DESIGN AND IMPLEMENTATION OF AN ONLINE BARCODE ATTENDANCE SYSTEM

BY

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BEING A PROJECT WORK SUBMITTED TO THE DEPARTMENT OF COMPUTER SCIENCE, SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY, AUCHI POLYTECHNIC, AUCHI, EDO STATE.

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF HIGHER NATIONAL DIPLOMA (HND) IN COMPUTER SCIENCE

NOVERMBER, 2022

CERTIFICATION

We the undersigned, hereby certify that this project was carried out by OSARO ENDURANCE – ICT/2252070405 of the department of computer science, school of information and Communication Technology, Auchi polytechnic, Auchi. We also certify that the work is adequate in the scope and quality in partial fulfillment of the requirements for the award of Higher National Diploma (HND) in computer science department of federal polytechnic, Auchi.

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DEDICATION

I dedicate this project to God Almighty, for granting me wisdom, knowledge and understanding. He has been the source of my strength throughout this program.

ACKNOWLEDGEMENT

The satisfaction that accompanies the successful completion of any task would be incomplete without the mention of people whose ceaseless cooperation made it possible, whose constant guidance and encouragement crown all efforts with success. I am grateful to my project supervisor **MR. OLUBODUN FORD** for the guidance, inspiration and constructive suggestions that helped me in the preparation and completion of this project. My special recognition goes to **Mr. SYLVESTER AKHETUAMEN**, the Head of Department, Computer Science. I pray that God will continually uphold you and your families. To my parent **Mr. Mrs. OSARO UGIAGBE** who contributed morally, spiritually and financially to the successful completion of this project. I also thank my colleagues who have helped in successful completion of this project.

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ABSTRACT

Online Barcode Attendance System is a software developed for daily student attendance in schools, colleges and institutes. It facilitates to access the attendance information of a particular student in a particular class. The information is sorted by the operators, which will be provided by the lecturer for a particular class. This system will help in evaluating attendance eligibility criteria of a student, and also help in parent involvement to the attendance performance of the student. The Online Barcode Attendance System is developed using HTML, CSS, BOOTSTRAP, JAVASCRIPT, PHP. It fully meets the objectives of the system which it has been developed. For student in school attendance is very important. A single absentee make a big difference in performance in the school. Most students of high school are prone to being absent from classes claiming that the class is boring. Others due to laziness fail to attend classes, having preference of going to computer shops or playing games while some students cannot refuse the prospect of a friend asking them out during class period.

KEYWORDS: *Barcode, Attendance, Records, QR code scanner.*

CHAPTER 1

INTRODUCTION

1.0 Background of the study

In most educational institutions, attendance is taken manually. It is not only time consuming, but it is also insecure, unreliable and it can be lost. Some institutions are using punch card for attendance while this will be difficult for teachers to keep track of the large number of students because by using punch card, a student can help the other students or his/her friend to punch their card even the other student may be absent or come late in class, so it is not reliable H. Mazlan, (2012).

To overcome these problems, a better system which is Web based is developed. It is fully responsive where a user can use in mobile, tablets and different computer systems. In this system, records are kept safe and secure and the attendance information of particular or all students of particular class can be accessed easily and without time consuming, the report is generated automatically. Attendance is very important in every student. Being absent makes a big difference in performance in the school M. K. Salleh,(2012).Most students of high school are prone to being absence from classes claiming that the class is boring. Others due to laziness fail to attend classes, having preference of going to computer shops or playing games while some students cannot refuse the prospect of a friend asking them out during class period. Some of these actions are not reported to parents or guardians because the possible way of informing them is the traditional way which is by inviting the parents over through the students. With this, the authority would communicate the parents on the attendance level of the

student. This process takes a long time and sometimes parents are not able to come because of their engagements, occupation or location. These are the reasons why parents/guardians are not informed about the absenteeism of the Students In this research, Online Barcode Attendance System with Short Message Service (SMS) is proposed. Its function is to send a notification to parents that their student are absent. Attendance Monitoring System with SMS provides a fast way of informing the parent anytime anywhere M. Kassim, (2012).

1.1 Statement of the problem

In current systems manual attendance marking data can be manipulated by students. This is a major issue and will damage the accuracy of attendance data and it reduces the student motivation toward attendance.

1.2 Objectives of the study

The objectives of the research work are to:

1. Eliminate duplicate data entry and errors in time and attendance entries.
2. Eliminate paperwork and save time.
3. Automatic calculation of attendance
4. To Increase security.
5. To involve parents in student attendance performance

1.3 Significance of the problem

Economic Significance

This system is cost effective in the sense that has eliminated the paper work completely. The system is also time effective because the calculations are automated which are made at the end of the month or as per the user requirement. The result obtained contains minimum errors and are highly accurate as the data is required.

Behavioral Significance

The system working is quite easy to use and learn due to its simple but attractive interface. User requires no special training for operating the system.

Parent Involvement

The system engages parents in the attendance performance of the student by notifying them through Short Message Service (SMS) on attendance report every weekend.

CHAPTER 2

LITERATURE REVIEW

2.0 Review of Related Literature

An attendance policy provides the guidelines and expectations for students' attendance at school as defined, written, disseminated, and implemented by the school. Depending on the school, attendance may be entered by the class representative or by the teachers, or possibly, both. Attendance can be recorded in many ways such as using web based, RFID, biometrics and bar code scanner. Since most of the application developed nowadays requires the world wide accessibility, web based system is the most common attendance system that available. Some institutions use RFID to record the attendance of their student and the record sent to online server for an online accessibility. Apart from that, there is plenty of educational institutions used RFID technology to record their student attendance. Easy connection of data into internet make RFID technology most common technology used in recording student attendance. Attendance is the act or fact of attending (being present at) school. Also, attendance is used to define the number of persons present on a particular day at school.

However, RFID technologies incur high cost and need experience people to handle the system M. K. Y. Sabri, (2010). Apart from that, biometrics technology is another tremendous use of technology in the domain of attendance reporting and tracking. Most of the biometrics technology used thumb print as sign of system entry. This allows a fair and reliable attendance to be recorded since there is no platform for any attendance cheating. Biometric utilize the fingerprint apart from thumb print method .Fingerprint peripheral used to record the attendance and sent the data into system using wireless technology. Image recording is another recent method used in recording attendance. Movement recorded in internal surveillance camera used as sign of attendance entry in one of the workplace in China. These

advanced technologies require high costing and well trained system developer. Use of bar code scanner is popular among educational institution which is not financiallysupportedanditisnotrequiredanywelltrainedpeopletoinstallandfix. Bar code scanner used as medium to record the attendance for one of the secondary school in Malaysia since their student card using barcode S. A. Khan, (2017).

A. Qaister, et al., [2020] designed a student attendance system which can efficiently manage student's attendance of the Computer Science. Fingerprint features are considered to be the best and fastest method for biometric identification. In their work, attendance is marked after student's biometric identification. For student identification, a fingerprint recognition based identification system was used. The proposed system based on fingerprint recognition was tested on a class of student fingerprint databases and achieved significant results. Dr. M. Rama et al., (2012) in propose the utilization and plan of a face detection and recognition framework to consequently recognize students. This proposed facial biometric framework will contain an enrollment procedure in which the remarkable features of people's face will be put away in a database and after that the procedures of distinguishing proof and verification.

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2.1 Theoretical Background

In this project the researcher is making use of several concepts and technologies which will be talking about. The major technologies used in this project are web technologies HTML (Hyper Text Make-up Language), CSS (Cascading Style She

etc), JAVASCRIPT, PHP (Personal Home Page) and relational database technologies. This site developed is a collection of web documents. These web documents are presented to the user through an application program known as a browser. Internet Explorer Edge, Firefox, Chrome.

