AN ONLINE WEBSITE TO MANAGE STUDENTS REGISTRATON


CASE STUDY:

**MONTESSORI INTERNATIONAL UNIVERSITY**




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June 2010




**A Graduation Project report Submitted to the School of Computer Studies in partial fulfillment of the requirements for the award of Bachelors in Information Technology**

# Abstract

This report helped the availability of data and information stored in database; this is an important aspect and resource for all the details concerning certain entity or subject when required. Therefore it's important that this resource is stored and easily retrieved for consumption whenever required in correctness, consistency and reliability. This project is directed toward designing and implementation of website in connection with database software that is capable of holding students' information of Montessori international university so as to solve problems and challenges they usually face.

This is also intended to provide the relevant security measure so that all the authorized and authenticated users are denied access to the previous data and information concerning the students and university.

# Acknowledgement

We humbly hereby express our sincere gratitude and thanks to all those who have contributed in numerous ways whether big or small to the successful completion of this report.

Special thanks go to our supervisor Mr. Mutungi Fredrick who guided us all through our study until its successful completion.

Sincere thanks go to out to our parents and all our friends especially Betty, Mariam, Matovu and Greg thanks for your encouragements and help rendered, and for the valuable contribution towards our research.

Finally to God be the glory.

# Dedication

This project report is dedicated to our beloved parents and guardians for their continuous support in prayers, finances and encouragements.

Lastly we dedicated this book to Jesus Christ who has been our stronghold in our education through out.

# Declaration

We do declare to the best of our knowledge that, this is our original work and it has never been submitted to any university or institution for the award of any qualification.

**STUDENT**

NAME......MUJUNI HERBERT...............

SIGN.................................

DATE......18/10/2010...............

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DATE......18/10/2010...............

# Approval

I certify that this project report has been submitted under my supervision as a university Lecturer.

**SUPERVISOR:**

**Mr. MUTUNGI FREDRICK**

Signature: ............................

Date: 18.10.2010

# Abbreviations

CEO..................................Chief Executive Officer

SQL..................................Standard Query Language

TPS..................................Transaction Processing System

ATM................................ Ansyclonous Transfer Mode

ID ...................................Identification

DBMS...............................Database Management System

PC ...................................Personal Computer

RAM................................Random Access Memory

LAN.................................Local Area Network

WAN................................Wide Area Network

OS...................................Operating System

DBA.................................Database Administrator

DA...................................Data Administrator

DFD.................................Data Flow Diagrams

SDLC................................System Development Life Cycle

IT.....................................Information Technology

B2B..................................Business to Business

URL .................................Uniform Resource Locator

WWW...............................World Wide Web

HTP.................................Hypertext Transfer Protocol

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# CHAPTER ONE

## 1.0 General Introduction

With the growth of the Web over the past decade, there has been a similar growth in services that are accessible over the Web. Many new services are on web sites that are driven from data stored in databases. Examples of web database applications include news services that provide access to large data repositories, e-commerce applications such as online stores, and business-to-business (B2B) support products.

Database applications have been around for over 30 years, and many have been deployed using network technology long before the Web existed. The point-of-service systems used by bank tellers are obvious examples of early networked database applications. Terminals are installed in bank branches, and access to the bank's central database application is provided through a wide area network. These early applications were limited to organizations that could afford the specialized terminal equipment and, in some cases, to build and own the network infrastructure (Betty Joan Salzberg).

The Web provides cheap, ubiquitous networking. It has an existing user base with standardized web browser software that runs on a variety of ordinary computers. For developers, web server software is freely available that can respond to requests for both documents and programs. Several scripting languages have been adapted or designed to develop programs to use with web servers and web protocols (John Edwards, 2006).

Many people are confused by the distinction between the internet and the World Wide Web. The web is a subset of the larger set called the internet. For the purpose, the web is defined as "anything on the internet that you can access via a hyperlink." Many things that are available through a web interface are also available through more traditional internet programs, such as ftp, gopher and wais (Donald J. Macabre, 2002)

Stated another way, the World Wide Web is a collection of documents on the internet that are loosely knit through a concept called hypertext. Hypertext documents connect to each other by hyperlinks (or hotlinks) in a completely free-form manner. Any document can have links to any other document in a completely free-form manner (James, 2005).

Any document can have links to any other document in the world. That's why it's called a web. There are no restrictions limiting any document from linking to any other. Each site on the Web is made up of collection of different pages. These pages are usually viewed with an application called a web browser. If you are interested in creating your own Web site, you probably already have a browser such as Netscape Navigator, Microsoft Internet Explorer, Mosaic, or any number of less common browsers

When the people want to see your web site, they connect to it with their browser. They may type in the URL (Uniform Resource Locator), a unique address assigned to each object on the Web.

## 1.1 Background of the Study

Montessori international university is a private owned institution (international university) located 4 kilometers from Kisoro town. It started in 2009 by a man called Mr. Murenga Augustus ceansor as a CEO and Chairman board of trustees. The research generally aims at solving the main problem which is **student registration process.**

Montessori international University's website has helped users mainly students online through the internet to get the Information about the university and daily time table of the university's activities. The aim of this project was to enable the students and other users to access different programs through the website.

## 1.2 Problem statement

The Montessori international university still uses outdated system of registering students manually; this however, is tedious and time wasting which has caused set

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backs such as lack of data security and slow mode of communications.

An online website to manage student's registration of Montessori international university will have solved the above mentioned setbacks

## 1.3 Objectives of the Study

## 1.3.1 Main objective

The main objective of this project was to develop an online website to manage students' registration.

## 1.3.2 Specific objectives

The specific objectives were to;

Develop an online website for students and other users to interact with the university

Keep information of all students who send their applications through website.

Ensure data security within the university.

Keep references of all internal data of the university

## 1.4 Motivation of Project

We decided to do the project because of our internal interest one day to become experts of website development, therefore this drove us to choose the projects with all our hearts to do what we could to reach the targeted goals.

## 1.5 Significance of the study

The following were importance in building this website:

It will help users and staff to have knowledge on web technology and Database as well.

To served as a starting point for other users to have website and email for communication.

The website will deliver information about day to day programs and services of Montessori international university. .

## 1.6 Scope of the study

The scope of the study is to design a database-driven web site where data collection will be done at Montessori international university located 4 kilometers from Kisoro town, the people that would be involved in data collection are: the Founder of the university Mr. Murenga Augustus ceansor, Human resource managers, students and some of the executive staff members.

