ONLINE STUDENTS ATTENDENCE MANAGEMENT SYSTEM

FOR HIGHER INSTITUTIONS OF LEARNING

CASE STUDY UGANDA MARTYRS UNIVERSITY MASAKA CAMPUS

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2017-B072-30017

UGANDA MARTYRS UNIVERSITY

SEPTEMBER 2020

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A Project Report Submitted to the Faculty of Science for the Study Leading to a Project in Partial Fulfillment of the Requirements for the Award of the Degree of Bachelor of Science in Information Technology of Uganda Martyrs University

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DECLARATION

I have read and understood the rules of Uganda Martyrs University on plagiarism and hereby state that this is my own work. It has never been submitted to any institution for the award of any qualification.

I have acknowledged all the sources I have used for this research.

NAME OF RESEARCHER: NABUNYA SANDRA

Signature: _____ Date: _____

APPROVAL

This work has been done under my supervision:

NAME OF SUPERVISOR: SSEMWEZI ANDREW

Signature: _____ Date: _____

DEDICATION

This piece of work is dedicated to my beloved sponsor Rev Fr Kyaligonza Franscis Ateenyi. And also to my beloved parents, sisters and brothers for all their support.

ACKNOWLEDGEMENT

I am very grateful to my project supervisor Ssemwezi Andrew for the guidance, inspiration and constructive suggestions that helped me in the preparation of this project. I will not forget to also thank my course-mates for their help wonderful and skillful guidance in assisting me with the necessary support to ensure that my dissertation is a success.

I also thank the administration of Uganda Martyrs University for having granted me the chance to study from this great university.

ABSTRACT

The word “Attendance” means to choose from a list, to elect or to determine. The main goal of attendance is to come up with proper list of the attended students

This project is about developing an online attendance System for higher institutions of learning using Uganda Martyrs University Masaka Campus as the case study. This study looked at the challenges that the students, lecturers and administrators. It focuses on how the university can use the power of Information Technology to manage its attendance records. This study therefore provides answers on how best institutions of higher learning can manage student’s attendance.

This system was developed using HTML and PHP as the programming language and MySQL as the database management system. To develop the system, designs were made that covered the system architecture, user interfaces and database design.

At the end of the project, an online attendance management System for Uganda Martyrs University Masaka Campus, which was the case study, was developed.

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CHAPTER ONE

1.0Introduction

This chapter covers the background of the study, statement of the problem, main objective, specific objectives, scope and finally the significance of the proposed solution to the identified problem.

This research is in the field of a web based development. Aden and Metin, (2011) defines a web based development as application software that runs on wed severs. Unlike computer-based software programs that are stored locally on the operating system of a device, Web applications can be accessed by the user through the web browser and on any device that can run a supported browser and has an active internet connection.

According to Saffarzed and Mansooor (2009) Attendance management system is a system developed for daily student attendance in schools, colleges and institutes. Poor student's attendance management in schools colleges and institutions results in difficulties in mismanagement of information, administering, planning and monitoring performance of an education system.

The study aims at ensuring that educational centers be successful in the future. Universities have to keep a track of students within school and also maximize their performance, thus a students attendance management system was developed to assist the user track students performance.

1.1Background

California State University, Chico (CSUC), with one of the longest histories of higher education in California, the greatest volume of institutional records deposited in university archives, in equal quantities to governance records, was class attendance records. This report thus brought into focus absenteeism in the first month of can predict poor performance and attendance throughout the semester for all universities, including (CSUC), which traditionally has taken the paper "attendance record" into its archives for permanent retention.

According to king's college explained that "attendance record" was identified particularly containing a vast array of materials with large variation between schools as to what was

being held. The Archives and Corporate Records Services (ACRS) undertook preliminary costing associated with various options for retention and media conversion and it was evident that the current general practice of retaining all documentation was not sustainable.

In Africa, a good reference is South Africa (Martin, 2011). Attendance information system literally means the general information systems for maintaining and ensuring student attendance. It exists in all the schools, colleges, universities and any other education institutions. However, those information systems vary. Some of them are paper based; heavily manual work is involved in managing and maintaining attendance. However, recently, most schools, even down to the very smallest, utilize computers in some way or another.

In East Africa, a study by Muliriithi and Ogalehe (2015) shows that universities are using either the predefined attendance record in temple in Microsoft Excel or the traditional way in attendance record book. These methods are already proven and tested for its effectiveness. Gung (2016) however mentions problems and discomforts that have been experienced , recording absence at a department having a large number of students in a classroom is a difficult task and time-consuming. Moreover, the process takes much time, and many efforts are spent by the staff of the department to complete the attendance rates for each student.

In Uganda, online attendance record has been tested in some institutions of learning generally, it has also been tested in other fields such as organizations through assigning duties, managing accounts among others. Still in Uganda, there is a mismanagement of attendances that is to say, theft of records and burning of necessary record. Studies show that those who are young and more affluent have better computer knowledge than those who are less affluent and educated (Bousor, 2014) so a need for attendance record management system.

Smith (2007) basing on him, suggests that, Electronic means should be used hopefully to provide education from home based computers, personal computers, and internet 3 kiosks which will help close this digital divide to reduce on the problems they face in the current system such as high costs incurred in moving long distances to schools or campuses, among others once implemented.

1.2 Problem statement

In the new era of advanced technology where online system boosts, work speed, reduces mistakes and promotes the generation of accurate results, having manual attendance system and traditional paper-based attendance system currently was used this comes up with students accidentally or purposely sign for other students, student miss out their name, while the latter leads to a false attendance record. Another issue of having the attendance record in a hardcopy form is that a lecturer may lose the attendance sheet (Martin, 2017).

Many universities and other institutions in Uganda especially are still processing their way of filling attendance records manually. This has contributed to inconsistencies insecurity, the method is costly and time consuming, wrong information, loss of data hence leading to a continuous computation of errors, and conflicts in universities. Since attendance is an activity that shows helps to keep track and performance of an individual, its data must be well managed.

1.3 Research Objectives

These research objectives were categorized into main and specific objectives which are as follows:

1.3.1 Main objective

The main objective was to develop an online attendance management system for Uganda Martyrs Masaka Campus that will provide students privacy, integrity and accuracy.

1.3.2 Specific objectives

i. To investigate and analyze the current road online attendance management system processed and review the literature related to the current system in order to establish the requirements
ii. To design a new online attendance management system in order to come up with models representing the system.
iii. Implementing the online attendance management system to ensure that the designed system is transformed into a working system.
iv. To test and validate the implemented system to ensure that it meets the specified requirements

1.4 Scope

This section describes the time scope, content scope and geographical scope within which the researcher carried out the research.

1.4.1Time Scope

The process of conducting the research started from the period of Problem identification to Research project, submission was done within a time frame of 9 months from October 2019 to June 2020.

1.4.2Content scope

The system is capable of providing the following functionalities

Front end user functional requirements

Registration: A user after accessing the system and having successfully accessed it submits details that will be used to create their user account and the user registers

Login: The system allows a user to login to the system at different instances and it provides an option whether to sign in to the system or to logout.