HTML and CSS

HTML stands for Hypertext Markup Language and CSS stands for Cascading Style Sheets are the crucial technologies for creating web pages. HTML supplies the structure of the page, and CSS the layout, for diversity of devices. Together with scripting and graphics, HTML and CSS are the fundamental of building.

Applications and Web pages. HTML provides designers and developers the following facilities, to design forms for directing transactions with remote services, for use in making reservation, searching for information, ordering products, and others retrieving online information through hypertext links. To include video and sound clips, spread sheets, and other applications straight in their documents, designer can publish online documents with text, headings, tables, photos and others.

CSS describes the Web pages' presentation, involving layout, colors, and fonts. It enables the designer to adjust the presentation to various types of devices, like a small screen, large screens, or printers. CSS is separate from HTML, and their separation makes it easy to preserve and maintain sites, share style sheets across pages, and accommodate pages to various environments.

```
<!DOCTYPEhtm1>
<htmllang="en">
<head>
        <linkrel="icon"type="image/png"sizes="16x16"href="../plugins/images/favicon.png">
 <title><?phpecho$sitename;?>|Attendance</title>
<metacharset="utf-8">
<metaname="viewport"content="width=device-width,initial-scale=1.0">
<linkrel="stylesheet"type="text/css"href="css/user.style.css">
<linkrel="stylesheet"type="text/css"href="css/substyles.css">
</heads
```

Figure 2.1 HTML Codes.

```
@media screen and(max-width:400px)(
 .top nava: not(:first-child){display:none;}
 .topnava.icon{
 float:right;
 display:block;

@mediascreenand(max-width:400px)(
 .topnav.responsive(position:relative;}
 .topnav.responsive.icont
 position:absolute;
```

Figure 2.2 CSS Codes.

Bootstrap

Bootstrap is front-end framework and collection of tools and mechanisms for building web applications. It consists of HTML and CSS based design templates for navigations, forms, buttons, typography, and other interface elements, and also JavaScript extensions.

PHP My Admin

It is an open source tool and also, it is free written in PHP, XHTML, CSS, and Java Script planned to manage the administration of MySQL by using of a web. It is able to perform various missions like creating, modifying databases, tables, fields, executing SQL statements or managing and supervise users.

Following is some feature of php My Admin;

- It is web interface.
- It administrates multiple servers.
- It is able to create PDF graphic soft he database layout.
- Importing data from SQL and CSV.
- Export data to different formats such as SQL, PDF, CSV, XML and others.
- It works with various Operating Systems and others.

The SublimeText3Editor

Sublime Text is a cross platform source code editor written in C++ and python. It originally supports plenty of programming and markup languages, and its functionality can be increased via users with plugins.

Sublime Text3 hast woma in features that are symbol pane management and symbol indexing. Through pane management users are to move between panes by hot keys and symbol indexing.

MySQL

SQL stands for Structured Query Language. MySQL is an open source Relational Database Management System (RDBMS); it is a popular database for use in web applications, and is a central part of the greatly used LAMP (Linux, Apache, MySQL, Perl/PHP/Python) open-source web application software stack. MySQL is used by many applications like, WordPress, Joomla, TYPO3, Drupal, MyBB, phpBB, MODX and other software. Numerous large scale websites including Google, YouTube, Facebook, Twitter, and Flickr are also using MySQL. On all platforms excluding Windows, MySQL sends with no GUI (Graphical User Interface) to administer MySQL databases or managing the data held within the databases. Users may install MySQL Workbench by downloading separately or simply may use the command line tools. Numbers of third party GUI tools that are also available. Swedish company has created MySQL which is written in C and C++.

The first version of MySQL revealed on23may 1995. It has various versions. The general accessibility of MySQL 5.7 was broadcast in Oct 2015, and the version which is used in my project is 5.6.17.

PHP

PHP also known as Personal Home Page which is used to design a dynamic website example: Facebook. PHP isn't a code you see affecting the layout of the page, it's a code that handles the connection to the database and soon.

```
<?phperrorreporting(0);?>
<?php
$server=”localhost";
$username=”root”;
$password=””;
$db=”smartschool”;
$link=mysqliconnect($server,$username,$passw          ,$db)ORdie();
```

Figure 2.5 PHP codes

Student ID Card

The use of ID card is mainly to verify the identity of the person who is holding it. Universities issue ID card to students so they can use it as a proof to prove that he/she is a student of the university. Normally, ID card only contains the essential information such as ID number, name of the person and other identity information.

Figure 2.6 shows a student ID card with QR code.

Student ID card contains barcode of student Registration number. The barcode is a 1D barcode, with format CODE 128, and the type of information set is a simple text. To identify the barcode format and type of information set, users can use existing scanner application to identify the barcode format and its encoded information.

Barcode

A barcode is a pattern that consists of grouped dark bars and white spaces. Users encode data characters to generate barcode thus every barcode represent different

data. It is a machine- readable pattern by using barcode scanner to decode it. In the current world, barcode is used to identify ID number of item such as retail sales product, books and others.

Based on community of ID Automation Incorporation (2012), the design of barcode is to eliminate the manual data entry error rate. In the case of manually enters data by keyboard, type error always exists. By using barcode, error such as inaccurate or incorrect data can be reduced, at the same time shortens the working procedural. There are many types of barcodes use, the most common used barcode is Linear (ID) Barcodes and Matrix (2D) Barcodes. There are also 3D Barcodes developed.

The main difference between Linear barcodes and Matrix barcodes is the Linear barcodes hold less than 85characters, and Matrix barcodes can hold hundreds of characters.

2.3 The impact of Parent involvement

Research shows parent involvement has a positive impact on school attendance. In addition, Joyce Epstein and Steven Sheldon from Johns Hopkins University, (2018) found that certain parent engagement practices contribute to improving daily attendance and decreasing chronic absence. School shave better attendance when they:

- Orient parents on school policies and expectations for student attendance and on-time arrival.
- Provide parents with a school contact person.

- Communicate often (as needed) to provide all families with information on attendance.
- Reward students for excellent attendance. (This is not the same as perfect attendance. Attendance Works suggests rewarding students for improved attendance as well.)
- Make home visits.
- Refer chronically absent students to a school counselor or a truant officer who intervenes in firm, but positive, ways.

CHAPTER 3

SYSTEM ANALYSIS AND DESIGN OF THE SYSTEM

3.0 Analysis of Existing System

Currently, there are existing attendance systems which are available in the market. In this section, all the systems will be studied and analyzed. The systems available in the market are:

Manual Punch Card Attendance System

In the early days of 1900s, punch card system was the primary method used by companies to store and retrieve data information. A punch card attendance system is a system where employees manually punch their card to a punch card clock machine at the arranged in-out time. The total working hours and overtime hours is recorded on the card, then companies collect the cards and generate payroll based on the record on the card [10].

The drawback of Manual Punch Card Attendance System is it takes up valuable time to collect and record time data on the card, especially to companies with large number of employees. In another situation, buddy punching is created where employees take advantage by having another person punch their card for them. This situation will lead to inaccurate or incorrect entry errors Finger Tec (2007).

Card Reader Attendance System

A Card Reader Attendance System is an identification system that gets information from the card and perform action correlative to the card.

This system can immediately capture information in the card, then send it to a central location where the data storage is located. This system typically consisting three important components:

Cards with information that are carried by the users.

- Card reader machine.
- Control unit and its hard ware and software.

A Card Reader System requires a control unit to control and manage the overall process of the system. This unit gets the information on the card and responds to user with appropriate response Finger Tec (2007).

There are three types of card available in the market. There are:

- Proximity Card Proximity card is a technology that embedding Radio Frequency (RF) circuit with encoded unique data. The data encoded in the card is transmitted through the radio wave to the card reader machine when two of them go near to each other.
- **Smart Card:** Smart Card is a card that contains an embedded microprocessor. The microprocessor is a gold color chip that contains memory for data store. The chip on the smart card acts as a contact pad, users insert the card into a smart card reader to read the data. There are two types of smart card:
- **Contact Smart Card:** The embedded chip of contact smart card is visible. The transmission of data requires a physical contact point.

