
DESIGN AND IMPLEMENTATION OF AN ONLINE APPLICATION SYSTEM

CASE OF KAMPALA INTERNATIONAL UNIVERSITY

BY

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BIS/1877/51/DU

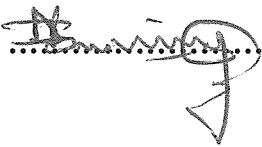
A REPORT SUBMITTED TO THE SCHOOL OF COMPUTER STUDIES IN
PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF
THE DEGREE OF BACHELOR OF MANAGEMENT INFORMATION
SYSTEMS OF KAMPALA INTERNATIONAL UNIVERSITY

JUNE 2009

DECLARATION

I BYENKYA L. DENIS registration number BIS/1877/51/DU declare that this piece of work has been as a result of my own efforts and it has not appeared in any other reports or dissertations of any institutions of learning.

Signed:

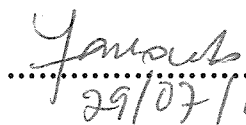
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APPROVED BY:

A handwritten signature in black ink, appearing to read 'Yakub', is written over a horizontal dotted line. Below the signature, the date '29/07/09' is handwritten.

MR. SSEBANDEKE YAKUB

SUPERVISOR

DEDICATION

This book is dedicated to my late father Mr. Emmanuel K Mbabazi, Msgr Emmanuel Wandera, Sr. Maria Enrica, my Sister Asimwe Betty, P. Fedele Mancini, and Bishop Deogratias Byabazaire for their total love, care, guidance and support towards my education. Special dedication is also extended to the Cistercian Sisters of Charity and Good Samaritan Sisters Bishop's House Hoima Diocese as well as my Aunties for all the necessary support provided

ACKNOWLEDGEMENT

Am thrilled and greatly indebted to many people who helped me in writing this book. In particular I wish to thank my supervisor Mr. Yakub Ssebandeke for providing constant guidance and support throughout the research process.

Special thanks go to the staff of Kampala International University Directorate of Admission for welcoming me in the department and for having supported me in various ways to enable me accomplish the task.

Thanks to the respondents at Kampala International University for allowing me to collect information from them through questionnaire and interviews.

Finally and most importantly thanks to all friends Sseguja Godfrey, Sr. Jane Kasande and Richard Alikira among others for the support, encouragement and advice given during the course of the research.

Dio te benedica!!

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CHAPTER ONE

INTRODUCTION

The Government of Uganda has embarked on a serious campaign of eradication of illiteracy by providing free education from primary up to secondary. As many students would complete secondary studies, Uganda has only few government universities and these few cannot enroll all the students.

In recognition of the above, the government of Uganda through the line Ministry of Education and Sports allowed private Universities to start, including Kampala International University which started in 2001 admitting students from within and outside Uganda. Kampala International University lacks an “Online student application system” although it has a website.

Computers and Information play a significant role in the development of organizations. Access to vast amounts of information determines the success of an institution. Networks, databases and communication technology enable quick reliable strategic decision making.

A database system is a collection of related record that are stored within a minimum redundancy from which data can be retrieved or accessed simultaneously from different locations.

1.1 BACKGROUND

Kampala International University is the fastest growing University in Uganda with over 10,000 students at Kansanga main campus and Western campus in Ishaka, it is situated in Kampala the capital city of Uganda about five kilometers from the city center along Ggaba road. Kampala International University is the only University that has the highest number

of International Students in Uganda. Having the highest number of International students, they always face a problem of accessing the application forms for admission which were to be picked and filled manually and delivered to the Director of Admission for processing in order to be admitted. This would take almost two weeks before the applicant receives an admission letter.

Lack of an online student application system, the Director of Admission used to face long queue of applicants lining up for application forms and it was also very expensive and time consuming for International and those applicants who come from upcountry. The office of the Director of Admission was so congested and has about five staff members with two receptionists who have to give out and receive application forms which are processed and later the applicant receives the Admission letter.

Since 2001 when Kampala International University started offering Education to Ugandans and Students outside the country, a website has been created and it is accessed on the Internet but the services that can be accessed are not among the students application forms which could have been filled, submitted directly to the Director of Admission by the applicant directly and waits for admission letter which could be e-mailed.

This project has involved the design and implementation of an online students' application system for a Kampala International University. This has involved a university prospectus which contains fees structure and courses offered by Kampala International University hosted on the server in form of a database. This database is designed to store and report on large amounts of information on application specifications such as courses descriptions, availability, duration cost etc. The users of this system are able to access this information;

through a University website. This is area of immediate interest to the Kampala International University and other tertiary institutions in Uganda and Africa at large since most of them require more applicants for the enrollment.

Access to website hosting this system by interested applicants for studies at Kampala International University and stakeholders of the university will aid long-term planning and proper budgeting.

The broad hypothesis that the project will be based on is that the success of such a system in a higher institution like Kampala International University conducting this kind of application is critically depended on the means by which it is designed and implemented.

1.2 Problem statement

Given the increased number of students at both campuses of Kampala international university, there were reports of congestion at the admissions office, a lot of time and space was wasted in serving the increasing number of applicants. This prompted the administration to employ a bigger number of staff members in the admission department which resulted in a high cost of operation to both the university and to the students.

1.3 Objectives

1.3.1 Purpose

The main objective of the study was to design and implement an online application system that allows students to apply online.

1.3.2 Specific Objectives

- To enable students to apply on line from all parts of the world.
- To make the KIU traditional application form available on the internet so that student can be able to down load it and bring it when already filled or simply e-mail it.
- To implement an online application system.

1.4 Scope

The project being in Kampala international university main campus covered mainly Admissions department. In this department, major emphasis was on the requirements for the various courses in order for a student to be admitted.

1.5 Significance

The study is of great importance in the following ways;

- To the public, the system has created awareness among people who may wish to apply for any course at Kampala international University.
- To both the public and the school, the system has made information required by people about the various courses that are offered at the university available on the internet.
- To the department, the system has reduced on the work load that was often experienced in the department. This is further important in the way that students no longer have to over crowd around the admissions office as all they need is available on the kiu website.
- To the researcher, skills have been acquired in the field of online application and reservation systems.

