Project Team #: 20CSM_B16

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Project Name:

Develop Application to regulate health care sector from exploiting people during medical emergencies and pandemic situations

Abstract:

In the face of critical medical emergencies and widespread pandemics, the private healthcare sector has at times been associated with exploitative practices, taking advantage of vulnerable individuals seeking urgent medical care. This project presents a comprehensive solution/application designed to establish robust regulation and oversight mechanisms to curb such exploitation. By leveraging advanced technology, the solution addresses key challenges including exorbitant pricing, resource mismanagement, and lack of transparency. The proposed application introduces real-time price monitoring, ensuring transparent and competitive pricing for medical services and supplies. It incorporates an emergency resource allocation algorithm that fairly distributes essential medical resources based on objective criteria, preventing hoarding and ensuring equitable access.

The distinction between our proposed healthcare regulation solution and the existing system lies in its comprehensive approach to curbing exploitation and enhancing healthcare access. Unlike the current setup, which lacks standardized pricing, quality benchmarks, and transparent information, our system establishes a robust regulatory framework that mandates fair pricing, treatment guidelines, and quality standards for private healthcare providers, particularly in emergencies and pandemics. The integration of a user-friendly digital platform further empowers patients by providing real-time information on treatment options, costs, and ratings of healthcare facilities, enabling them to make informed decisions. Additionally, our system integrates telemedicine, emergency response, medical records, mental health support, and collaboration between different sectors, creating a holistic and inclusive approach to healthcare that addresses both physical and mental well-being.

Title	MediEthiCare
Clients	Defence Research and Development Organisation (DRDO), Ministry of Defence
Objective/Vision	During Covid–19 crisis, many hospitals had charged huge and unimaginable amounts from patients and made enormous profits taking advantage of panic conditions. Notwithstanding of spending huge amounts many families lost their members and in some instances hospitals even demanded clearance of pending bills for handing over bodies to their families. There was no proper information about availability of beds and details of treatment provided etc. In order to curb this exploitation by private hospitals, there is a requirement of application which can regulate the hospitals and provide accurate details of rates and medical facilities available in the private hospitals across the country to guide the citizens to get affordable medical emergency services as per their choice and availability.
Users	1,Patients and Users 2,Private Healthcare Providers 3, Healthcare Educators and Trainers 4,Technology and System Administrators
Functional Requirements	**1, Registration and Login :** 1,Doctors login as the healthcare providers, Users registration as patients, and regulatory authorities. Verification process to ensure the authenticity of healthcare providers and facilities. 2,Users, Doctors should be able to log in with their credentials. **2,Appointment Booking** : The Application must allow users to schedule appointments with healthcare professionals, providing real-time availability updates and reminders. **3, Emergency Coordination :** A dedicated emergency option for immediate assistance. Quick access to emergency services and Integration with emergency contacts and alerts.

	4,Medicine Procurement: 1, The medicine procurement platform facilitates a seamless online ordering process for users. 2,Integration with pharmacies ensuring real-time updates on medicine availability, prices, and discounts**.** **5, Medical Records:** 1,Secure storage and retrieval of users' medical records securely with out any loss of data. 2, Integration with healthcare providers allows for continuous updates to medical records, ensuring that healthcare professionals have access to the most recent and relevant information **6, Booking Services:** Users should be able to book various healthcare services offered by hospitals, including the beds availability, laboratory services, diagnostic tests **7, Complaint on Hospital Against Price Transparency:** 1,User-friendly complaint submission process, specifically addressing concerns related to price transparency. 2,Clear and concise forms guide users through the complaint submission process, allowing them to provide details and supporting evidence. **8,User Support and Helpdesk :** 1. User support features a responsive helpdesk, offering assistance for various queries and issues 2, The knowledge base and FAQs serve as self-help resources, options provide real-time, personalized support.
Non-Functional Requirements	**1,Security and Privacy** 1,Ensure data encryption and secure transmission of sensitive information. Implement strict access controls and blockchain framework to prevent unauthorized access to patient and healthcare data. 2,Compliance with relevant data protection laws and regulations (e.g., GDPR, HIPAA).

	2,Reliability and Availability: 1,High availability architecture to ensure the application is accessible during emergencies and peak usage periods. 2,Implement data backup and disaster recovery mechanisms to prevent data loss**.** **3,Performance and Scalability:** 1,Ensure the application can handle a surge in user activity during emergencies without degradation in performance. 2,Scalability to accommodate a growing user base and increasing data volume. **4, User Experience:** 1,Intuitive and user-friendly interface to cater to users of varying technical expertise. 2,Responsive design for access from various devices and screen sizes**.** **5,Interoperability and Integration:** 1,Ability to integrate with existing healthcare systems, government databases, and regulatory authorities. 2,Support for standard data exchange formats and APIs. **6,Regulatory Requirements:** 1,Adherence to healthcare industry standards, guidelines, and regulatory requirements specific to India. 2,Alignment with relevant healthcare regulations, such as telemedicine guidelines and pricing regulations. **7,Response Time and Latency:** 1,Define acceptable response times for critical actions, such as resource allocation and telemedicine consultations. 2,Minimize latency to ensure timely communication and decision-making. **8,Scalable Infrastructure:** Ensure the application's infrastructure can scale horizontally to accommodate increased demand and user traffic.

Software and Hardware Requirements	**Software Requirements:** **1, IDE (Integrated Development Environment):** PyCharm, Visual Studio **2, Front-End Development:** HTML5, CSS3, JavaScript, ReactJS, **3, Back-End Development:** Python, Django **4, Database Management:** MYSQL ,MongoDB **5, Blockchain Framework :** Ethereum **Hardware Requirements:** **1,Development Machine: -Processor:** A modern multicore processor (e.g., Intel Core i5 or AMD Ryzen 5) with a clock speed of at least 2.5 GHz or higher. **2,RAM:** 8GB to 32GB of RAM. **3,Storage:** An SSD (Solid State Drive) with at least 500GB of storage space. **4,Graphic Card:** A dedicated graphics card (e.g., NVIDIA GeForce GTX or RTX series) with at least 4GB of VRAM. **5,Operating System:** Windows 10, macOS, or a popular Linux distribution (e.g., Ubuntu, CentOS).