File attendance report: After the user logged in the system, becomes able to view courses and to do attendance.

The backend user functional requirements

User registration: The backend user is the lecturer who has more privileges than the front end user. When the backend user registers, he is given higher user level clearance as compared to the front end user. This means he can access more functionality aside from the frontend user functionalities.

1.4.3Geographical Scope

The study used the attendance management processes and procedures of the attendance Department at Uganda Martyrs University Masaka campus in Masaka municipality, located in Masaka district in the Central region of Uganda. This choice was based on convenience and ease in data collections.

1.5 Significance of the study.

Attendance management is fundamental to any institution and organization (Shalapovaet.el, 2014)

The findings on the impact of management information systems in maintenance of attendance records according to (Aden and Metin, 2011) a well developed system provides several features including accuracy; it must accurately reflect the intent of each individual.

An online attendance management system reduces unwanted human errors, it is reliable and it provides timely information to its user's .It does not require geographical proximity of students (Ogalehe, 2015).

The system helps users to keep truck the entire activities done by students, lectures and administrators benefit because it contributes to uplift the application of technology and the institution's performance.

CHAPTER TWO

2.0Literature review

This chapter explores literature review on similar systems used to manage students attendance. It also focuses on their structure and architecture as well as their implementation.

2.1 Attendance Management

Saffarzed and Mansooor (2009) define attendance Management as system developed of daily student attendance in schools, colleges and institutes. If facilitates the access of attendance information of a particular student in a particular class. The information is sorted by the operators, which will be provided by the teacher for a particular class.

According to Murali, R., Bojja, P. and Nakirekanti, M. (2016), checking student attendance is one of the important issues for universities, because many universities evaluate students' attendance and while giving the final grade, professors consider their total number of appearances on classes during the whole semester. This brings to the idea of having some tool to control students' attendance.

Mulirith and Ogalehe (2015) say as the attendance sheet is passed around the class, some students may accidentally or purposely sign another student's name. The first case leads to a student missing out their name, while the latter leads to a false attendance record. Gunga (2013) observed another issue of having the attendance record in a hardcopy form is that a lecturer may lose the attendance sheet. In terms of attendance analysis, the lecturer also has to perform manual computation to obtain the students' attendance percentage, which normally consume a lot of time.

Some universities prefer to use paper sheet for controlling attendance, whereas some universities prefer to use paper sheet for checking students' attendance and after this, fill out these information into a system manually.Menne-Haritz (2013).

In both classroom and work places attendance may be mandatory. Poorattendance by a student in class may affect their grades or other evaluationsAllen (1989). Poorattendance may also reflect problems in a student's personal situation, and is an indicator that students are not developing the knowledge and skills needed for late success. Based onLombardo

and Condic (2000),for students in elementary school and higher school, laws may require compulsoryattendance, while students at higher levels of education may be penalized by professors or the institution for lack of attendance.

2.2 Literature on the existing systems

Many authors have come up with different arguments and reports on how online attendances record management should be conducted

“Mobile Based record Management System” conducted by Reddy, et al (2014) aimed to automate attendance management using mobile devices to reduce the dependencies on paper resources and also provide a way of communicating between lectures and students. The teacher takes time to follow his students online.

Based Area Web Monitoring, EPJ Web of conferences came up with a“students Attendance Tracker system” developed an android application to manage students attendance. The main objective of this project was to add mobility to existing system process. Teachers took attendances edit attendances keep I tough with students sent important documents in portable document formats upcoming events managed quiz leave tests and exams and communication facilitated furthermore the researchers reported that the application offers reliability, time saving, and easy control.

A study by Muliriithi and Ogalehe (2015)shows that universities are using either the predefined ***class recording in temple in Microsoft*** *Excel* or the traditional way in class record book. These methods are already proven and tested for its effectiveness. Gung (2016) however problems and discomforts have been experienced during the release of grades.

Power soft free online screen recorder was used it was a web based application which enables users to capture their screen activity along with audio from system and microphone, both in HD quality Documenting lecturers and students especially when their multiple classes. Aside from making the class vivid, you can also save lot of time in preparing for classes when you have a recorded audio or video of the lecturer at hand.

According to Allen (1989) analyzed some studies undertaken to analyze patron’s response to using ***bibliographic databases on CD-ROM*** in academic libraries and found that patrons

prefer CD-ROM to comparable printed reference tools. Lombardo and Condic (2000) set out to determine user acceptance of the On-line Public Access Catalogue (OPAC) and found that users overwhelmingly preferred the OPAC and found it easy to use. Similarly, Isman (2004) found that students in Eastern Mediterranean University have very positive attitude towards Internet use; just as Allen (1997) found that the students surveyed were receptive towards electronic information resources while the internet was their most used of these resources available to them

Databases are being used as the attendance records management systems of preference because of their informational value. Such databases are created for their informational value as an informationresource. Statistical databases are good examples of this kind of database. Terry Cook and EldonFrost(2011) have described the first generation of databases transferred to the Canadian National Archives as mainly consisting of statistical and survey files.

2.3 Benefits of attendance record management systems

Marburg, Germany (2015), it is reliable and accurate as per the traditional method, employees used to report their work hours manually. This process had many loopholes like sometimes employees forget to log in the correct timings and there are occasions when the employees misuse the system and give incorrect inputs. However, having an automated attendance management system helps in keeping the accurate and reliable data.

Gunga (2013) observed that keeping the track of the traditional manual attendance is a clumsy task and calculating the work fee for employees becomes an issue. There are chances of error and moreover it is a tedious task. With the help of automated attendance management the task can be made simple and easy. It improves the efficiency and productivity of the organization.

Cost effective: Getting automated attendance management system helps in cost cutting and it is one time investment and you don’t have to pay a human for doing this task. Moreover you get error free report without wasting time. Luciano, B., (2002)

Menne-Haritz (2013) argues that attendance Management system is flawless and it gives you accurate data regarding the exact work hours, leaves and net amount to be paid to the employees. It gives enough information required for regulatory compliance against the employees.

2.4 Challenges of enforcing attendance

Poor administration. In certain organizations, supervisors are well-aware of their responsibilities of attendance tracking. However, they do not have the supporting tools to perform this important task.

Inconsistence in capturing of absence. It is vital to record every time a student is absent including information such as date, time and reason .This makes it possible for administrators to understand where the problem lies .Aden and Metin, (2011)

Poor tracking. It is the job of the employees to track the student's attendence or their problems. They are responsible for managing their students. A lot of supervisors however are not trained and informed about this duty.

CHAPTER THREE

3.0Research Methodology

3.1 Study Area

The study was conducted from Uganda Martyrs University Masaka where the researcher found out that the idea of having an online system is supported by the students.

3.2 Study Population

A population refers to a complete set of objects, cases and individuals that the researchers intend to generalize the research results (Olive & Abel, 2012).

This refers to the collection of elements, people among others that can be used to investigate a particular fact or situation. The study population involved University administrators, students and the university staff that were interviewed and given questionnaires to fill and thereafter, collected and evaluated.

