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Secured Quick Vaccine Manager: Smart Scheduler, Tracker and Reminder using Cloud Technology

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Abstract: Vaccines are used to prevent the country from different infectious diseases. Such diseases include covid-19, polio, whooping cough, diphtheria, measles, rubella, etc. Everyone is constantly concerned about the health and safety of their family. Therefore, they take many steps in order to prevent their family from catching a disease. Secured Quick Vaccine Manager project is mainly done to provide a proper reminder for the user to remember their vaccines and give the appropriate vaccines to their family members on time.

In addition, this system also helps to track an updated record of the vaccines which are given to the family members of the users in a schedule form. Furthermore, the benefits of creating Secured Quick Vaccine Manager will remind the user of the vaccination schedule and according to the schedule the user will be reminded via SMS or email. Secured Quick Vaccine Manager project also provides the contact information and the specialization of the Pediatrics who are working in the nearest hospital. So this information would be useful for the user so that they can place their appointments with the doctors without going to the hospital.

Keywords: Vaccination, Vaccine, Short Message Service, Mobile Application, Cloud Technology

I. INTRODUCTION

Prevention of disease is the key to public health. It is a general saying that "prevention is always better than cures". Vaccines protect people from catching specific diseases. Vaccines are used to prevent the country from different infectious diseases. Such diseases include covid-19, polio, whooping cough, diphtheria, measles, rubella, etc. Everyone is constantly concerned about the health and safety of their family.

Therefore, they take many steps in order to prevent their family from catching a disease. One of the options is vaccination. Vaccination is done to prevent various diseases. Vaccination has its particular time period and it is required from infants to adults. In today's stressful life, it is the responsibility of everyone to vaccinate their family members on time. Sometimes due to the busy schedules, we tend to forget about vaccinations. It would be easier if we are having a vaccination manager which can be carried along with us wherever we go. Since internet is playing a big role in our life, it would be easier for everyone to have an online vaccination manager. This project uses Cloud Technology which helps to prevent loss of data from the database. This project also provides security mechanism over cloud database by using appropriate encryption and decryption algorithms. By having Secured Quick Vaccine Manager it will surely be a benefit for the user and it will also be very helpful for the one who are leading a busy lifestyle.

II. OBJECTIVE

- 1) To make the user friendly and easy to access vaccination management system.
- 2) To implement more useful and flexible vaccination system using cloud database which is dynamic in nature.
- 3) To implement a system which can schedule, track and remind respective vaccinations which is accessible through anywhere and at any time.
- 4) To provide the availability of the pediatrician who's working in nearest hospital.
- 5) To implement a flexible system which easy to build and update.
- 6) To provide security to data which is stored at cloud using appropriate encryption algorithms.

III. PROPOSED SYSTEM

The proposed system provide proper schedule of vaccine time interval for the patients. Patients can search nearby hospital and make a schedule. Frontend-side consists of the GSM mobile phone used by patient, the client device also can be smart device or computer. Backend side its location is in the healthcare centre. The backend consists of two servers: a. The first server is vaccination server that schedule vaccine and remind the clients to make an appointment with the doctor for the next vaccination. b. The second one is the SMS gateway server that lets the proposed system to transmit or receive SMS to or from a telecommunications network.