## 1.7 Methodology

## 1.8 Constraints to the Project

These were the limitations that might hinder the achievement of the project of MIU website development there are several challenges faced as summarized below

|   | CHALLENGE | DESCRIPTION | MEASURES |
|---|---|---|---|
| 1 | Time | Insufficient time to develop the Project and tools that are need to meet the current goals | Increase the developing time |
| 2 | Requirement Management | Includes the need to deal with all defined, unstable and uncertain requirement | Increase meeting with end-users |
| 3 | Developer | The big challenge is only one person deals with every stage of website development | Adding the team member of the Project |

**Table 1.0 describe the challenges faced during website development**

## 1.9 Research questions

a.  What are the available opportunities and prospects in the course of establishing and operating the system and how optimally will it be taken advantage of?

b.  Why should a university and other institution expose themselves to the online system?

c.  Is it possible to produce a documentation that will help the stakeholders to understand the key design and implementation of the system?


## 1.10 Conceptual model

The system which was created contains a registration form, and application form in which students can register online and apply. For this mechanisms was implemented and the following tools were used: PHP engine, MySQL server and Macromedia Dream weaver 8. The whole operation follows a client-server architecture that follows a general web database structure shown in the figure below
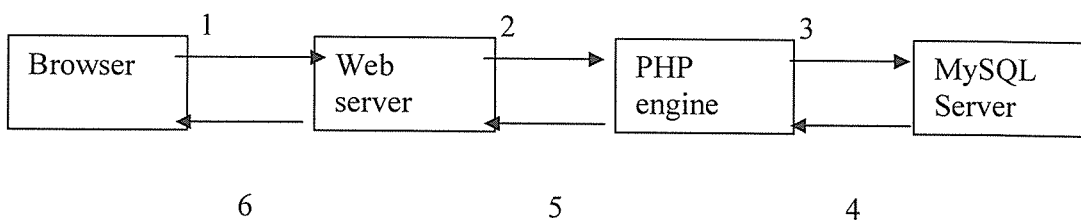


**Figure 1.0: client-server Architecture model**

A user's web browser issues an HTTP request for a particular web page such as a form.

The web server receives the request for this web page, retrieves its file, and passes it to the PHP engine for processing.

The PHP engine begins parsing the script. Inside the script is a command to connect to the database and execute a query. PHP opens a connection to the MySQL server and sends on the appropriate query.

The MySQL server receives the database query and processes it, and sends the results back to the PHP engine.

The PHP engine finishes running the script which usually involves formatting the query results nicely in HTML. It then returns the resulting HTML to the web server.

The web server passes the HTML back to the browser, where the user can see the form she/he requested for.

# CHAPTER TWO

## 2.0 LITERATURE REVIEW

### 2.1 Introduction

A literature review discusses published information in a particular subject area, and sometimes information in a particular subject area within a certain time period.

A literature review can be just a simple summary of the sources, but it usually has an organizational pattern and combines both summary and synthesis. A summary is a recap of the important information of the source, but a synthesis is a re-organization, or a reshuffling, of that information. It might give a new interpretation of old material or combine new with old interpretations. Or it might trace the intellectual progression of the field, including major debates. And depending on the situation, the literature review may evaluate the sources and advise the reader on the most pertinent or relevant (McFadden and Kathy Brittain-white, 1980).

### 2.2 Web site design

A Web site is a collection of information about a particular topic or subject. Designing a website is defined as the arrangement and creation of Web pages that in turn make up a website. A Web page consists of information for which the Web site is developed. A website might be compared to a book, where each page of the book is a web page (Wendy, 2001).

A Web site typically consists of text and images. The first page of a website is known as the Home page or Index. Some websites use what is commonly called a Splash Page. Splash pages might include a welcome message, language/region selection, or disclaimer. Each web page within a Web site is an HTML file which has its own URL. After each Web page is created, they are typically linked together using a

navigation menu composed of hyperlinks. Faster browsing speeds have led to shorter attention spans and more demanding online visitors and this has resulted in less use of Splash Pages, particularly where commercial websites are concerned (Donny, Seven, 2001).

Once a Web site is completed, it must be published or uploaded in order to be viewable to the public over the internet. This may be done using an FTP client. Once published, the Web master may use a variety of techniques to increase the traffic, or hits, that the website receives. This may include submitting the Web site to a search engine such as Google or Yahoo, exchanging links with other Web sites, creating affiliations with similar Web sites (James, 2005).

## 2.3 Reviewing different literature

After problem identification the developer decided to find out the way can solve the problem through the same case problem which have been solved to enable the developer to experience the problem domain and to get good choice of methodology, techniques and tools to be used in the project.

### 2.3.1 Site selection

The project was guided from the choices of case study site. By studying many sites and select three (3) sites that are close related to Montessori international university website wishing.

The choices were.

- www.kiu.ac.ug 25th May 2010 time 10am.

## 2.3.2 Books reviewed

Wendy(2001) describe the web design as the technology of developing the pages that can be viewed on the internet., the author suggest that in web design there should be a web server for storing the information. Also suggest there should be a web browser for interpreting the web pages.

Jennifer (1999) says "A minority of web developers HTML standard and make sure that pages work on all browsers includes Linux and version of the popular browsers".

But the effective Web design is about usability. It's about inspiring your visitor to do or feel what intended. To achieve effective design the web designer should know what end-user real want and also the targeted population and things which attracts users to come and interacts with the website frequently.

As the Web grows and Internet data exchange becomes more important to the success of many businesses, developers are seeking new ways of providing richer Web applications.

James (2005) defines a web service as a network accessible interface to application functionality, built using standard Internet technologies.

Donny, Seven (2001) defines web service as a class or set of classes that doesn't render typical browser-based HTML output, but rather outputs data. A client can consume, manipulate, and display this data in any format that's appropriate. The Web service uses XML and SOAP to expose data for consumption by a client.

## 2.4 Issues Related to the title Study

### 2.4.1 Web Browser (web clients)

Is one of the many applications software that function as the interface between a user and the Internet? The browser not only sends messages to web servers to retrieve your page request, but also parses and renders the HTML code once it arrives. That is the browser interprets the code and displaying the result on the screen.

Web browser was designed to help computer to find their way around the Internet particularly the sound and graphics part of it known as the www. The name of the first web browser was Mosaic, but it was not to become the software that would make the Internet available to every one, being over taken in a matter of months by Netscape Navigator, now Netscape itself is on defensive, fighting the aggressive marketing of Microsoft and its Internet Explorer.

### 2.4.2 World Wide Web (WWW)

The www was created in the year 1991 by Tim Berners Lee at CERN (a French acronym for the European laboratory for Particle Physics) as a simple way to publish information and make it available on the Internet.

### 2.4.3 Internet

The word Internet is a combination of the prefix inter, meaning "between or among each other", and the suffix net, short for "network", defined as an interconnecting pattern or system. An internet work, or internet (small i), can refer to any "network of computers" (Boncheck, 1997; Krol, 1995; "Yahoo Dictionary Online," 1997). However the Internet (capital I) is the specific name of the communication network that is composed of hundreds of thousands of interconnected computers that freely exchange information with one another world wide (Grooves, 1997;Pitter Aamata, Callahan, Kerr & Tilton, 1995).

