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Private and Secure Medical Data Transmission Using Wireless Network with QR Code

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Abstract: ***In medical management, more and more information technology is applied to improve work efficiency. For example, the hospital information management system is used for basic information and medical management of patients, and the one-dimensional and two-dimensional codes on the wrist are used for quick reading or inputting patient identification (ID), etc. Although computerization is more convenient, due to immature technology or management flaws, there are certain security risks in various typical scenarios, such as disclosure of user privacy through reporting transparency, lack of strict control over the consultation of confidential medical records, the absence of technical verification for the confirmation of the infusion, etc. Identity is easy to fake, payment is inconvenient, etc.***
Security issues are discussed in more detail below. Healthcare applications are considered a promising area for wireless sensor networks, where patients can be monitored using wireless medical networks (WMN).
Current trends in WMN healthcare research focus on reliable patient communication, patient mobility, and energy-efficient delivery.
Keywords: Healthcare System, QR Code, Privacy Protection , Wireless network, MD5 , AES.

I. INTRODUCTION

The rapid technological convergence of the Internet of Things (IoT), Wireless Body Area Networks (WBAN) and cloud computing has made e-health (electronic health care) a promising industrial application. information-intensive occupying important areas Improving potential for quality of care.
Most of today's e-/m health systems require physicians (or system administrators) to be involved in processing medical information, which creates two problems: inefficiencies caused by manual operations and knowledge users by physicians. data.
A medical expert system that can automatically analyze the messy private data of users and reduce the involvement of doctors can solve these two problems, especially the application of a general physical examination
.

A. Problem Definition

To overcome the problem of patients, we have implemented the system where a user/patient hides their information in QR code and the system will provide the patient with a unique ID to access when that patient/user is in the processing case. Doctors identify symptoms and assign treatment options to patients.
The pharmacist will scan the hat's QR code and administer the medicine to the patient/user. Finally, there is the insurance service. Develop specific plans based on the patient's perspective.
The proposed system's attention to the safety of the user's patient is an extreme requirement for healthcare applications and their insurance plans, especially in the case of patient privacy, if the patient is inconvenienced.

B. Model Architecture

In the proposed research work to design and implement a system which work with healthcare services. This research work aims to propose a unified trust computing scheme for giving most relevant, efficient and trustworthy healthcare service provider to the requesting patent.
Trustworthiness of the healthcare service/provider will be evaluated based on various attributes like QR Code, unique patient id to secure patients record in healthcare environment.

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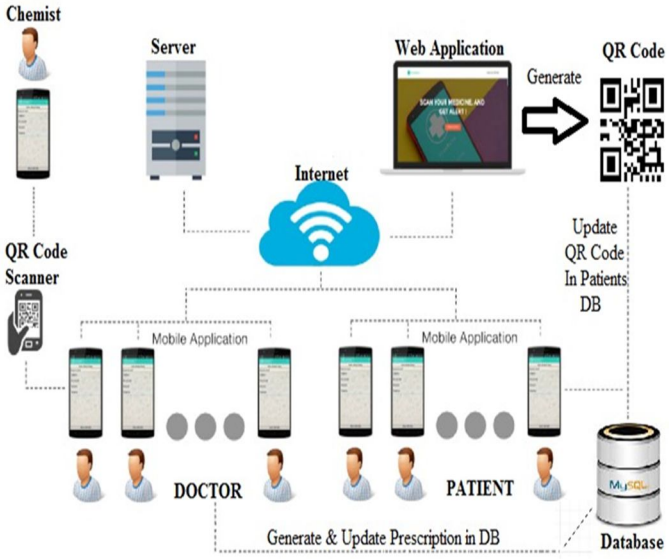


Fig -1: Model Architecture

C. Algorithm Used

1) AES Algorithm

AES is an encryption algorithm which is a symmetric block cipher with a block size of 128 bits. It transforms these individual blocks using 128, 192 and 256 bit keys. Once it encrypts the blocks, it concatenates them to from the cipher text AES operates on bytes of data rather than bits. Since the block size is 128 bits the cipher processes 128 bit input data (or 16 bytes) at a time