- **Contactless Smart Card:** Contactless smart card is similar to proximity card. The chip is embedded inside the card thus it is not visible to users. The transmission of data is also similar to the proximity card by going near to the smart card reader.

- **Magnetic Stripe Card:** Magnetic stripe card is also called swipe card. Users swipe past the card at a magnetic reader head and capture data on the card. Magnetic stripe card encodes data by using electromagnetic charges on the black tape. Magnetic stripe card is commonly used on card of bank such as ATM card and credit card.
- **Barcode Card:** Barcode card is the card with printed barcode that contain information. It is widely used on retail sales market. For example, the products are with a price tag that contains barcode which is storing price of the product.

Every type of card has its advantages and disadvantages.

Table 3.1 Comparison between these four types of cards.

Type of Cards	**Security Level**	**Cost**	**Vulnerability**	**Life Cycle**
Proximity	High	Moderate	Virtually none	Long
Smart Card	Highest	Expensive	High	Short
Magnetic Stripe	Moderate	Inexpensive	Moderate	Moderate
Barcode	Low	Inexpensive	Virtually none	Long

Fingerprint Attendance System

Fingerprint Recognition Attendance System is an attendance system which is able to record attendance data based on fingerprints. The fingerprints have to be registered and stored before using this system. Fingerprint attendance system provides better management and control of the human resources. Based on Dr. M. Rama Krishnan and Josphine leela.R R (2012) using fingerprint attendance system is more efficient than using card-based attendance system.

Table 2.3 shows the advantages and comparison of Fingerprint and Card-based system.

Table3.2 Advantages of Fingerprint System.

Advantages	**Fingerprint System**	**Card-based System**
Convenience in operation	Simple record attendance By using fingerprint	Have to carry card to Record attendance
Better discipline control	Impossible to cheat	"Buddy punching" Might occur
Lower cost	Longer lifespan, easy to Maintain	Higher maintenance cost
Flexible deployment	Only consists of light Weight machine	Space required for keeping cards
Reduce workloads	Automatic storing data Once it is captured	Manually input data by Referring to the cards
Better data management	Information is ready most Of the time because it is Stored immediately after captured	Data entry task have to be done first before using the data

Face Recognition Attendance System

Face Recognition Attendance System is similar to Fingerprint Attendance System; both of the systems are using biometrics recognition technology to record attendance Abhishek Jha, (2014).

Face recognition technology has four main processes

- **Face Detection** This process is focus on separating the detected areas of the faces from the background of the image.

- **Face Alignment** This process focus on locating the position of the facial components, such as mouth, nose, eyes, ears and face outline.
- **Feature Extraction** This process is reducing their presentation of an image.

Face Matching

This process is matching the output of feature extraction with the data stored in data base, and made decision based on the confidence in the matching process.

The machine of the face recognition and fingerprint recognition machine also quite similar based on their appearance, but the process behind face recognition is more complex.

Matching: This process is matching the output of feature extraction with the data stored in database, and made decision based on the confidence in the matching process.

Other existing system is as follows;

- At the beginning of every semester, the lecturer takes the total of the class list.
- The lecturer takes out a piece of paper after each lecture and Requires students to write their names and registration numbers inside the paper and attach their signatures, that paper is called the class attendance list.
- The same is repeated for every corresponding class.
- At the end of the semester, the lecturer compares the attendance of each student manually and compares it to the standard for qualified attendance.
- Students with lower marks than the standard are not allowed to

write the examinations. Those who higher marks are deemed qualified.

The flowchart that describes the existing system is given below;

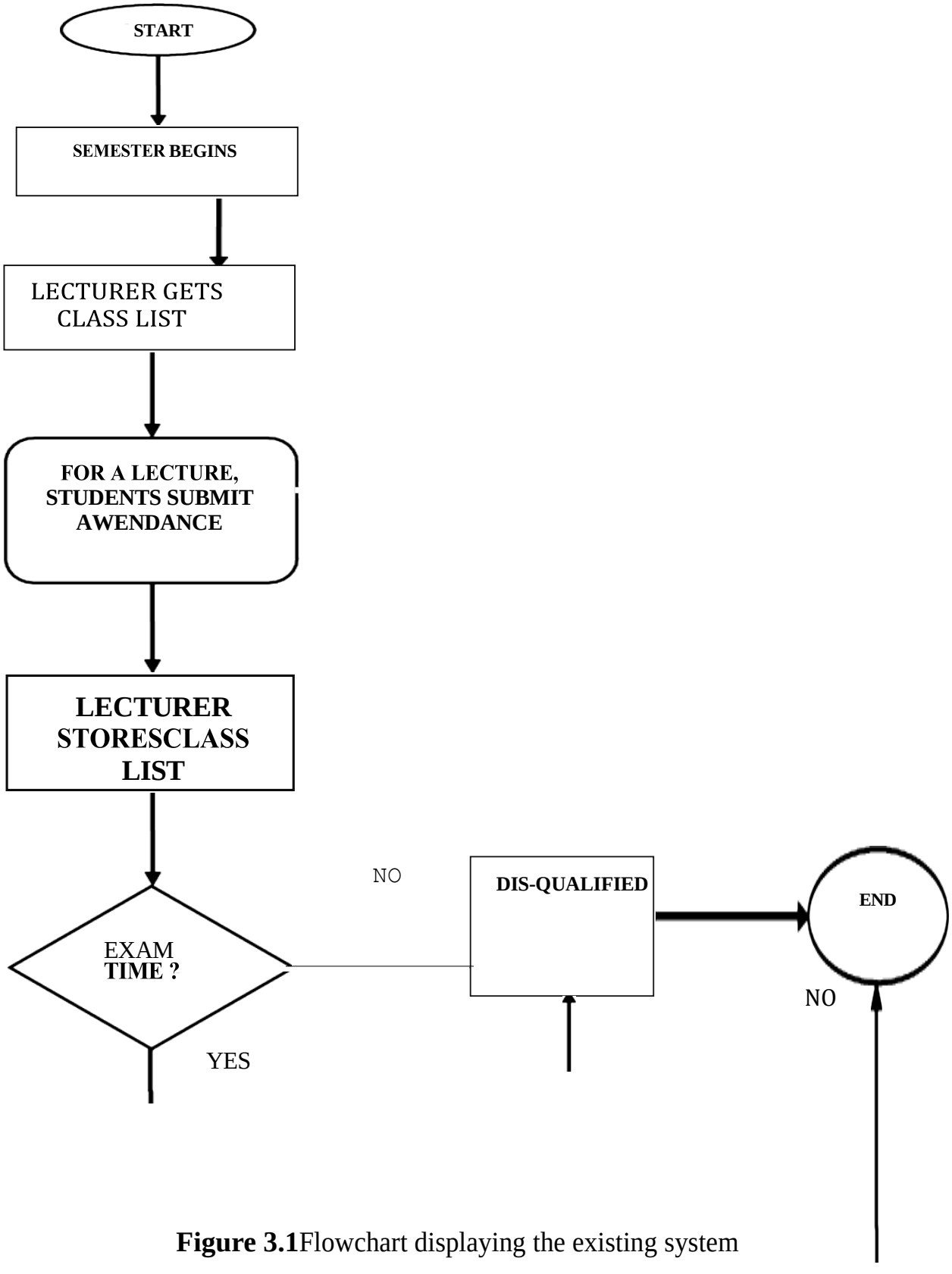


Figure 3.1 Flowchart displaying the existing system

After analysis, the following disadvantages were discovered;

- The attendance sheets can easily be manipulated, because student's can easily fill in names of absent students as a way of showing favor.
- It is quite costly to have papers at every lecture for attendance. It often results to bulky list of records to store, maintain or analyze.
- Because of the number of attendance sheets, the manipulation and the subsequent manual analysis involved at the end of each semester, the lecturer may be forced to bypass the list or just use a few lists.