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Country to the belief that the Interne is a 1990s phenomenon this electronically networked system was actually envisioned in the early 1960s. Paul Baran of the rand corporation conceptually sending via a system of networked computers. In 1964 Baran approached the U.S govern with a formal proposal out lining the need for a decentralized communication network in event of a nuclear attack by 1970s, the Advanced Research Projects agency (ARPAnet) had been created to advance computer interconnections

The network established by ARPAnet soon caught the attention of other US agencies that saw the promise of an electronic network as a means of sharing information among research facilities and schools. In the mid 1980s, the National Science Foundation took on task of designing an expanding network that because the basis of the Internet as it is known today.

At the same time, Tim Berners-Lee and a group of scientists in the European Laboratory of Particle Physics (CERN) were developing a system for world wide interconnectivity that was later dubbed the World Wide Web.

## 2.4.4 Hypertext Transfer Protocol

From K. Thompson and R. Wilder. "Wide-area internet traffic patterns and characteristics," *IEEE Network*, 11(6):10-23, November/December 1997.

The Web itself provides the protocols and network that connect the client and middle tiers of the application; that is, it provides the connection between the web browser and the web server. HTTP is one component that binds together the three-tier architecture. A detailed knowledge of HTTP isn't necessary to understand the material in this book, but it's important to understand the problems HTTP presents for web database applications. The HTTP protocol is used by web browsers to request resources from web servers, and for web servers to return responses. HTTP allows resources to be communicated and shared over the Web. From a network perspective, HTTP is an *applications-layer protocol* that is built on top of the TCP/IP networking protocol suite. Most web servers and web browsers communicate using the current

version, HTTP/1.1. Some browsers and servers use the previous version, HTTP/1.0, but most HTTP/1.1 software is backward-compatible with HTTP/1.0. HTTP communications dominate Internet network traffic. In 1997, HTTP accounted for about 75% of all traffic. We speculate that this percentage is now even higher due to the growth in the number and popularity of HTTP-based applications such as free email services.

## 2.4.4.1 HTTP example

HTTP is conceptually simple: a client web browser sends a *request* for a resource to a web server, and the web server sends back a *response*. The HTTP response carries the resource—the HTML document, image, or output of a program—back to the web browser as its payload. This simple request-response model is shown in Figure 2.0
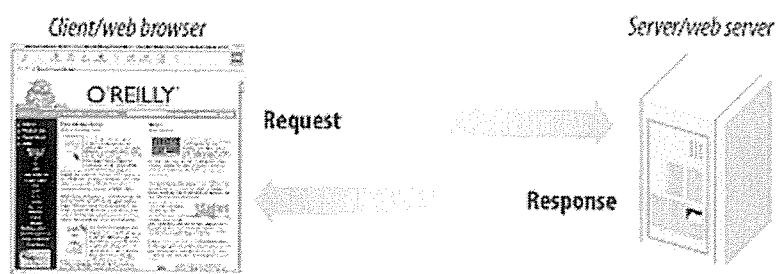


**Figure 2.0. A web browser makes a request and the web server responds with the resource**

## 2.4.5 Authentication and Security

From the Security Space web server survey, Apache module report, http://www.securityspace.com/s_survey/data/index.html (April 2001).

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There are many database applications in which restrictions need to be applied to control user access. Some applications deal with sensitive information such as bank account details, while others provide information or services only to paying customers. These applications need to authenticate and authorize user requests, typically by collecting a username and password, and checking these against a list of valid users. As well as authenticating those who have access to a service, web applications often need to protect the data that is transmitted over the Internet from those who shouldn't see it.

## 2.4.6 How HTTP Authentication Works

Figure 3.0 shows the interaction between a web browser and a web server when a request is challenged the browser sends a request for a resource stored on the server. The server sends back a challenge response with the status code set to 401 Unauthorized, and the header field WWW-Authenticate. The WWW-Authenticate field contains parameters that instruct the browser on how to meet the challenge. The browser may need to prompt for a username and password to meet the challenge. The browser then resends the request, including the Authorization header field that contains the credentials the server requires.



**Figure 3.0 shows the interaction between a web browser and a web server**

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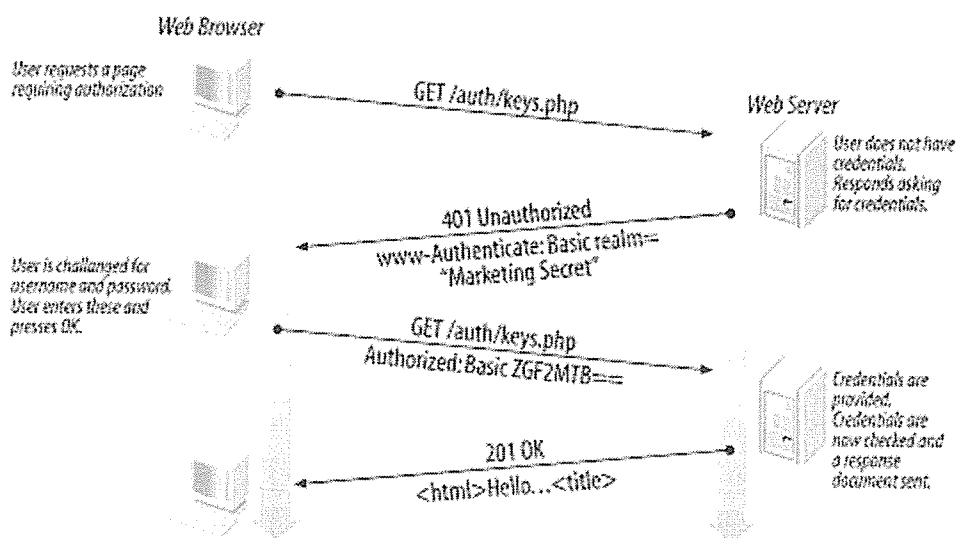
## 2.4.7 Authentication Using a Database

In a web database application, usernames and passwords can be stored in a table rather than a file. This moves the data stored about users into a database and can simplify the management of an application. In this section we develop techniques to store usernames and passwords securely in a table.

For example

CREATE TABLE users (

  user_name varchar(10) not null,

  password varchar(15) not null,

  PRIMARY KEY (user_name),

  KEY password (password)

This table defines two attributes: user_name and password. The user_name must be unique, and in the *users* table, it is defined as the primary key. The password attributes needs to be indexed as you formulate queries on the password in the authentication script developed later in this section. It's unwise to store user passwords as plain text in this table. There are many ways to retrieve passwords from a database, and even with good web site practices and policies, storing plain-text passwords is a security risk.

