

HEALTHCARE MONITORING APPLICATION FOR DIABETES PATIENTS

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ABSTRACT

In recent years, in e-health development the most needy requirements is sharing the health care information anytime. And anywhere. To achieve this concept, different solutions are proposed through different technologies. In this paper, we proposed a solution for sharing healthcare information using cloud computing based on Google App Engine (GAE). From the experimental test results, we come to know that interoperability among various healthcare centers and also between the healthcare providers and receivers with high stability and availability is achieved. In this implementation we proposed the idea of using the Google fusion tables as a cloud storage tool and with the help of that fusion table we can make the medical records of the patients available at any time and we can access the data easily from anywhere. Here both the patients and the doctors can access the data using the appropriate applications and with a simple sign in procedure to enter the data in the fusion table by the doctors. The patients can use the PAT app and the doctors can use the DOC application. The patient can't edit their data but they can have the access to view their data from anywhere and at any time, whereas the doctors can update, edit and view their patients details through their login credentials. Thus this proposed system facilitates anytime and everywhere access to doctors and their patients to have a better and updated health details.

I.INTRODUCTION

Despite advances in Information Technology, the health care industry still lacks innovation in maintaining the medical records of the patients and making it accessible during emergencies. Most of the hospitals and health officials still using paper as source to store the medical records, therefore it is highly improbable for both patients and doctors to

review a patient's complete medical history. Diabetes is a disease that requires periodic medical attention; it involves monitoring several parameters which helps doctors to provide efficient medication. In this busy world our present system requires patients to sit for long hours to collect their test results which make it inconvenient. Thus it is necessary to devise a feasible solution by providing anywhere and anytime accessibility of medical records to solve this problem.

Therefore designing mobile applications to access medical records can be a solution for this issue. This project deals with Android platform and some cloud computing tools and comes out with a mobile application for both patients and doctors. Ease of accessing medical records, availability of past and present data during emergencies and anywhere accessibility are the core factors upon which this application is built. Healthcare monitoring application deals with diabetes patients' exclusive medical records and stores those using Google fusion

II. LITERATURE SURVEY

Existing System

In the existing system there is an absence of quick retrieval of patient's medical history during emergencies [1]. Systems collect data in the form of **Electronic Medical Records (EMR)** without use of smartphones. There is also absence of facilities for health officials to store medical data through smartphones [2]. There is an absence of usage of cloud computing and android tools for processing medical records of the patients [6] and also absence of exclusive eHealth app for diabetes during emergencies [5].

Proposed System

It facilitates both accumulation, retrieval of patient's medical records through android application that helps in decision making during emergencies. It avoids unnecessary document handling of the patients' previous medical records. Provides important information that helps in educating patients. This application eliminates the use of hard copy of medical records. In case of any unexpected situation like fire accident or any other damage then we can easily retrieve the data using the patient's

tables. This android application requires data entry by the health professionals through Smartphone after every periodic health assessment of the patients. The main aim of this application is to aid easy access of the medical records which contain parameters like blood glucose, thyroxine Cholesterol and Glycated Hemoglobin levels. The main idea is to educate both patients and medical professionals about the past and present data for effective treatment during emergencies.

login credentials at anytime from anywhere with internet facility.

III.SYSTEM ARCHITECTURE

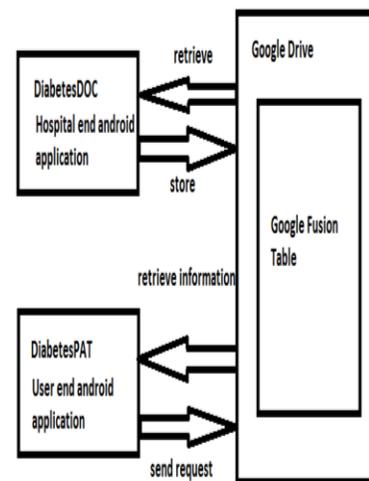


Fig :1 Health Care Monitoring system

System Architecture

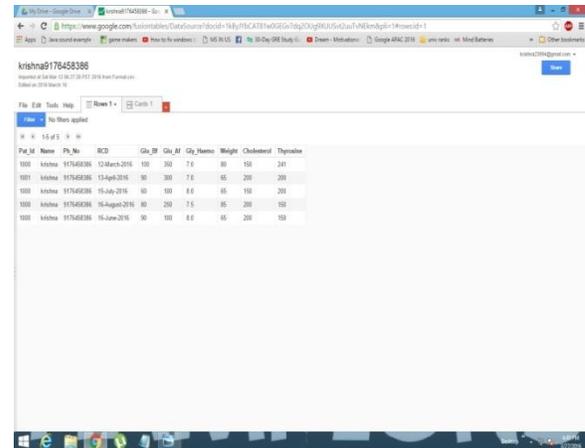
This architecture (fig:1) consists of a Diabetes DOC hospital end android application through which the hospitals staff updates the patient's medical records periodically and also updates if needed. With this application the hospital management and the doctors can view their patient's details at any time and from

anywhere. The staffs enter the patients' details through the fusion tables for patients to store their medical history. It also consists of a patient PAT application which facilitates the patients to view their medical reports from anywhere and from any place through the cloud based storage. They are also provided with a sign in id and password to login every time which ensures privacy. The doctors also have separate logon id's and passwords. The fusion table provides any time anywhere access to both doctors and patients which reduces the storage space and time and thereby facilitating ease of data access.

