BUSITEMA UNIVERSITY

FACULTY OF ENGINEERING

DEPARTMENT OF COMPUTER ENGINEERING

DRUG LOCKER SYSTEM FOR MEDICINE STORE IN PUBLIC HOSPITALS

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A project report submitted to the Department of Computer Engineering as a partial fulfillment of the requirements for the award of a degree of bachelor of computer engineering.

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DECLARATION

I hereby declare that this report submitted to the department of computer engineering, is a record of an original work done by me. This work is submitted in the partial fulfillment of the requirements for my Bachelor's degree in Computer Engineering. The results in this report have not been submitted to any other University or Institute for the award of any degree or diploma.

………………………………….

ISIKO HENRY

DATE: …………………….

APPROVAL

This final year project report for the program of Computer Engineering has been submitted to the Department of Computer Engineering for examination with approval from the supervisors below:

Name: Mr. MATOVU DAVIS

Signature: …………………………………………….

Date: …………………………………………….

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Above all I thank the almighty God who has been my guide through this project.

DEDICATION

I dedicate this Report to first of All my parents RUTH KAWANGUZI and STEPHEN KAWANGUZI, to all my family members, friends and to all the well-wishers.

LIST OF FIGURES

List of acronyms

GSM: Global system for mobile communication.

RF ID: Radio frequency identification

MIPS: Million Instructions Per second

MHz: Megahertz

PDIP: Plastic Dual Inline Package

TQFP: Plastic Quad Flat Package

QFN: Quad Flat No-Lead

MLF: Micro Lead Frame Package

RISC: Reduced Instruction Set Architecture

SRAM: Statically Random Access Memory

USART: Universal Synchronous Asynchronous Receiver Transmitter

RAM: Random Access Memory

ROM: Read Only Memory

EEPROM: Electrically Erasable Programmable Read Only Memory

RC: Resistor-Capacitor

PCB: Printed Circuit Board

LEDs: Light Emitting Diodes

AVR: Advanced Virtual RISC

ABSTRACT

In this present age, safety has becomes an essential issue for most of the property especially in the drugs in public hospitals. Some people will try to cheat or steal the drugs, which may endanger the safety of drugs in the hospitals.

This project was therefore aimed at developing a to build a prototype of drug locker system for drug store that would solve the above problem through the following ways namely; restricting access to the locker, notification to the authorized person if intrusion happens.

The work is arranged mainly in six chapters, Chapter one includes the introduction drug locker system for drug store. Chapter two discusses the literature related to the system, Chapter three illustrates the methodologies used in coming up with the working prototype of the system, Chapter four includes system design and analysis, Chapter five is contains the implementation and testing of the system and chapter six contains the summary of the work, , discussions   and recommendations.

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CHAPTER ONE: INTRODUCTION

1.1 **Background**

In this present age, safety has becomes an essential issue for most of the property especially in the drugs in public hospitals. [1] Some people will try to cheat or steal the drugs, which may endanger the safety of drugs in the hospitals. [2]To overcome the security threat, most of medical personals will install bunch of locks or alarm system and even differentiating marks for example (UG) on public drugs.

The findings by Uganda National users /consumers' Organization (UNHCO) imply that clients are fully aware of free services and health workers have kept within the government policy of no-user fees. However, some health consumers have been manipulated to make payments by some health workers [3]. In Lira district, 21% of the users had paid more than UGX 5,000 (USD 2) in contrast with Bushenyi district where about 20% of the had paid more than UGX 5,000 to public health workers. [4]Some health users reported that stock-outs of essential medical supplies required medical operations push them to purchase these commodities from drug shops before they are attended to which drug shops are for the employees of the different public hospitals. [5] Basing on the above the medicine are stolen from public hospitals by almost every employee in the public hospital therefore there is no one full accountable for stolen drugs from hospitals. [6]

There are many types of alarm systems available in the market, which utilizes different types of sensor. The sensor can detect different types of changes occur in the surrounding and the changes will be processed to be given out alert according to the pre-set value. By the same time, this system may not be good for all the time. In this project, I intend to design safety of the drug locker system based on GSM and RFID technology to restrict access to drugs in the public hospital drug stores, which will be more secure than other systems [7]. GSM and RFID technologies are the commonly used for restrict access to any property and for safe identification to any system

1.2 Problem statement

Public hospitals have been losing a lot of drugs in their drug store and no one is held fully responsible for accountability of such lost drugs due to the poor locking system of such drugs that can easily be accessed almost by any employee of the hospital and therefore a need to design a system that will restrict access to the drugs in the public hospitals.

1.3 Objectives

1.3.1 Main objective

The main objective of the project was to design and implement a drug locker system for medicine store in public hospitals that restricts access to the medicine in public hospitals.

1.3.2 Specific objectives

i. To gather the requirements of drug locker system in public hospitals in Uganda through reviewing the existing system
ii. To analyse the requirements necessary for designing the proposed system.
iii. To design and implement proposed system.
iv. To test and validate the proposed system and that it meets the required standards.

1.4 Justification

The common method for locking drugs in their stores in public hospitals is by use of wooden casings that are enclosed using traditional padlocks whose keys to open it (padlock) are always in three copies and they are distributed to different hierarchies in the hospital depending on the administrative organization of the hospitals [8]. The three keys can be further duplicated that almost every nurse or doctor can have a copy of these keys. Sometimes those lockers are not locked at all so however is entitled to open the hospital store can access the drugs at any time. The other method of ensuring drug theft is keeping it at the doctor's residence especially for health centres iii and IV. These methods are very unreliable that when there is theft of drugs in public hospital, no one can be fully accountable for such a loss of drugs therefore it leads to more investigations by other Government agencies to ascertain the real person responsible for the theft thereby leading to more wastage of public funds [9].

The main advantage of using passive RFID and GSM is more secure than other systems. This system is more secure than other systems because two passwords required for verification

1.5 Significance

➢ The designed system ensured the drug store keeper or attendant is fully accountable for all the transactions in the drug store.
➢ The designed system ensured a restricted access to the locking of the drug store i.e. the access was only for of the drug store keeper.
➢ The designed system is to reduce on the expenses incurred by the Government on accessing the accountable person for the theft of drugs in public hospitals.
➢ The designed system will be in long run reducing on the rampant theft of drugs in public hospitals.

1.6 Project scope

1.6.1 Context scope

The project allows restricted access to the drugs in the drug store by allowing only the drug store keeper to open and close the locker by using the RFID reader, tag, a GSM module, microcontroller, keyboard and LCD.

1.6.2 Geographical scope

➢ The project will be applied in drug store in public hospitals.
➢ The project will be strictly used by the drug store keeper in public hospitals.

1.6.3 Time scope

➢ Duration wise, the designed system was under execution between September 2015 and April 2016.

1.7 Limitation

The project is limited to only those lockers that fits the rotating of the motor (360 degree). The project only allow access to the drug locker by only one person.

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