DIGITIZED DRUG PRESCRIPTION SYSTEM USING RFID MODULE

[1]Abhilash Kulthamutt, [2]Anitha, [3]Anusha V Pai, [4]C AAdarsh, [5]Rajesh Nayak

[1.2.3.4]UG Student, [5]Assistant Professor
Department of Electronics and Communication Engineering
Shri Madhwa Vadiraja Institute of Technology and Management, Udupi, India

***Abstract*—Many a times the prescriptions given to patient by doctors consist of sensitive drugs which, whentaken in excessive quantities can be harmful to the patient. Drug abuse is a patterned use of adrug in which the user consumes the substantial amounts or with methods which are harmful tothemselves or to others.A system is required through which the quantity and the time of purchase of the drug can becontrolled as per the doctor's advice. This paper aims at developing a system which can achievethe drug abuse control. In Existing system, the patients are free to purchase any quantity of thedrug very easily sometimes even without the prescription from the doctor, which if taken inexcessive quantities can be harmful to the patients. There is no measure to stop the purchase ofexcessive quantity of drugs. In this paper we outline a RFID module used for designing a system in health care. An application of the architecture is described in the area of Digitized Prescription system using RFID module.**

***Keywords:* Prescription; Drug Abuse; RFID module; Raspberry Pi 3 Processor.**

I. INTRODUCTION

According to a report from International Narcotics Control Board (INCB), South Asia is facing a serious and growing drug abuse problem including the pharmaceutical preparations containing narcotic drugs and psychotropic substance. Prescription drug abuse is growing in India. Despite efforts by India to tackle the problem, diversion from illicit channel in the country remains a major source of pharmaceutical preparations trafficked in the region. There is an erroneous perception that prescription drugs are less susceptible to abuse than illicit drugs.Easy and instant access to electronically managed medical information is now a key factor determining the efficiency and quality of health care sector.

The Digitized Drug Prescription Systems (DDPS) bring the concept of safer, smarter, and cheaper medication-management systems. The DPS's functionality demands immediate access to the patients' information to prescribe the medication. Before issuing a prescription, a doctor needs to inspect a patient's medical records, complementing his diagnosis process as well as checking for possible allergies and harmful drug interactions pertaining to the patient. In a health care context, the use of RFID (Radio Frequency Identification) technology can be employed for not only bringing down health care costs but also facilitate automating patient identification processes in hospitals and pharmacy for designing a better health care management systems.

The proposed system employs Radio Frequency Identification (RFID) module and Raspberry Pi 3 processor. The RFID card is used instead of a paper prescription that is patient specific as it contains a unique user Id called UID. The patient now carries the RFID card to the Pharmacy to obtain the drugs which only the doctor has the privilege to access or modify when prescribed. The pharmacist provides the drug as per the doctor's advice.

II. OBJECTIVES

Following are the objectives of the project, highlighting its importance:

- This system is used to avoid the self treatment method of patients, because there is no way to purchase drugs without doctor knowledge.
- Details relevant to the prescription like the dosage, the quantity and the duration of the medication are also entered which is secured with a user id and password which the doctor and pharmacy only can access.
- To replace paper prescription with RFID tags which are readily available, low cost and are permanent therefore reducing the usage of paper.

III. LITERATURE REVIEW

The main aim is to propose a secure and safer Prescribing System that allows prescriptions authentication and protects the patient data, keeping their identity confidential. By protecting several system flaws, this proposed system increases greatly the Prescription System security levels, protects patient data, and avoid its collection from Third Party Companies. Also the physical model of the electronic Prescription appears to have all the security and applicability requirements needed to function during a communication network dysfunction.[1] Electronic system allows prescription authentication and protects the patient data, keeping their identity confidential. Within the overall context of protection of health care information, privacy of prescription data needs special treatment. First, the involvement of diverse parties, especially nonmedical parties in the process of drug prescription complicates the protection of prescription data. Second, both patients and doctors have privacy stakes in prescription, and their

