UNIVERSITY OF DAR ES SALAAM

COLLEGE OF INFORMATION AND COMMUNICATION TECHNOLOGIES

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IS 335 FINAL YEAR PROJECT REPORT 2019/2020

MID-SEMISTER REPORT

PROJECT TITLE: DESIGN AND IMPLEMENTATION OF A COMPUTERIZED VISITOR

MANAGEMENT SYSTEM IN AN ORGANIZATION

Student(s) Name: Weston Baraka (2017-04-07311)- Bsc in computer science

Lead supervisor: Ms. Merina Marcelino   Signature……………………

                                                                             Date…………………………

DECLARATION

I hereby declare that the project report entitled **"DESIGN AND IMPLEMENTATION OF COMPUTERIZED VISITOR MANAGEMENT SYSTEM IN AN ORGANIZATION"** submitted by me to the College of Information and Communication Technologies, Department of computer science and Engineering, University of Dar es salaam in partial fulfillment of the requirements for the award of   BACHELOR OF SCIENCE IN COMPUTER SCIENCE. This project is a record of initial work or tasks done by me during consultation under the guidance of Ms. merina Marcelino.

Name of student.   Student   Signature

Weston baraka   ………………………………

ABSTRACT

In this computer technology world, the impact of IT contributes major roles in all real time system. Various management system implemented for achieving the business organization towards profits, standards and further business enhancement. Regardless of the size and type of the business outfits, visitor management systems have crucial to ensure efficiency and security in today's highly competitive and volatile business environment. Facilities like government and corporate offices, hotels, educational institution etc. attracts a number of visitors each day. In present day organizations receive many more type of visitors than just customers and ensuring security while processing visitors can be quite a challenge. This project is mainly focused on achieving or implementing a web-based system to increase the efficiency of keeping and to implement methods such as biometric fingerprint and face recognition to enhance the security of an organization. This system is a well-structured system and easy to use. The languages used to develop this system are PHP (Personal Home Page), HTML (Hyper Text Markup Language), CSS (Cascading Style Sheet), and Database is MySQL.

ACKNOWLEDGEMENT

LIST OF ABBREVIATIONS

VMS- visitors management system

IT-   Information Technology

RFID- Radio Frequency Identification

ID – Identity

SVM- Secure Visitor Management system

HTML- Hyper Text Markup Language

CSS- Cascading Style Sheet

LIST OF TABLES

TABLE OF CONTENTS

References

CHAPTER ONE

INTRODUCTION

1.1 Background

A Visitor management system refers as a structure to keep tracking visitor's activities in organization or public building. It is a record in electronic or digital format that is capable of keeping track of list of visitors and their personal details for effective services from both visitors or clients and the organization.

This system tracks the usage of public office by gathering increasing amounts of information, since a visitor management system provides a record of office for more efficiency and capture of the information by biometric fingerprint and face recognition, these systems enhance the security in the organization. As electronic visitor management systems become more common and more powerful these systems are taking over many of the functions of office security and access control like gathering information manually.

1.2 Statement of the problem

Ensuing from the increasing rate of insecurity in our society, with an increasing of kidnaping, theft, and sabotage of public and private infrastructure; this is a great challenge or threat in our society and nation. It is worthy of note to assert that in every organization be it governmental or private, visitors come to visit the staff of the organization, so do spies come also, but with an interior or undisclosed motive to spy the environment against a plan attack to the organization. In most cases, it is when the event has occurred that people reflect back, but without any concrete evidence to reference. In other organizations, such as offices, hotels, business places, etc., visitors' information are collected manually, that is, using the paper-based visitors' record management system. In such case, the building including the records might get destroyed when there is fire disaster. As such, the paper-based system is inadequate to accommodate such occurrences. Furthermore, the paper-based system is limited in scope as regards the necessary information required for visitors' identification in crime investigation, such as picture, fingerprint data, etc.

1.3 Objectives

1.3.1 Main objective

The general objective of this research work is to develop/design a software application that would manage and keep track of the information of visitors coming in and out of the organization. as a means of providing security and creating a secured environment for the members, staff, and infrastructure of the organization.

1.3.2 Specific objectives

The specific objectives of this project include:

1. Implementation of a database for the storage and management of visitors' information.
2. Manage the records of all visitors coming in and out of the organization.
3. Generate security reports from the daily records of visitors for security investigation in case of emergencies.

1.4 significance of the project

This project is directed towards visitors' record management in any organization, be it governmental or private that takes interest in managing the records of the visitors in the organization. This project will assist ministries, organization, and establishments in adequate management of their visitors' record against the pen and paper-based system in place; and in the case of an emergency, it will assist the police/security in crime investigation via:

1. The information of visitors collected which will include name, location, fingerprint, and instant photography that could be used easily to identify a suspect.
2. Providing list of visitors who visited the organization on a particular day, week, month, or year as the case may be.
3. Generating daily security report from the application visitors' check-in and check-out. This can be used to determine potential suspects over any criminal activity perpetuated in the organization over a given period.
4. It contributes to the entire organization security. The system able to enhance the security of an organization.