3.3 Sampling strategy

Persuasive sampling technique was used. This is the type of sampling based on the intention or the purpose of study. Only those elements were selected from the population which suited the best for the purpose of the study. However, the use of the method was not adequately explained in most studies.

3.4Sample size

The sampling frame was categorized into groups that were the basis of sartified random sampling. The units of analysis consisted of administrators, lecturers and students. To get out the sample size a simplified formula of Morgan and kredge was used with a sample size of 130

3.5 Data requirement collection

Data about attendance management system was collected using the various instruments such as interviews with the administrator, lectures and, the students. These tools are discussed in greater depth below:

3.5.1 Interviews

Using interviews, the researcher used acquire relevant first class information from the administrators' lectures and, the students of the school. This method involved face to face

interaction with the respondent. The interviewer compiled questions for the targeted users which help him get the specific requirements to include in during the development of the system.

3.5.2 Questionnaires

This method involved a number of related questions that were used basing on the study objectives of the project. These questions were given to the respective respondents who were required to fill in the questions accordingly.

3.5.3 Observation

This technique was used to gather accurate information on how the system actually operates and it also involved active participation in recording attendance.

3.6 Data collection tools

3.6.1 Interview guide

This is an outline of different question that was used during the interview it comprised of structured open and close ended questions that aimed at finding the respondents view on the existing attendance record system

3.6.2 Questioners

3.7 Design methodology

The following tools were used to design the system

3.7.1 Design tools

***3.7.2Entity relationship diagrams*:** It is a type of data modeling that shows a graphical representation of objects or concepts within an information system or organization and their relationship to one another.

3.7.3. Data flow diagrams (DFDS)

These are hierarchical input process output charts supported by documentation. They helped to show the relationship between data and its flow within the system. In this case data collected from the field was categorically compiled to come up with various data types.

3.8Implement technologies

3.8.1 PHP: "PHP" is an acronym that stands for "PHP: Hypertext Preprocessor". It's a scripting language originally designed for web development to produce dynamic web pages. PHP code is embedded into the HTML source document and interpreted by a web

server with a PHP processor module, which generates the web page document. It was used to design user interfaces.

3.8.2 HTML (Hypertext Markup Language): It's the predominant markup language for web pages which is written in the form of HTML elements consisting of tags, enclosed in angle brackets within 22 the web page content. It was used to create forms and tables. The browser does not display the HTML tags, but uses the tags to interpret the content of the page.

3.8.3 MYSQL: It's a relational database management system that runs as a server. The researcher used it to create databases. It was preferred because of its flexibility to easily connect with user interfaces built in PHP scripting language. It has made its source code available under the terms of the General Public License, as well as under a variety of proprietary agreements which makes it easy to access.

3.8.4 Dreamweaver: Dreamweaver is a web design and development application that provided a visual WYSIWYG editor (colloquially referred to as the Design view) and a code editor with standard features such as syntax highlighting, code completion, and code collapsing as well as more sophisticated features such as real-time syntax checking and code introspection to generate code hints to assist the user in writing code. The Design view facilitates rapid layout design and code generation as it allows users to quickly create and manipulate the layout of HTML elements.

3.8.5 Unified modeling language (UML): The Unified Modeling Language (UML) is a general-purpose modeling language in the field of software engineering, which is designed to provide a standard way to visualize the design of a system.

CHAPTER FOUR

SYSTEM ANALYSIS AND DESIGN

4.0 Introduction

This chapter presents findings from the questionnaires and interviews, explains the current attendance management system used at UMU Masaka campus and it also explains the problems of the current attendance management system and then proposes a new solution. The chapter describes the user requirements for the system. The functional requirements are identified, and the non-functional requirements are also listed. The chapter explains the database design, interface design, program modules and hardware requirements.

4.1Analys of Data

Data from 130 respondents at UMU Masaka Campus was analyzed; the data was collected from students, lecturers and administrators using questionnaires and interview guides. The respondents were asked about the level of their I.C.T skills, the results are indicated in table 4.1 below:

I.C.T knowledge and skills	**Number of Respondents**	**Percentage (%)**
Excellent	35	37
Good	60	46
Fair	25	20
Poor	10	7
Total	**130**	**100**

According to the table above, the biggest number (46%) of respondents are able to use

computer systems well because in each and every course offered at the university, students are introduced to ICT even if they are not ICT students.

Also respondents were asked about their level of satisfaction and how reliable is the current attendance system used at UMU Masaka campus. The results are shown in table 4.2 below:

Table 4. 2 showing respondents' level satisfaction with the current system

Level of satisfaction	**Number of Respondents**	**Percentage (%)**
Very satisfied	22	17
Less satisfied	48	37
Not satisfied	60	46
Total	**130**	**100**

The above table shows that 46% which is almost a half of the respondents were not satisfied with the current attendance management system hence the need to develop a new attendance management system.

4.2 Description of the current system

Uganda Martyrs University Masaka campus as at the time of this research was still relying on paper based procedures for attendance filling. By default a student comes to class and the attendance sheet is passed for every one to sign.

Once each and every one who has attended signs the sheet is passed onto the lecturer to confirm the attendance and crosses those who have not attended.

