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Advance Secure Emergency Access to Patient Personal Health Record

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***Abstract*: Distributed m-healthcare cloud computing systems havebeen increasingly adopted worldwide including the European Commission activities, the US Health Portability and Accountability Act (HIPAA) and many other governments for efficient and high-quality medical treatment. In m-healthcare social networks, the personal health information is always shared among the patients located in respective social communities suffering from the same disease for mutual support, and across distributed healthcare providers equipped with their own cloud servers for medical consultant, however though it also brings about a series of challenges, especially how to ensure the security and privacy of the patients personal health information from various attacks in the wireless communication channel such as eavesdropping and tampering.**

***Keywords*: identification number aging population and affordability**

1. Introduction

A system which handles the medical history of each individual of the country and provides access to all registered hospitals to read or update the data. The hospital which accesses the database must be registered and must have got a license. The license number is used as a unique code to access the database. The details of the patients will be stored and an identification number will be generated when their data are stored into the database for the first time after the implementation of the system. Whenever they go for a treatment, their medical data will be stored into the database using their identification number. For security reasons, any person who wants to view their data will be allowed only to read the data. They will not be given access to update the database. For hospitals to update the database they require the license number along with the identification number of the person whose record has to be stored.

2. Literature survey

Wearable Medical System For P-Health-Xiao-Fei Teng,Yuan-Ting Zhang 2005:Driven by the growing aging population, prevalence of chronic diseases continuously health care costs, healthcare transformation, from conventional hospital-AL centered system emerging developments in wearable medical systems will have a radical impact on this paradigm shift. Advances in wearable medical systems will enable the accessibility and affordability of healthcare, so that physiological condition can be monitored not only at sporadic snapshots but also continuous for extended periods of time, making early disease detection and timely response to health threats possible. This paper reviews recent developments in the area of wearable medical systems for p-Health. Toward Fine Grained Distributed Data Access Control in Wireless Sensor Networks-Shucheng Yu, Wenjing Lou2007: Distributed sensor data storage and retrieval has gained increasing popularity in recent years for supporting of various applications. While distributed architecture enjoys for more robust and fault-tolerant wireless sensor network (WSN) such architecture also poses a number of security challenges is especially when applied in mission-critical applications such battle field and e-healthcare. First, as sensor data are stored an maintained by individual sensors and unattended sensors were easily subject to strong attacks such as physical compromise is significantly harder to ensure data security. Heart Failure Monitoring System based on wearable and information technologies" E. Villalba, M.T. Arredondo 2008: In Europe, Cardiovascular Diseases (CVD) are the leading source of death, causing 45% of all ceases. Besides, Heart Failure the paradigm of CVD, mainly affects people older than 65. In their current aging society, the European My Heart Project was created whose mission is to empower citizens to fight CVD by leading process lifestyle and being able to be diagnosed at an early stage. This paper presents the development of a Heart Failure in Management System, based on daily monitoring of Vital prevent Body Signals, with wearable and mobile technologies, for their as continuous assessment of this chronic disease.

A. Description

Problem Definitions: In existing system we have a problem that is semi-trusted, that means the Doctor will try to find out the secret information from Patient Details which was stored in this application and also they will try to enter Wrong disease for the patients. On the other hand, some users will also try to access the files beyond their privilege so they can get the details about the patient.

B. Overview of Project

In this Project Patient Achieving data confidentiality and identity privacy with high efficiency. Efficiently realizing

access control of patients' personal health information. Health care various kinds of performs previous schemes in terms of storage, computational and communication overhead. Finally to be fix the date and time and send to the admin after that particular doctor fix the appointment send to the patient, finally in this patient feedback sent to the admin to verify the feedback in case the feedback could be bad the information seen to the particular doctor suppose the feedback is good the admin accept the feedback and in this admin patient and doctor approved and reject status sent to the mail. Patient send doctors feedback bad or wrong to particular doctor appointment canceled temporally .In this project mainly used for patient and hospital ,doctors details through online maintained based on Patients id.

3. Limitations

A. *Demerits*

Inefficient, time consuming, Laborious for the staffs Consists of paper medical records, handwritten test results, non-digitized images handwritten notes

B. *Existing system*

Cloud based health system's main focus is the patient's data collection, storage, access, analysis, and presentation etc. The current patient data collection techniques are time consuming, inefficient, laborious. It is also obvious that currents technique is violating the real time data access for monitoring the patients. In m-health care social networks, the personal health information is always shared among the patients located in respective social communities suffering from the same disease for mutual support, and across distributed health care providers equipped with their own cloud servers for medical consultant. However, it also brings about a series of challenges, especially how to ensure the security and privacy of the patients personal health information from various attacks in the wireless communication channel such as eavesdropping and tampering.

C. *Proposed system*

Cloud based health system solution is based on the concept of "Cloud Computing" a distributed computing system where a pool of virtualized, dynamically-salable, managed computing power, storage, platforms, and services are delivered. This system provides an environment where patient's records are stored and it will be referenced by the doctors to improve the efficiency of the treatment. This handles the medical history of each individual of the country and provides access to all registered hospitals to read or update the data. The hospital which accesses the database must be registered and must have got a license. The license number is used as a unique code to access the database. The details of the patients will be stored and an identification number will be generated when their data are stored into the database for the first time after the implementation of the system. For hospitals to update the database they require the license number along with the identification number of the person whose record has to be stored.