PHP provides the crypt ( ) function that can protect passwords stored in a database:

**String crypt (string *plainText* [, string *salt*])**

## 2.4.8 MySQL encryption

MySQL provides the encryption function password ( ) that can be used instead of the crypt( ) function; . The MySQL password ( ) function can be incorporated into the SQL update or insert queries:

$update_query =

"UPDATE users

SET password = password ($password)

WHERE user_name = '$username'";

Like crypt ( ), the MySQL password ( ) function is a one-way function, but it is simpler to use because it doesn't require a salt string. However, when identical passwords are used, they are stored as identical encrypted strings. Another disadvantage to using the MySQL password ( ) function is that the password is transmitted between the web server and the MySQL DBMS in its unencrypted form. We recommend that crypt ( ) be used rather than the MySQL password ( ) function when building web database applications.

## 2.5 Software technologies used

Tools identified being popular and strong after study can be summarized as follows; Software, hardware used for project, Server scripting language, most used scripts were PHP, Structure query language (SQL) language used in database manipulation.

- Client script language (Java Script and HTML) which added interactivity in the static page.
- Text editor most used in the project was Dream weaver.

- Database management system after comparison of different authors of books and website reviewed, MYSQL database appear to be most suitable for our application.
- Application server (App server) was the software which provided three products PHP scripting language, MYSQL server and web server (apache).

## 2.5.1 Macromedia Dream weaver.

Dream weaver allows users (for non-coders) to create web pages and sites and preview websites in many browsers, provided that they are installed on their computer. It also has some site management tools, such as the ability to find and replace lines of text or code by whatever parameters specified across the entire site, and a templatization feature for creating multiple pages with similar structures. The behaviors panel also enables use of basic JavaScript without any coding knowledge

Like other HTML editors, Dream weaver edits files locally, then uploads all edited files to the remote web server using FTP, SFTP, or WebDAV. The easiest way to build a professional website using Dream weaver software is by using the Layout functions; it is very easy to organize the web page just using the Layout option provided by Dream weaver

## 2.5.2 MYSQL

MySQL is a database. A database defines a structure for storing information. In a database, there are tables. Just like HTML tables, database tables contain rows, columns, and cells. Databases are useful when storing information categorically. A company may have a database with the following tables: "Employees", "Products", "Customers" and "Orders".MySQL is popular for web applications and acts as the database component of the LAMP, MAMP, and WAMP platforms (Linux/Mac/Windows-Apache-MySQL-PHP/Perl/Python), and for open-source bug tracking tools like Bugzilla. MySQL was first released internally on 23 May 1995.Its

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popularity for use with web applications is closely tied to the popularity of PHP and Ruby on Rails, which are often combined with MySQL. PHP and MySQL are essential components for running popular content management systems such as Joomla!, Word Press, and Drupal. Wikipedia runs on MediaWiki software, which is written in PHP and uses a MySQL database

**Reasons for choosing MYSQL are;**

It has good security strategies example encryption of passwords

It is easy to develop a database.

It's customizable.

To support large database

It is open source software. It is easy to get technical support online when developing an application (website http://www.MYSQL.com)

MySQL is ideal for both small and large applications

MySQL compiles on a number of platforms

MySQL is free to download and use

## 2.5.3 PHP

PHP stands for: Hypertext Preprocessor PHP, known originally as Personal Home Pages, was first conceived in the autumn of 1994 by Rasmus Lerdorf.PHP is a tool for creating dynamic web pages. Its presence is completely transparent to the end

user. PHP is easy to learn, and most importantly, it's easy to implement. So, PHP creates dynamic web pages.

**Reasons for choosing PHP are;**

It is fast

Inexpensive (free)

Easy to find technical support. Website http://www.PHP.com

Easy to use.

It runs on many variety operating systems.

It supports many databases. (about 15 different DBMS such as MySQL, Informix, Oracle, Sybase, Solid, PostgreSQL, Generic ODBC, etc.)

It's customizable.

PHP is a server-side scripting language, like ASP.

PHP scripts are executed on the server.

# CHAPTER THREE

## 3.0 Research Methodology

### 3.1. Introduction

This chapter includes various techniques and procedures the researchers employed such as targeted population, sample selection, methods of data collection, data collection instruments, analysis, design and development of the prototype.

### 3.2. Target Population

The people that were involved in data collection are: the founder of Montessori international university, Human resource manager, executive staffs of the university, and lastly students, who provided the reliable information about the current system.

### 3.3. Research Procedures

The research entailed seeking permission from the case study's management to carry out the research at their premises, first of all we introduced ourselves to the targeted population and we were accepted, the first thing we did was Planning, then analyzing was done to study the current system and identify drawbacks and success of the current website.

Thereafter Questionnaire was distributed to targeted population followed by an Interview to collect data. After each stage deliverable was produced containing documents of the stage completed.

### 3.4. Data Collection

Data was collected from the target population identified in part 3.2 above through the use of distribution of well designed Questionnaires and lastly the Interview was carried out based on the Questionnaire distributed to the targeted population mentioned above.

## 3.5 Primary methods

The primary methods were used to obtain first hand information from the staffs of the university and students of MIU. Primary methods used are as follows:-

## 3.5.1 Questionnaire

Questionnaires provided a cheaper way of collecting data. The questionnaire was prepared given to all concerned persons such as staff and students to answer them and respond accordingly. The distributing factor was following the sample size of study. The following are merits of questionnaires:

Most questionnaires can be answered quickly; people can complete and return questionnaires at their convenience.

Questionnaires provide a relatively cheap means of gathering data from a large number of individuals.

Questionnaires allow individuals to maintain anonymity; therefore individuals are more likely to provide the real facts rather than telling you what they think their superiors would want them to.

Responses can be tabulated and analyzed quickly.

## 3.5.2. Interview

The good source of reliable data that was collected from the founder of Montessori international university and human resource manager, these people were responsible on responding on those questionnaires, later on an appointment was made so as to have face to face interview with the researchers.

## 3.5.3 Observation

This method was useful most especially where the required information was not easy to obtain due to restrictions imposed on the obtaining of such information that proved to be relevant to this research. Observation involved visiting the offices where the information is kept and taking note of what is going on and then come up with a

conclusion. It included the relevant staff would go and pick bits of information they required. By observing this pattern, it was possible to define from the information they picked their role and came up with an analysis that will help in developing a strong and good information system.

## 3.6 Secondary methods

## 3.6.1 Research documentation.

This is a very instrumental fact finding technique to research the application and problem. Documents such as journals, magazines, lecture notes, reference books, other people's research work (previously published) and the internet which provide good source of relevant information.

## 3.7 Document Analysis

Document analysis was carried out with the objective of discovering the problems with the existing system, opportunity to meet with new needs, values of the institution and information processing. The researchers sought permission from the university to be allowed to go through several documents, records and other sources provided credible information seen to be of importance to the researchers. Document analysis was a credible technique since it offered first hand information just like observation. This is a documented account and is factual unlike other techniques. The researchers of this project has high analytical skills and thus was able to verify facts, opinions, prejudice, malice, assumptions, and projected visions documented in the records.

## *3.8    Data Collection and Presentation*

The instruments and the methods used to gather information were determined by the nature of the research and the objectives of the research undertaken. As stated earlier, the objectives included documenting all the deliverables from planning, analysis, design and implementation phases. In order to get appropriately the requirements,

different techniques in data collection were used, such as interviews, questionnaires, observation and document analysis.

