Smart QR Code for Private & Secured Medical Data Transmission using Cloud Computing

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***Abstract*- In medical management, more and more information technologies are used to improve efficiency. For example, a hospital's information management system is used to carry out basic patient information and medical management, a one-dimensional QR Code on the wrist is used to quickly read or input the patient's identification (ID).**

Information technology brings convenience while at the same time there are certain security flaws in some common situations due to immature technology or management weakness, such as, reports leak transparency User privacy, medical privacy Access to view records is not strictly controlled, infusion confirmation without technical authentication Yes, patient wrist ID is easy to fake, payment is not convenient etc.

The security issues are further analysed as follows. Healthcare applications are considered promising areas for wireless sensor networks, where patients can be monitored using wireless medical networks (WMNs). Current WMN healthcare research trends focus on reliable patient communication, patient mobility, and energy-efficient routing, as a few examples. However, the use of new technologies in healthcare applications without regard to security makes patient privacy vulnerable. Additionally, a person's physical data is highly sensitive.

The main contribution of this paper is to securely distribute patient data across data servers and to demonstrate a pallier cryptosystem for performing statistical analysis on patient data without compromising patient privacy.

Keywords: QR Code, Medical Data, Report Transparency, Wireless Medical Network etc

1. INTRODUCTION

In medical management, more and more information technologies are used to improve efficiency. For example, a hospital's information management system is used to perform basic patient information and medical management, a one-dimensional QR code on the wrist is used to quickly read or input the patient's identification.

In the proposed system we design and develop an android and web application, which uses a registration and login phase to authenticate the user to his personal account where he provides all the personal details and information of his medical record.

To store patient details in database and generate quick response code, quick response code stores patient details in cipher text format so it provides better security for patient health records.

2. OBJECTIVES

Following are the major objectives we have finalized,

- To study and implement Quick Response Code for patient's medical records.
- To hide patient's medical information in quick response code.
- Time reducing process at hospital.
- To apply cryptosystem for storing patient's confidential medical records.

Even when the mobile phone has been directly equipped with medical sensors or biometric information-sensing components, current technology limits it to collecting only one or two data items.

Furthermore, many e-/m-healthcare architectures fail in terms of the feasibility of data transmission directly from WBANs to wireless personal area networks (WPANs) or the Internet because implementation difficulty and the need for network connectivity are not considered.

Therefore, this paper focuses on designing a distinctive e-/m-healthcare architecture in which medical sensing data from a wireless body-area intranet is relayed via an extended wireless sensor network infrastructure and then scattered to personal area networks or the Internet.

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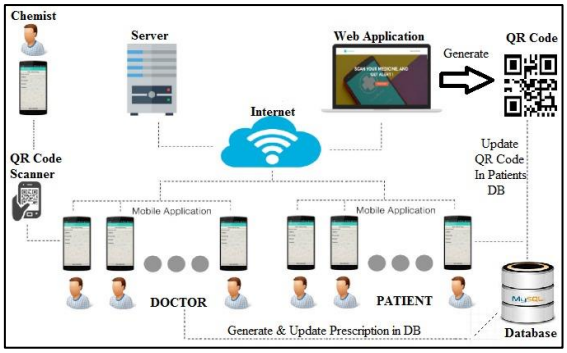
the Internet. This architecture also emphasizes security and privacy preservation during data transmission while guaranteeing data availability.

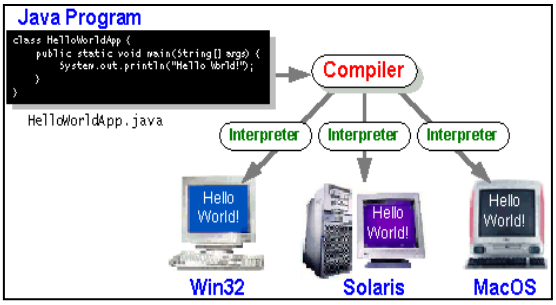
3. System Architecture:

With most programming languages, you either compile or interpret a program so that you can run it on your computer.



Various implantable and network-oriented medical devices such as medical sensors and body-area network components are considered in e-/m-healthcare system. However, a practical market survey on medical instruments illustrates that most current wearable medical devices and nodes cannot be directly linked with smart mobile terminals through 4G or Wi-Fi. Additional network infrastructure or gateway devices are required to enable.

The Java programming language is unusual in that a program is both compiled and interpreted. With the compiler, first you translate a program into an intermediate language called Java byte codes —the platform-independent codes interpreted by the interpreter on the Java platform. The interpreter parses and runs each Java byte code instruction on the computer. Compilation happens just once; interpretation occurs each time the program is executed. The following figure illustrates how this works.

