"Student Security Access and Login System using RFID for Our Lady of Perpetual Succor College With Data Visualization"

A thesis proposal presented to the faculty of the
Computing Studies of the College Division
of Our Lady of Perpetual Succor College

In partial fulfillment of
the requirements for the degree
Bachelor of Science in Computer Science

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ABSTRACT

This research study was conducted and developed by using the Radio Frequency Identification (RFID) technology. Initially RFID tags were developed to eventually replace barcodes in supply chains. Their advantages are that they can be read wirelessly and it contains more information than barcodes, and are more durable. The paper describes the current technology and RFID is part of the expanding world of technology.

This study can serve as a helping hand on monitoring the security of who were entering the school premises. The application of RFID to student security access as illustrated in this study is to develop strong security of the school and for the students to be responsible for bringing their school identification cards.

CHAPTER 1

INTRODUCTION

Area of Investigation

RFID (radio frequency identification) is a form of wireless communication that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency portion of the electromagnetic spectrum to uniquely identify an object, animal or person.

The use of RFID system in school premises is to improve student's security. The system ensures that students are under surveillance right from the time they enter the school gates, until the time they have safely left the premises.

It is necessary for the students to bring their identification cards whenever they enter or leave school premises and it also helps for better management of the School. The students will be responsible enough to maintain proper conduct.

Reasons for Choice of Project

RFID security system has been effectively used in IT and Transportation industries since last few years. RFID is widely used in real world application. It is used by many companies on Logistic and supply chain visibility, in chaotic manufacturing, shipping, and distribution environments, real-time data on the status of individual items provides insights that turn into actionable measures.

This technology can also be used in Race Timing. Timing marathons and races are one of the most popular uses of RFID, but often race participants never realize they're being timed using RFID technology, and that's a testament to RFID's ability to provide a seamless consumer experience.

In a Library System, RFID improves the efficiency of circulation operations. Barcodes require line of sight but RFID tags can be read from multiple angles which means the checkout and check-in process is significantly faster.

Importance of the Study

Nowadays, there are universities around our country and each of this University consists of student up to ten thousand. To handle a large amount of student may be a problem specially to get the security.

There are some of the main benefits of using Radio Frequency Identification (RFID) in schools. The most essential use of this device is to ensure the safety and security of students. Students can be track by their parents or guardians by visiting the given website. In this website parents/guardians can be mindful and aware on their child's login and outs in the school.

The RFID based attendance system has also enabled the school administration to ensure only accredited people access the school premises. This goes a long way in enhancing the general security within the school.

Our Lady of Perpetual Succor College was using barcodes on their students' Identification Card for the past few years and technology was growing rapidly so it will be easier not only for the school but also for their students and staff to use RFID than the traditional Barcodes. RFID offers a number of advantages over barcodes. RFID was tremendously faster than barcodes scanning and it allows for accurate inventory in adverse condition.

Target Users / Beneficiaries

The target Users of this project System are the security guard and College Students of Our Lady of Perpetual Succor College, Marikina City.

The college students of Our Lady of Perpetual Succor College, Marikina City have the most flexible schedule to monitor they are always going in and out of the school premises whenever they want to. The students' safety lacks strong security. It will also prevent outsiders and thieves from entering the school. This project proposal also helps the students to be responsible for bringing their school identification cards. If ever they don't bring their identification card, they will have to fill out a violation form to get in. If they exceed three times, they will receive a notice letter from the school which means that they can no longer enter school premises without their identification card. The guard will check if the students were using their own identification cards

For the beneficiaries, the researchers will be creating a website for parents or guardians to monitor their children. Just simply login into the website and check the log in and out activities.

Scope and Limitations

The researchers will be making a prototype security login system using RFID. The system will run using HTML, CSS, JavaScript as frontend and PHP, MySQL as backend technologies. The prototype project will be placed at the entrance gate for the college students. The prototype project will be exclusively used by College students of Our Lady of Perpetual Succor College, Marikina City. For the visitors who want to enter school premises, they need to go to the main gate for them to be able to enter school premises. First, the student should acquire the said requirements from the registrar, for them to register in the database and validate their identification card. Once they are enrolled and acquire a validated identification card, they can now use it to enter school premises. Before entering, they have to tap the identification card on the scanner, if the identification card was accepted by the system and the identification card matches the face of the student the guard can now confirm the entry and the student's login will be recorded in the website and database. When the students leave the school premises, they will also have to tap the identification card to the scanner so that their logouts will be recorded. If their identification card didn't work it means that they are not validated and they need to go to registration or undergo enrollment process.