Data collection also involved reviewing primary and secondary sources, including text books, thesis and dissertations and the internet. So as to get requirements for the new system this included reviewing and determining relevant information regarding the strategic objectives, educational processes and IT, systems requirement and student perspectives.

The deliverables included information collected from the customers of the staff, students and the heads of different departments and computer based information.

In the presentation phase, the researchers presented the data in the form of a research booklet and the system in form of software.

### 3.8.1 Data Analysis and Analysis of User Requirements

Data analysis involved analyzing the interviews, questionnaires and documents.

This was undertaken according to systems analysis concepts because it is the basis that the system is embedded. Data was analyzed and the user requirements drawn out from the collected data to know what the user requirements are and what requirements have the highest priority. I also sought to know exactly what the research provided to improve the current need of a new system from the problem definition of this project. It also involved the analysis of the system during the development by precisely defining the different planning phases of the project while also giving insight in to the expected changes that would occur during the later stages of the development and the aspects expected to affect the system.

### 3.8. 2 Development Methodology

The methodology that the research project followed was the SDLC methodology of system development namely: planning, analysis, design and implementation. They are described below.

In the planning phase, the researchers identified the value of the system, conducted a feasibility analysis, identified the scope of the problem and planned the project. The analysis phase involved the development of an analysis strategy; gathering information and building a set of analysis models. The researchers also studied and analyzed the problems, causes and effects of the current system then identified and analyzed the requirements that were to be fulfilled by any successful solution. In the design phase, the researchers dev eloped the physical design, architecture design, interface design, database and file specifications and program design. Finally, in the implementation phase, a prototype of the system was constructed and tested to ensure it performed as designed. An implementation plan was also made.

# CHAPTER FOUR

## SYSTEM DESIGN

## 4.0 Introduction

This chapter encompasses the data collected and the analysis of the system to be implemented.

## 4.1 Data Presentation and Analysis

The data collected was checked, edited, and analyzed with the goal of highlighting drawing conclusions and supporting decision making. Whereby, cross-tabulation was used to determine the opinion of the interviewees and checking the validity of the questionnaires.

| Types of users | No. of people interviewed |
|---|---|
| Operational staff | 10 |
| Heads of departments | 15 |
| Students | 20 |
| Total | 45 |

**Table 2.0:** Number of people interviewed

The findings from the study have been presented in tables below for easier analysis.

| Types of users | Number of people interviewed | | |
|---|---|---|---|
| | Less efficient | Efficient | Very efficient |
| Operational staff | 3 | 7 | 0 |
| Heads of department | 5 | 10 | 0 |
| Students | 5 | 15 | 0 |
| TOTAL | 13 | 32 | 0 |

**Table 3.0:** Response on the efficiency of the current system

| USER | NUMBER OF PEOPLE | | |
|------|-----------|------|-----------|
| | Very easy | Easy | Difficult |
| Operational Staff | 6 | 4 | 0 |
| Heads of department | 5 | 10 | 0 |
| Students | nil | nil | nil |
| **TOTAL** | **11** | **14** | **0** |

**Table 4.0: Response on the use of the current system**

| USER | USER RESPONSE | |
|------|--------------------------|-----------------------------------|
| | Manual paper based system | Online registration management system |
| Operational Staff | 0 | 10 |
| Heads of department | 0 | 15 |
| Students | 0 | 20 |
| **TOTAL** | **0** | **45** |

**Table 5.0:** User response on the type of system preferred

## Details stored about a student in the current system of registration form

The current system stores the following details about a student. They have been categorized into three groups: personal details, registration details and contact details.

| Personal details | Registration details | Contact details |
|---|---|---|
| Fname | Registration number | Phone number |
| Lname | Faculty | E-mail address |
| sex | Department | Home telephone |
| Student_Id | Account number | Father or guardian's phone |
| Marital status | Academic year | |
| Date of birth | Program type | |
| Place of birth | Session | |

**Table 6.0: Details stored about a student in the current system**

These details will be useful in determining the tables that will be contained in the database and the different kinds of forms that will be used for data capture.

**Generated output for the current system**

The current system produces registration forms for the students to register for their intake.

The following details are contained in the generated output:

**Details contained in a student's registration form**

The current registration form contains the following fields as shown in the table below

| Personal details | Registration details | Contacts details |
|---|---|---|
| Fname | Registration no | Phone number |
| Lname | Academic year | Email address |
| Sex | Session | |
| Marital status | Date of birth | |
| | Place of birth | |

## 4.2 System Specification Analysis and Requirements

This specifies the functionality of the system and the constraints under which it operates. System specification is intended to establish the services that are required from the system and the constraints on the system's operation and development.

### 4.2.1 System requirements.

These were the requirements for the system as a whole rather than of its components. The required properties included performance, reliability, usability, safety and security.

The success or failure of a system is often dependent on the system requirements and this was taken into great consideration by the researcher.

The proposed system was a database management system and can be used on any personal computer running on windows XP operating systems or above. The Browser versions supported are firefox 2.0+, internet explorer6.0+ and a screen resolution of 1024 X 800 is also recommended.

**User requirements of the new system**

These were the statements in natural language plus diagrams of what services the system was expected to provide and the constraints under which it must operate.

The system will meet the following user requirements:

- Updating records.
- Deleting any records.
- Editing and refreshing records.
- Adding records that will be stored in the system's database.
- Searching for relevant records.
- Perform backup and restoration.

## Security requirements

These specify system behavior that was disallowed rather than the behavior that was expected of the system. The following security checks were observed:

Unauthorized users should not be allowed to access the database, this can be enhanced by use of passwords and user names, relevant information should be made available to the relevant people and use of security measure such as antivirus software to prevent damage to the website by hackers.

## Functional requirements

These were the statements of services the system should provide, how the system should react to particular inputs and how the system should behave in particular situations. They explain what the system should do:

- The system will provide online registration for the students
- The system will provide the application and registration forms for the students online.
- The system will detect people registering more than once.
- The system will create a list of students who have already applied and the vacancies remained
- It will also provide a short listed of already admitted students

## Non-functional requirements

These were constraints on the services or functions offered by the current system. They include timing constraints, constraints on the development process, long ques and delay feedback. The following were expected of the new system.

The system was designed to be user-friendly through the various buttons and simple forms by which the user interacts, data integrity is ensured through the use of validation rules, access to the system will be controlled through the use of passwords, need to enter the correct password to access the system, the system alerts the user if he performs actions that are considered invalid such as entering invalid data and the user is warned before performing actions that can be dangerous for example deleting a record

**Strengths and the weaknesses of the current system**

**Strengths**

Despite the system being paper-based, the following was achieved.

Data retrieval by the staff.

Storage of the data received.

Security was maintained even though at a low standard.