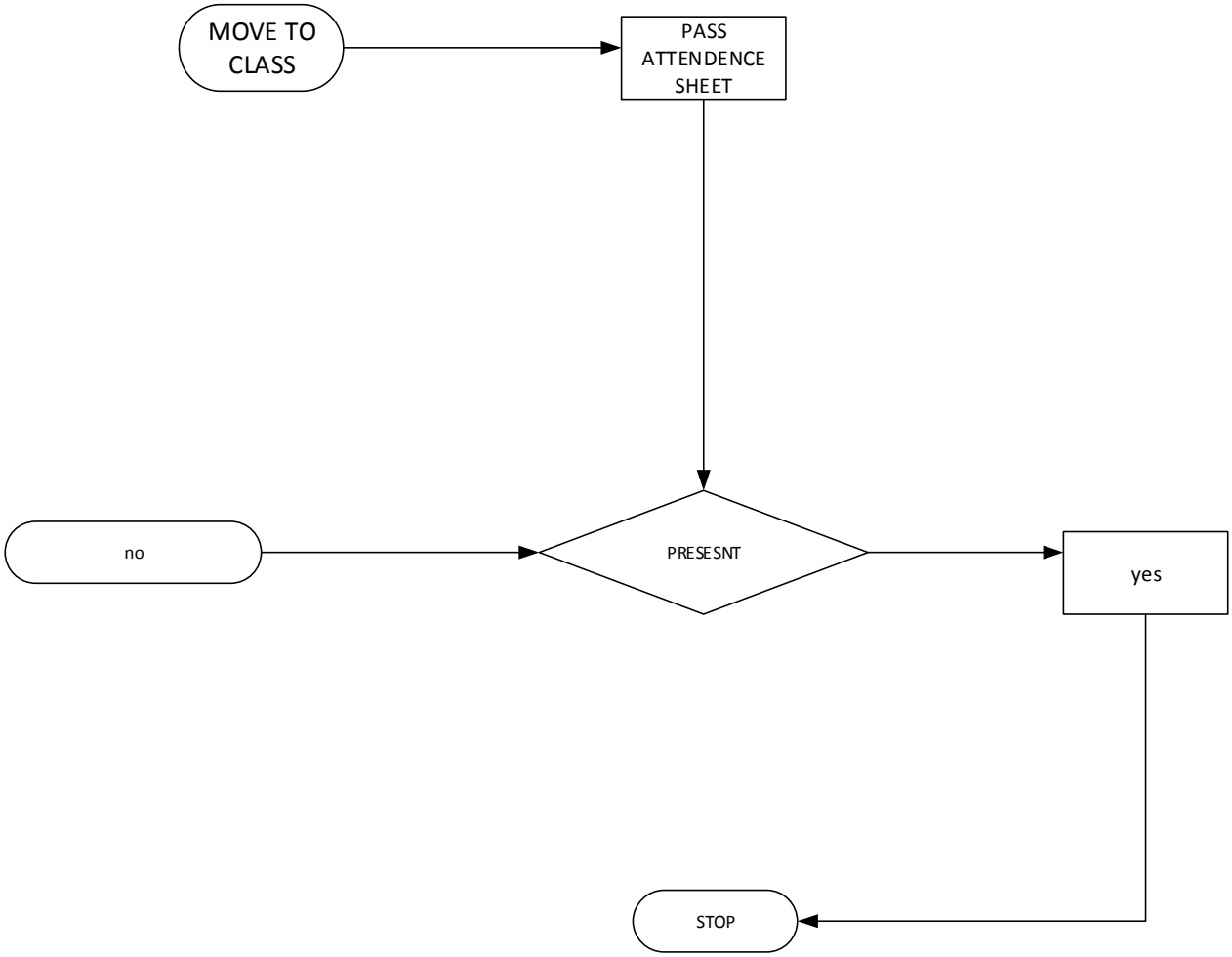


Figure 4. 1: Illustration of the Existing attendance process at UMU Masaka Campus

4.2.1 Weakness of the Existing Attendance System

The following are some of the problems faced with the current attendance management system used at UMU Masaka campus:

Students signing for other students those who are absent request friends to sign for them with out the lecturer's approval.

Lecturers and students may loss the attendance sheet

Students sometimes miss out their names.

Students can not compute their percentages and their is only done by the administrators yet it would be necessary for one to compute his or her own percentage

4.3 Requirements of the proposed system

4.3.1 User Requirements

User requirements for the online attendance management system are divided into two categories; functional requirements and non-functional requirements.

4.3.1.1 Functional Requirements

Table 4. 3: showing Functional Requirements

Module	**Functional Requirement**
Administration	Allow the administrator /Lecturer; - i. add, delete, edit, update (users, students) ii. view attendance and delete wrong attendance iii. managing entire system iv. login in using username and password

4.3.1.2 Non Functional Requirements

The non-functional requirements were used to identify the standards that can be applied to decide on the operation of the system, the system should be:

Reliability: The system should be able to produce acceptable results**.**

Multi-threading: The system should be able to allow several users to access

. **Usability:** The system should be as easy to use to the administrators

. **Maintainability:** The system should be easy to maintain.

Security: Only administrator can set limits and user accounts, the administrator cannot generate the same ID for another user and students have their unique login for relevant areas.

4.3.2 Hardware Requirements

Table 4. 4: showing Hardware Requirements

Hardware	**Specification**
Processor	2.5GHz
RAM	4.00GB
Windows Operating system	64 bit

Screen resolution	1280 pixel

4.3.3 Software requirements

i. MySQL Server, a server hosting the database where all the data regarding different processes are stored.

ii. Web browser: Opera, Google chrome, Mozilla

. iii. Operating System: Microsoft Windows 10 or higher.

4.4Proposed system

The proposed online attendance management system was to enable students register online to reduce impersonation

The system has the ability to automatically compute attendance and students has the ability to record attendance

4.4.1Benefits of the proposed system

i. With the proposed system, results misrepresentation will be cut down since users are automatically recorded by the system.

ii. Increased students turn up will be achieved since there will be need for lectures aprroval for attended students.

iii. Data processing will become more accurate since human errors will be minimized in final result calculations.

vi. Security: which allows for easy authentication and no chance of registering for the other? It is necessary in any attendance system to provide the highest degree of authentication possible.

4.5 System design

The activities and data involved in the online attendance management system project were modeled using Relational schema, dataflow diagrams. Data Flow Diagrams (DFDs) are graphical representations of data processes and data flows. Here data flow diagrams have been used to depict the broadest possible overview of system inputs, process and outputs.

4.5.1 Level 0 Data flow Diagram for the proposed system

The diagram below shows the level 0 data flow diagram and stages that data undergoes including processing stages. The students do online attendance and the data is stored in the database. Officials and administrators can view and manage users.