The researchers will also create a website for the parents or guardians to monitor their children. In this website they can view the logins and outs of their children. The account will be given upon enrollment.

The school's IT will be the main admin of the website and database. The admin will be the only one who can create, edit and deactivate the user. The registrar will inform the admin if there is a change in student's information.

CHAPTER 2

Methodology

Type of Research

Applied research is a methodology used to solve a specific, practical problem of an individual or group. The study and research are used in order to find solutions that used to solve every day's problems for example, cure illness and develop innovative technologies.

This research methodology is conducted for the purpose of applying, testing and evaluating its usefulness in solving problems. It come up with data to support theory, guide theory revision, or propose the development of new theory. The main focus of the researchers is to generate knowledge which of immediate practical use.

Algorithm
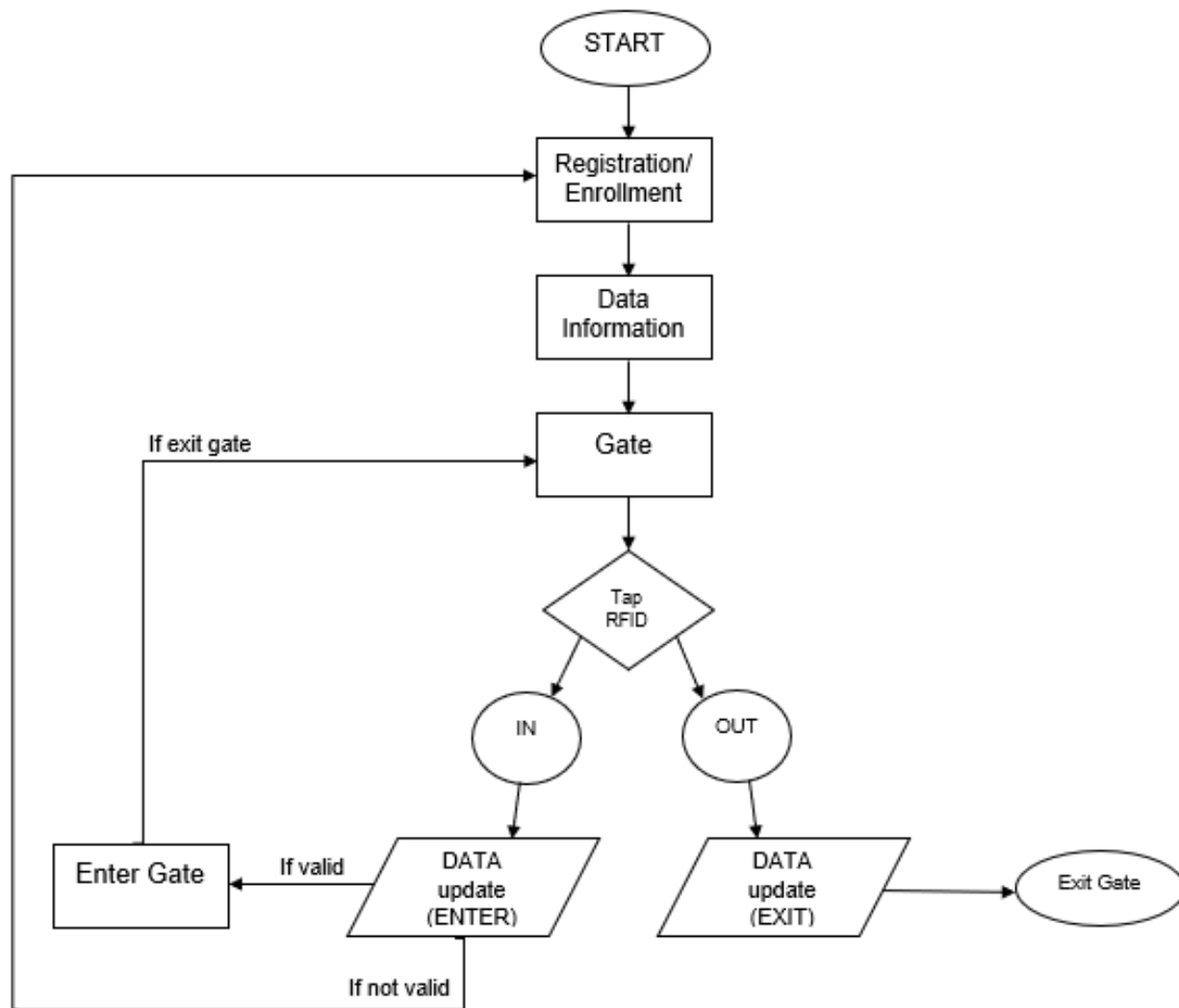
Research Story

The students will use their school identification cards to enter school premises. They will tap their school identification cards to the scanner and the student's picture, name, year and course will appear on the monitor that will last for 15 seconds. The time-in will be recorded in the database. When they about to leave the school premises, they should also tap their school identification cards for their time-out to be recorded in the database.

To check the record of time-in and time-out of the students, they can visit the created website of the researchers. To login they will use the student's first letter of their first name followed by surname as username (e.g. Gdumlao) and student's number as default password (e.g. 14-A0123). There, they can monitor the student's time-in and time-out. Basic information will be shown in their account. The website will look like a calendar when they click on a specific date the full record of time-in and time-out will be shown.

As for the admin and for the students to verify their identification cards, the students must complete the registrar's requirements, as for them to be verified. The registrar will notify the schools IT. The school's IT or admin will create and activate the students account to be able to use their identification cards. The school's IT or admin will be the only one who can access the admin's account for creating and deactivating student's record in the website and database.

Interface

Sample Login page

Sample Student's Account

Sample Admin's Account

OUR LADY OF PERPETUAL SUCCOR COLLEGE