2) MD5 (Message-Digest Algorithm)

MD5 (Message Digest Algorithm) The MD5 hash algorithm is a one-way cryptographic function that accepts an arbitrary length message as input and returns as output a fixed length digest value that authenticates the original message. Basically, MD5 is used to store passwords and one-way hashes of passwords, but is not among the recommended hashes for this purpose. The MD5hash function was originally designed for use as a secure cryptographic hash algorithm for authentication

3) Quick Response Code

QR is a two-dimensional barcode. It is commonly used to add web links to printed pages. When you scan such a QR barcode with your webcam or phone camera, the QR reader app will take you to a website or other web content. QR codes are an easy way send people to a website without entering a URL. It also provides different types of QR code symbols such as logo QR code, encrypted QR code, iQR code, etc. Users can choose between according to their needs. Nowadays, QR codes are applied in different streams of applications related to marketing, security, academics, etc.

II. OBJECTIVES

Health information on pregnancy procedures, diabetes, flu, etc. can be incorporated into the QR method. To learn more about these health issues, these QR cannons can be your access to medical information. Case can download necessary data or information from its infiltration to better understand and learn about health-specific content.

A. Scope of Study

The proposed system to provide better way to patients & doctor of each treatment task based on user time of attempt and paperless work. This system will overcome the traditional manual work of faculty to overcome a waiting time of treatment task in few amount of time.

1) We can use this system in medical healthcare applications.
2) We can use this system to reduces paper work and save time.
3) To make India digital for user friendly application for every user/patient.

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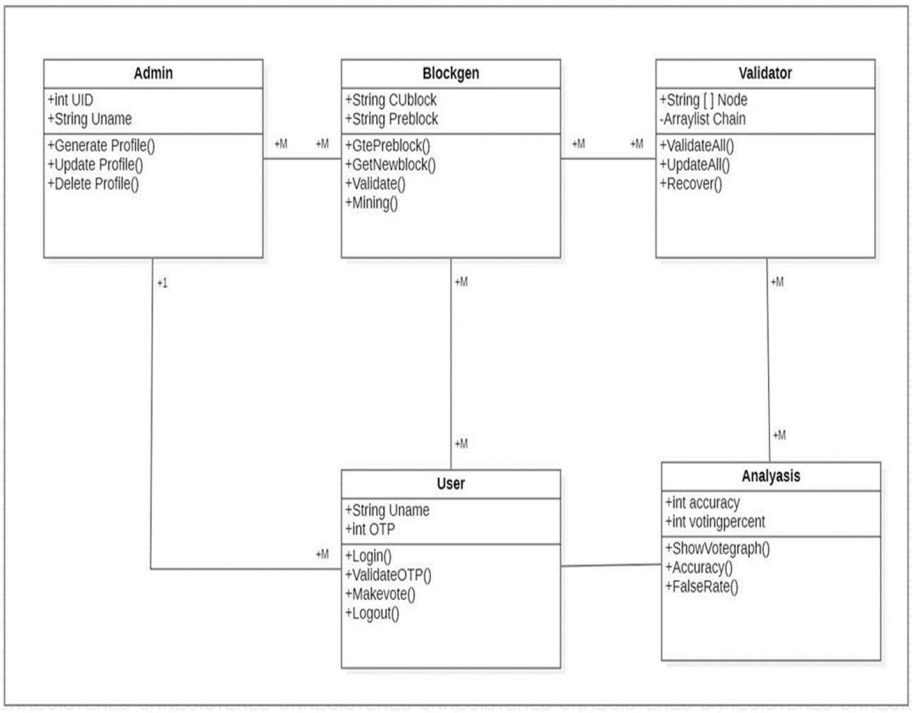


Fig -2: Class Diagram

A class diagram in the world of Unified Modeling Language or UML can be defined as a type of static structure diagram which mainly defines the structure of a system. It works by showing the systems classes and their attributes and operations or methods also the relationships among objects.