Level 1 DFD

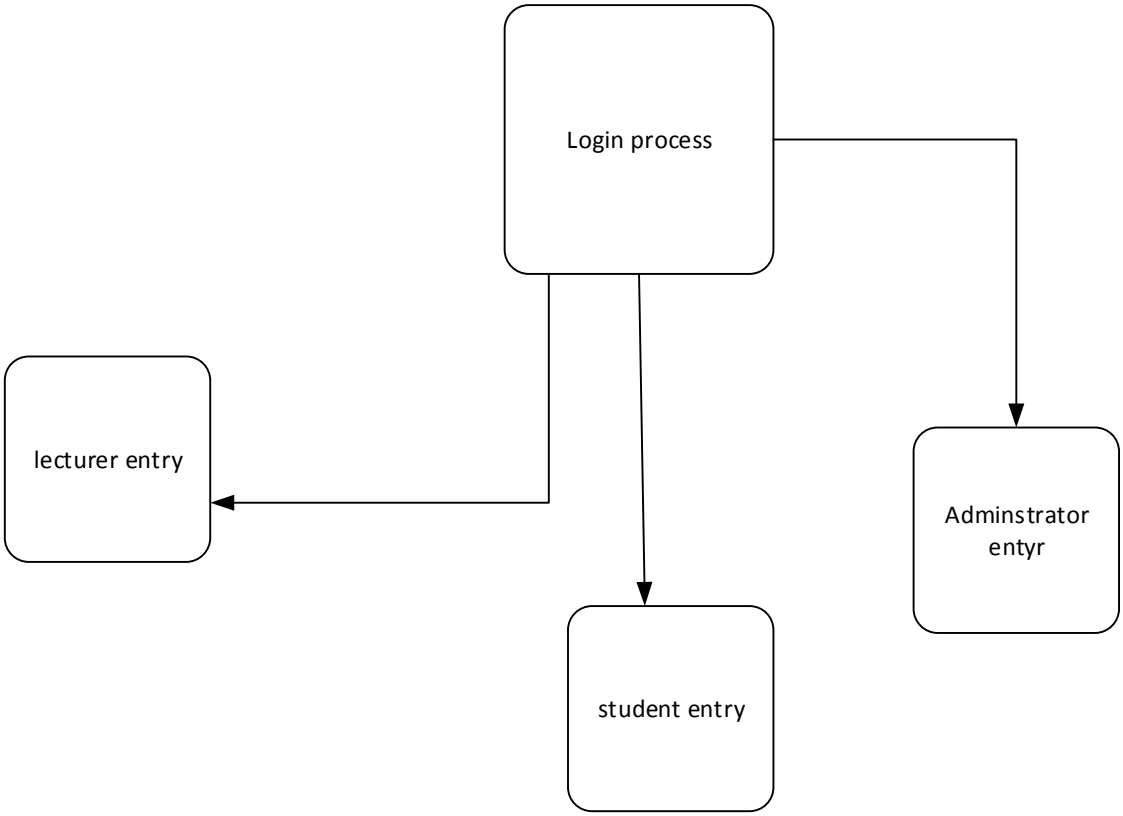
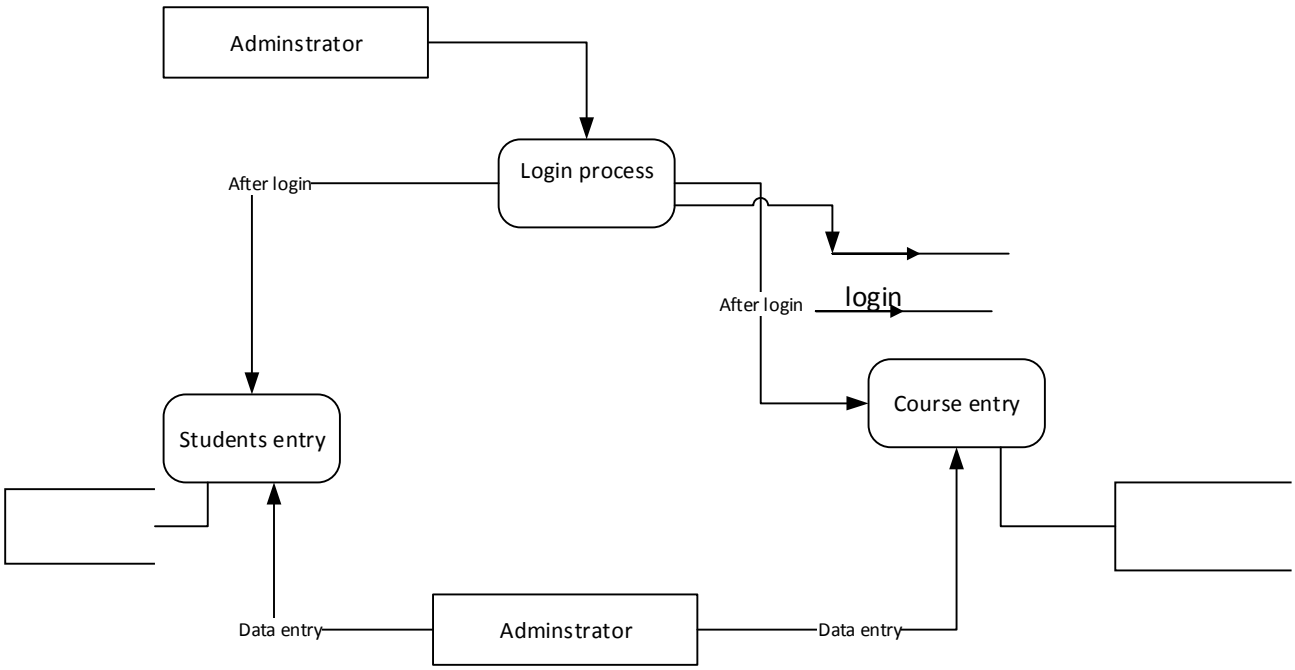


Figure 4. 2: showing level 0 dataflow diagram

4.5.2 Level 1 Data flow Diagram for the proposed system

A level 1 DFD gives more details of each of the main sub-processes of the proposed system that together form the complete system.

Figure 4.3:showing level 1 dataflow diagram



4.6 Database design

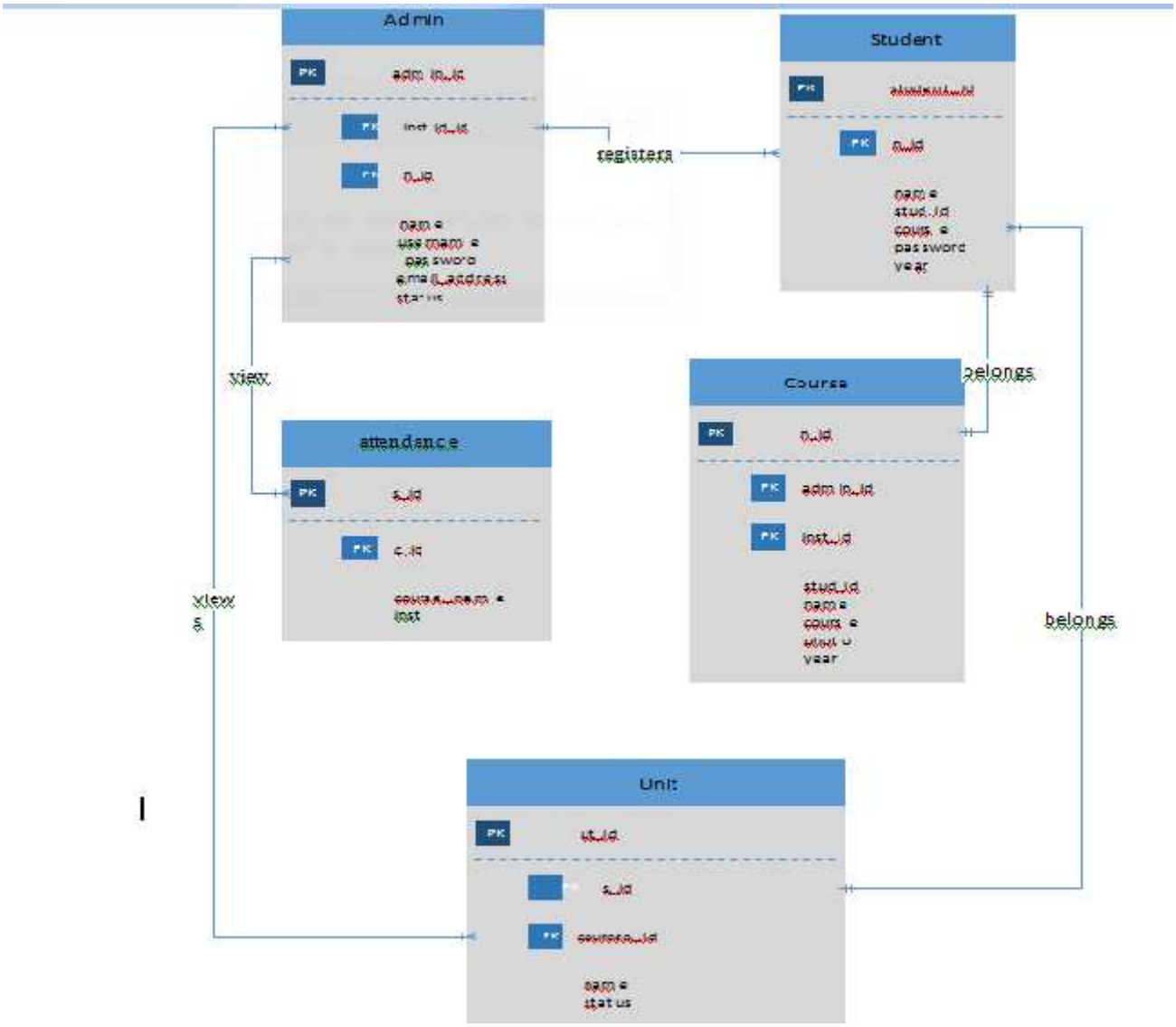
It was comprised of designing the conceptual, Logical and physical database.

