

Web based emergency health card using Quick Response Code

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Abstract: *In this system consists of QR-codes placed in various places of the hospital and QR-code reader applications, installed on smart phones or tablets, which scan the QR-codes in order to obtain vast amount of information. Health monitoring has become the most important factor in today's medical era. During the time of emergency, it would be difficult for the physicians to know the past health history of the victim to proceed with further treatment. This project presents a health monitoring system where a person himself/herself can enter their own health and emergency information into our servers and it can be accessed by anyone using the QR code technology at the time of an emergency. This system helps to keep track on the individual's health information, henceforth giving a way for the physicians to access the information during the time of emergency. This not only saves the life of the victim but also helps the physicians to work at ease.*

Keywords: *Health Monitoring, QR Code Technology, Medical Records.*

I. INTRODUCTION

A tool that has recently become very popular in meeting mobile information delivery demand while keeping the resource investment relatively low is the Quick Response code, or QR code. QR codes are found everywhere. Whether in the pages of magazines, printed on flyers and posters, or added to web pages, they serve to lead customers to more information. Airlines are using them as electronic boarding passes. Retailers are providing links for customers to access detailed comparisons and make well-informed purchases. Librarians are delving into this method of information access by designing services that deliver information directly to the user's device. The real value of QR code access is the speed and convenience with which the information is delivered. No more struggling to enter a long URL or contact's name and phone number on a tiny optical keyboard, just snap the code and go the common healthcare issue such as attending appointment and taking medication on a proper schedule as prescribed. The m-health application also has an option of entering data in a quick and easy manner by using the chosen automated data-entry technology, the Quick Response (QR) code. QR code is a two dimensional code used to record thousands of characters and numbers in a small image created by Denso-Wave Corporation of Japan in 1994. Users utilize the QR code can simply use the software decode built-in into the systems to convert scanned code images into the coded information and save it to the database [5]. Most healthcare management applications [6-7] require the users to input The objective of this project is to develop a system where a person can enter his/her medical information. The system mainly focuses on the ability to quickly access information in case of any emergency. The users will be able to see the details of the person who needs any kind of medical attention. The system provides the information of the person, which includes his recent medical records and also personal details.

II. QR CODE

A. What is QR code?

Few years back QR Code has been developed by Denso Wave [8], [9]. Example of QR Code is depicted in Figure 1. That version was a 2D Code, since it has been coded in vertical and horizontal directions. Through that design, it was possible to store larger amount of information into the code. There are also other types of 2D Codes available on the markets. Each of them has unique advantages and disadvantages. Some of the features, which are thought to be useful for clients, of QR Code are listed below:

- First its Data capacity, QR Code can contain up to 4296 Alphanumeric data or 7089 Numeric data or 2953 Binary data. It means in clear that you can write a text long of 4296 character within your code that will be readable by any translating software.
- In order to translate the barcodes, there are many price-free applications in online application stores. Through these codes, you can not only code the important product info into the code, but you also can provide your clients with direct interactive links.
- This code can be used in textile forms, and it will still be able to be scanned and read.
- Should the code be smudge or partially damaged QR Code system has an error correction capability up to approximately 30%.
- In order to keep the same amount of data stored by a traditional 1D Barcode, the required space is only 10% of the space that is required in case of Barcode.
- It can also encode the Kanji Characters ().
- It is capable of 360 degree high speed reading.
- In this system, 1 Code can be divided up to 16 smaller codes. This feature is useful when it is needed to print on smaller surfaces.

B. How does it work?

There are many free QR code applications that can create a code from the data. User enters the data to be embedded into the code, and then the application creates the QR code that can be used in digital form or in printed form. In order to decode the data embedded in the code, the camera of any mobile device such as smart phone or tablet PC that includes QR Code scanning application can be utilized. After the user scans the code, then the application decodes it [9].

QR codes are capable of storing significantly complex information into a small matrix. The common denominator glue is the mobile phone. The new social interactions generally make use of various sources such as face to face meetings, voice calls, SMS, email, IM chat, social applications such as Twitter & Facebook and many others.

III. EXISTING SYSTEM

The Existing System is used for basic hospital management services and health care. The medical and lab reports are shared within various departments of the hospital and with the patients in the form of QR codes. The existing system [3] is specific to only certain hospitals, that is, the patient can only retrieve medical records provided by a specific hospital. This system focuses mainly on the sharing of reports within a hospital organisation. Hence at any medical emergencies, when a person is admitted to another hospital, the retrieval of his previous medical records becomes difficult.

IV. PROPOSED SYSTEM

We are creating an Android application, which uses a login form to authenticate the user into his personal account where he provides all the personal details and information of his medical records. The details are then saved in the database and a QR code is generated which contains the required details of the user. In the case of emergencies, the QR code can be scanned and the details stored in the database are retrieved. This saves the time to start the treatment of a patient admitted at an emergency. This saves time taken to complete all medical procedures in order to start operating the patient. It is also a safe and secure data storage and retrieval. By applying this method, it not only saves the life of the victim but also helps the physicians to work at ease.