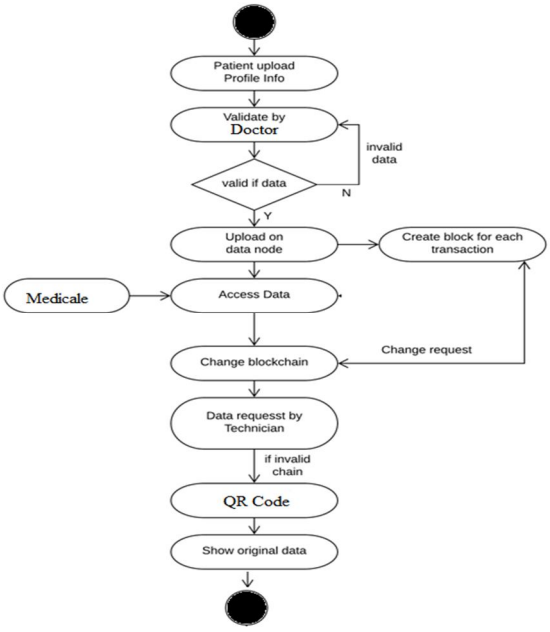


Fig -3: Activity Diagram

Activity diagram can be defined as a flowchart to display the flow from one activity to another activity. These activities could be described as an operation of the system. The control flow usually is drawn from one operation of application to another. This can be branched or sequential, or concurrent also. Activity diagram scan deal with all or many type of flow control and used different elements such as join or fork.