Data was shared by the different users.

Data was updated quarterly (once every month).

However, the system was faced with the following setbacks:

There was demand for storage space for paper work. This space could be utilized to accommodate other activities such as offices.

Inaccurate data capture and recording resulting in processing of wrong information.

Loss in productivity because staff members spend valuable time moving from place to place in search of data to be analyzed.

A lot of paper work involved which can result to errors and inconsistent results.

The paper-based system used gives little opportunity to share data across each department. This is because each department has its own files with contents relevant to it.

Same data kept on a student in different files may be inconsistent and therefore lacks integrity and may be unreliable.

Retrieval of information was tedious and time consuming. It was therefore necessary to automate the system so as to overcome the shortcomings associated with the current system.

## 4.3    The proposed system.

The proposed online system seeks to overcome the shortfalls associated with the old system by achieving the following goals:

Providing online registration and application forms, allowing students to check whether they have been admitted or not and providing any information that the students may need about the university.

## 4.3.1 Benefits of the proposed system

The following benefits will accrue from the use of the new system:

- Elimination of data duplication leading to improved data consistency.
- The proposed system will offer increased security of the system by use of passwords.
- Reduces the time required for registration.
- The proposed system will help increase efficiency and effectiveness of the department's services to the institution and the customers.

# 4.4 System Design

The logical and physical designs of the new system were developed by the researchers. Entity relationship diagrams and data flow diagrams were put into consideration. The diagrams will serve to facilitate the users' understanding of the new system.

## 4.4.1 Logical design

This was concerned with the conversion of logical records structures of a data model supported by a database management system identifying entities and their matching attributes and the relationship types determining the attributes domain. It involved the use of entity relations diagrams.

Entity Relationship Diagram

An entity relationship model is part of system development methodology that provides an understanding of the logical data requirement of a system independent of the systems' organization and process. It also reflects a static view of the relationship between different entities

## 4.4.2 Physical design

Physical design shows not only what a system does, but also how the system was physically and technically implemented. It transforms the logical design material into real computer work and describes how the logical structure is to be physically implemented on the target system

This was the last stage of the design process. Its major objective was to implement the database as a set of stored records, files, indexes and other data structures that will provide adequate performance and ensure database integrity, security and recoverability. Physical database design must be performed carefully since decisions made during this stage have a major impact on data accessibility, response time, security, user friendliness and similar factors. The following were the major inputs to physical design:

- Logical data structures that were developed during the logical design like the relational data models.
- User processing requirements that were identified during requirements definition including size and frequency of use of the database.
- Characteristics of the database management system (DBMS) and other components of the computer operating environment.

**Activities involved in the physical database design**

Data volume and usage analysis: - The size and usage patterns of the database are estimated. Estimates of the database size are used to select physical storage devices and estimate the storage costs.

Data distribution strategy: - There are different distribution strategies. In this research, a centralized approach was used. A backup component will be used to back up the database to ensure restoration can be performed in case the database is corrupted or the system crashes.

File organization: - This is a technique for physically arranging the record of files on secondary storage devices.

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The following were put into consideration: - constraints including physical characteristics of the secondary storage devices, available operating system and file management software and user needs for storing and accessing data.

The selected file organization for the new system was influenced by the following factors:

- Fast access and retrieval.
- Efficient use of storage space.
- Protection from failures or data loss.
- Minimizing need for reorganization.
- Accommodating growth.
- Security from unauthorized use.

**Database structure**

Based on the analysis of the user requirements other information such as the kind of details stored about a student, the kind of details generated and the privilege levels required; the researcher came up with the following database structure.

The database consists of 9 tables, each storing different information but related to the other tables. The field names and the data types are shown below.

| Field name | Data type | Field length |
|---|---|---|
| Fname | Text | 15 |
| Lname | Text | 15 |
| sex | Text | 6 |
| Nationality | Text | 15 |
| Date of birth | Date/time | 15 |
| Registration no | Text/ numbers | 20 |

| | | |
|---|---|---|
| Marital status | Text | 10 |
| Academic year | Text | 15 |
| Department | Text | 25 |
| Program type | Text | 15 |
| Session | Text | 10 |
| Phone no | Number | 15 |
| Email | Text | 30 |

**Registration form**

| Field name | Data type | Field length |
|---|---|---|
| Fname | Text | 15 |
| Lname | Text | 15 |
| sex | Text | 6 |
| Nationality | Text | 15 |
| Date of birth | Date/time | 15 |
| Marital status | Text | 10 |
| Academic year | Text | 15 |
| Program type | Text | 15 |
| Session | Text | 10 |
| Phone no | Number | 15 |
| Email | Text | 30 |

**Figure 4.0 application form**

## 4.4.3 Data Input Design

Data/command is inputted using the mouse and keyboard. There is a provision for the user to type on a provided space to search for something in the database. The user will interact with the system using a simple and user friendly graphical user interface.

The data stored in the database will be entered through the interface. The interface designs for the various forms are illustrated below:

| Header | | |
|---|---|---|
| Other links | Main links | |
| | Main overview of the university | |
| Footer | | |
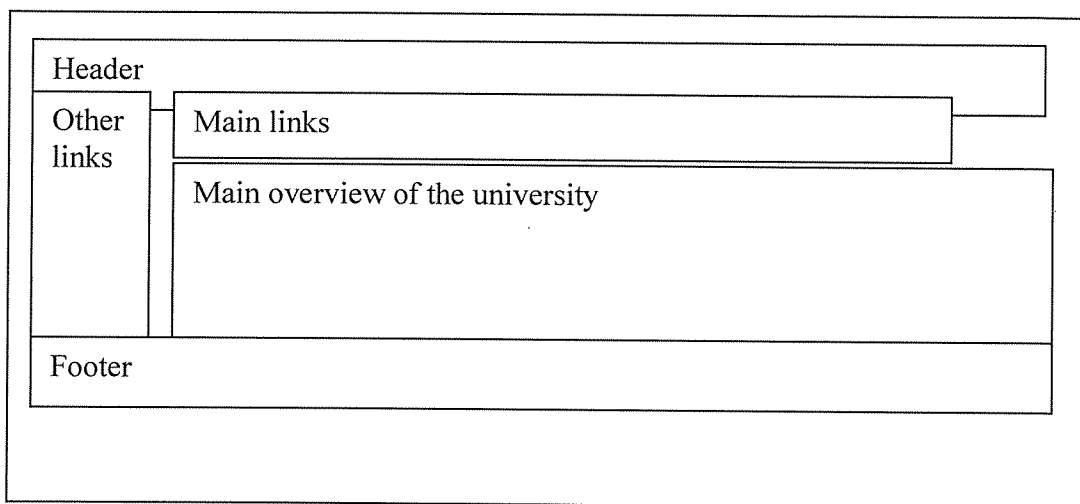
**Figure 5.0 the home page**

**Description of the above figure**

Header – includes the university name (Montessori international university)

Main links- links to other university pages such as application forms, registration forms, academic policies, academic programs, contacts and objectives.