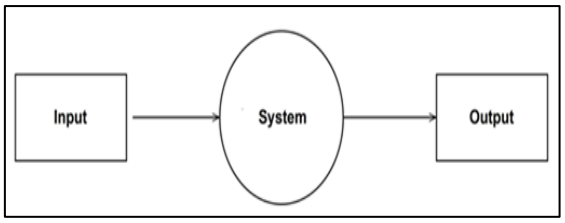


A platform is the hardware or software environment in which a program runs. We have already mentioned some of the most popular platforms like Windows 2000, Linux, Solaris and macOS. Most platforms can be described as a combination of an operating system and hardware. The Java platform differs from most other platforms because it is the only software platform that runs on top of other hardware-based platforms.

The Java platform has two components: Java Virtual Machine (Java VM) Java Application Programming Interface (Java API) You are already introduced to Java VM. It is the basis for the Java platform and has been ported to various hardware-based platforms. The Java API is a large collection of ready-made software components that provide many useful capabilities, such as graphical user interface (GUI) widgets.

The Java API is grouped into libraries of related classes and interfaces; these libraries are known as packages. The next section, What Can Java Technology Do Highlights what functionality some of the packages in the Java API Technical Risk: The probability of loss incurred through the execution of atechnical process in which the outcome is uncertain. Untested engineering, techno-logical or manufacturing procedures entail some level technical risk that can resultin the loss of time.

The following figure depicts a program that's running on the Java platform. As the figure shows, the Java API and the virtual machine insulate the program from the hardware. A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects. A DFD is often used as a preliminary step to create an overview of the system, which can later beelaborated. DFDs can also be used for the visualization of data processing.



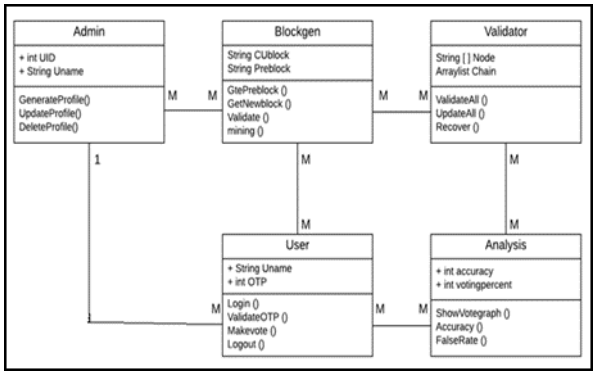
Dynamic behavior is most important aspect to capture the model of any system. Dynamic behavior can be defined as the behavior of the system when it is running or operating.

Static behavior is not sufficient to model a system rather dynamic behavior is more important than static behavior.

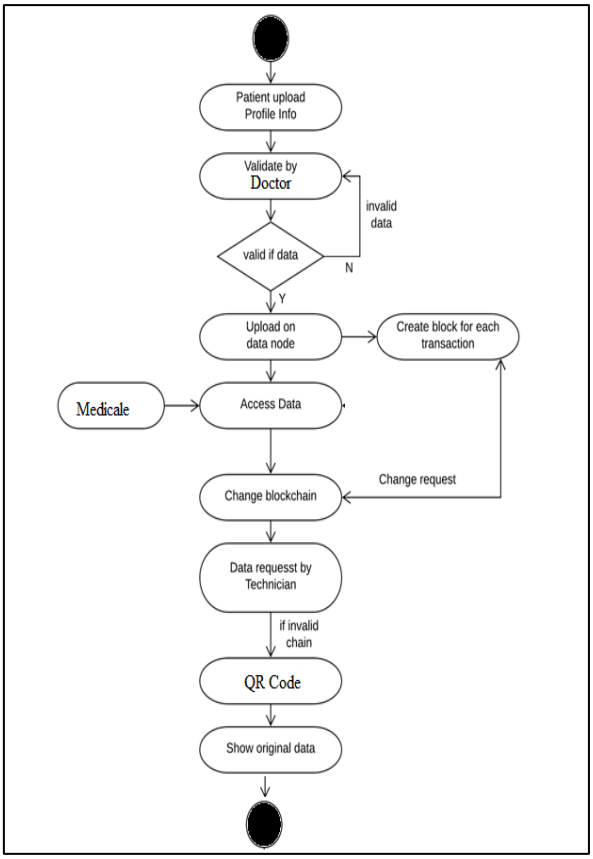
Sequence diagrams can be used to provide a graphical representation of object interactions or object coordination overthetime.

These basically displaysa actoror user, and the objects and components they interact with in the execution of a use case.

The sequence diagrams display the own of messages from one object to another object, and as such correspond to the methods and events supported by aclass/object.



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



CONCLUSION:

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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