Because of these disadvantages, there is a need to create an automated attendance format that would analyze the class attendance behavior of students without any fear of malicious manipulation or phobia for the manual work involved in compiling them.

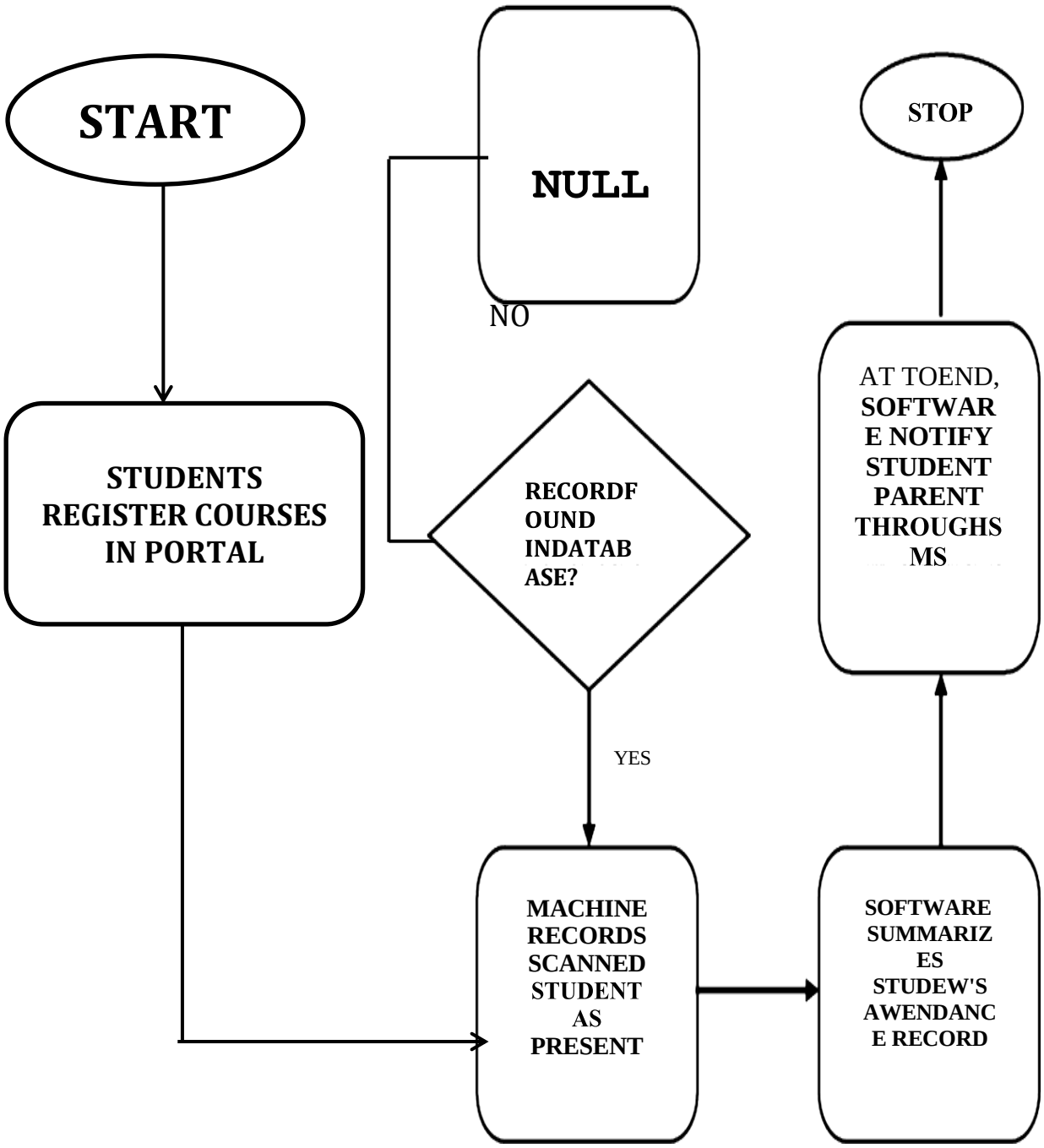
3.3 Analysis of the Proposed System

The proposed system is automated application software that runs on the internet or on the web.

It uses database management methodology to store information about each student and the analysis is done by the computer system. The only manual involvement is the entrance of the student's presence, which is done using a barcode scanner.

1. Each student has a QR Code (Matrix Barcode) attached to his/ her identity card. The QR code bears the registration number of the student. The user needs to display the barcode in front of the software camera.
2. The software detects the registration number on the QR code and records the student as being present for that class in the database.
3. At the end of the semester, or towards the semester exams, the software analyzes student's academic attendance to activities and displays who is eligible and who is not.

The flowchart diagram for this proposed design is given below;



The advantages of the proposed system are that;

- There is no need for physical attendance records that could easily get tampered with.
- The calculation of the student's attendance records is done automatically and not collectively, and even displayed as a graph.
- The discovery of eligibility of a student to write exams as a result of attendance is easily detected.
- It cannot be manipulated, because every student must be appearing with their identity cards in order to be marked present.

3.3 Design of the proposed system

Database Design

The database in this project is made up a minimum of 4tables, which would contain the attendance statistics of the students registered and the courses for which the attendance is to be taken. The screen shots below contain the database structures for these tables / relations.

Table 3. 3 Table Structure for the Site Settings.

Field	Data Type	Size	NULL	Description	Action	Extra
Id	Int	11	No	Unique User Id	Primary key	Auto Increment
Site logo	Varchar	255	No	For storing Site logo		
Site name	Varchar	255	No	For storing Site name		
Page back	Varchar	255	No	For storing page background image		

Field	Data Type	Size	NULL	Description	Action	Extra
Id	Int	11	No	Unique User Id	Primary Key	Auto increment
Reg Number	Varchar	255	No	Student registration number		
Title	Varchar	255	No	Student Title		
First Name	Varchar	255	No	Student first Name		
Last Name	Varchar	25s	No	Student last Name		
OtherName	Varchar	255	NO	Student Other name		
Date of Birth	Varchar	255	NO	Student Date of birth		
Gender	Varchar	255	NO	Student gender		
Marital Status	Varchar	25s	No	Student marital status		
Nationality	Varchar	25s	No	Student nationality		
State of origin	Varchar	255	No	Student State of		
				Origin		
LGA	Varchar	25s	No	Student local government		

Town of Origin	Varchar	255	NO	Student Town of Origin		
Address	Varchar	255	No	Student house address		
Email	Varchar	25s	No	Student email address		
Mobile	Varchar	255	No	Student phone number		
Guardian Name	Varchar	255	No	Student sponsor name		
Guardian Number	Varchar	255	NO	Student sponsor phone number		
Guardian Address	varchar	255	No	Student sponsor address		
Faculty	Varchar	255	NO	Student faculty		
Department	Varchar	255	NO	Student department		
Level	Varchar	255	NO	Student Level		

On leave	Varchar	25s	No	If student is On leave		
On suspension	Varchar	25s	No	If student is on suspension		
Expelled	Varchar	25s	No	If student is Expelled		
Hostel	Varchar	255	NO	Student Hostel		
Off Campus	Varchar	255	No	If student is On or off campus		
Mentor Name	Varchar	255	NO	Student SCHOOL mentor		
Mentor Number	varchar	255	No	Student mentor phone number		
Mentor Department	Varchar	255	No	Student		
				mentor department		
Passport	Varchar	255	NO	Student passport		
Total	Int(11)	255	No	Student total attendance		

Table 3.4 Table Structure for Issue Tracking.