privacy should be equally protected. Third, the following facts determine that prescription should not be processed in a truly anonymous manner: certain involved parties conduct useful research on the basis of aggregation of prescription data that are linkable with respect to either the patients or the doctors; prescription data has to be identifiable in some extreme circumstances, e.g., under the court order for inspection and assign liability. [2] In this paper, we propose an e-prescription system to address issues pertaining to the privacy protection in the process of drug prescription. In the e-prescription system, smartcard are implemented to carry up to date personal medical records and insurance information, providing doctors instant data access crucial to the process of diagnosis prescription. A secret sign in key is being stored inside which enables the patient to sign electronically the prescription pad, declaring his acceptance of the prescription. Tracking patients, charts end equipment in hospitals and across integrated health delivery networks is mostly done manually on white boards or manual entry within health information systems. Some health delivery networks have adopted systems using a combination of infrared and radio frequency (RF) technology to help manage the tracking process. [3] This paper proposes an approach that can improve the operational efficiency of a health delivery network by automating this process through the use of RF Identification (RFID) tags. RFID tags arc low power communication devices that can be embedded in a patient's ID bracelet, inside a patient chart and medical equipment, and call help track their location and status.At least 44,000 people, and perhaps as many as 98,000 people, die in hospitals each year as a result of medical errors. Medical errors could be prevented by building a safer healthcare system. Recently, Radio frequency identification (RFID) has been applied in hospital management. RFID is valuable for quickly retrieving patient information and monitoring patient locations in the hospital. [4] The purpose of this paper is to improve the accuracy of patient identification, and any medications the patient is taking. We proposed a framework using RFID, integration with the Hospital Information Systems (HIS) and reengineer the inpatient medication processes to improve patient safety and reduce serious medical errors.Medicines are the primitive solution for the prevention and cure for most of the diseases. Many risky diseases can be cured and prevented with the use of proper medication. Therefore, it is mandatory to take the medicine at the prescribed time. If a patient does not take his medications on time, there can be certain adverse effects. [5] To overcome this, the Med-Alert provides intimation about the right medication to be consumed at the prescribed time through audio-visual alerts along with an E-Mail sent to the user's smart phone. The system generates a report of the patient's medicine intake routine and E-Mails it to the concerned doctor weekly. In a health care context, the use RFID (Radio Frequency Identification) technology can be employed for not only bringing down health care costs but also facilitate automating and streamlining patient identification processes in hospitals and use of mobile devices like PDA, smart phones, for design a health care management systems. [6] In this paper, we outline a RFID model for designing a system in the health care. An application of the architecture is described in the area of RFID-based Real-time Hospital Patient Management System (HPMS).

IV. METHODOLOGY

Firstly, a survey was conducted with the pharmacists and medical representatives in and around Udupito know the problems existing in the present medical field as well as to know how many patients take the medicines without the prescription.

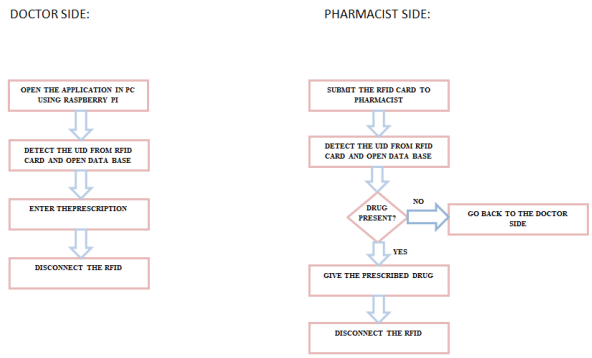

Fig4.1: Flowchart

Fig4.1 shows the Flowchart of theproposed system which uses a Radio Frequency Identification Module (RFID) to implement the Digitized Drug Prescription System. At the doctor side the doctor has a RFID Tag programmer which is connected to a computer via RFID Reader module interfaced with Raspberry Pi. On the computer an application generated using Raspberry Pi is initiated, where the doctor can enter the prescription and program the same into the database using RFID Tag. If the patient has previous record/documents, the interface is faster as it will be directly linked on searching. If not, a new database for the patient has to be generated upon connecting with the RFID module.

The RFID Tag is given to the patient as the prescription instead of a paper.At the Pharmacy side a RFID reader and same programmer is used for retrieving information pertaining to prescription. This is again connected to a computer running an application generated using Raspberry Pi on which the Pharmacist can see the prescription.