1.5 scope and limitation of the project

The scope of this project is to design and implement visitor management system that will improve the efficiency on managing and controlling visitors within an organization. This project is limited to the capture of visitor information and improve security within an organzation

1.6 organization of the project

The work or material presented in this project is organized into three chapters. After this introductory chapter one which gives description about the background of the project, showing the problem of statement, for clear understanding of the problem chapter two describes the literature review of the project by analyzing the similar system review and related works. Chapter three

provides an account for the methodologies that is used in this project, including requirement gathering methods, development approach. Finally, references are included at the end of this report

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Organizations need to take care of security measures concerning visitor's management and tracking. Corporate offices will get too many numbers of visitors every day for many reasons such as interviews, parcel deliveries. By introducing a computerized visitor's management system that allows organizations to track visitors on daily basis by introducing procedures such as ID registration, visitor approvals, process management, pass or badge and record keeping. This part describes the justification of the proposed system.

2.2 VMS based on papers and log books

Currently, most of the organization either the government sector, private sector or even educational industries manage their visitors by using manual system. This manual system requires the visitors to register with the person in-charge who is normally a security guard before they can enter the building. After registered, the visitors will be provided with the visitor card that needs to bring by the visitors when they are entering the building and return back by signing a log book before they exit the building. Organizations need to take care of security measures concerning visitor's management and tracking. According to LobbyGuard (2013), the pen and paper visitors' record management systems records basic information about visitors to a public building or site in a log book. Typical information found in an entry includes the visitor's name, reason for the visit, date and check-in and check-out times. A pen and paper visitors' record management system's main positive feature is low up-front cost. Training to use the system is minimal, and the equipment required to implement this visitors' record management system is cheap and readily available. Some systems use a simple book format, where visitors simply enter their details on marked rows. Furthermore, (LobbyGuard, 2013) submitted that, a pen and paper visitor's record management system have some negative points from a security point of view. Visitors must write entries by hand, creating a logjam (holdup) effect in public entryways. A security personnel must check each visitor's credentials and manually initiate any further security checks (for example, a call for a background check or other action) (Kat Technologies, 2017). Visitor badges rarely have photo

identification and can easily be swapped from person to person (LobbyGuard, 2013). Kat Technologies (2017) reported that documentation in a pen and paper visitors' record management system requires either manually re-entering logbook information in a computer or keeping the logbook itself in storage. Other shot-comings of the pen and paper visitors' record management system as outlined by LobbyGuard (2013) and Kat Technologies, (2017) include the following:

- It takes time to search for previous visitor's record. The receptionist would have to flip through several pages of records in the visitors' book and cross-check one after the other, which is rather strenuous and laborious. In a computer-based system however, searching of records is just a matter of few seconds and the receptionist would be freed to do more worthwhile jobs.

- The pen and paper visitors' record management system cannot be sorted for statistical reports. It is disorganized, incomplete, and difficult to retrieve information (World Bank, 2000). It lacks the capability of generating visitor's statistics or sorting visitors' record in a particular order, such as sorting by host to get the number of visitors who visited a particular staff within a certain period of time e.g. one month. Also, the statistics generated could be used to analyze the variation of the total number of visitor on daily, weekly, monthly, or annual basis. In a nutshell, the pen and paper visitors' record management system is void of generating security reports in case of an emergency.
- ·In regard to act of terrorism such as fire disaster, the entire information of the visitors' book/ log will be burnt down to ashes and no reference can be made to previously record either management decision making or criminal investigation.

2.3 Computerized visitor management system (VMS)

Welcoming visitors is key to the success of any organization, from schools to hospitals to large organizations. Visitors play a key role in education, finance, manufacturing and other industries. A visitor management system (VMS) is a visitor management and that is design to enhance the security of an organization. This system is web-based system that integrated with biometric technology and improving the efficiency of capturing and recording visitor's information or details by storing information in a database. This system able to generate reports by providing list of visitors and detail information about them that can be retrieved from database. These reports enable person in charge to monitor those visitors that enter and exit the building. In this way, the organization able to solve some security problems that occur within an organization.

2.4 Review of related works

According to Rick Hagan (2012) visitor management system refers to the gathering of information from visitors and then tracking their whereabouts within the school. The purpose is to

document the information and limit visitor access to only persons who have a need to be there. There are different methods for documenting this information including manual logs and computerized systems. For many schools, this process is manual and consists of a clipboard and hand written visitor stickers. While this is better than nothing, there are technologies today that offer much more in an effort to keep children safe and enhance productivity. Visitor management is the recording and collection of visitor data, either manually or through automated check in software, for the purpose of knowing who is in the facility, who they are visiting and how long they spent there.

Andrews International (AI) (2014) developed Visitor Management System to provide security managers with an efficient tool to reduce delays in logging and badging visitors, distinguish special consideration visitors, and identify individuals "not to be admitted". The system enables notes and name tag creation – all through one easy-to-use program.