1.7 Conceptual Framework

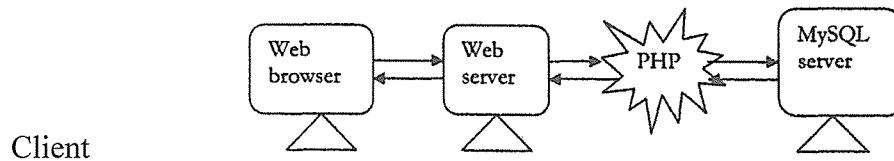
The conceptual frame work of this online reservation system is based on the way communication servers work. According to Schultheis& Summer (1992) in their book management information systems the manager's view, a communication server is a computer that provides and manages external communication devices for the network.. They further add that these devices may include; modems, specialized gateways to other networks such as the organization's mainframe or other communication devices. Communication server is an ordinary microcomputer dedicated to handling the modems or other communication devices.

Like wise, in this online application system, a server computer will be set a side or space will be set aside on the service provider's server on which the database and web pages will be stored.

The applicant will fill the application form and submit online to be processed and receives the feedback from the site. After confirming the admission, payment can be made physically at the university since there is currently no electronic infrastructure to manage payments using credit cards at the University under study.

In order to implement the above mechanism, the following functionality has to be designed and implemented using Dream weaver; PHP and SQL server

- 1 A database of the application form to be browsed online
- 2 An online list of courses and programs offered
- 3 An administration interface for adding, deleting and viewing data.



A user's web browser issues an HTTP request for an application form

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

The PHP Engine begins parsing the script whereby, it contains a command to connect to the database and execute a query. PHP opens a connection to the SQL server and sends on the appropriate query.

The SQL server receives the query and processes it, and sends the feedback to the PHP Engine.

The PHP Engine finishes running the script which usually involves formatting the query results in HTML to the web server.

The web server passes the HTML back to the browser, where the application form requested for is displayed.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Literature review is an extensive review of related literature which is an essential Component of any research. Literature review is the research on various academic materials so as to enable analysis and comparison of enabling technologies used to implement the projects; this includes justification on why the system is designed.

2.1 Information Technology

Information technology has been given different definitions by different scholars. The examples are given below:

[1] It includes all matters concerned with the furtherance of computer science and technology and with the design, development, installation, and implementation of information systems and applications [**San Diego State University**], ud.

Information technology architecture is an integrated framework for acquiring and evolving IT to achieve strategic goals. It has both logical and technical components.

[2] It is any equipment or interconnected system or subsystem of equipment, which is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information. The term information technology includes computers, ancillary equipment, soft-ware, Firmware and similar procedures, educations (including support educations), and related resources.

[3] IT is a term that encompasses all forms of technology used to create, store, exchange and utilize information in its various forms including business data, conversations, still images, motion pictures and multimedia presentations.

[4] It is (IT) the application of computer, communications and software technology to the management, processing and dissemination of information.

[5] The term "IT" encompasses the methods and techniques used in information handling and retrieval by automatic means. The means include computers, telecommunications and office systems or any combination of these elements.

[6] Equipment, telecommunications, video telecommunications, proprietary software, and purchased educations. It resources may also include personal educations when FM approvals are obtained and all reporting/approval requirements of are followed.

[7] The hardware and software operated by an organization to accomplish a Federal function, regardless of the technology involved, whether computers, Telecommunications or other.

‘Just-in-time’ database-driven web applications (DBWA) are inexpensive, quickly developed software that can be put to many uses within a healthcare organization. DBWA garnered 73,873 hits on our system-wide intranet in 2002. They enabled collaboration and communication via user-friendly web browser-based interfaces for both mission and patient care critical functions. Nineteen DBWA were developed application categories that comprised 80 per cent of the hits were results reporting (27%), graduate medical education (26%), research (20%), and bed availability (8%).

2.2 Information System

O'Brien, J (1999) states that the term **information system** (IS) refers to a system of persons, data records and activities that process the data and information in an organization, and it includes the organization's manual and automated processes. In a narrow sense, the term *information system* refers to the specific application software that is used to store data records in a computer system and automates some of the information-processing activities of the organization. Computer-based information systems are in the field of information technology. The discipline of Business process modeling describes the business processes supported by information systems.

2.2.1 Components of an Information System

Long (1989), Identified the following components of an information system:

1. **Input:** this is the startup component in which a system operates. It largely determines the nature of output in the system.
2. **Process:** it is defined as an activity that makes possible the transformation of input to output. Machines, functions, operations may act as a processor transformed data into output.
3. **Output:** is defined as a result of an operation. It's the main objective for which an information system is designed.
4. **People:** these are the users of the system. Includes system analysts, programmers, database administrators, end users.
5. **Procedures:** are rules that govern the working of the information system

2.2.2 Transaction processing systems (TPS)

Automate the handling of data about business activities or transactions, which can be thought of as simple, discrete events in the life of an organization. Data about each transaction are captured, transactions are verified and accepted or rejected and validated transactions are stored for later aggregation. Reports may be produced immediately to provide standard summarizations of transactions and transactions may be moved from process to process in order to handle all aspects of the business activity.

Kotler, Phillip and Keller (2006) found that; marketing information system consists of people, equipment, and procedures to gather, sort, analyze, evaluate, and distribute needed, timely, and accurate information to marketing decision makers.

Management Information Systems; is a planned system of the collecting, processing, storing and disseminating data in the form of information needed to carry out the functions of management. See appendix A

EARS - Endangered Animal Rescue Sanctuary

BigCatRescueSanctuary.org is the website of the Endangered Animal Rescue Sanctuary - a not for profit charitable organization based in Citr, Florida, USA. This website was designed by ic-webs.com as a response to a previously very badly designed website for which EARS were charged a considerable sum of money. **At ic-webs.com, we will always help charitable organizations as much as possible where we can.**

The website is designed in such a way as to provide individual pages for each of the EARS residents - although all are not shown on the website at present. The web site is an example of a large *static design web site*, relying on standard HTML pages as opposed to a database

driven system. It does also sell products in aid of its non Government supported income, as well as takes donations through the website. Thus a good example of where a static site can be adapted quite easily to retail a small product range that does not change frequently.

2.3 Static Websites

According to **wikipedia, the free encyclopedia**, a static website is one that seldom or never changes. This means that once the site is designed and uploaded to a location on the Internet it is considered complete and not updated very often (other than annual or semi-annual maintenance). A viewer sees the exact same thing every time they go to the website.

While this may sound boring, static websites can be made more interesting through the use of slide shows, email forms, rollover buttons and programming such as Javascripts. Think of a static website as an online brochure.

2.4 Dynamic Websites

According to **wikipedia, the free encyclopedia**, a dynamic website's content is regenerated every time a user visits or reloads the site. The owner, viewer or automated programming can change the content constantly. This is done through the use of one or several databases located on the website hosting server.