GEN. ORDONEZ ST., CONCEPCION, MARIKINA CITY
997-7777 LOC.21 OR 28/997-2556

Logout

Student No
Search

Home   New   Edit   Monitoring

Name :
Course :
Address :
Birth year :
Email :
Contact No :

Choose file

Year
○ 1st   ○ 2nd   ○ 3rd   ○ 4th

Gender   ○ Male   ○ Female

Activate
Deactivate

www.olopscsecuritytracker.com.ph

OUR LADY OF PERPETUAL SUCCOR COLLEGE
GEN. ORDONEZ ST., CONCEPCION, MARIKINA CITY
997-7777 LOC.21 OR 28/997-2556

Logout

Student No
Search

Home   Add   Edit

Name :
Course :

Search   AUGUST   13   2019

AUGUST 2019

SUN	MON	TUE	WED	THU	FRI	SAT
				1	2	3
4	5	6	7	8	9	10
11	12 Eid-Al-Adha	13	14 Raksha Bandhan	15	16	17
18	19	20	21	22	23 Janmashtami	24
25	26	27	28	29	30	31

August 13, 2019

IN	OUT

Notes

Choose file

Activate
Deactivate

www.olopscsecuritytracker.com.ph

Functional Requirements

The principal objective of the system to be designed is to establish a complete RFID system that will monitor the attendance of each students. A short-range reader will be used and it will be placed inside the campus. A System Unit will be used in order to connect the reader inside the campus. The System Unit will be placed at the entrance of the campus for a much better student monitoring system. After the placement, the system will undergo operational testing to test the functionality of the system. The system shall provide access to only registered users.

The security login system to be developed is expected to facilitate the process of recording logins and logouts through website and RFID, viewing logins and logouts for different interval of time. The table below shows the functional requirements for the security login system.

Using Website Functional Requirements

Actors	Requirement	Description
RFID Reader	Record log information	RFID reader will be recording the login/logout by detecting the RFID's.
Students Parents/Guardians	Login View log information	Students and Parents or Guardians will be viewing the login/logout information.
Admin	Login View log information Edit student's information Register New Students Activate Students Info Deactivate Students Info	The Admin will login into system; view log information of students, edit student's information, Register new students, activate and deactivate student's info.

Entering School Premises Functional Requirements

| Actors	Requirement	Description
RFID Reader	Record log information	RFID reader will be recording the login/logout by detecting the RFID's.
Students	Login and out	Students will be tapping their ID's for them to be able to enter and exit the school premises.
Guard	Login Confirmation	The Guard will confirm the logins before the system records it on the database.