Easy Lobby secure visitor management (SVM)

Easy Lobby Secure Visitor Management system is another example of visitor management system. The system comes up with solutions that allow organizations to automate the entire registering process of a visitor and the printing visitor card. The system able to save all the detail information of the visitors with minimum time by scanning the user's ID. The ID can be in a form of a driver's license number, business card or passport number. There are several advantages of the system such as this system provides high quality badges for all visitors and check-in process. Besides that, this system had improved the security by enabling organizations to identify exactly who is in their facilities and allows users to create and watch lists and screen against unwelcome visitors. Entrap detail of visitor information more correctly and differentiates between dissimilar categories of visitors, execute analysis and reporting on visitor data across several locations are also apart of advantages of the system. The main advantage is that the system is reasonable in terms of the security and cost, easy to use and simple to install.

Veristream (2012) iVisitor by Veristream provides a secure visitor management system for multi-tenant facilities of any size looking for easier visitor control, increased visitor security and simplified visitor badging. No more maintaining written visitor logs, struggling with software or

on-site servers. iVisitor is the simplest, hassle-free way to control visitors and property in a multi-tenant setting. In typical electronic visitor management situations, the software is installed on site. For a multi-tenant facility, this can cause major headaches when the server goes down or the software crashes. No local IT? You are left trying to solve the problem yourself. iVisitor is different because it is online and managed by Veristream.

Visitor management system (VMS 3000)

VMS 3000 is one of the systems that handling the visitor's management and was developed by HASAM Company.   This system is appropriate for any organizations or entries to any construction. VMS 3000 is easy to use with its automated operations assistances to provide extreme comfort to visitors by defensive great security level of the buildings. This system is integrated with RFID technology to manage and tracking the visitors that entering the organization. This system has several advantages that going to discuss here. The main advantage of the system is it is highly stable system that developed based on confirmed application framework. The communication system of VMS 3000 can be either through web based or intranet visitors' confirmation. This system supports Biometric, Active and Passive RFID tags and Contact Chip Cards to make the system more secure. The system is fully integrated with Access Control System that make the visitor management system become more easily to operate and moreover it is sustenance for passport scanners, business card readers, national ID readers and standard document scanners.

	VMS 3000	Easy lobby
Technology	RFID	Face recognition
Platform	Windows	Windows
Type	Web based system	System based
Functions	Tracking visitor management	Capture personal information

Table 1. table of comparison of visitor management system

CHAPTER THREE

METHODOLOGY

3.1 Development approach

The proposed software development methodology to be used in this in the design and implementation of computerized visitor management system is evolutionary prototyping model. Evolutionary prototyping model is a software development model where the developer or development team first constructs a prototype. After receiving initial feedback from customer, subsequent prototypes are produced, each with additional functionality or improvements, until the final product emerges. The methodology is also used in object-oriented development methods.

3.2 Advantages of the proposed methodology in relation to the project

The methodology will enable a user gets a chance to experiment partially developed system and it will reduce the error because the core modules be tested thoroughly throughout the project runs. Therefore, in relation to this project this proposed methodology will be used and reduce errors.

3.3 Proposed methods for requirement gathering

The following are the proposed data collection methods in the writing of this project;

1. Interview
    In this project one of the methods proposed for gathering requirements is through interview whose results are based on intensive engagement with respondents about a project. Interviews of stakeholders and users will be critical to creating the great project. This will on be understanding the goals and expectations of the users and stakeholders.
2. Observation
    By observing users, a process flow, steps, pain points and opportunities can be identified for improvement. Observations can be passive or active (asking questions while observing). Passive observation is better for getting feedback on a prototype (to refine requirements)
3. Literature review

This involves the collection of data from already existing work in the public domain. Literature sources can include relevant works, and existing systems and analyzing them clearly.

3.4 description of specific objectives in general how each will be achieved

This part generally is detailing on how the specific objectives will be achieved in terms of tools or technologies, platforms and methods. Tools or technologies are as

- Xampp Apache server
- MySQL database
- SQL data language
- PHP server-side scripting language
- JavaScript-client scripting language
- Biometric for capturing visitor information

REFERENCES

1. Hasam (2010). VMS 3000 Visitor Management System. [ONLINE]
Available
at:http://www.hasam.eu/enus/products/identificationsystems/visitormanagementsystem.aspx.
[Last Accessed 25 March 2014].

2. HID (2013). EasyLobby® Secure Visitor Management (SVM™)
Software. [ONLINE] Available at:
http://www.hidglobal.com/products/software/easylobby/svm. [Last Accessed 15 March
2014].

3. Rick Hagan. New school visitor management technologies help keep school safe, 2012.
[online] http://www.seenmagazine.us/Articles/Article-
Detail/ArticleId/2010/smid/403/ArticleCategory/56/New-school-visitor-management-
technologies-help-keep-school-safe

4. Andrews International (AI) Process Visitors Efficiently With Visitors Management
System, 2014. [Online]
http://www.andrewsinternational.com/technology/documents/technology-visitor-
management.pdf

5. Veristream. Secure Visitor Management System For Multi-Tenant Facilities, 2012.
[Online]
https://www.anixter.com/content/dam/Suppliers/Veristream/Veristream_iVisitor_MutiTe
nant.pdf