

A Review Paper on QR Code Based Android App For Healthcare

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Abstract - *In this paper, we propose an integrated system, developed for use by the healthcare personnel within hospitals, adapted to Smartphone's, tablets and handheld devices. Most of the hospitals in India do traditional manual paper work to maintain the records which becomes burdensome. Though it works efficiently most of the time but compromises time and space. The proposed system which is based on android platform facilitates doctors, nurses and the involved personnel's throughout with the facility, regardless of the existence of network connection in the area using a typical smart phone. The proposed application and its backend system maintains an access to patient's current status as well as previous history i.e. previous ailments, diagnoses, medications and specification of allergies. Additional features include updates about progress of the patient, encryption of the private reports for confidential diseases. Also we integrate a Quick Response (QR code) for accessing medical related data of the patient using a smart phone or a tablet be used by the facility itself or anyone else certified.*

Key Words: Quick Response (QR code), healthcare, encryption, confidentiality; etc.

I. INTRODUCTION

QR or Quick Response Codes are a type of two-dimensional barcode that can be read using Smartphone's and dedicated QR reading devices, that link directly to text, emails, websites, phone numbers and more. We see QR codes on product packaging, shop displays, printed and billboard advertisements as well as in emails and on websites[1]. Soon enough we will be seeing it in hospitals also.

Keeping results of medical, laboratory investigations in a hospital for a patient using traditional, paper form is

complicated. Therefore it becomes difficult to maintain or search the history of data in the integrated form. It is of vital importance when a patient uses health services from different providers. In such situations a complete Electronic Health Records are often not available. Patients, who regularly obtain new laboratory results, are required to keep them ordered and to bring them for each visit in a consulting room. Without the right solution, hospital materials management can be extremely time consuming and prone to human error from manual data entry. Various solutions like World medical card by Norway and Dossi through which users have the ability to download their full record, in electronic form, at any time but its significance hasn't yet realised India[2]. Recently,

EHR related applications for Smartphone's have become widely popular. Each of them offers various health data storage and management capabilities. So our proposed system may be an attempt in bringing the same in third world countries.

II. EXISTING SYSTEM

In India majority of hospitals follow the manual paperwork method for keeping records. In first world countries the proposed system has already been implemented and is a success, but this concept is still alien to third world countries. An application has been developed that uses Qr code to exchange laboratory results with the encapsulated, encrypted medical data[3]. In 2010, PPH, which includes two hospitals in the San Diego area and is the largest hospital district in California, kicked off a project to build its own mobile healthcare platform called MIAA (Medical Information Anytime Anywhere). The centrepiece of MIAA is a specialized mobile app that pulls in data from the hospital's legacy system to give physicians all the information they need on a patient in real time. The MIAA mobile app was developed for the Android OS[4]. Sterling Hospitals have launched an application in Ahmedabad, which is compatible for android and iPhone, allows a user to book an appointment

with a doctor, or a diagnostic test, view the pathology reports directly on mobile, get information about all doctors at the hospital, as well contact in case of emergency situations[5].

As Smartphone's are growing too mainstream these days so the proposed system which is based on Smartphone's can be worthwhile. The system not only enhances process efficiency and cut costs, but also save lives by preventing harmful medical errors. Thus there is a need for automation and elimination of manual work.

III. PROPOSED SYSTEM

The proposed system has various modules integrated that will be easy to use and will contribute as a useful tool for the personnel of any healthcare facility. Also precious time will be dedicated to patient's healthcare rather than keeping records. We aim at facilitating doctors, nurses and involved staff throughout the hospital, regardless of the existence of network connection in the area, using a typical Smartphone.

A. Architecture of proposed system

The system basically consists of client side and server side. On client side, there can be mobile device as well as computer. Mobile device will be used by the doctors or consultants and the computer by the receptionist. A proper network connectivity will be provided between client and the server through internet. The server consists of database which will store information of the patients and will be cross matched with the scanned QR code. Mobile device will contain a local database to store temporary data.