4.6.1 Conceptual and Logical Design

Modeling of the Data is done during the first stages of the database development process. The data model focuses mainly on what information should be stored in the database. The information needed to build the data model was gathered during the requirement analysis.

An Entity relationship Diagram was drawn to explain the relationships between the attributes as well as the requirements for the system.

Figure 4. 4: An ERD Diagram for the System



4.7Interface Design

The interface was designed using Hyper Text Markup Language (HTML). This makes up the overall graphical user interface in which PHP was embedded to carry the appropriate SQL queries that fetch data from MySQL database.

Principles used in the development of new system included the following;

i. The researcher applied the principle of consistency. This is seen in the way by which the system looks, acts and operates in the same way.

ii. The principle of availability was also used by the researcher. This was meant that the all the objects were made available all the time for the users to perform all the actions/functionality at any time they feel like.

iii. The system is simple to use and easily understood by the users.

iv. Another principle that was used by the researcher is Aesthetically pleasing where the system was developed in such a way that was so as visually appealing and pleasing the users are attracted to use it.

v. Efficiency was also considered as a principle that was used in the development of the system.

For we see that all the elements such as, add, submit and others were put where the users can easily access it.

vi. Configurability was a principle used in such a way that it permits easy personalization. For instance, the administrator is able to change password and it also enhances the sense of control where by the administrator plays all the parts of controlling the whole system hence enabling management of information in the system.

vii. The system is flexible in such a way that it is sensitive to enable the users to perform functions

CHAPTER FIVE

SYSTEM IMPLEMENTATION AND TESTING

5.0 Introduction

In this chapter the researcher clearly document how the earlier designs both conceptual and logical were implemented to form a working system. In addition the implementation of the graphical user interface is shown. In this phase, the real coding was done and a feasible system implemented.

5.1 Implementation Plan

This section shows the different activities, deliverables and tools that were carried out during the implementation of the system as listed in the table.

Table 5. 1: Implementation Plan

ACTIVITY	DELIVERABLES	TOOLS
Coding	• Complete implementation of the system architecture • Link interface to database	PHP, Java script, HTML, Dream weaver, MySQL, and Wamp server.
Testing plan	• Inspection of code for predictable errors. • Structured walk through • Test correctness, performance • and reliability	• Dreamweaver • Browser

	• User testing of the system • Security testing and authentication • Test results documentation.	
Documentation	• System documentation and key features	MS word, adobe acrobat
Training plan	• User manuals	CDs, MS word,

5.2 Database

Implementation

The database was created using MySQL and the database was run on MySQL Server. The database and all the defined components were designed and generated using MYSQL server, the tables and their constraints namely, primary keys, unique keys, foreign keys and indices were well defined. Primary keys were used to uniquely identify all records while foreign keys were meant to ensure that data is well represented in other tables.

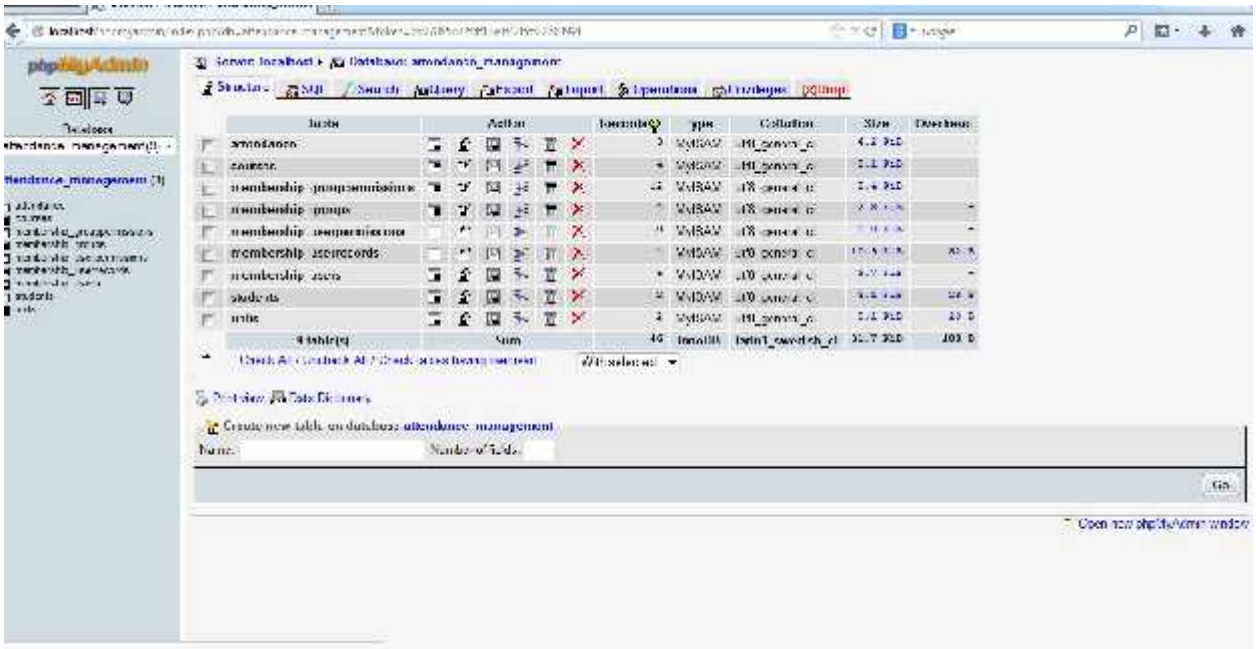


Figure 5. 1: Screen shot of the database and database tables

5.3System Implementation

The system implementation user interfaces and implementation of test plans. In the process of coding, the logical, physical design models and specifications were transformed into machine language.

5.4UserInterface Implementation

The system was developed as an interactive mechanism between the user at the interface and the database using the web-browser. This enables a user through a web browser to interact with the MYSQL database to enter, edit, view and retrieve such data as per the privileges granted.

5.4.1 The Login page

The login page provides access to the system to registered users. It is generated when the user clicks on the “Login” button. They can enter their user name and password.