V QR CODE TECHNOLOGY

QR code[1], abbreviated from Quick Response Code, is the trademark for a type of matrix barcode or two-dimensional barcode. A QR code uses four standardized encoding modes (numeric, alphanumeric, byte/binary, and kanji) to efficiently store data; extensions may also be used. A QR code consists of black modules (square dots) arranged in a square grid on a white background, which can be read by an imaging device (such as a camera, scanner, etc.) and processed using Reed–Solomon error correction until the image can be appropriately interpreted. The required data are then extracted from patterns that are present in both horizontal and vertical components of the image.



Figure QR 4.1 QR code Representation

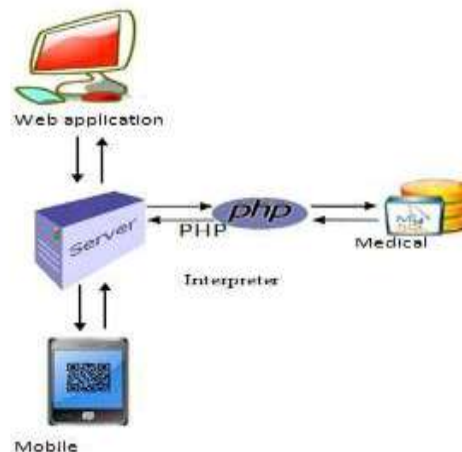
Nowadays, when smart phones equipped with cameras are very common, conveying message via QR code has become popular. As the aim was to transfer data from a document to a mobile phone in a feasible way it was a rational choice to apply this standard to our purposes. This standard of graphical data representation, established in 1994, can hold even 2953 Bytes on a 177 by 177 modules pattern. It possesses an attribute in encoding data resistant for slight code distortions. There were set up four error correction levels and the higher the level, the less is storage capacity. [5] The levels L, M, Q and H allow retrieving the whole message when up to 7, 15, 25 and 30% respectively of the QR image is destroyed. The priority was in getting as much space for data as possible, not particularly in damage resistance. That is why the level L was acclaimed as sufficient.

VII IMPLEMENTATION

We have developed a QR Identity Tag system, the system mechanism as depicted in Fig. 2 containing of a web site, database containing the medical records and a mobile application using PHP [5], MySQL [7] and Java [9].

Web Application

Some screenshots of the web pages of the QR Identity Tag web site are listed below. First a new user has to become a member by clicking Become a Member, on the next page user has to enter the information. To update the information user first should login then update the information as depicted.



VIII CONCLUSION

In this paper, mainly presented the concept of sharing emergency information through qr codes. The customer has to enter all his personal and medical information by him/herself. Consumer will be more loyal towards the service provider. the qr code can be scanned through any qr- code scanner app across any platforms. Hereby, we ensure that the number of deaths due to accidents will be reduced. Further enhancement the idea can be further more enhanced by bringing in hospitals their selves adding the information of a patient into our servers. Similarly, the information provided by the user can be verified by the nearby hospitals. the med info profile ids can be added to the id cards of major institutes and organizations.

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REFERENCES

- [1] Czuszynski, K., Ruminski, J,2014, "Interaction with medical data using QR- codes", Seventh International Conference on Human System Interactions (HSI), pp. 101-105.
- [2] Dimitris Tychalas, Athanasios Kakarountas, 2010, "Planning and development of an electronic health record client based on the android platform", 14th Panhellenic Conference on Informatics, pp. 3 - 6.
- [3] Hung-Ming Chen, Yong-ZanLiou, Shih-Ying Chen, Jhuo-Syun Li, 2013, "Design of mobile healthcare service with health records format evaluation", IEEE 17th International Symposium on Consumer Electronics, pp. 257 – 258.
- [4] Liu Y, Yang J, and Liu M,2008, "Recognition of QR-code with mobile phones," in Control and Decision Conference. CCDC 2008. Chinese. IEEE, 2008, pp. 203–206.
- [5] Mohamed Amine Ben Yahmed, Mohamed Amine Bounenni, ZeinebChelly, Amir Jlassi, 2013, "A New Mobile Health Application for an ubiquitous information system", 6th Joint IFIP Wireless and Mobile Networking Conference, pp. 1 - 4.
- [6] Mungyu Bae, Suk Kyu Lee ungyu Bae, Suk Kyu Lee, SeungHoYoo and Hwangnam Kim, 2013,"FASE: Fast authentication system for E-health", Fifth International Conference on Ubiquitous and Future Networks, pp. 648 – 649.
- [7] SudhaG, GanesanR,2013,"Secure transmission medical data for pervasive healthcare system using android", International Conference on Communications and Signal Processing, pp. 433 – 436.
- [8] M.N. Rahman, A.H. Seyal "A theoretical framework on the use of database management systems", Journal of Technology & Management, vol. 5, no. 1, pp. 36-48, 2007.
- [9] S. Klug, K. Krupka, H. Dickhaus and T. Hilbel, "Displaying computerized ECG recordings and vital signs on Windows Phone 7 smartphones", Computing in Cardiology, pp. 1067-1070, 2010.

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