Database driven websites are used for interactive websites such as online sales, message boards and sites that contain large amounts of information. The data (or content) of a webpage is stored in the database and is retrieved when the viewer clicks on a specially programmed button or link.

An example of dynamic information is shown below. While this example is rather simple, dynamic sites can be very sophisticated and provide viewers with tremendous amounts of information with just a few mouse clicks.

2.4.1 An example of Dynamic website

Tour Price Calculator

Enter the number of adults and children in your party as well as the tour name of the tour you want to calculate.

All fields required (enter 0 if necessary).

Number of Adults

Number of Children

Tour Name

Having carefully analyzed the advantages of the two types of Web-based application systems, I propose to develop a dynamic web-based application system which is a database driven website.

2.5 WEB-BASED APPLICATION SYSTEM

2.5.1 Recent Development

Owen (2003) argue that the debate over "high-tech" or "high-touch" is largely a thing of the past in the education industry as emerging technologies drive unprecedented change in the way Universities operate and serve applicants. It is clear that investments in technologies can generate greatly improved operating efficiencies, higher University revenues and enhanced Applicant educations. The pace of change, however, has been so extreme as to leave many University organizations uncertain about what types of technology to adopt and the best ways to create a seamless integration of systems company-wide. In addition, investments made by many University owners and administrators during the last five years have lagged as a result of the serious downturn weathered by the industry. Many University organizations are using technologies so outdated as to place their companies at a competitive disadvantage in the marketplace.

The technology life cycle provides a model to assess how and when companies and individuals adopt new technologies. Pioneers are generally the first to acquire new technologies and take the greatest risk.

A second category of technology users -- leaders -- adopts relatively unproven technologies, but the risks are known and accepted. Obsolete technology at the other end of

the spectrum may seriously impair a company's ability to compete. In terms of costs and benefits, the best balance appears to be with the leaders who invest significantly less than pioneers and incur reduced risks, yet their technology investments can yield similar benefits.

Finding that balance in technology investment is critical today for University operations, given its importance in two areas:

- The desire of operators to improve the applicant experience. This is demonstrated through faster assess and more timely response to education requests and a myriad of other opportunities to enhance educations.
- The potential to improve operating efficiencies. University administrators are seeking ways to reduce staffing requirements, cross-train staff, reduce the overall general and administrative expense, and explore opportunities for centralizing some functions while at the same time distributing other functions more widely.

Implementing technological advances promises the potential for greatly enhanced Applicant educations to meet rising student expectations, improved cost control, more effective marketing strategies and expanded opportunities for University organizations and properties to achieve a competitive advantage. However, technology is only as good as its application by an organization, and therein lies the challenge for higher learning institutions weighing how best to invest in technology, as well as train employees and implement its use.

Database marketing at the core of technology-driven marketing is the ability to better target a University's student base. A University's applicant information file provides the opportunity to segment applicants, develop profiles of frequent Applicants, target

prospective applicants and improve retention. Many finer Universities maintained an Applicant history system manually before the advent of affordable computer systems. However, these manual systems were limited in their ability to serve as the basis for a marketing program, and also did not permit the chain operator to identify the best individual applicants who frequented multiple Universities within the chain.

Technological advances thus have the potential to generate a range of benefits critical to remaining competitive, and ultimately driving expanded market share and profitability. Nevertheless, the barriers to increased investments in technology by University owners and operators can be daunting. These include general resistance to change, lack of available funds or manpower to invest in technology, and a perceived inability to quantify benefits.

Like any other education institutions, Universities are by their very nature more reliant on information than many other industries. The success or failure of a learning institution can be directly tied to the accuracy of data contained in databases and the speed of retrieval. Clearly, technological advances applied in the education industry will set increasingly higher standards for Applicant educations and University operations with applicant expectations continuing to accelerate. As a result, investments in technologies and effective application of these technologies in University operations and education will become one of the most decisive factors differentiating successful University organizations globally in the years ahead.

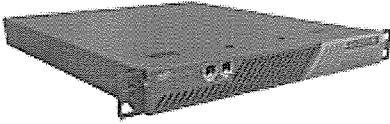
2.6 Information Security

According to www.about.com ([all about information security.html](http://www.about.com/all_about_information_security.html)), Information security refers to protecting information and information systems from unauthorized access, use, disclosure, disruption, modification, or destruction. The goals of information security include protecting the confidentiality, integrity and availability of information.

All organizations, including governments, military, financial institutions, hospitals, and private businesses, gather and store a great deal of confidential information about their employees, customers, products, research, and financial operations. Most of this information is collected, processed and stored on electronically and transmitted across networks to other computers. Protecting confidential information is a business requirement, and in many cases also an ethical and legal requirement. For the individual, information security has a significant effect on privacy and identity theft.

The field of information security has grown significantly in recent years. There are many areas for specialization including Information Systems Auditing, Business Continuity Planning and Digital Forensics Science, for example. There are also specific information security technical certifications that can assist getting started in this field.

The Barracuda Web Application Firewall is a complete and powerful security solution for Web applications and Web sites. The Barracuda Web Application Firewall provides award-winning protection against hackers leveraging protocol or application vulnerabilities to instigate data theft, denial of service or defacement of your Web site.



- ☐ Protection against common attacks
- ☐ Outbound data theft protection
- ☐ Web site cloaking
- ☐ Granular policies
- ☐ Secure HTTP traffic
- ☐ SSL Offloading
- ☐ SSL Acceleration
- ☐ Load Balancing

2.7 Database Systems

O’Leary J.T O’Leary (2000) states that, it takes time to locate a specific piece of information by manually opening and searching through folders. Imagine how much time would be required for a large company to manually search through a huge amount of data, however, with the use of electronic **Database Management System** can do it.

Connolly and Begg (2002), in their book Database Systems. A practical Approach to Design, Implementation and Management approach a **Database management system** as

A computer database relies on software to organize the storage of data. This software is known as a database management system (DBMS). Database management systems are categorized according to the database model that they support. The model tends to determine the query languages that are available to access the database. A great deal of the

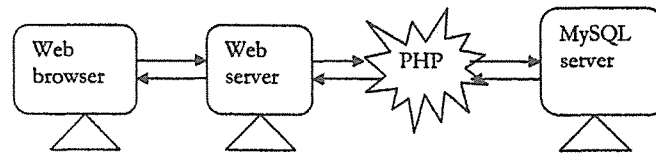
internal engineering of a DBMS, however, is independent of the data model, and is concerned with managing factors such as performance, concurrency, integrity, and recovery from hardware failures. In these areas there are large differences between products.

Database security denotes the system, processes, and procedures that protect a database from unintended activity.