Field	Data Type	Size	NULL	Description	Action	Extra
Id	Int (11)	11	No	Unique User Id	Primary Key	Auto Increment
Course Code	Varchar	255	No	Course code of reporting course		
Issue	Varchar	255	No	Error encountered		
Description	Varchar	255	No	Details of the error encountered		
Status	Varchar	255	No	Status of issue reported		

Table 3.5 Table Structure for the Students Registered.

Table 3.6 Table Structure for Course Register.

Field	**Data Type**	**Size**	**NULL**	**Description**	**Action**	**Extra**
Id	Int(11)		No	Unique User Id	Primary Key	Auto increment
Reg No	Varchar(200)		No	Student registration number		
First Name	Varchar(200)		No	Student first name		

Last Name	Varchar(200)		No	Student last name		
Course l	Varchar(200)		No	Course1 point		
Course2	Varchar(200)		No	Course2 point		
Course3	Varchar(200)		No	Course3 point		
Course4	Varchar(200)		No	Course4		
				point		
Course5	Varchar(200)		No	Course5 point		
Course6	Varchar(200)		No	Course6 point		
Course7	Varchar(200)		No	Course7 point		
Course8	Varchar(200)		No	Course8 point		
Course9	Varchar(200)		No	Course9 point		
Course10	Varchar(200)		No	Course10 point		

Table 3.7 Table Structure for Users.

Field	**Data Type**	**Size**	**NULL**	**Description**	**Action**	**Extra**
Id	Int	11	No	Unique User Id	Primary Key	Auto Increment

Course	Varchar	255	No	Course Name		
Course Code	Varchar	255	No	Course code		
Department	Varchar	255	No	Course department		
Level	Varchar	255	No	Course level		
Email	Varchar	255	No	Course Email		
Mobile	Varchar	255	No	Course phone Number		
Password	Varchar	255	No	Course password		
Status	Varchar	255	No	Course Status if Blocked or unblocked		

System Architecture

This web application is designed to work with user applications such as a barcode scanner and database management system software.

- It gets the information from the barcode scanner, and searches for matching information from the database.
- When a match occurs, the system indicates that attendance for the student has been taken and the entry is saved into the database.
- If a match doesn’t occur, the application indicates that the student is not available or isn't registered for that course.
- The administrator of the application software is allowed the following

privileges;

- Changing the student's bio-data and status.
- Adding and deleting courses from the software.
- Creating a new database.

CHAPTER4

SYSTEM IMPLEMENTATION

3.1 Introduction

The methodology used in this project is SSADM (structured system analysis and design Method). SSADM is a widely used computer application development method. This methodology divides an application development project into modules, stages, steps, and tasks and provides a framework for describing project in a fashion suited to managing the project. SSADM sets out cascade or waterfall view of systems development, in which there are a series of steps, each of which lead to the next. The step or stages are;

- Feasibility
- Investigation of the current environment
- Business system options
- Definition of the requirements
- Technical system options
- Logical design
- Physical design

This chapter is the part that puts a planned system into action and examine in details the analysis and design of the Online Barcode Attendance System with Short Message Service (SMS). The present chapter discusses the implementation of the system, highlighting the testing exercise and

describing some of the main components of the system's Graphical User Interface (GUI). It will give an output from programming language and other tools used to develop our system. According to this plan, the activities are to be carried out, discussions made regarding the equipment and resources and the additional equipment has to be acquired to implement the new system.

4.0 Choice of Development Environment

The researcher will be talking about the system platform used, IDE(integrated development environment) used and programming language used.

The system platform used is windows 10. Also the IDE (integrated development environment) used is Sublime text 3 the latest version and the programming language used is PHP previously known as personal home page. PHP was created by Rasmus Lerdorfin 1994 and publicly released in June 8, 1995 and was known as Hypertext Preprocessor. PHP is a server-side interpreted scripting language designed for creating dynamic web pages and web pages that effectively work with databases.

Several reasons ride the choice of using PHP for this system, one of which is its extensive portability and use over several webhost servers on the internet. Also PHP possesses several in built functions which allow it to integrate well with the widely used and accepted databases to rage management system for the Web-MySQL. Due to its wide use, several documentations are available online which will guarantee that materials about any aspect of it sure will be easily found.