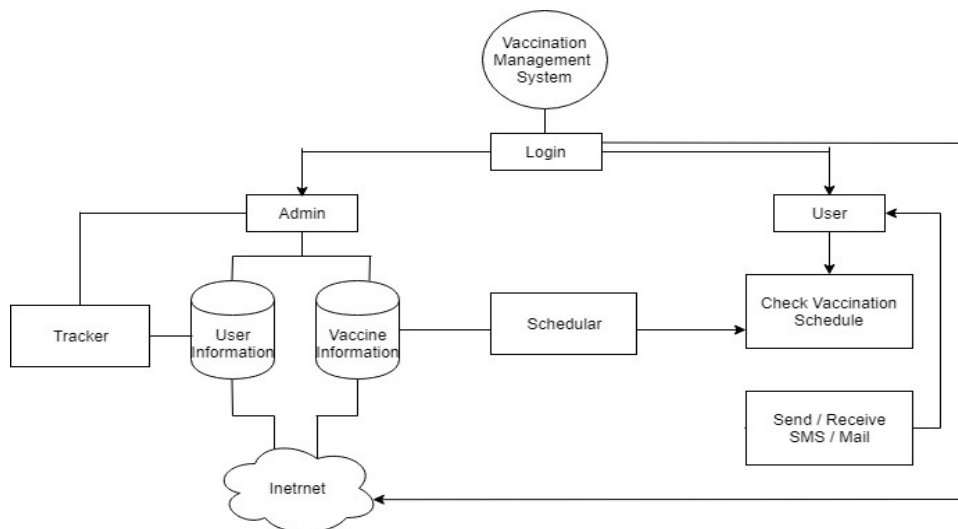


Fig 1: System diagram

A. Scheduler

A vaccination schedule is a sequence of vaccines, along with the timing of all doses of vaccines, which may be either recommended or compulsory, depending on the country of residence. A vaccine is an antigenic preparation used to produce active immunity to a disease, in order to reduce the effects of infection by any natural or "wild" pathogen.

B. Remainder

Vaccines are given on a recommended schedule because the evidence shows that the proper doses at the proper times generate the optimal immune response. If you miss one visit or get off the schedule, you may not be fully safe from certain diseases. Fortunately, modern life has also brought with it modern technology. Here are a few methods that you can use to keep track of your family's vaccination records with reminders on when the next scheduled vaccine is recommended to be given.

The aim of this module is reminding you about events. All of us have calendars that can look very far into the future, so it's not a bad suggestion to just make an appointment or reminder in your phone's calendar for that date in the future when you or your child need the next vaccine, even if it is years in the future. This module will keep track of your immunization records and remind you when the time comes for the next doctor's visit.

Reminder systems can work through a various mechanisms meant to prompt the patient, including phone calls (by computer, through patient portals, or through centralized programs), letters, postcards, and e-mail. Short message service (SMS) is an important and beneficial service included in mobile phones. It provides in all types of mobile phones as it is easy to use and can operate with minimal cost . SMS permits users to communicate non-verbally, SMS has entered global links because SMS is an affordable, fast and efficient means of connection between people of any distance. Hence, using a reminder system through mobile messaging service may benefit the community.

The remainder has two options Automatic, Manually.

- 1) *Automatic Option:* If the admin chooses Automatic option, the Automatic Scheduler will run and it starts to update the age of patient in the database then send SMS and an email message depending on their age.
- 2) *Manually Option:* If the admin choose Manually option, the Manual Scheduler will run and the admin can manually send SMS or an email message to the patient.

C. Tracker

Vaccine tracker especially suitable to remind patient about tracking the vaccine dosage. They need to create the patient or child's profile, add the medication with dosage, and set the reminder. It inform about an upcoming appointment. Vaccine tracker saves time, effort, and a number of visits to the medical specialists. It require Patient's history and Dosage of medication for keeping track of vaccinations.

Features of Vaccine Tracker:

- 1) To track a patient's vaccination.
- 2) To track vaccination chart and schedule.
- 3) To get email or SMS reminders before the shot is due.

The use of this module is ,when the admin selects patient Information option from the main interface then it will be show the Information of selected patient. When the admin selects the vaccination option from the main interface it show all the vaccination details. The admin can add and update vaccine types.

D. Cloud Database

Cloud technology provides access to storage, various resources and servers through internet connected devices.

There are three main service models of cloud computing- IAAS, PAAS, and SAAS. IAAS (Infrastructure as a Service) uses virtualization technology to integrate IT infrastructure resources. PAAS (Platform as a Service), cloud computing provides the development environment as a service. SAAS (Software as a Service) provides more and more SAAS applications for customers, especially group customers, by providing cloud computing services to customers. Basic concept behind this technology is sharing of resources.

Cloud Technology gives different service models (IaaS, PaaS, and SaaS) including DBaaS. Cloud Database system is more flexible and efficient than the existing traditional database system. Cloud database service model allow users to run a database on a virtual machines or they can purchase access to the database service maintained by a database provider. Cloud database provides various advantages to the cloud users. Cloud database can be sent at various deployment models, i.e. at public, private, hybrid, virtual and community cloud. Using cloud database architecture user can dynamically scale their DB requirements. Database Administrator plays an important role in the cloud database management.

E. SMS Gateways

An SMS gateway allows a computer to send or receive transmissions from or to a telecommunications network via Short Message Service (SMS). Most messages are redirected through phone networks. Gateways also support media conversion from email and other formats.

F. Data Security

Encryption method provides higher level of security to data through strong encryption and decryption technique used employed for encrypting the data files, log files and backup files without dissolving transparency property for its user.

IV. CONCLUSIONS

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