Security is usually enforced through access control, auditing, and encryption.

- Access control ensures and restricts who can connect and what can be done to the database.
- Auditing logs what action or change has been performed, when and by whom.
- Encryption: Since security has become a major issue in recent years, many commercial database vendors provide built-in encryption mechanisms. Data is encoded natively into the tables and deciphered "on the fly" when a query comes in. Connections can also be secured and encrypted if required using DSA, MD5, SSL or legacy encryption standard.

2.8 HOW PHP AND SQL WORK



A web browser receives request from the user then sends it to the web server which receives the files and passes them over to Apache for processing. The PHP engine parses the scripts according to the commands that connect to the database and executes the query. After this it opens SQL. Server and sends the query. Then the SQL server receives and processes the database query and sends the result back to a PHP engine which finishes running the script. This usually involves formatting query results in HTML. After this it returns the resulting HTML to the web server. The web server passes the HTML back to browser where the user can see the requested pages.

CHAPTER THREE:

RESEARCH METHODOLOGY

3.1 Research procedures

Before embarking on the research project, a letter of introduction was secured from relevant authorities of the organization under consideration to acquaint him with the top administrators of the institution and to secure a letter of acceptance to carry out research in the organization.

Prior to starting the data collection, the researcher reviewed and studied different websites of other leading B2C institutions in order to establish what factors enables them to have high applications on the Internet

When time came to collect data from the organization, schedules were drawn with the administrators so as not to disrupt normal business flow.

The researcher also observed the administrators of the university under consideration in interaction with applicants with the intention of affirming information that was collected from questionnaire and interviews.

Lastly, the researcher analyzed Admission prospectus, forms, application procedures and documents.

The intention of the above procedures was to discover issues with the current application system and needs for the future. In all the above, the researcher gathered facts, opinions

and even speculations. To this end, the researcher was guided by careful planning, being neutral listening, and ability to seek diverse views.

3.2 Data Collection

In order to capture appropriately the requirements, various techniques in data collection were used on the traditional (questionnaires, interviews, observation and document analysis) approaches. The qualitative data sources included interviews and questionnaires, document and texts, observation and secondary sources of data.

Data collection involved reviewing primary and secondary sources, including research reports, Internet, and text books so as to determine the requirements for the new system. This included reviewing and determining as much as relevant information regarding the university's strategic objectives, admission processes and IS, human resource requirements and university structure, system requirements and student perspectives.

Thus, the deliverables included information collected from both the students and university employees, forms and reports, computer based information, and university components such as its objective, information needs.

Throughout the process of gathering data, emphasis was put on confidentiality as a top priority in order to elicit the support and co-operation of the respondents.

3.3 Target population

The data collection technique targeted senior, middle, and lower administrators in B2C application from a traditional manual system. This is because the three categories of administrators are able to give complete and concrete information that can be used to determine requirements for the system under investigation.

3.4 Sample Selection

The researcher used purposeful sampling techniques to choose respondents who were able to give reliable and accurate information due to their position of authority and expertise. Thus the senior administrators of the university gave information concerning strategic objectives, policies, organizational structure, resource requirements and other information relevant to the research. The middle administrators gave information concerning admission procedures, problems encountered with students and other information relevant to the research under their jurisdiction.

The operational staff gave information concerning student care and motivation, routine tasks they perform, and relevant information under their authority.

For students, the fact finding technique targeted peoples who actually interact and carry out transactions with members of the target company, and these were students who are already in the university under study and other people whose work need the utilization of the admission system.

3.5 Data collection Instruments

The research instruments (tools) include interviews and questionnaire, structured and semi-structured questions, multiple choice questions. Structured and semi-structured questions allowed respondents to give diverse views and opinions while multiple choice questions allowed them give specific responses.

Because the intention was focused on understanding the system requirements, the instruments were designed to capture as much relevant information as possible and within a relatively short period of time and with less mental effort.

Observation schedules were also be used to compliment the other schedules and is expected to help the researcher cross-validate the findings that were solicited through interview and questionnaire schedules.

3.6 Design and Development of the Prototype

Design of data involved analyzing interviews, observation, Questionnaires and document analysis and this gave the requirements of the system. Responses from interviews and questionnaires were checked for consistency and accuracy.

Document analysis was carried out with the objective of discovering the problems with the existing system, opportunity to meet new need, institutional direction, values of the university and information processing.

Requirements of the system were determined and structured according to three views of the system:

- Process – use-case diagrams was used to communicate the system requirements to users.
- Data modeling had previously been proposed however it was not feasible and the researcher instead used a sequence diagram to serve the purpose.
- Logic – use-case descriptions were developed to communicate the normal flow of events to users.

Design was evolved from system requirements by interpreting the processes, logic and data models. A system designed for Information System was made. A network architecture design will be made to show how various components of the system will be interconnected. The interface designs were made that included an interface structure chart, an input and output design.

From the designs, a prototype of the system was constructed through writing program code and finally, the system as a whole was tested to ensure that it performs according the pre-defined objectives of the university.

3.7 Development Methodology and Tools

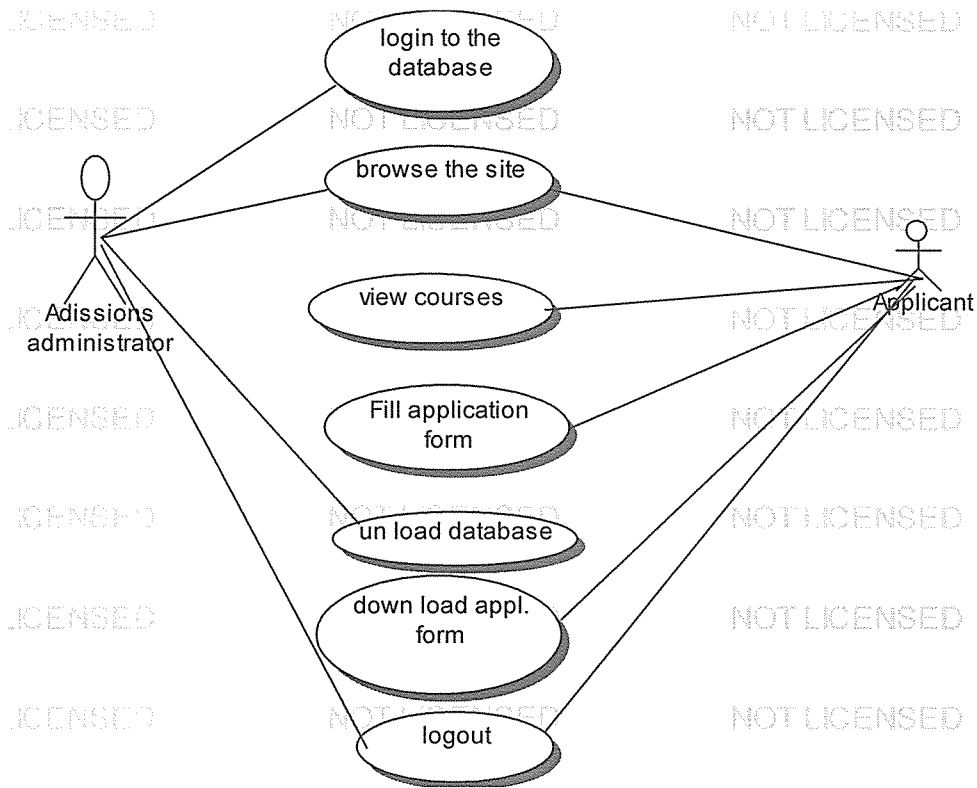
The research project followed four fundamental phases of the SDLC which includes; planning, analysis, design, and implementation.