4.1 Implementation Architecture

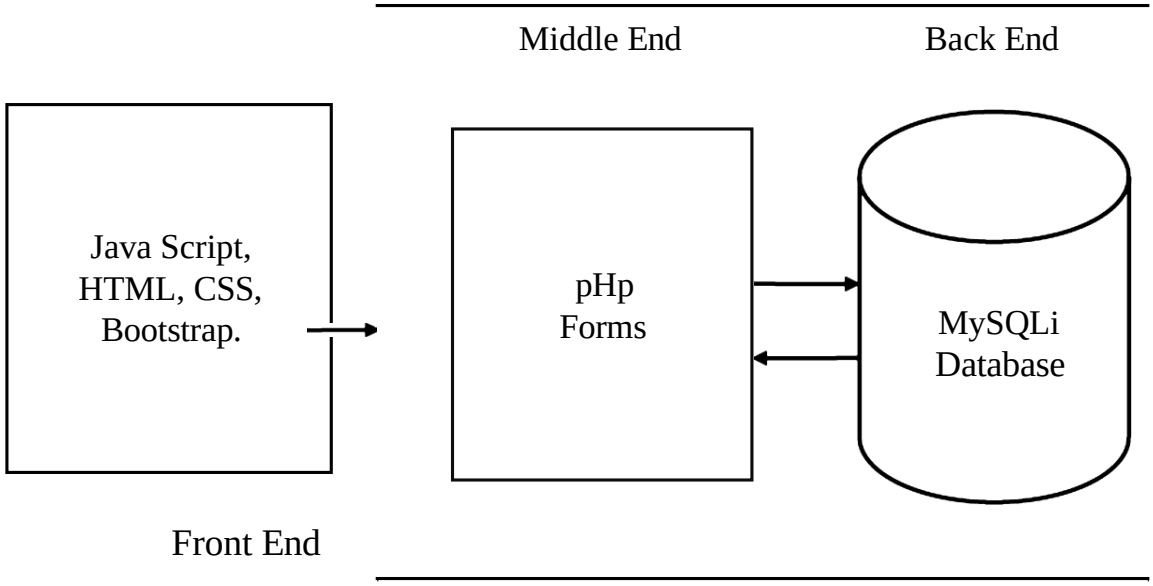


Figure4.1 Implementation Architecture

4.2 Use Case Diagram

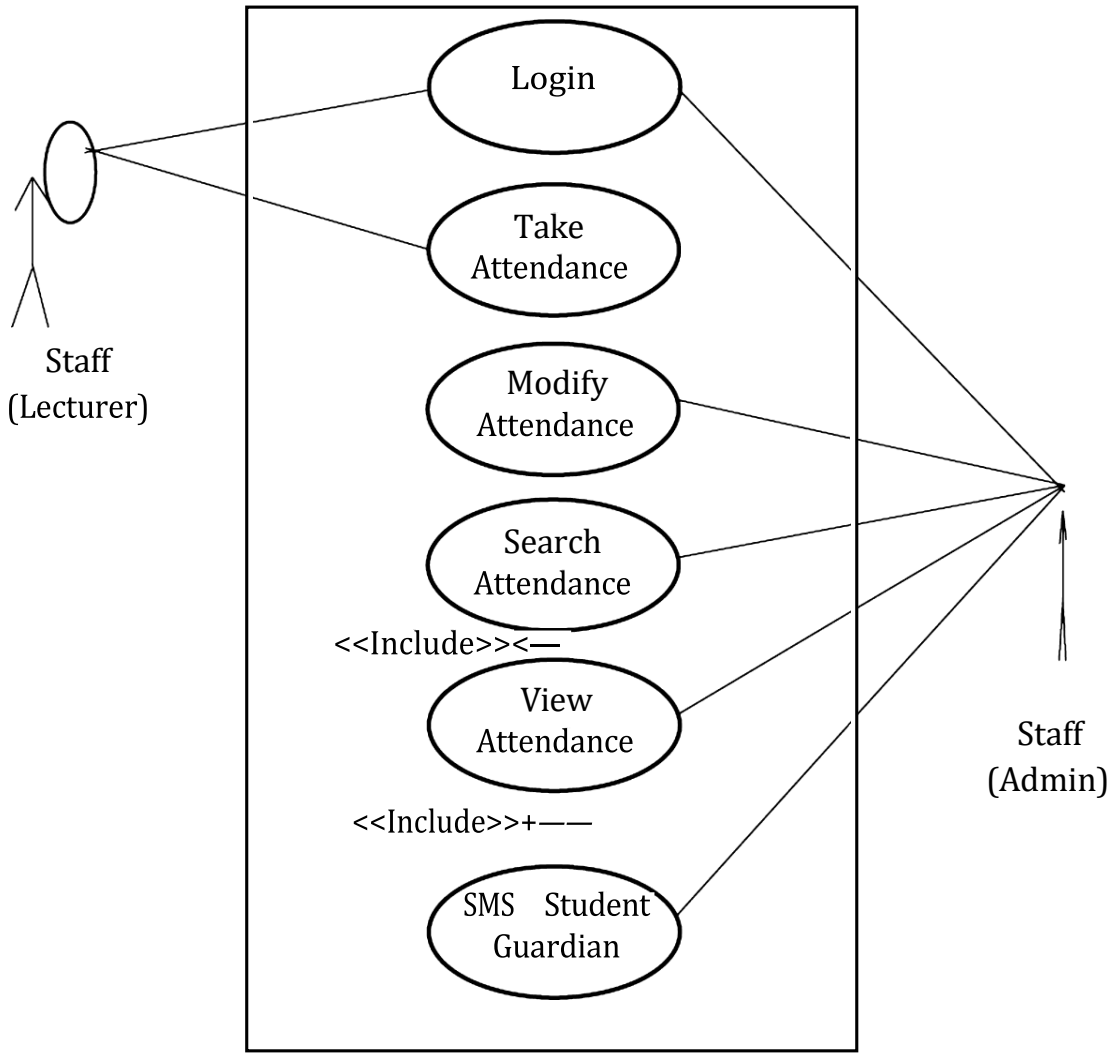


Figure 4.2 Use case diagram.

Users of the system:

1. Lecturer
2. Admin

Actions available of the system:

1. Take attendance
2. Modify attendance
3. View attendance
4. Search attendance
5. Send student attendance report to guardian via SMS

4.3 Software Testing

Shown below are the sample outputs of the newly proposed Online Barcode Attendance System.

Index/Login Page: This is an output of the Online Barcode Attendance System with Short Message Service (SMS) startup page. Here, the user logs in using the Course Code, Department, Level and Password of the desired Course. If the inputted details are correct, the page directs to the Attendance page for attendance taking. if not correct, the user will be notified to contact head min.

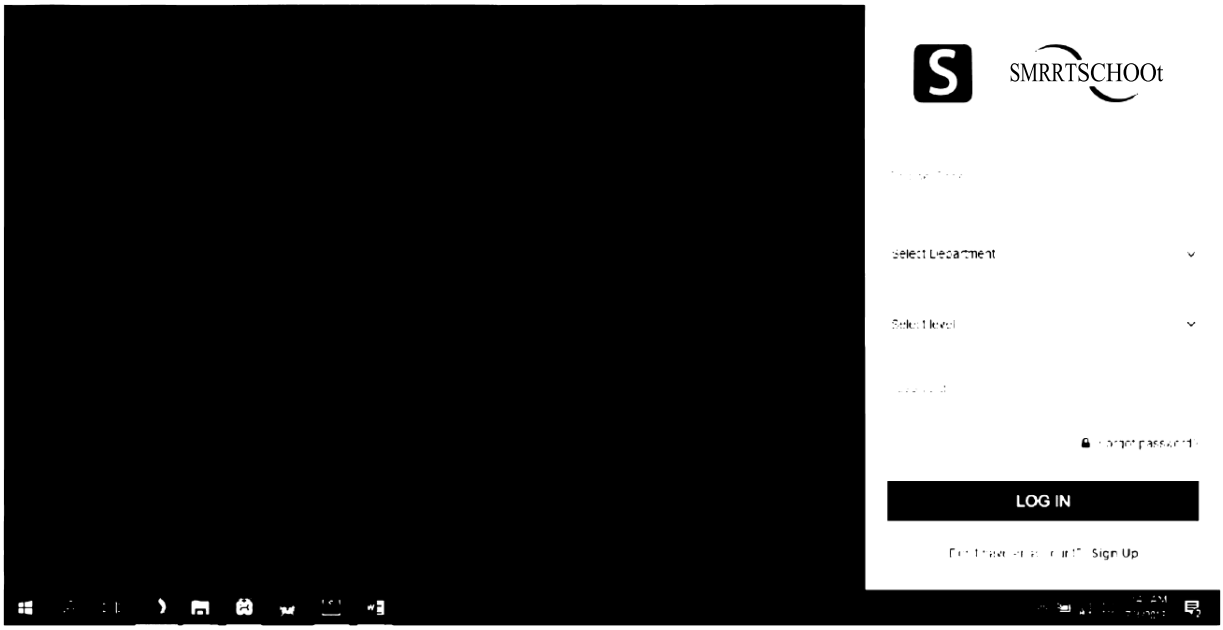


Figure 4.3 Snapshot of the Login Page.

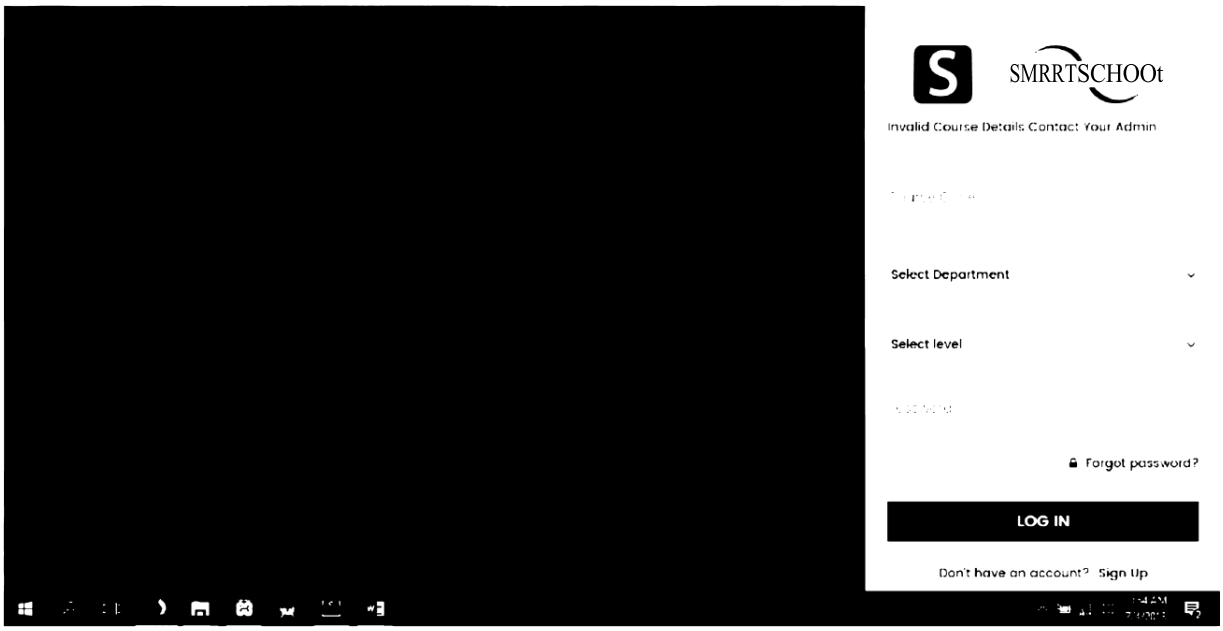


Figure 4.4 Snapshot of the Login Page showing error message for invalid course details.