System Design

Use Case Model (Website)
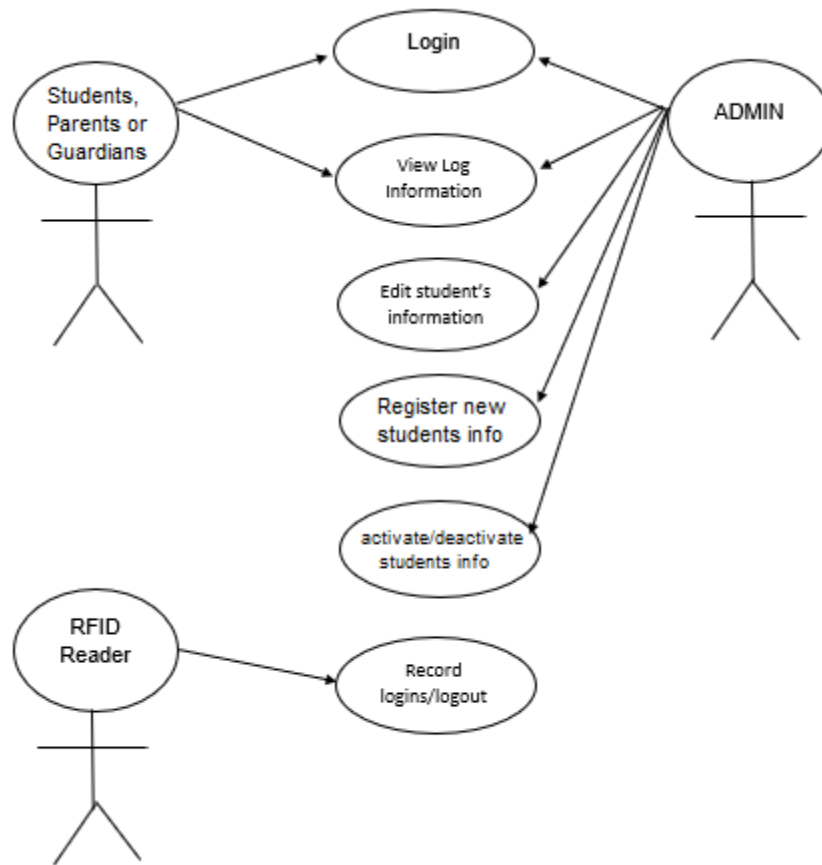
Actors and associated use cases for Website.

Actor	Use Cases
RFID Reader	Record Log Information
Students Parents/Guardians	Login View log information
Admin	Login View log information Edit student's information Register new Students info Activate and Deactivate Students info

Use Case Model (Entering School Premises)
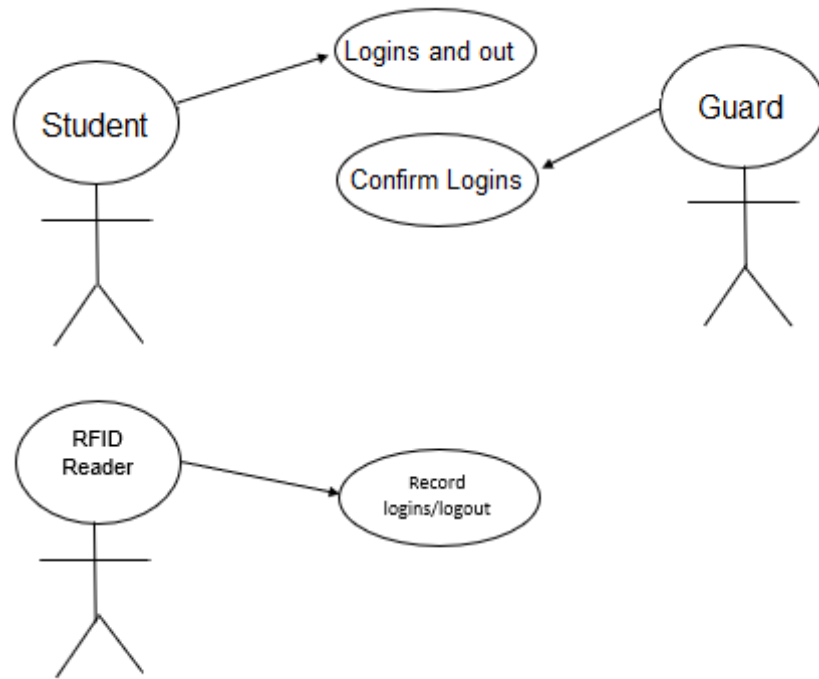
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