- In planning phase, the researchers identified the university value of the system, conducted a feasibility analysis and planed the project.
- In the analysis phase it involved the development of analysis strategy, gather information and building a set of analysis models.
- In design phase, the researcher designed a physical design, architecture design, interface design, program design and database and file specification.
- Lastly, in the implementation phase, a prototype of the system was constructed and tested to ensure it performs as designed. Also, the implementation plan was made.

CHAPTER FOUR

SYSTEM ANALYSIS, DESIGN AND IMPLEMENTATION

4.1 Systems Analysis



The administrator can browse information on the website.

The administrator can down load (Unload the database)

The administrators can logout.

The applicant can browse the website.

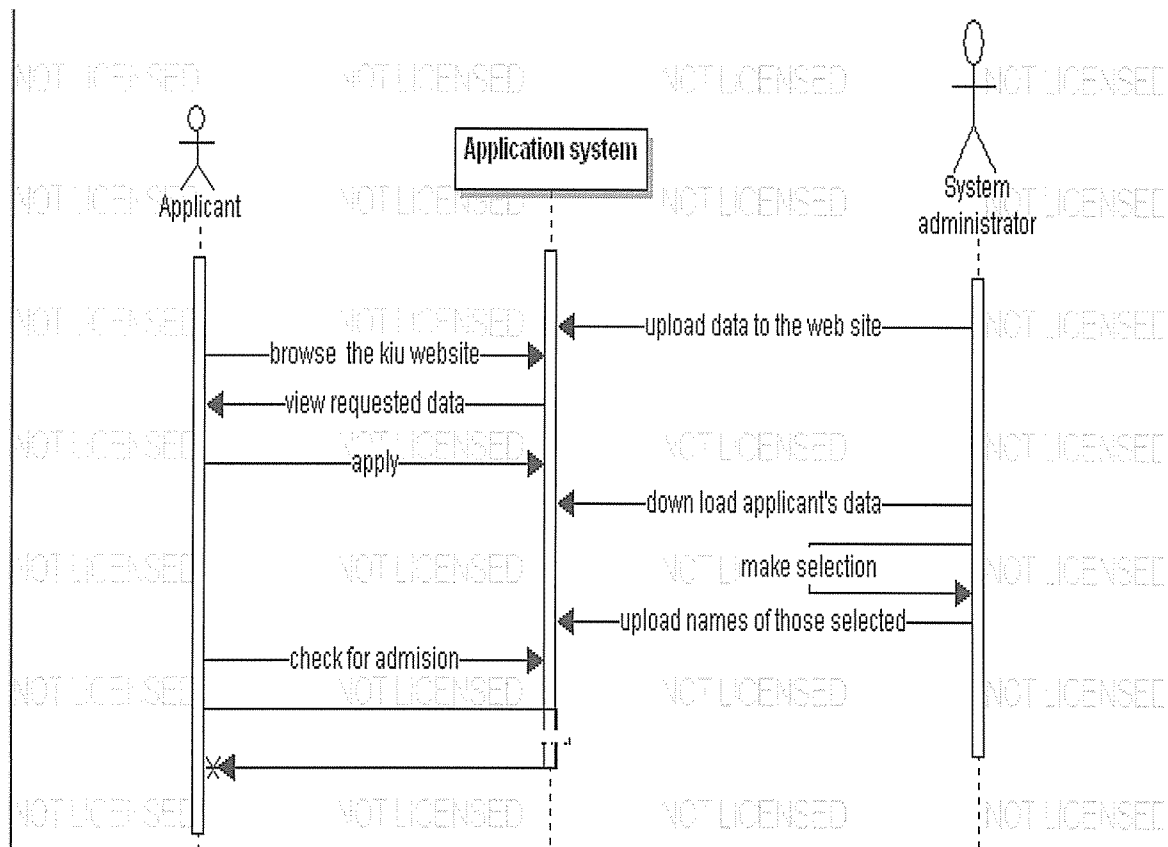
The applicant can apply by filling the application form.

The applicant can down load the application form.

The applicants can logout.

4.2 The system sequence diagram

Figure showing order of process when using the system.



4.3 weaknesses of the old system

From the data gathered, the following weaknesses were found to be with the current system;

- High cost of operation resulting from the big number of employees that kiu employee so as to serve the huge number of students who are applying.
- A lot of time is often wasted by applicants while waiting for clearance from the admissions office.

- Lack of a fast way of accessing data when needed for analysis. Because it is not easy to arrange and organize data stored on papers.
- Lack of data security.

4.4 system specification

System specification refers to statements of what the system should do and the constraints under which it must provide those services. They are divided into two, that is to say;

- i) Functional requirements and ,
- ii) Non-function requirements

The following were identified as function requirements for this system;

4.4.1 Functional requirements for the system

These are statements of what services that the system should provide to its users;

From the above use case diagram, the system should;

- It should allow applicants to apply for courses via the internet..
- It should have a way of making some KIU's information available on the website. It should have a way navigating from one page to another.
- It should allow the data administrator to download 'applicant's data for analysis.
- It should make the kiu application form available on the internet so that applicants who wish to manually apply can download it and apply for the courses they want.
- It should allow applicants to view courses that are offered at Kampala international university.

4.4.2 Non functional requirements

- It should be easy to use by those that may wish to apply.

The database must be created using Mysql.

4.5 System resources required

Hardware resources

The system will require a server computer with speed not less than 2.0GHZ of speed, RAM of at least 512MB and hard disk space of at least 120 GB , a printer, and a UPS.