Attendance Page: This is the output of the attendance page. It displays the Logged in Course Code at the top of the page. Here, the QR Code embedded on the student ID card is scanned, and the information about the student Full Name, Registration Number, Faculty, Department, Level and Passport is displayed on the screen. Also other Information about if the student is on Leave, Expulsion or Suspension is also displayed. Once this information is displayed, automatically attendance has been taken and generated without delay.

NOTE:

- Only students offering the particular logged in Course Code will be taken.
- Eachattendanceattracts2points.
- Latenesstoclassattracts1point.
- Absencetoclassmisses2points.
- Attendance is NULL is student is not found in the course register or the student is either on leave, expelled or suspension.
- Id card will be confiscated due to Impersonation and attracts a fine.

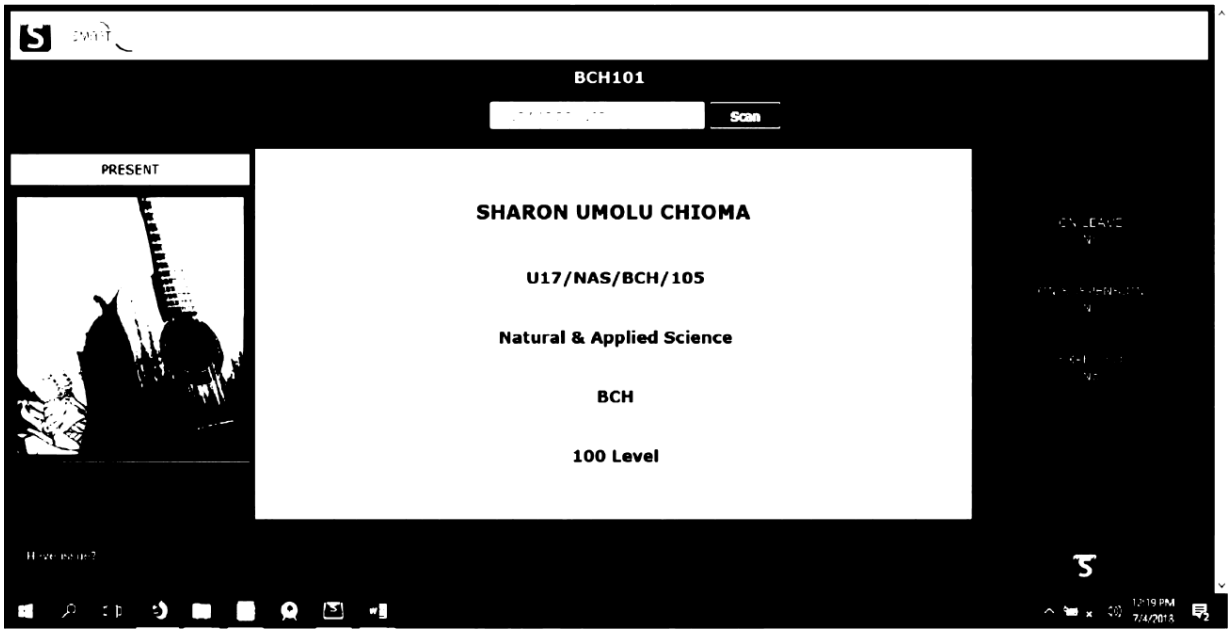


Figure 4.5 Snapshot of a student present.

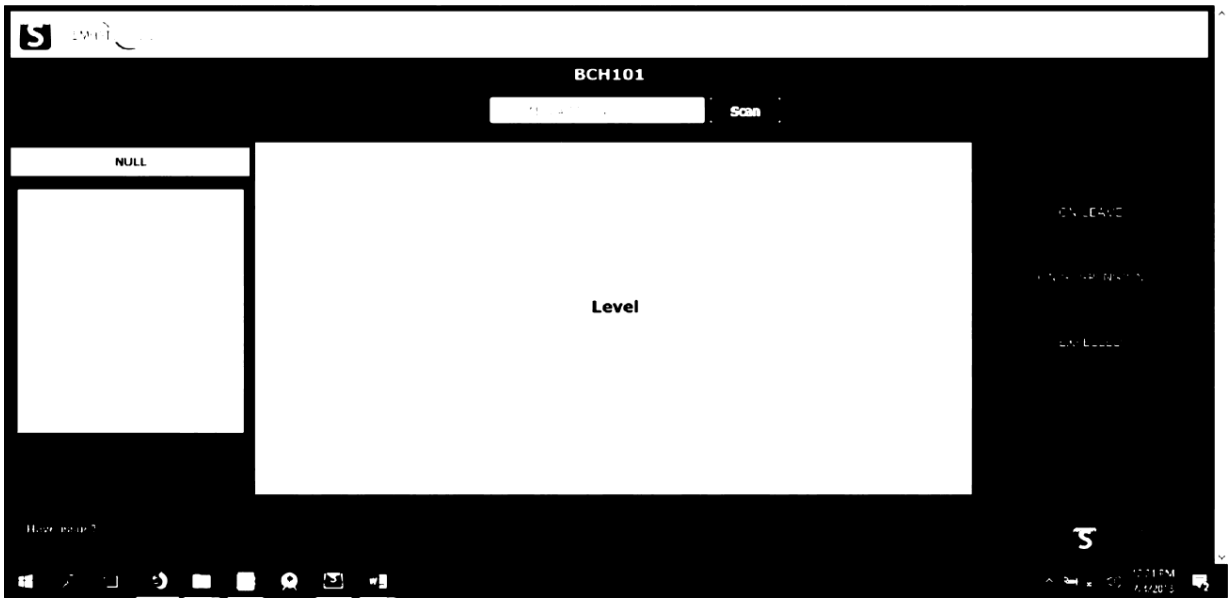


Figure 4.6 Snapshot of a Null attendance.

Report Page:

Figure 4.7 Snapshot of the report modal.

Here the logged in user can make a report to the administration issue encountered while taking attendance.

Admin Dashboard: Here the admin monitors:

- The number of users, students of each level, total students, user's issue and total students.
- Graphical reports of daily, monthly and yearly: leave, expulsion and suspension of students,
- Students with high performance and students with low performance.

Admin Accounts:

Heretheadmincanviewthedetailsofallregisteredusers.Userscanalsobe blocked from logging in.

Admin Add-Student: Here the admin registers a new student using the following

Information about the student.

- Personal Information.
- Contact Information.
- Guardians Information.
- Academic and Campus Information.
- Mentors Information.
- Passport.

Here the admin can easily make changes to the site name, site logo and page background without necessary using codes or putting the site on maintenance mode.

Admin Maintenance:

The web site is being redirected to the maintenance page whenever the admin is working to develop or manage the website. It keeps users from interfering.

4.4 Documentation Installation Procedure

Some computer program scan be executed by simply copying them in to a folder stored on a computer and executing them but this is quit advanced in nature because of the advancement in technology. Other programs are supplied in a form unsuitable for immediate execution and therefore need an installation procedure. Once installed, the program can be executed again and again, without the need to reinstall before each execution.

The following are the step involve in setting up the Quest website:

1. Install the Xampp Server.
2. Copy the **Smart school** folder to your www directory.

   Locating foot *Folder..... Click on Computer.... Click on Local disk c... navigate to* ***Xampp..... Click*** on *htdocs.....Paste the (older.....*

3. Import the database file through **php My Admin** in Xampp server.
4. Launch your browser.
5. Type**localhost**or**127.0.0.1/Smart school** in the address bar.
6. Click enter.

4.4.1 User Manual System maintenance

The program may be maintained on the ground that the system requires an upgrade. When there is a new field to be added or a new form to be added in other to serve users well.