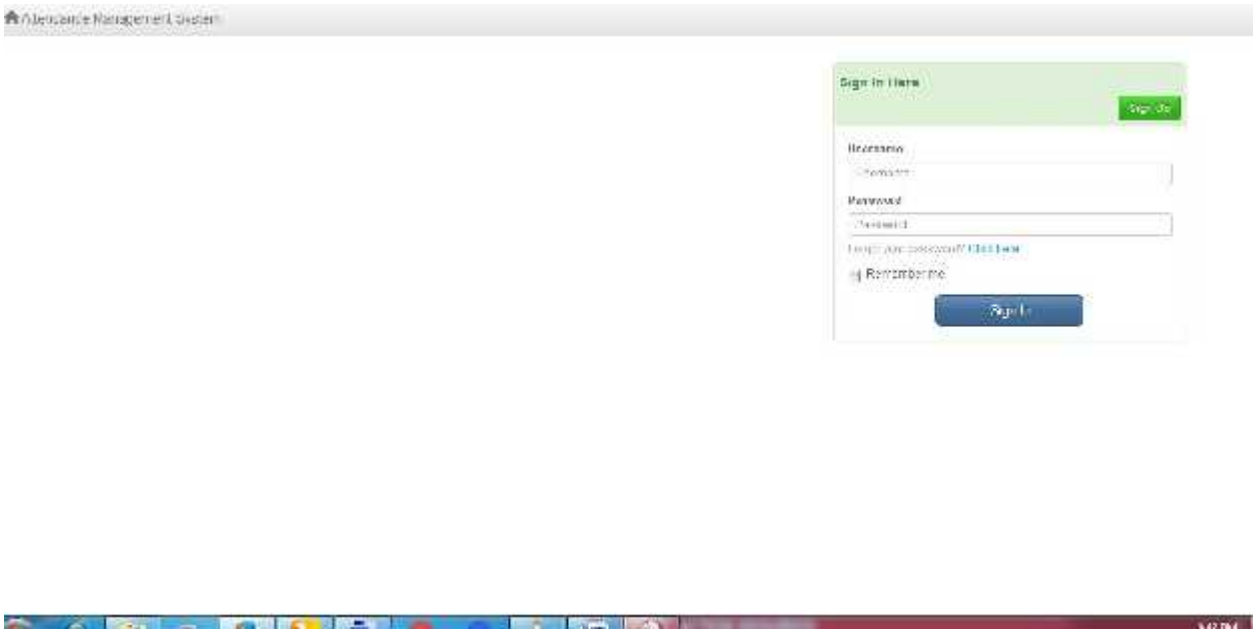


Figure 5. 2: Screen shot of login page

5.4.2 The Admin Home page after admin login

This page is strictly preserved for the system administrator. He/she is the only one with the privileges to access and use this page.

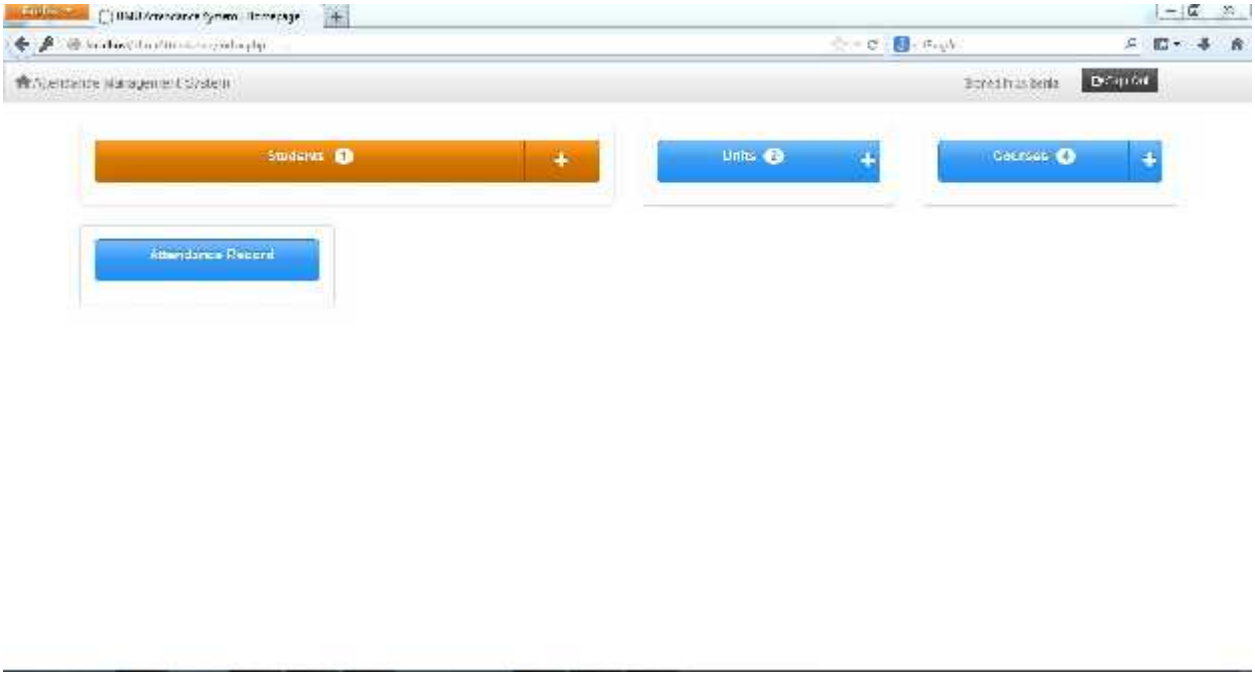


Figure 5. 4: Screen shot administrator home page

5.4.3 The Attendance form

This form is strictly preserved for the system administrator. He/she is the only one with the privileges to access and use this form