Software requirements

- An operating system (windows operating system)
- Dream weaver software package
- A mysql DBMS
- And server software.

4.6 Feasibility study

This is a phase in the requirements engineering phase during which the analyst looks at the requirements of the system and evaluate it along the following lines; technical feasibility and economic feasibility.

Technical feasibility this is the most important of the three and this is where the user determines whether the available manpower can design and implement a system that fulfils

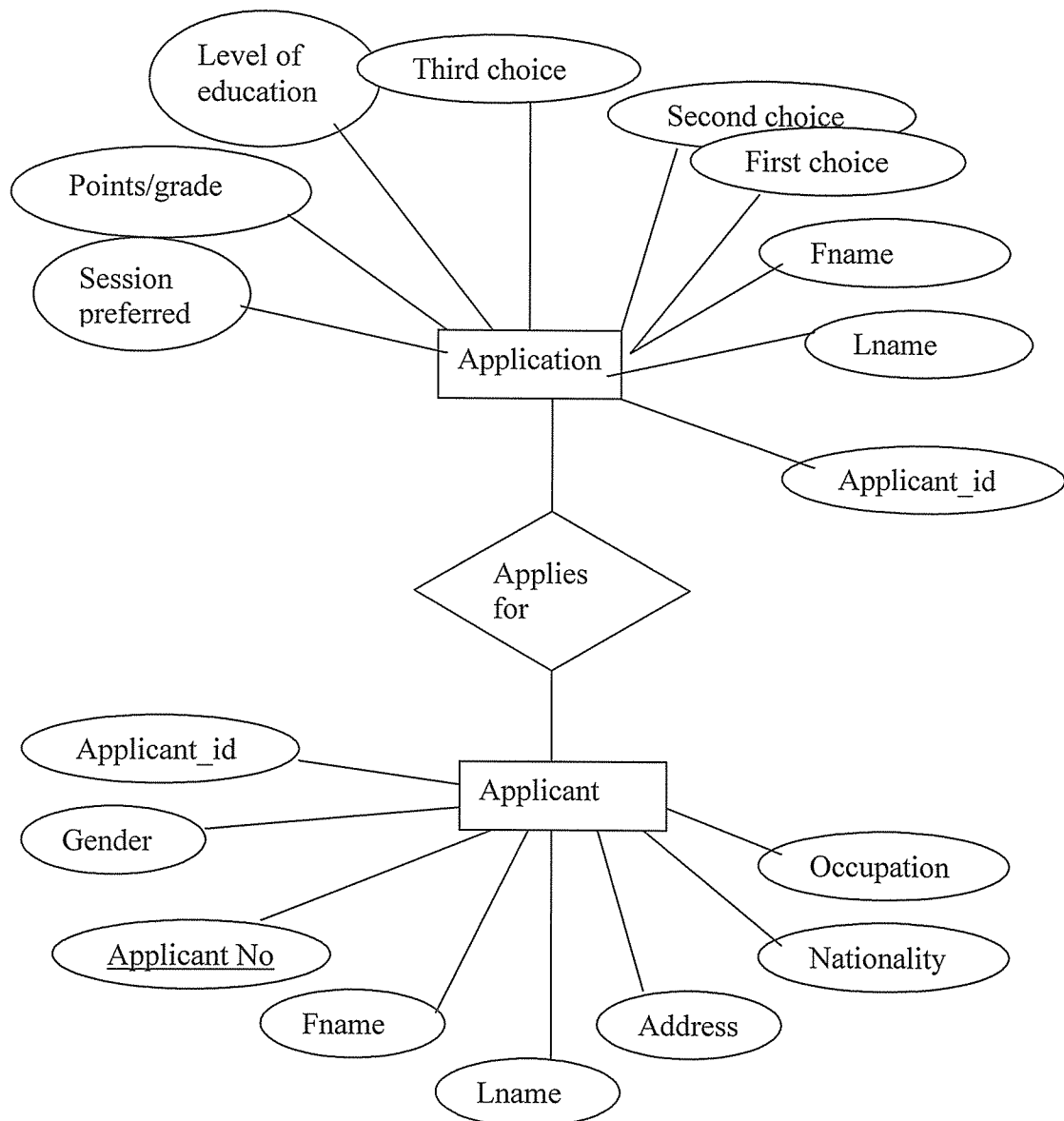
the identified requirements. Given the above requirements this system is technically feasible.

Economically, the system is feasible because kiu already has a website therefore it is just a matter of enhancing the already existing website with this module. This is as easy as linking to pages which is just a few clicks.

4.7 System design

E-R (Entity Relationship) Models

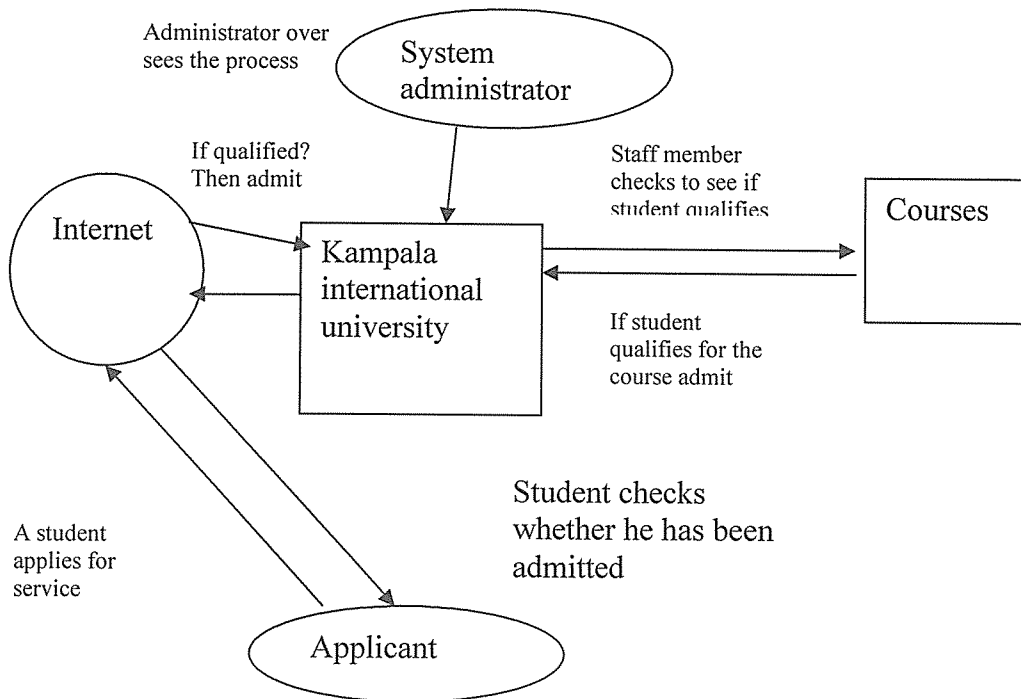
It represents the relationships between entities or elements in the system. Also it reflect a static view of the relationship between different entities



