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Vaccicare+

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Abstract :

Vaccination plays a vital role in protecting children from dangerous diseases. In India, many children still miss their vaccines because of a lack of awareness and poor record management.

To solve this problem, our project VacciCare+ has been designed as an online system that helps parents, hospitals, and administrators manage vaccination records digitally. Parents can register, add their child's details, book appointments, and receive automatic reminders for upcoming vaccines.

Hospitals can manage appointments and verify vaccination records using QR codes. The system is developed using Python (Flask) for backend logic and MySQL for data storage, while the frontend uses HTML, CSS (Bootstrap), and JavaScript. The main aim is to make vaccination management simple, reliable, and accessible for everyone.

Keywords :

E-Vaccination System, Healthcare Automation, Flask Framework, QR Code Verification, Digital Immunization Record, Smart Reminder System, Web- based Healthcare Platform

INTRODUCTION :

Vaccines have been one of the greatest achievements in healthcare, saving millions of lives every year. Still, in many areas, vaccination tracking is done manually, which often leads to confusion and missed doses. Paper- based records are difficult to maintain and can be lost or damaged over time.

To overcome these issues, VacciCare+ provides a digital platform for vaccination tracking and reminders. The system allows parents to manage their child's vaccination data from registration

to reminder alerts. Hospitals can update vaccination details, and the admin can monitor the overall system. The project uses a web-based interface that is simple, user-friendly, and accessible through any device with an internet connection.

PROBLEM STATEMENT :

In developing countries, maintaining vaccination records is still a manual process. This often leads to errors, missing entries, and late vaccinations. Parents may forget the correct schedule or fail to visit healthcare centers on time.

The lack of a centralized record system is a major challenge in ensuring complete immunization coverage. Our proposed VacciCare+ system solves this problem by keeping all vaccination information online, sending automatic reminders, and giving hospitals and admins access to organized records.

OBJECTIVES :

To develop a centralized digital platform for recording, managing, and monitoring child vaccination data.

To automatically generate personalized vaccination schedules based on the child's date of birth and vaccine type.

To notify parents about upcoming or missed vaccination doses through reminder alerts.

To enable hospitals to view, update, and verify vaccination appointments and records in real time.

To maintain secure, reliable, and easily retrievable vaccination data for healthcare professionals and parents.

LITERATURE REVIEW :

Several research studies and existing systems have explored ways to digitalize vaccination management, but most of them were limited in functionality and user interaction. In many cases, systems depended on local databases or manual record entry, which restricted accessibility and efficiency.

One such system, E-Vaccims (IJSTR, 2020), introduced a web-based platform for vaccine tracking and inventory management. While it contributed to improving data storage, it lacked features like real-time reminders, parent notifications, and verification mechanisms that are essential for ensuring timely immunization.

In comparison, the proposed VacciCare+ system enhances the traditional approach by integrating advanced features such as real-time appointment scheduling, automated vaccination reminders, and QR code–based record verification. This not only improves communication among parents, hospitals, and administrators but also ensures better transparency, accuracy, and timely delivery of healthcare services.

Methodology :

1. Frontend Development :

The user interface of VacciCare+ is designed using HTML5, CSS (Bootstrap), and JavaScript.

These technologies ensure that the system is visually appealing, responsive across devices, and simple to navigate for all users — whether parents, hospitals, or administrators. Bootstrap's grid system and reusable components enhance the layout consistency and reduce design complexity.

2. Backend Development :

The backend of the system is built using the Python Flask framework, which serves as the core engine for handling the system's operations. Flask manages routing, session handling, and logical communication between the user interface and the database. It provides a lightweight yet powerful environment that supports scalability and fast deployment. The backend also ensures proper data validation and smooth coordination between modules.

3. Database Design :

The system uses MySQL as its database to securely store user information, child details, vaccination records, appointment schedules, and feedback. The relational structure of MySQL allows efficient querying and management of large volumes of vaccination data. Data integrity and confidentiality are maintained through structured database schemas and access control mechanisms.

4. Major Modules of the System :

Admin Module: Manages system users, verifies data, tracks appointments, and generates vaccination reports.

Hospital Module: Enables hospital staff to register, update vaccination records, and verify appointments.

Parent Module: Allows parents to create accounts, manage profiles, add child details, and book vaccination appointments.

Reminder Module: Sends automated alerts and notifications for upcoming or missed vaccinations.

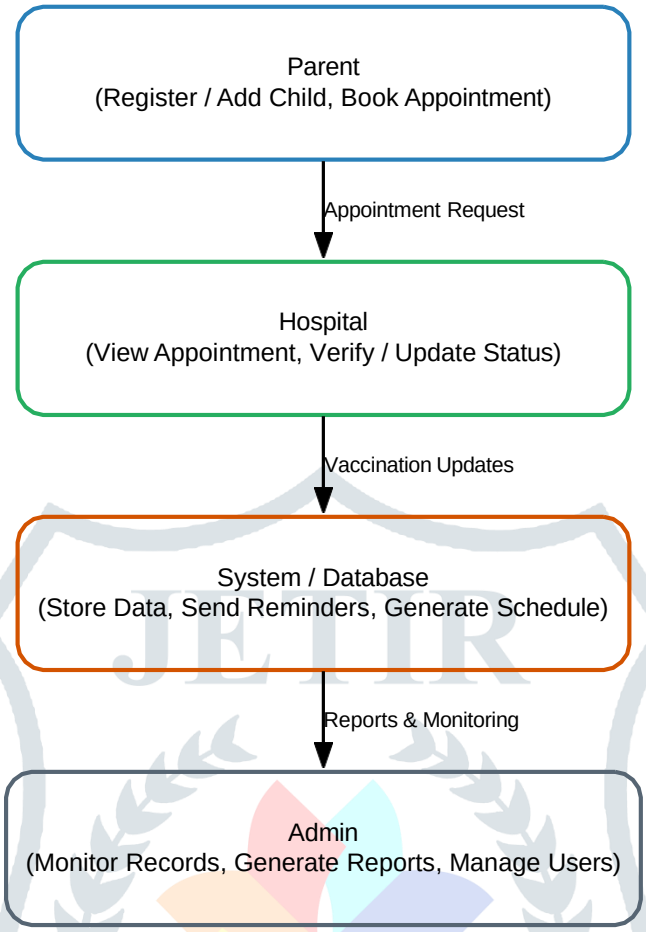
QR Code Module: Generates and verifies QR codes for quick access to a child's vaccination record.

Feedback Module: Collects feedback and suggestions from users to enhance the overall system performance.

5. Workflow :

The workflow of VacciCare+ is designed for simplicity and automation. Parents register on the platform and enter their child's vaccination details. Based on the child's age and vaccine type, the system automatically generates an appointment schedule. Hospitals review appointment requests, confirm bookings, and update vaccination status after administration. The system sends reminder notifications to parents for upcoming or overdue doses. Admin monitors all records, generates reports, and ensures proper data management.

Workflow of VacciCare+



CONCLUSION :

The VacciCare+ system offers a comprehensive and intelligent approach to managing child vaccination records in a digital environment. By automating manual processes, it ensures accuracy, reliability, and accessibility of vaccination data for both parents and healthcare providers. The platform significantly reduces the chances of missed or delayed immunizations through timely reminders and easy appointment management.

Moreover, the integration of modules such as QR-based verification and automated scheduling makes the system user-friendly and efficient. Through its web-based architecture, VacciCare+ contributes to improving healthcare delivery and promoting awareness about timely immunization. In the future, the system can be scaled and integrated with government health databases and mobile applications to support nationwide vaccination tracking and better public health outcomes.

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