Other links – links to other pages on the site like philosophy and missions.

Footer- contains the copyright information.

The page above allows people who have visited the site to have the overview of the university and they get all the information they want.

The site also provides them with the different programs that are currently running and the future plans

| Registration form provides options for various records | | |
|---|---|---|

| Fname | Text box | Registration no | Text box |
|---|---|---|---|
| Lname | Text box | Marital status | Text box |
| Sex | Text box | Academic year | Combo box |
| Nationality: | Combo box | Department | Combo box |
| Date of birth: | Date picker | Program type | Text box |

| Session | Text box | Phone number | Text box |
|---|---|---|---|
| Email address | Text box | | |

submit

Delete

Figure 6.0 registration form

**Description of the above table**

Submit – after one has filled the information needed, it gives the option of one to submit the form to the university.

Delete –incase one changes her /his mind, the delete button clears the information..

Textboxes – provides space for typing in the information.

Combo boxes- provide options for different fields to choose from.

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The above form allows students both local and international to register their programs online. The website provides the form which is filled in there and then its sent back to the University for Approval.

```
┌─────────────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────────────────┐      │
│  │  Application form provides options for various records    │      │
│  └───────────────────────────────────────────────────────────┘      │
│                                                                      │
│  ┌──────────────────────────────┐  ┌─────────────────────────────┐  │
│  │ Fname                        │  │ Academic year ┌───────────┐ │  │
│  │         ┌──────────────┐     │  │               │ Textbox   │ │  │
│  │         │ Textbox      │     │  │               └───────────┘ │  │
│  │         └──────────────┘     │  │ Marital status ┌──────────┐ │  │
│  │ Lname                        │  │                │ Textbox  │ │  │
│  │         ┌──────────────┐     │  │                └──────────┘ │  │
│  │         │ Textbox      │     │  │ Program type  ┌───────────┐ │  │
│  │         └──────────────┘     │  │               │ Combobox  │ │  │
│  │ Sex     ┌──────────────┐     │  │               └───────────┘ │  │
│  │         │ Texbox       │     │  │ Session       ┌───────────┐ │  │
│  │         └──────────────┘     │  │               │ Combobox  │ │  │
│  │ Nationality ┌────────────┐   │  │               └───────────┘ │  │
│  │             │ Combo box  │   │  │ Phone number  ┌───────────┐ │  │
│  │             └────────────┘   │  │               │ Textbox   │ │  │
│  │ Date of birth ┌──────────┐   │  │               └───────────┘ │  │
│  │               │Date picker│  │  │                             │  │
│  │               └──────────┘   │  │                             │  │
│  └──────────────────────────────┘  └─────────────────────────────┘  │
│                                                                      │
│  Email address  ┌─────────────────────────────────────────────┐     │
│                 │ Textbox                                     │     │
│                 └─────────────────────────────────────────────┘     │
│      ┌──────────┐                              ┌──────────┐          │
│      │ Apply    │                              │ Delete   │          │
│      └──────────┘                              └──────────┘          │
└─────────────────────────────────────────────────────────────────────┘
```

**Description of the above figure**

Apply – this button is for allowing one to send their application form after filling in the required information.

Delete – clears any unnecessary information.

# CHAPTER FIVE

## SYSTEM TESTING, IMPLEMENTATION AND EVALUATION

### 5.2    System Testing

This system testing was to make sure the system is consistent and performs its specifications and objectives to meet the expectations of the users. The testing process was done in stages and the following were the stages followed:

**Unit testing**: - each system unit was tested to make sure it runs correctly on the site. In this case, each form was tested independent to ensure that it was working as expected.

**Sub-system testing**: - Each form was tested to ensure that there were no errors among other forms. The database was also tested separately to ensure that the table relationships were consistent. For instance, data was entered in two related tables. An attempt was then made to modify data in one table. This was supposed to affect the data stored in the related table.

