Online Healthcare System Using the Concept of Cloud Computing

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ABSTRACT

An android application that can be used to get health checkups done immediately through nearest pathology labs and access the reports anywhere anytime on users phone. For health checkups there are many applications available in the market like Practo, Thyrocare, E-wireless etc. Thyrocare android app is useful only for thyroid related patients, E-wireless is useful to store data of a particular hospital only. Practo app is useful to obtain the details of doctors in the user's locality and take online appointment. Thus to overcome all the disadvantages of the existing applications we are introducing and implementing online healthcare system using the concept of cloud computing which will be efficiently provide various facilities such as online health checkups booking with discounted rates, get information about preventive measures, provide different path labs and keep track of user's health checkups records. Also the user will be able to broadcast the blood requirement directly on the application and the related notification will be send to all the users who are registered on the application having the same blood group through emails.

Keywords : Cloud Computing, Android Application, Client Portal, XAMPP, Android Studio 1.5.1

I. INTRODUCTION

An integrated application for having the health checkups done immediately at affordable price from the nearest pathology labs and access the reports anytime anywhere on the mobile. Based on those reports get the preventive measures on the phone itself. For any doubts one can contact the specialized doctors in his/her locality through the phone. If one ever needs any blood it's just one tap away. The application will broadcast the users need to the people having same blood group in the locality. In today's busy world, it has become an important issue to keep focus on our health and have regular health checkups to detect the heath related problems in the early stage. It is also important to follow the preventive measures so that the disease itself can be avoided. Therefore taking in mind the busy schedule of the people it is important to have an integrated application that will tie-up the different pathology labs and provide the facility booking an appointment for having the health check-up done. The application will also be able to keep track of user's check-up records. Application includes three components: Cloud Computing, Client portal, Android application. Cloud is used for storing the data and accessing it anytime anywhere from a virtual environment. As cloud computing is one of the emerging technologies having an increasing impact on both public well as private sectors, for our application we are using public cloud. Here the processors will be shared publicly and the reports and users data will be secured as user will get the details on email. Cloud computing provides variety of services such as Platform as a Service (PaaS), Software as a Service (SaaS), security as a Service (SecaaS) and Database as a Service (DBaaS), Infrastructure as a Service (IaaS). To find location of a particular user Geolocation API is used which will be used to find residual end points i.e. longitude and latitude of an area. Integrating the cloud computing concepts and android application many health problems can be resolved thus helping the user to keep up good health in his/her busy schedule.

II. METHODS AND MATERIAL

1. Literature Review

Deng, M., Petkovic, M., Nalin, M., and Baroni, I., A home healthcare system in the cloud addressing security and privacy challenges, IEEE International Conference on Cloud Computing (CLOUD), pp: 549-556, 2011.

Cloud computing, one of the emerging technologies which is expected to support the Internet based critical applications that would be essential in the health sector. Its resilience, high performance, scalability, connectivity, cost reduction, high performance and adaptability features have great capacity to raise the efficiency of healthcare. It is also important to understand the risks related to privacy and security which this technology brings. This paper concentrates on home healthcare application depending on cloud computing. It draws an architecture based on the cloud. In particular, security and privacy challenges are identified in the proposed cloud-based home healthcare system. Also, a functional infrastructure plan is provided to represent the integration of the cloud infrastructure with the proposed application architecture. The paper discusses several techniques concentrating on patient-centric control and policy enforcement through the cryptographic techniques, and consequently on digital rights management and attribute based encryption technologies.

2. Proposed System

A. Design Considerations

1. The device must be android to install this app. So the impact quality is high.
2. The efficiency of this system depends on the speed of processor. So it is not predictable.
3. As cloud is used for monitoring and handling the data, chances of data loss are low and if it occurs then it can be easily recovered by cloud.
4. As initially we are not introducing this application in the market, so we are using fake data of doctors, pathlabs & hospitals for the database.

Table 1 : Existing System vs Proposed System

		THYROCARE	REMEDY
1	Problem statement	It gives details related to issues related to thyroid.	It provides details related to all health issues.
2	Report generation	Not present	Present
3	Update details	Not possible for doctor's and path lab's.	Possible for doctor's and path labs.
4	Efficiency	Less	More
5	Time complexity	20.510 sec	17.107 sec
6	Space complexity	3 Gb	4 Gb or more than 4 Gb
7	Advantage	Users can easily access	Users, doctors as well as path labs can easily access.
8	Disadvantage	Only applicable to thyroid related patients.	If data becomes vast then updater is required.
9	Uses	a) User can see symptoms and preventive measures depending on his reports. b) User can book doctor's appointments.	a) User can see path labs in his locality. b) User can see symptoms and preventive measures depending on his reports. c) User can book doctor's appointments. d) Broadcast blood requirements. e) User can able to see various tests at discounted rates. f) User can access checkup reports on application.

B. Experimental Setup

1. Android studio1.5.1: It is the IDE (Integrated Development Environment) used by android application developer.
2. XAMPP: It is used to provide multiple platforms in single software. XAMPP stands for:

a. X: Cross-Platform   A:Apache
b. M: MariaDB   P:PHP
c. P:Perl (P).

From these we are using Apache, MySQL, FileZilla

3. Phpmyadmin: It is the open source tool for handling administration of MySQL by using web browser.
4. Cloud (Hostinger): It provides 2000mb bandwidth for storing of the data.

III. RESULTS AND DISCUSSION

By using this application user will be able to easily find the details of the test. User can also get the cost of the test; find the nearest path labs, hospitals and the doctor. We can also collect the reports directly by using this system. If anyone requires the blood then he/she can directly tap on the system the notification will be send to the people who is having the same blood group which the person is having. The time required to do each and every process of the hospital i.e. taking appointment, doing test, collecting the report is reduced.

a) The project provides online platform for health checkup bookings with cheaper rates.
b) It provides online repository for user's health reports and medical history.
c) It provides information about preventive measures and tips to user based on his/her
d) Medical history.
e) This application can be used by the doctors for maintaining the patient's record.
f) This application can be used by the patients for taking appointment, performing tests, sending the blood requirements and he/she also gets the preventive measures details.
g) This application can be used by the hospitals to maintain the records.
h) This application can be used by the path labs.
i) It can also use to maintain the records of the number of hospitals and path labs.
j) If in emergency if any one requires the blood then he can easily take the benefit of this application.

IV. CONCLUSION

A health application is the organization of institutions, resources and people that provides health care facilities to meet the health requirements of the population. There are various applications available in the market like Thyrocare, E-wireless, Practo and many more. All these applications were effective only for particular health related problems. Thyrocare android application is useful only for the people having thyroid problems. E-wireless healthcare application is useful to maintain the data about a specific hospital. Practo application is useful just to obtain the details of doctors in user's locality and take online appointment. Therefore to overcome all the drawbacks of the existing systems we have introduced and implemented an online health care application with the help of cloud computing concepts which will effectively provide various information related to preventive measures and tips that should be taken to avoid various contagious diseases, provide different path labs, online booking of doctor's appointment, keep track of user's health checkups reports. If in case anybody requires any blood then he/she can broadcast the requirement on the application and the related notification will be send to all the users in the locality who are registered on the application and have same blood group through emails. Thus our proposed system will be useful in preventing lots of hectic work such as:

1. Paper work
2. Time
3. Emergency cases of blood requirement.
4. Finding the nearest pathology labs and hospitals.

V. REFERENCES

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