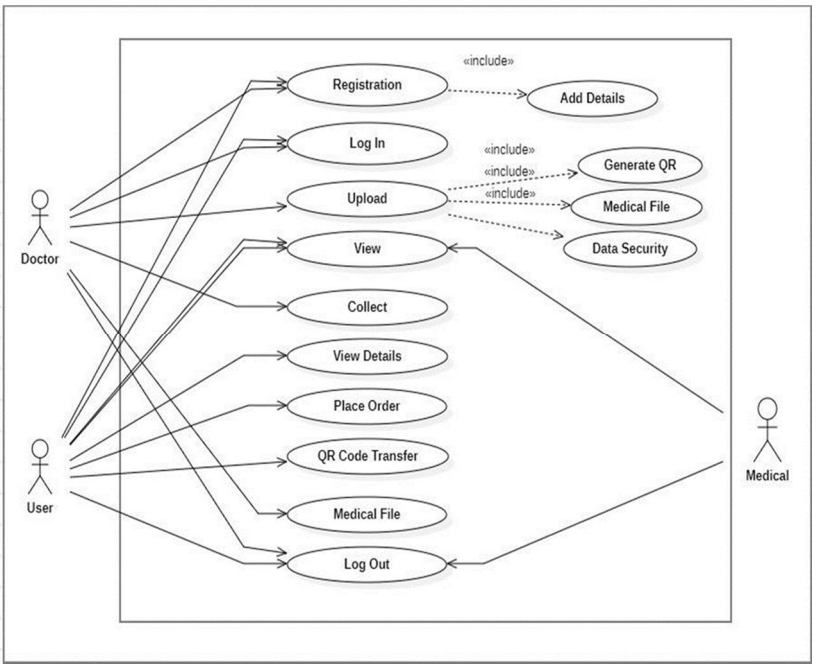


Fig -4: Use Case Diagram

III. CONCLUSIONS

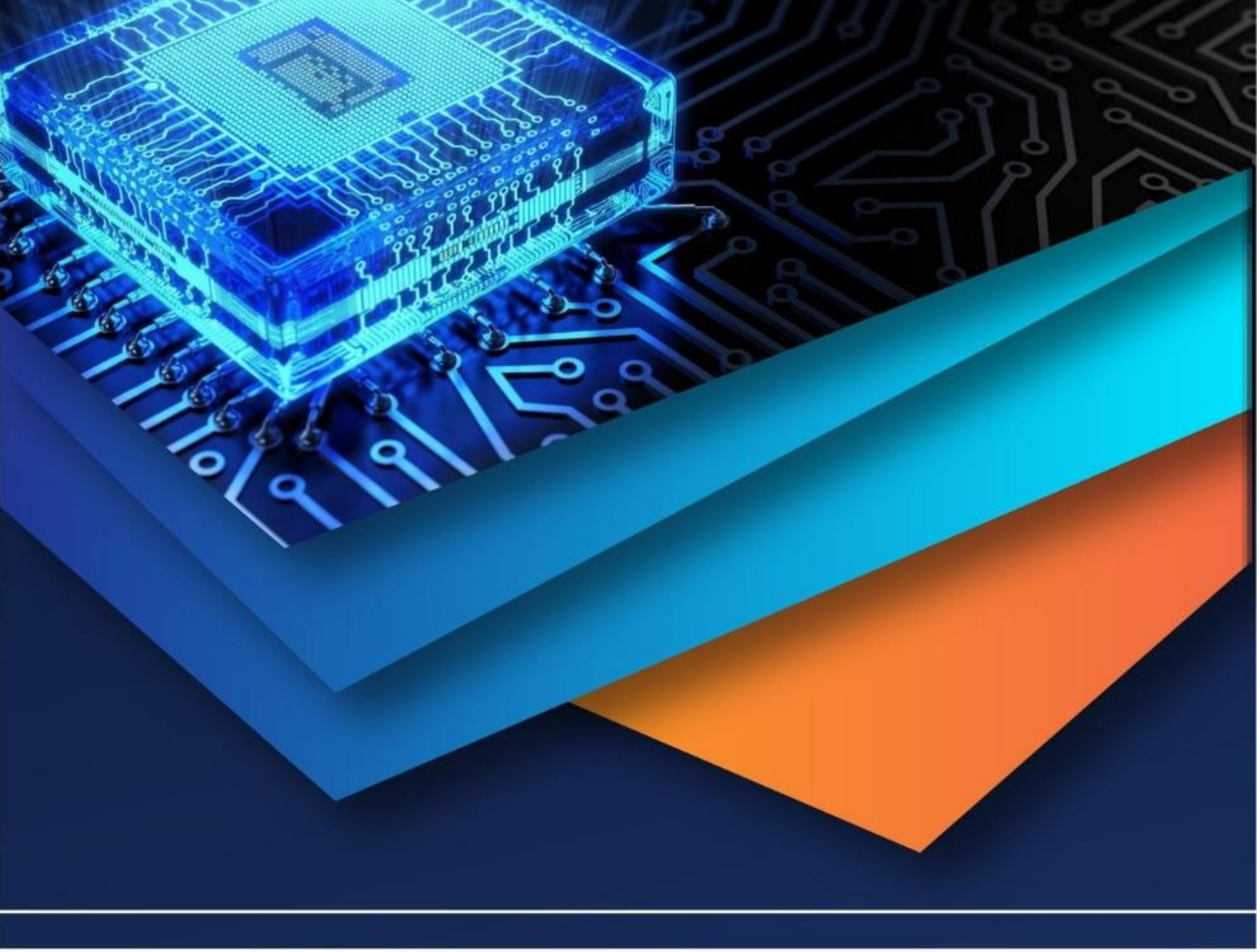
In this system we are going to implement In medical management, more and more information technologies are applied to improve work efficiency. In this proposed system, based on the analyses of the security shortcomings of medical management technology, we exploit the idea of applying Quick Response (QR) code to secure medical management and improve many medical management security through utilizing information security technology. Further theoretical analyses and more simulated experimental results will be our future work.

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