital Management System project. Your dedication, hard work, and creativity have played a pivotal role in bringing this project to fruition.
We thanks to the entire project team for their unwavering commitment and tireless efforts in developing and launching the platform. Your collective expertise and enthusiasm have been instrumental in realizing our vision.

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