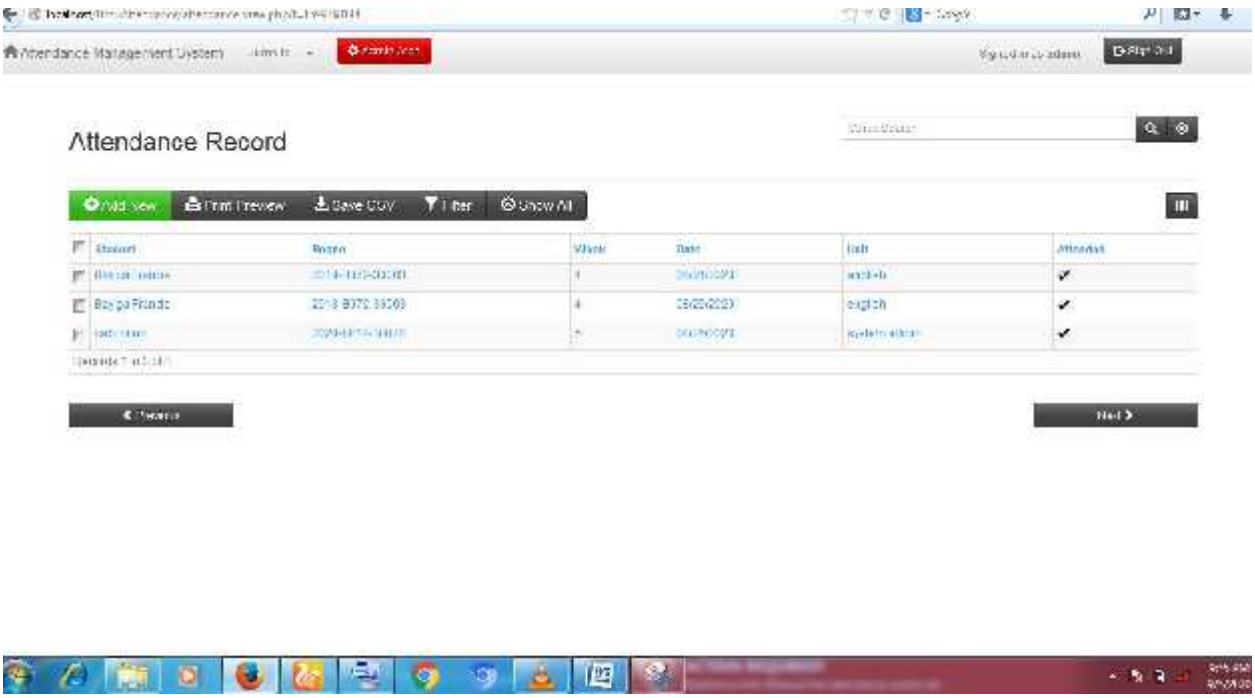


Figure 5. 4: Screen shot of the attendance list

5.5 Testing And Validation

Testing involved the execution of system components to evaluate one or more properties of interest. In general, these properties indicated the extent to which the component or system under test

Meets the user requirements

Can be installed and run in the required environment

Performs its functionality within the expected time

Responds correctly to all input

5.5.1 Unit testing

With this type of testing, the researcher tested each script code, line by line independently. It was carried out with the intention of executing each statement of the module at least once. Unit testing helped the researcher identity any errors in the program code.

5.5.2 Integration testing

In Integration Testing the researcher tested multiple modules working together. It was intended to find discrepancies between the system and its original objective, current specifications, and systems documentation. Tested models included: Database module, user module, reports module and administrator module.

5.5.3 System testing

System testing was done to check the system's functionality under different running environments like Windows XP, 7, 8, 10, UNIX and Linux. The researcher

5.6 Conclusion

This chapter focused on the implementation of the system and the presentation of the results or the final system design.

CHAPTER SIX

DISCUSSION, CONCLUSION AND RECOMMENDATION

6.0 Introduction

This section presents the comparison of the project's findings. An overview of the project is given in this chapter, having gone through all the stages of information system planning, analysis, design and implementation. A brief discussion is made to make recommendations and conclusions.

6.1 Summary

In the attempt to evaluate the designed system, it was imperative that the researcher look back at the predefined functionalities, goals and objectives and analyze those in relation to the expectations met by the system. The Online Attendance management System was evaluated based on the set of predefined objectives and the expected functionalities it was able to fulfill. The Online Attendance management System was designed to facilitate attendance in Uganda Martyrs University by providing an efficient, reliable way of managing attendance.

The main objective was to develop an online Attendance management system for higher

Institutions of learning that reduces mistakes and impersonation.

As a result of collecting data and information about the current system, requirements for the new system were derived and design was done in chapter four. The implementation was then done in chapter five basing on the guidance got from chapter three and four.

Testing and validating the implemented system was done in chapter five during testing and validation so as to ensure that it functions properly and meets the user's requirements was done in chapter five during testing and validation. All the objectives were met by the system, to a certain extent.

6.2 Challenges and Constraints Faced

Many challenges and constraints were met during the implementation of the project which included the following;

The system was developed and implemented concurrently with other course units the researcher had to accomplish. This led to implementation of the system in parts which were merged later due to time limitation. It could be better than it is if the researcher had got more time.

Understanding key concepts limitations also posed a major challenge. Considering the fact that most of the concepts were new, the researcher had to spend a considerable amount of time learning the concepts. This took away a lot of valuable time that would otherwise be fully dedicated to the design of the system.

Programming skills such as learning PHP and MySQL requires considerable practice for one to gain the programming skills. With limited knowledge and ability, the programming progress was rather slow and this limited the number of functionalities that the researcher could implement into the system.

The researcher was also met with a few financial constraints as a result of unanticipated expenditure. In order to cater for the internet speeds, this expenditure was however unforeseen and therefore posed a challenge for the researcher.

6.3 Conclusion

In Conclusion, from a proper analysis and assessment of the developed system, it can be safely concluded that the system is an efficient, usable and reliable. It is working properly and adequately meets the minimum expectations that were set for it initially. The new system is expected to give benefits to the university in terms of increased overall productivity, performance and efficient attendance management of Uganda Martyrs University Masaka Campus.

6.4 Recommendation

Based on the results of the findings and conclusions gathered, the researcher would like to recommend the following:

ii. The researcher recommends the proposed system be deployed because it is more productive and more capable of managing attendance in the school.

iii. Future researchers should continue to improve the proposed system.

iv. The administrator should train students and staff in order to know how to use the system and dispatch. That is to say students and staff members of Uganda Martyrs University should also be trained on how the system works.

6.5Suggestions for further research

It is recommended that in a bid to improve the system's efficiency, more research should be invested into the system so that the following can be achieved;

1. An online computational option should be integrated into the system to ensure that student's attendance percentage is done online.
2. More time should be invested in research on how best the system can be integrated into a management system for the whole company.

References

Aden and Metin, (2011) The Future of, Information, Technology and PublicPolicy http://www.cs.washington.edu/education/courses/csep590/04au/clearedprojects/Adma.pdf, retrieved on 30-05-2011

Murali, R., Bojja, P,andNakirekanti m(2016) Analysis of an ElectonicAttendenceSystem. pp. 1- 30.

Mulirith and Ogalehe(2015). Management Information's Systems: Managing The Digital Firm, Seventh Edition, Prentice-Hall, Inc.

Shalapova.et.el, (2014) Oxford Handbook of Political Ideologies (Oxford: Oxford University Press, 2014).

Murali, R., Bojja, P. and Nakirekanti, M. (2016). AADHAR based Electronic Recording Machine using Arduino. International Journal of Computer Applications, 145(12), pp.39-42.

Menne-Haritz (2013). The Machinery of Attendecne: Protecting Records in an Electronic. World, Brennan Center for Justice, NYU School of Law.Isman (2004) 'Records in Northern Ireland: Do transfers matter?', Irish Politics Forum, 3 (March 2014), accessed 22 June 2014.

Saffarzedand Mansooor (2009) "Bringing Confidence to Records" The Electronic Journal of eGovernment Volume 1 Issue 1, pp 30-40, available online at www.ejeg.com.

Luciano, B., 2002. Systems Analysis and Design ina Changing World. Course Technology A Division Of Thomson Learning, Inc.

Umu.ac.ug. (2018). Masaka campus – Uganda Martyrs University. [online] Available at:

https://www.umu.ac.ug/masaka-campus/ [Accessed 12 Dec. 2018].

Thakur, S., Adetiba, E., Olugbara, O. and Millham, R. (2015). Experimentation Using Short-Term Spectral Features for Secure Mobile Internet Attendence Authentication. Mathematical Problems in Engineering, 2015, pp.1-21.

Umu.ac.ug. (2018). Masaka campus – Uganda Martyrs University. [online] Available at:

https://www.umu.ac.ug/masaka-campus/ [Accessed 12 Dec. 2018].