IV. MODULE DESCRIPTION AND IMPLEMENTATION

Google fusion table

This involves creation of individual fusion table for patients to store their medical history. Here the fusion table creation involves first signup with google drive and then enter the table name and then enter the relevant field details for storing the data from the application. Once we have created the fusion table, google service account will provide permission to the admin for generating the unique identification. After generating the unique identification, the control passes to the appspot.com which is a customized web database where a unique link <http://health1248.appspot.com> for the admin is created. When we click the above link tiny web database service will open. In that there will be two fields store value and get value. Once we enter the patient name and the unique Id in the respective fields then click the store value. The entered details will be stored in the database.



The screenshot shows a web browser window displaying a Google Fusion Table. The table has the following columns: Pat_Id, Name, Pts.No, BCD, Glu_09, Glu_A1, Cholesterol, Weight, and Thyroxine. The data rows are as follows:

Pat_Id	Name	Pts.No	BCD	Glu_09	Glu_A1	Cholesterol	Weight	Thyroxine
1001	Krishna	9176458388	12-March-2016	100	7.0	85	200	200
1002	Krishna	9176458388	15-April-2016	90	7.0	85	200	200
1003	Krishna	9176458388	15-July-2016	80	8.0	85	150	200
1004	Krishna	9176458388	16-August-2016	80	7.5	85	200	150
1005	Krishna	9176458388	16-June-2016	90	8.0	85	200	150

Fig 2: Google fusion table

Design of Hospital-end application (Diabetes DOC App)

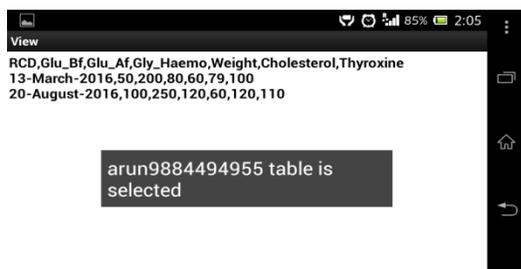
Hospital end android application which requires a hospital staff to update the patient medical record onto the database and access those data. This system consists of a Diabetes DOC hospital end android application through which the hospitals staff updates the patients' medical records periodically and also updates it if needed. With this application the hospital management and the doctors can view their patient's details at any time and from anywhere. The staffs enter the patient's details through the fusion tables for patients to store their medical history. They are also provided with a sign in id and password to login every time which ensures privacy. The doctors also have separate login ids and passwords for their respective Google drive account. The fusion table provides any time anywhere access to both doctors and patients which reduces the storage space and time and thereby facilitating ease of data access



Fig 3.3: DiabetesDOC App

Design of Patient-end application (DiabetesPAT App)

It involves viewing of entire medical history, through an exclusive app download in patient’s smartphone. The screenshot provided below is the patient end application where the patient enters their name and phone number the details can be viewed from the database.



Fig

3:DiabetesPAT App

V.DESIGN AND IMPLEMENTATION

Design of Application

DiabetesDOC App

Screen 1

In the first screen the app requests the user to enter the name and phone number, using the given input,

appropriate table is selected. In this screen the health officials can either update or view the medical record using update and view button.

Screen 2

In this screen the health officials can give current medical data and can upload it to the fusion table using submit button.

Screen 3

The health officials can view the entire medical history of the patients in this screen.

DiabetesPAT App

Screen 1

In the first screen the app requests the user to enter the name and phone number, using the given input appropriate table is selected. The patient can view the medical records by using view button.

Screen 2

The patients can view the entire medical history in this screen

5.2 Working of application

The first step involves creating a fusion table from doctor id for patients. This involves login using the Google drive with the given userid and password. After logging in just click on New button and select more and select fusion table.This will create a fusion table in the drive. Once we have created the fusion table, google service account will provide permission to the admin for generating the unique identification. After generating the unique identification, the control passes to the appspot.com which is a google cloud platform where a unique link <http://health1248.appspot.com> for the admin is

created. When we click the above link tiny web database service will appear. In that there will be two fields store value and get value .Once we enter the patient name and the unique Id in the respective fields then click the store value .The entered details will be stored in the database.