Fig4.2 shows the raspberry pi terminal application in which UID of a RFID card is detected using a RFID reader. After that the doctor login's into the database using his user id and password and he enters the details of the patient and the medication details which is shown in Fig4.3 and is saved. Then the RFID card is given back to patient. At the pharmacy the UID is once again detected in the same way and he login's into database with his user id and password in which he can see the medication details of patients as shown in Fig4.4 and searches for the UID and gives the prescribed medicine.

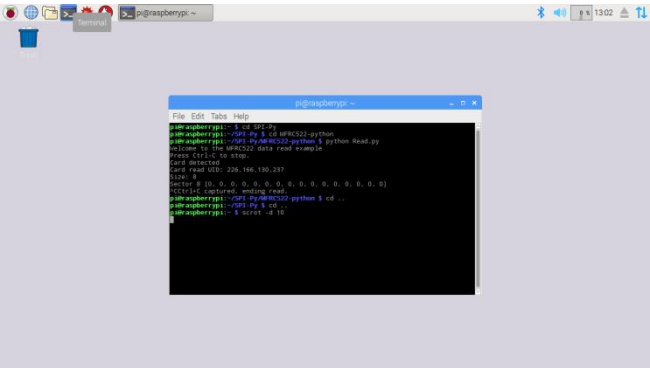

Fig 4.2: Detection of UID using RFID reader

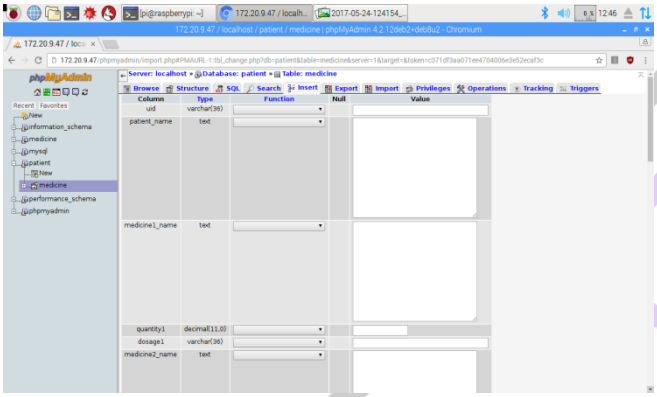

Fig4.3: Entering Medication details of a patient into database

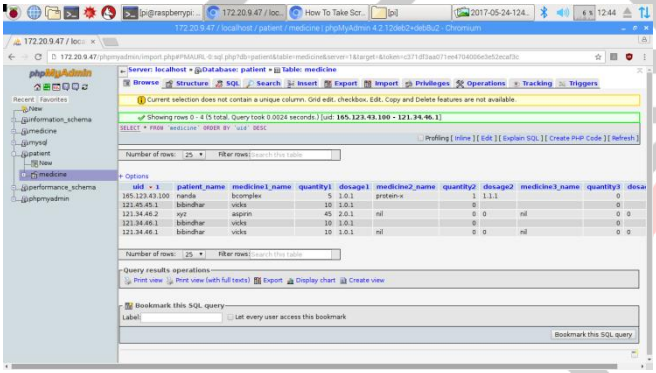

Fig 4.4: Database showing details of patients

V. RESULT AND DISCUSSION:

In the existing system the patients are free to purchase any quantity of the drugs which if taken in excessive amounts or by methods which is harmful to their health. If the medicine prescribed is not present the pharmacists provide the medicines other than the prescribed which may be costly or may have any side effects. The Proposed system uses RFID cards as the prescription which consists of a UID,which is used to enter the prescription into the database and to retrieve the same. The patients details are secure because of a login id and password are present at both doctor and pharmacy sides. If any medical error occurs then the doctor or pharmacy person cannot deny because the same can be checked with the database of the patients.This system is mainly used to avoid the self-treatment method of patients, because there is no way to purchase drugs without doctor's knowledge. Details relevant to the prescription like the dosage, the quantity and the duration of the medication are also entered.Reduces consumption of paper.Pharmacies cannot trick patients by providing expensive drugs.RFID tags are ready available, low cost and is permanent therefore can replace paper prescription in days to come.

VI. CONCLUSION

The paper proposes the use of RFID tags to keep the track of patient's database using web server. Using this approach, not only can accurate and current information about patients prescription can be recorded but also, the prescription drug abuse can be restricted in a controlled way. It is the real time data of patients that makes it possible for the doctor to minimize medication errors and deliver the best services to patients.

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