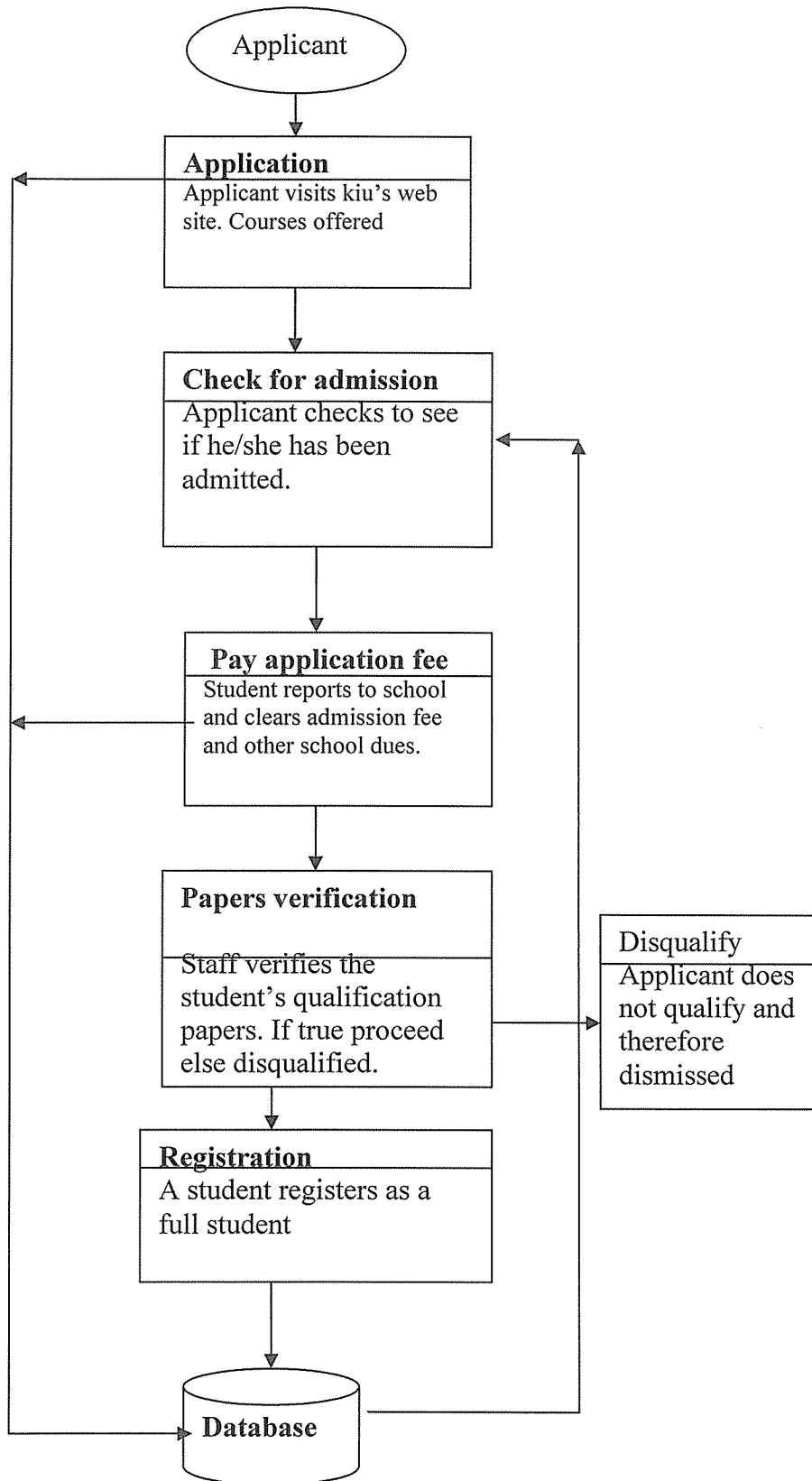
Relation ships

An applicant may apply on once every academic year but may apply for many courses but be admitted to only one course.

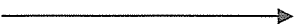
4.8 Context Diagram

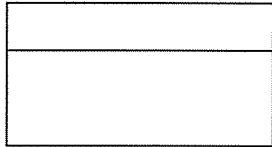


The flow of data through the new system (**online application**)

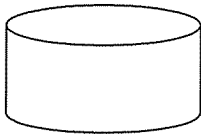


Key

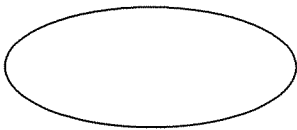
DATAFLOW 



PROCESS



DATABASE



ENTITY

An entity can be defined as the source or destination of data, which is considered external to the system being studied

Process: This is an activity that transforms data in logical data flow diagram, the activities of the manual, mechanized, automated or computerized are not differentiated. a data

process will use or alter the data in some-way ,the processing identification number uniquely identifies each process and indicates its order in sequence of process represented

A **database** ;is a collection of logically related data of a give organization to allow data sharing, reduce data redundancy, improved data integrity among others.

4.10 Database design

This system will implement a database system as its core driving force. The website has two tables.

1. Applicant
2. Application

TABLE STRUCTURES

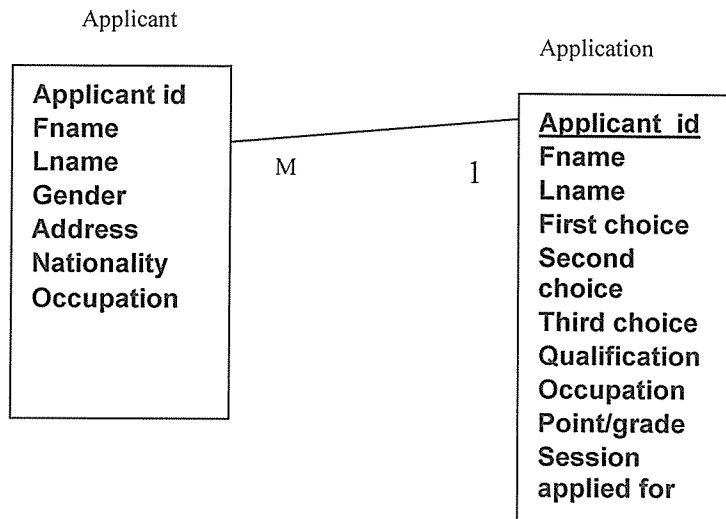
Application tables

FIELD NAME	DATA TYPE	DATA SIZE	Primary key	Null
Applicant_id	varchar	10	yes	No
Fname	varchar	15		
Lname	varchar	15		
Fisrt choice	varchar	30		
Second choice	varchar	30		
Third choice	varchar	30		
Qualification	varchar	30		
Occupation	varchar	30		
Point/grade	varchar	20		
Session applierd for	varchar	20		