B. System Flow

Our proposed solution involves an android application based solution, developed to operate within hospitals such that the components are interconnected in a system or network so that those components depend on each other to the least extent practicable thereby minimizing both inference and consumption of battery. Whenever a new patient is admitted the IPD department which currently maintains all patients details, date of admittance and discharge date manually will instead use our App to store that crucial data without much hassling. Medical personnel has to be able to be updated for details that might be of interest to him while visiting like new information is invoked, on the reaction of a patient to a specific medication, dosage or some history allergies. This will enable better arrangement of time. Finally, the medical personnel in charge will be able to record vital signs i.e. temperature, blood pressure, weight, bowel movements directly after the measurement, thus reducing the clerical work involved in the process. The backend system of the App supports access to patient's medical history. Even authentication is given to confidential reports of the patient. QR codes are used so that the consultant can directly view the patients details without any personnel to brief him. They also include some personal information about the patient like surgeries, regular medications taken, emergency numbers, regular physician etc. QR codes also include a link for the patients to view their reports, medicines etc. The diagrammatic representation of the above discussion is shown in the adjacent figure 2.

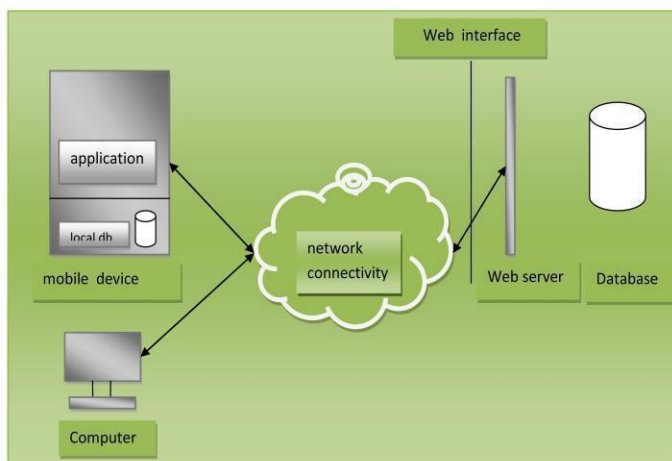


Figure 1. Block Diagram

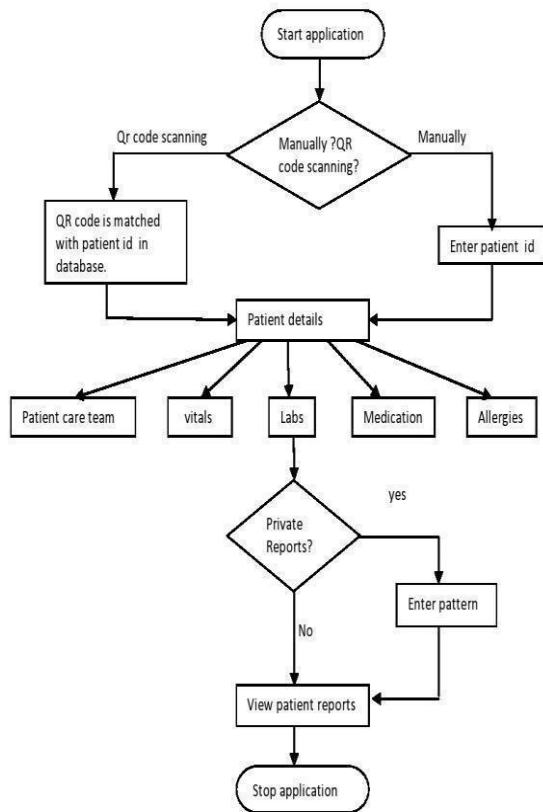


Figure 2. Flow of the system

C. Android Application Development

This is the final step of our project where we are developing Android Application. Android is an open source phone operation system based on Linux platform and it's the first truly open and complete mobile software for mobile terminal. In order to solve the shortcomings of traditional system, this project proposed a system based on android smart phone integrated with QR code. To develop it we use the eclipse for coding (java) and Android SDK for development of the apps. We are generating a windows application for registration using asp.net.

IV. SUMMARY

The purpose of this paper is to create an application for the portable devices that can be used by the healthcare personnel during their visits to the wards where the patients are hospitalized. Our application is an integration to the QR code which is used when the healthcare personnel is a consultant not aware about patients id or where the patient is not able to give the id. Doctors often scratch notes after examining the patient and the data is

then updated by the nurses or other personnel's. Since , now-a-days every personnel carry Smartphone's, so the system will be an improvement to the traditional system. Our system not only reduces the manual work but also saves time spend in updating data in the office. Additionally, our system also provides authentication to the private reports. The proposed system enables better time management of the healthcare personnel, reduces office work and provides a more holistic care to the patient.

V. ACKNOWLEDGMENT

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