The following precaution should be done

- Ensure that the computer is kept in clean areas.
- System should be kept in cool places.
- Air conditioner is important to reduce room temperature and keep it constant.
- Backup of data is important.

CHAPTER 5

SUMMARY , CONCLUSION AND RECOMMENDATION

5.0 Summary

A child performance depends largely on his attendance to classes. Parents would always want information about their child performance and attendance plays a pivotal role. The researcher developed an Online Barcode Attendance System with Short Message Service (SMS) which takes and monitors the child regularity or punctuality to classes in line with this it also notifies the parents about the child's performance in attendance through Short Message Service (SMS).

5.1 Conclusion

Online Barcode Attendance System is developed using HTML, CSC, BOOTSTRAP, JAVASCRIPT, PHP. It fully meets the objectives of the system which it has been developed. The system has reached a steady state where all bugs have been eliminated. The system is operated at a high level of efficiency and all the teachers and user associated with the system understands its advantage via User Manual. The system solves the problem It was intended to solve as requirement specification.

This project is completed by referring and following the project plan planned during the planning phases. The project break down in the project plan also acts as a guidance of this project.

In the conclusion, the result of this project has met all the requirements gathered during the planning and analysis phases. The system developed with the selected methodology. It is also passed all the test cases. This project can be guidance and reference for future people who are going to develop the system similar to this project. People can refer this project and come up with a more creative and innovative idea.

5.2 Recommendation

In the development of this Online Barcode Attendance System with Short Message Service (SMS), I will recommend that if there is going to be any modification the developer should look forward in making it a stand-alone system, whereby it does not require the use of external devices such as QR code scanner. This can be archived with the creation of android apps or IOS apps for the system, which uses built in camera as QR code scanner. In doing so, it further improves the portability, efficiency and reduces the time consumption of the system.

APPENDIXA

SOURCE CODES

These are thesource codes fortheindex.php, attendance.php,admin.php.

index.php

```
<?phpsessionstart()i?>

<?phpinclude'libraries7index.lib.php'?>

<?phpinclude'libraries7con[ip1.php'?>

<!DOCTYPEhtml>

<htmllong—"en ">

<head>

metacharset—"ut[-8">

                                                    Compatible"

metahttp-equiv="A-
UA- content—"IE—
edge">

metaname—"viewport"content—"width—device-width,initial-scale—1">

<metaname—"description"content—"">

<meta name="author" content="">

<linkrel——"icon"nype——"image/png"sizes——"16xJ6"fire(——
"../plugins/images/(avicon.pnp">

<title><?phpecho$sitename;?>Login</titfe>

<!--BootstrapCore CSS-->
```

<*linkrel—"stylesheet"type—*"texUcss"*hre(—"css/user.style.css"*>

<*linkhre[—*"bootstrap/distZcssñootstrap.*min.css"rel—*"stylesheet">

<*link rel—"stylesheet"*> *hre[—"../plupins7bower*componentNbootstrap-extensiorv'css/bootstrap-extension.css"

<*!-- animation CSS --*>

<*linkhre[—"css/animate*.css"*re~l"stylesheet">*

<!--CtIS£OMCSS-->

<*linkhre[—*"css/style.css"*re~l*"s(yfesheet">

!--***COIOY****CSA*-->

<*linkhre[—"css/colors/megna*.css"*id—"theme"rel—"stylesheet">*

<!--*HTMLSShimandRespond.jsIE8supporto(HTMLS*elements*and media*queries-->

<!--*WARNING:Respond.jsdoesn'twork i(youviewthepagevia(ile://-->*

*!--[i[ItIE*9j>

<*script*src—"https:Z/oss.*maxcdn.com7libs/html5shiv/3.7.07htmlSshiv.js">*</*script*>*

<*script*src—
"https:Z/oss.*maxcdn.com7libs/respond.js/1.4.27respond.min.js"><7script>*

<![endiff-->

<script>

functionstartTime(){

vor today—new

Dote(); varh–

today.gett—Iours();

var m—

todoy.petMinutes();

var s—

today.petSeconds{);

m=*checkTime(m);*

s=*checkTime{s);*

document.petElementById('txt').innerHTML—h":"+m+":"*s;*

var t se@imeout(stortTime,*500);*

(unctioncheckTime(i)(

```
    return i;


</script>

 /head>

<bodyonlood—"stortTime()">

<!--Preloader-->

<divclass="preloader">

 <divclass—"cssload-speedinp-wheel"></div>

</div>

<sectionid—"wrapper"class—"login-register">

    <$vi$—"ptxqt$sryple—"float:Ie(t;[ont-size:9Spx;text-align:center;width:45%;margin-top:200px;


--><divclass'"login-boxlo€iin-sidebar"id''Io€i'>

    '--  scripttype—"texFjavascript">

  document.€ietEiementBy1d('boot').onclick—junction()[

    $('#lop').show('slow');


</script> -->

   <divclass="white-box">
```

<[ormcl "[orm-horizontal[orm- "login[orm"action=""me ’’POST"> as s material"id tho d

*<ahre[—’’javascript:void(0)"*cfoss*="text- "?phpecho*$sitefogo;*?> " centerdb’’><tmpsr c alt—"Home"*cfoss—"smort"style— *"heipht:100px;"/>*

<?phperrorreportinp{0);?>

* <?php echo $msg; ?> *

<div*class*="form-9roup*m-t-40"*>

```
<divclass—”col-xs-12">

inputcfoss="[orm-control"typ–e "text"nam–e "coursecode"requi–d ""placehol–r "Course Code
”>

<divclass="form-9roupm-t-40">

<divclass—”col-xs-12">

<select class="form-control" name="dept">

<option>SelectDepartment</option>

<b>option>--ARTS--

</option></b>option>ENG<

/option>

option>HIS</option>

option>MUS</option><br>

b><option>--EDU--

</option></b>option>CSS-

EDU</option>

option>BlO-

EDU</option>option>CH

M-EDU</option>

option>PHY-
```

EDU</option>

<option>--NAS--

</option>option>ARC</

option>

option>CSS</option>optio

n>CHM

</option>option>BCH</opt

ion>

<option>BIO<7option>

option>BTG</opti

on

>option>ICH</o

ption>option>MC

B</option>

<option>PH¥</option>

*<option>GLM</option>
*

<option>--MSA--<7option>

<option>ACC</option>

<optionRECO<7option>

<optionLIRE</option>

<optionAMAS</option>

<option>MKT</option><bre

<option>--LAW--<7option><7b>

<option>LAW<7option>

</select>

* *

<div*class*="form-9roup*m-t-40*">

<divclass—"col-xs-12">

```
<select  class="form-control" name="level">
  <option>Selectlevel</option>
  <option>100</option>
  <option>200</option>
  <option>300</option>
  <option>400</option>
```

</select>

<divclass=”(orm-
group”>

<divclass——”col-xs-
12”>

<inputclass—"(orm-control"type—"password"name—
"password"required—"" placeholder—”Password”>

<div*class="form-*
9roup">

<divclass——"col-md-12">

*div*cfoss=*”checkboxcheckbox-primary*puff-feet*p-t-0">*

<input*i* "checkbox- *"checkbox">*
~~*d*~~ sipnup"*t y p e*

<!-- label[o r"checkbox-sipnup">Rememberme</label>-->

<o*hre[—* *"to-* *”text-dark*puff-
"jovoscript:void(0)"i d *recover"c l a s—* right"><*i*cfoss=*"[a[a-lock*
s
*m-r-5”>Eli>Forgotpassword? *

* *

*cdiv*class=*“(orm-prouptext-centerm-t-20“*>

<*divclass——”col-xs-12”*>

<*button*class="bin*btn-in(obtn-Ipbtn-blocktext-uppercasewaves-e[(ectwaves-light"*

typ—"submit"n a e m–e "submit">*LogIn*<7button>

<div*class*="form-9roupm-b-0">