**System testing**: - The sub-systems were integrated to make up the system. The whole system was then tested. This process was concerned with finding errors that result from manipulated interactions between the various sub systems. In addition, it was concerned with ensuring that the system meets its functional and non-functional requirements and testing the system properties.
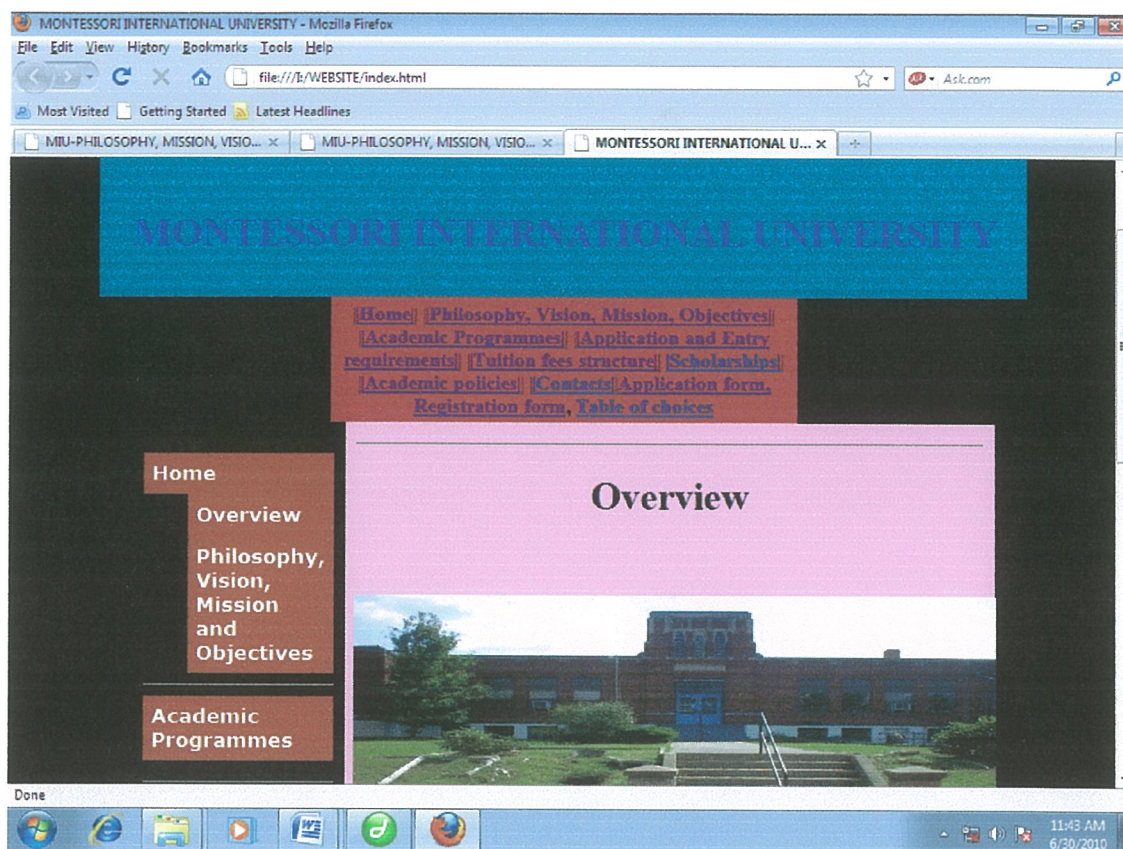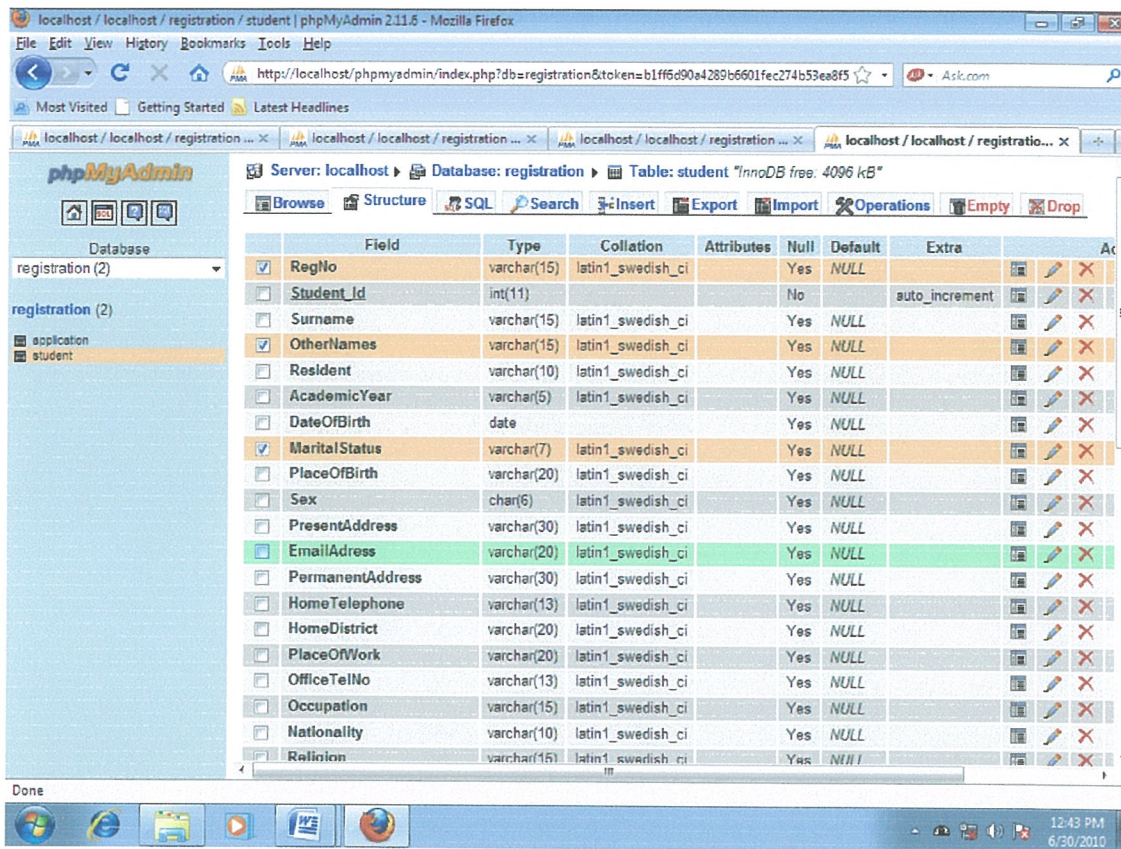
Figure 8.0 shows the home page of the website

Figure 9.0 showing the 'students' table in the database 'registration'

Figure 10.0 registration form

## 5.3 User training, operation and support

**User Training**

The implementation of the new system would have involved training individuals who would use the final system. The results of the system implementation and project implementation are the operational system that will enter the operation and support stage.

User training would have involved: helping the user to understand the application's user interface, performing sample data entry and retrieval, explaining the actions/ events that would cause the application to behave abnormally, highlighting the strengths/ limitations of the application as far as data entry, storage and retrieval is concerned.

## Operation and Support

The operation and support stage comes in once the system is operating. System support is the ongoing technical support for users as well as the maintenance required to fix any errors and new requirements that may arise.

System support consists of the following activities.

- Assisting the users: - Regardless of how well the users have been trained and how good the end-user documentation is, users will eventually need additional assistance for unanticipated problems that would arise or new users added in the organization.

- Fixing bugs: - the system may contain errors that may have not been detected during the testing phase.

- Recovering the system: - A system failure may result in a program "crash" or loss of data. Human error or hardware or software failure may have caused this. The researchers would be called in to provide technical assistance which may include restoring the web pages and database.

- Adapting the system to new requirements: - New requirements may include business problems, new user requirements, new technical problems or new technology requirements which will need to be adapted into the new system.

# CHAPTER SIX

# DISCUSSION, RECOMMENDATION AND CONCLUSION

## 6.0 DISCUSSIONS

The project still has various activities to be added on the web; we tried our level best to solve some of the problems.

Suggestions through website, university programs online, news and events online, students' registration, programs records, Events and news records keep.

Still we reviewed different writings in order to update this site once the need arises and overcome the challenges due to a dynamic and competitive world.

## 6.1 Critical analysis

| Risk Area | Risk factor | Causes | Solution |
|---|---|---|---|
| 1. Functionality | Wrong design | Lack of design experience | Iterative design And algorithm |
| 2. Organization | Uncooperative internal parties | Lack of management support | Increase communication with top management |
| 3. Technology | Inadequate development | Poor investment in technology | Seek case study site |
| 4. Technical | PPR Staffs lacks needed technical skills and experience | Inadequate organization data warehouse skills | Prototyping And requirement analysis iteration |

Table 7.0 showing critical analysis of the project

## 6.2 Conclusion

This report is part of deliverable of Montessori international university website project.

The website of Montessori international university provides a link to the societies or all users around the world who are interested in the university.

The purpose of developing this website is not only for distant people but also for nearby people including internal users of the system such as staff who arrange and coordinate daily programs of the organization and schedule periodic services of the university. The maintenance of the records is made efficient, as all the records are stored in database, through which data can be retrieved easily.

The website can provide relevant and timely information that covers wide area through application of modern technologies such as internet to cope with ongoing advancement in technology worldwide.

The website will provide an effective means of providing information about the university to prospective students and other interested people. It will also act as a tool where suggestions and feedback can be received.

The future of the organization has many innovative and exciting possibilities. Previously the website have been in trouble, with inflexible criteria, and with diverse problems such as lack of effective administration of the website resulted in delay in updating the database to keep track of data stored and finally failure to maintain the website.

This complete project provides solutions to many previous problems and also a way to build a strong competitive organization through the web technology.