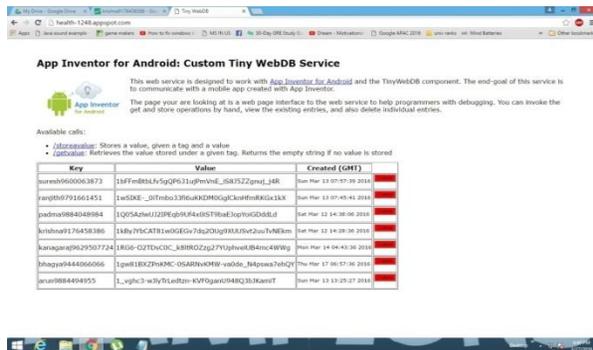


Fig 5.3: Custom Web Database Service

This system consists of a DiabetesDOC hospital end android application as in fig 5.5 through which the hospitals staff updates the patients’ medical records periodically and also updates if needed. With this application the hospital management and the doctors can view their patient’s details (fig5.9) at any time and from anywhere. The staffs enter the patients’ details (fig 5.6) through the fusion tables for patients to store their medical history and after storing an automated message will be sent to the patient smartphone as in fig 5.7. It also consists of a DiabetesPAT application which facilitates the patients to view their medical reports from anywhere and from any place through the cloud based storage. They are also provided with a sign in id and password to login every time which ensures privacy. The doctors also have separate login ids and passwords for their Google drive account. The fusion

table provides any time anywhere access to both doctors and patients which reduces the storage space and time and thereby facilitating ease of data access.

Fig 5.4: DiabetesDOC Application

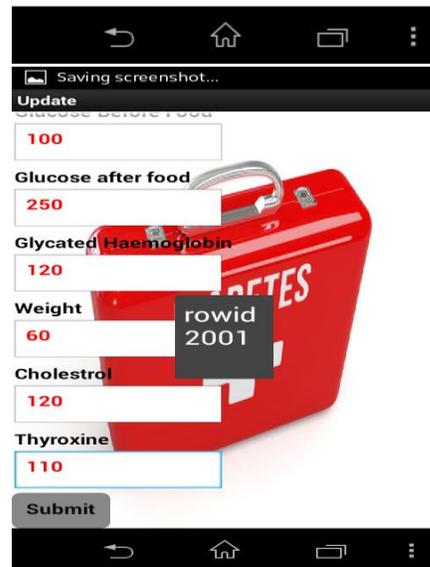
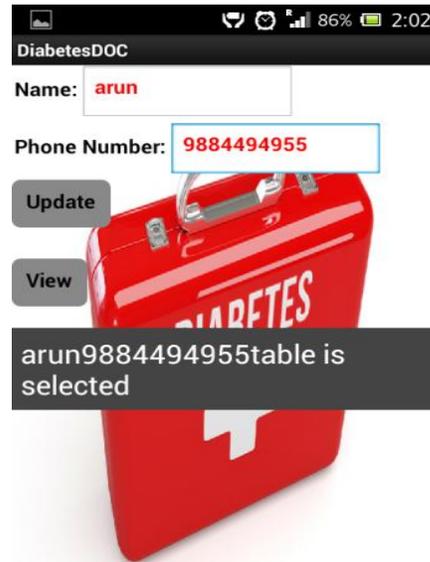


Fig 5.5: Screen shot after entering data

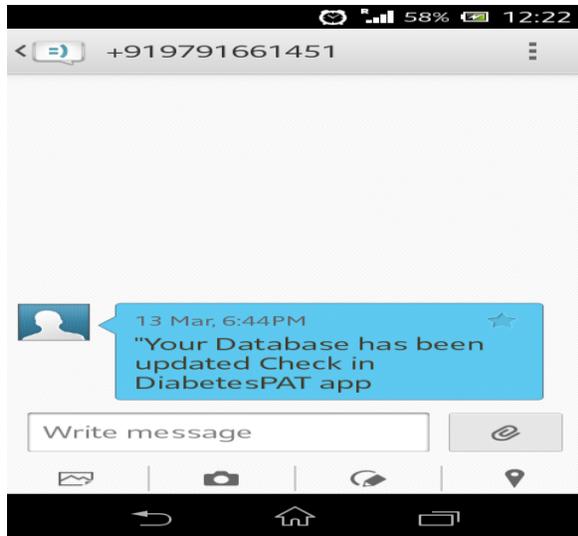


Fig 5.6: Automated message screen

The above screenshot is the patient end application where the patient enters their name and phone number the details can be viewed from the database.

VI.CONCLUSION AND FUTURE WORK

Thus this project might stand as a prototype for the future health management applications, making health records accessible anytime and anywhere. This project when done in large scale can involve big data analytics and predictive analytics for easier diagnosis of diseases .It can also provide graphical representations in the app screen that might help patients to study their data more effectively. So these representations help doctors to take necessary decisions during emergencies. It also makes people to know about their health issues very easily and makes the doctor to view their patients past and current health details and helps them to provide preventive measures. Thus it is the most effective way of providing healthcare in future.

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