4. System architecture

A. *System analysis*

Cloud based health system's main focus is the patient's data collection, storage, access, analysis, and presentation etc. The current patient data collection techniques are time consuming, inefficient, laborious for the staffs. It is also obvious that currents technique is violating the real time data access for monitoring the patients.

Authentication module: In this module they are four users Hospital, Patient, Doctor and Admin. First hospital will register here and then they will add the doctor with doctor details. After registration the doctor will get the user-name and password through mail. Next the hospital will add the patient details but in this registration process user will get a user-name based on their attributes. By using this user-name and password the patient can log-in in this application.

- *Appointment module:* In this module the hospital member will do the appointment for the patient to doctor. In this appointment, the hospital member will root this patient to the doctor based on their problems which was given by the patient. The hospital member will give the appointment timing to the patient to meet her doctor.
- *Appointment view module:* In this module, once the appoint was given by the hospital to the patient means then only the doctor can view that appointment details. He can view the patient problem. But he can't view the entire details of the patient. The doctor can view all the appointments which was given to him by the hospital reception.
- *View and update patient details:* In this module the doctor can view the scan and other health details of the patient. But he can view the records directly before that the doctor have to put one time password and also the patient have to put the one time password which was send to their mails. If both one time password gets matched only the doctor can view and update the records and also doctor can view scan details. Patient and admin *view feedback:* In this module, after the appointment and checking with the doctor was done means the patient can give a feedback about the doctor. But in this the patient can give feedback only to the doctors whom he have already treatment from He cannot give a feedback about other doctors. After the feedback was given the patient, those feedback will be viewed by the admin and also the hospitals too.
- *Emergency case and symptoms module:* In this module, if the patient is unconscious means the doctor can get the health records of the patient by using the patients thumb image which was given by the hospital member during registration of patients. But the doctor

can only view the data he cannot update the data. And also the doctors can talk to other doctors when they want to know anything about patient symptoms.

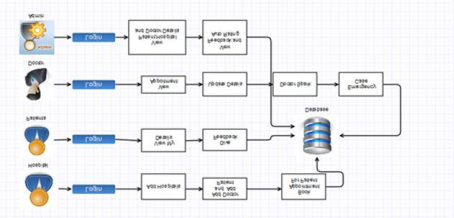

Fig. 1. System architecture

5. Strategic approach to software testing

The software engineering process can be viewed as a spiral. Initially system engineering defines the role of software and leads to software requirement analysis where the information domain, functions, behavior, performance, constraints and validation criteria for software are established. Moving inward along the spiral, we come to design and finally to coding. To develop computer software we spiral in along streamlines that decrease the level of abstraction at each turn. A strategy for software testing may also be viewed in the context of the spiral. Unit testing begins at the vertex of the spiral and concentrates on each unit of the software as implemented in source code. Testing progress is done by moving outward along the spiral to integration testing, where the focus is on the design and the construction of the software architecture. Talking another turn on outward on the spiral we encounter validation testing where requirements established as part of software requirements analysis are validated against the software that has been constructed. Finally, we arrive at system testing, where the software and other system elements are tested as a whole.

A. White box testing

This type of testing ensures that

- All independent paths have been exercised at least once
- All logical decisions have been exercised on their true and false sides
- All loops are executed at their boundaries and within their operational bounds
- All internal data structures have been exercised to assure their validity.
- To follow the concept of white box testing we have tested each form .We have created independently to verify that Data flow is correct, All conditions are exercised to check their validity, All loops are executed on their boundaries.

B. Basic path testing

The established technique of flow graph with Cyclomatic complexity was used to derive test cases for all the functions. The main steps in deriving test cases were: Use the design of the code and draw correspondent flow graphs. Determine the Cyclomatic complexity of the resultant flow graph, using formula:

V (G) =E-N+2 or
V (G) =P+1 or
V (G) =Number of Regions
Where V (G) is Cyclomatic complexity,
E is the number of edges,
N is the number of flow graph nodes,
P is the number of predicate nodes.
Determine the basis of set of linearly independent paths.

C. Conditional testing

In this part of the testing each of the conditions were tested to both true and false aspects. And all the resulting paths were tested. So that each path that may be generated on particular condition is traced to uncover any possible errors.

D. Data flow testing

This type of testing selects the path of the program, according to the location of the definition and use of variables. This kind of testing was used only when some local variable were declared. The definition-use chain method was used in this type of testing. These were particularly useful in nested statements.

E. Loop testing

In this type of testing all the loops are tested to all the limits possible. The following exercise was adopted for all loops:

- All the loops were tested at their limits, just above them and just below them.
- All the loops were skipped at least once.
- For nested loop test the innermost loop first and then work outwards.

6. Conclusion

In this project, proposed a system which monitors the health care details of each individual of the country. It comprises of modules like generating the unique ID and store and retrieve data of a person. The cloud computing is an emerging computing mode. It promises to increase the velocity with which applications are deployed, increase innovation, and lower costs, all while increasing business agility. The nature of cloud computing is useful for constructing the data center. To the new generation of cloud based health system, cloud computing is better approach in the future.

A. Future enhancement

The Rijndael encryption algorithm has been designed to replace the aging DES algorithm. Like DES, it is a block cipher. It uses 128-bit, 192-bit or 256-bit keys. This implementation encrypts 128-bit blocks. (DES used 56-bit keys and 64-bit blocks)

References

[1] Matthew I. Kim, MD and Kevin B. Johnson, MD, “Personal Health Records Evaluation of Functionality and Utility,” J Am Med Inform Assoc. 2002 Mar-Apr; 9(2): 171–180.