Applicant table

FIELD NAME	DATA TYPE	DATA SIZE	Primary key	Null
Applicant No	Varchar	10	yes	No
Applicant id	Varchar	10		
Fname	Varchar	15		
Lname	Varchar	15		
Gender	Varchar	10		
Address	Varchar	30		
Nationality	Varchar	20		
Occupation	Varchar	30		

4.11 Relation schema



4.12 SYTEM IMPLEMENTATION

Database codes

```
-- phpMyAdmin SQL Dump
-- version 2.7.0-pl1
-- http://www.phpmyadmin.net
--
-- Host: localhost
-- Generation Time: Nov 18, 2005 at 10:49 PM
-- Server version: 5.0.17
-- PHP Version: 5.1.1
--
```

```
-- Database: `kiu`
```

```
--
```

```
-- -----
```

```
--
```

```
-- Table structure for table `applicant`
```

```
--
```

```
CREATE TABLE `applicant` (  
  `applicant_id` varchar(10) NOT NULL,  
  `fname` varchar(20) default NULL,  
  `lname` varchar(20) default NULL,  
  `gender` varchar(10) default NULL,  
  `address` varchar(30) default NULL,  
  `nationality` varchar(25) default NULL,  
  `occupation` varchar(25) default NULL,  
  PRIMARY KEY (`applicant_id`)  
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

```
--
```

```
-- Dumping data for table `applicant`
```

```
--
```



```

-----

--

-- Table structure for table `application`

--

CREATE TABLE `application` (
  `applicant_id` varchar(10) NOT NULL,
  `fname` varchar(20) default NULL,
  `lname` varchar(20) default NULL,
  `first_choice` varchar(30) default NULL,
  `second_choice` varchar(30) default NULL,
  `last_choice` varchar(30) default NULL,
  `qualification` varchar(30) default NULL,
  `pointsOrgrade` varchar(10) default NULL,
  `session_preffered` varchar(20) default NULL,
  PRIMARY KEY (`applicant_id`)
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

--

-- Dumping data for table `application`

--

```

```
INSERT INTO `application` VALUES ('c-001', 'Alikira', 'Richard', 'IT', 'computer  
science', 'engineering', 's.6', '12', 'day');
```

```
INSERT INTO `application` VALUES ('c-002', 'Byenkya', 'Denis', 'mis', 'it', 'cs',  
'diploma', 'second cla', 'day');
```

4.12.1 Systems sample web pages

The sample web pages cab viewed from Appendices B.

Registration form used for tracking the applicant's detail.

See appendix C.

For the online application form that the applicant fills to apply for a particular course.

The applicant is expected to come with documents that certify the information submitted via the online application form.

See appendix D.

For the page showing the KIU administration contact numbers.

See appendix E.

For the page showing students perform during their annual cultural gala

See appendix F.

For the page showing KIU's traditional application form that can be downloaded, filled, scanned and mailed to KIU's admissions department.

4.13 System testing

This was done by sampling three people who acted as potential applicants. This was done to ensure that the system performed as it was expected. Major parts that were tested are connectivity between the interfaces and the database.

4.14 System conversion

The online application system does not replace the KIU website but rather upgrades it from being static to a dynamic website.

CHAPTER FIVE

RECOMMENDATIONS AND CONCLUSIONS

5.0 Introduction

This includes the general conclusion of the project and the problems encountered.

- It discusses key events in the project.

5.1 Recommendation

The researcher recommends that the Kiu admission department takes full advantage of this information system in addition to the traditional system that it has been using. This is because not all places have internet, not only that, given the high competition that has come up as a result of the attainment of the charter applicants can view it as having no surety upon an applicant's application as one can not exactly know when the database is unloaded for analysis so as to confirm whether he/she has been admitted or not hence the need for both systems.

The researcher further recommends that the department can improve by computerizing its other systems. When this is done then they could advance to networking their various facilities which will make communication significantly faster and operations more efficient.

5.2 Conclusion

The researcher concludes therefore that the manual system in place is not adequate enough and the use of this online application system will compliment the existing system and the departments operations more efficient and satisfactory. Now applicants can more easily apply from wherever at a reduced cost hence the system has fully achieved the objective of reducing the cost of operation. Though the Information system will not provide 100% satisfaction, however it guarantees a significant user satisfaction and boost up efficiency.

Convenience – this information system allows applicants to apply from all parts of the world without having to travel hence making it more convenient than the existing system.

Moderate paperwork – A successful implementation of the system will lower paperwork and manual collection of application forms and saves storage space.

Increase efficiency – The developed Database Management System will fastened manipulation and retrieval of records.

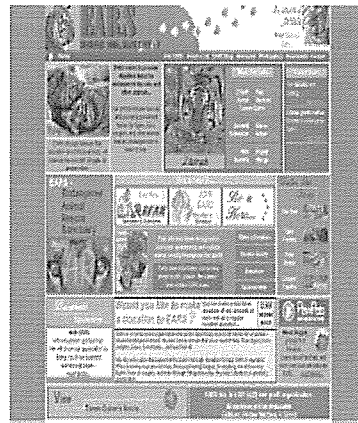
References

- Connolly, T. Begg, C., (2002). Database Systems. A practical Approach to design, Implementation and Management Edinburgh Gate: Pearson Education Ltd
- Kotler, Phillip and Keller, Kevin Lane (2006). Marketing Management, Pearson Education, 12 Ed, 2006
- O'Brien, J (1999). Management Information Systems – Managing Information Technology in the Internet worked Enterprise. Boston: Irwin McGraw-Hill.
- Robert Schultheis and Mary Summer (1992). Management information systems. The manager's view. Second Edition.
- Timothy J. O'Leary and Linda I. O'Leary (2001). Computing essentials, introductory edition.
- Wikipedia –the free encyclopedia last modified on 22 Feb. 2009, at 07:15.
- www.about.com viewed on 3rd June 2009

APPENDICES

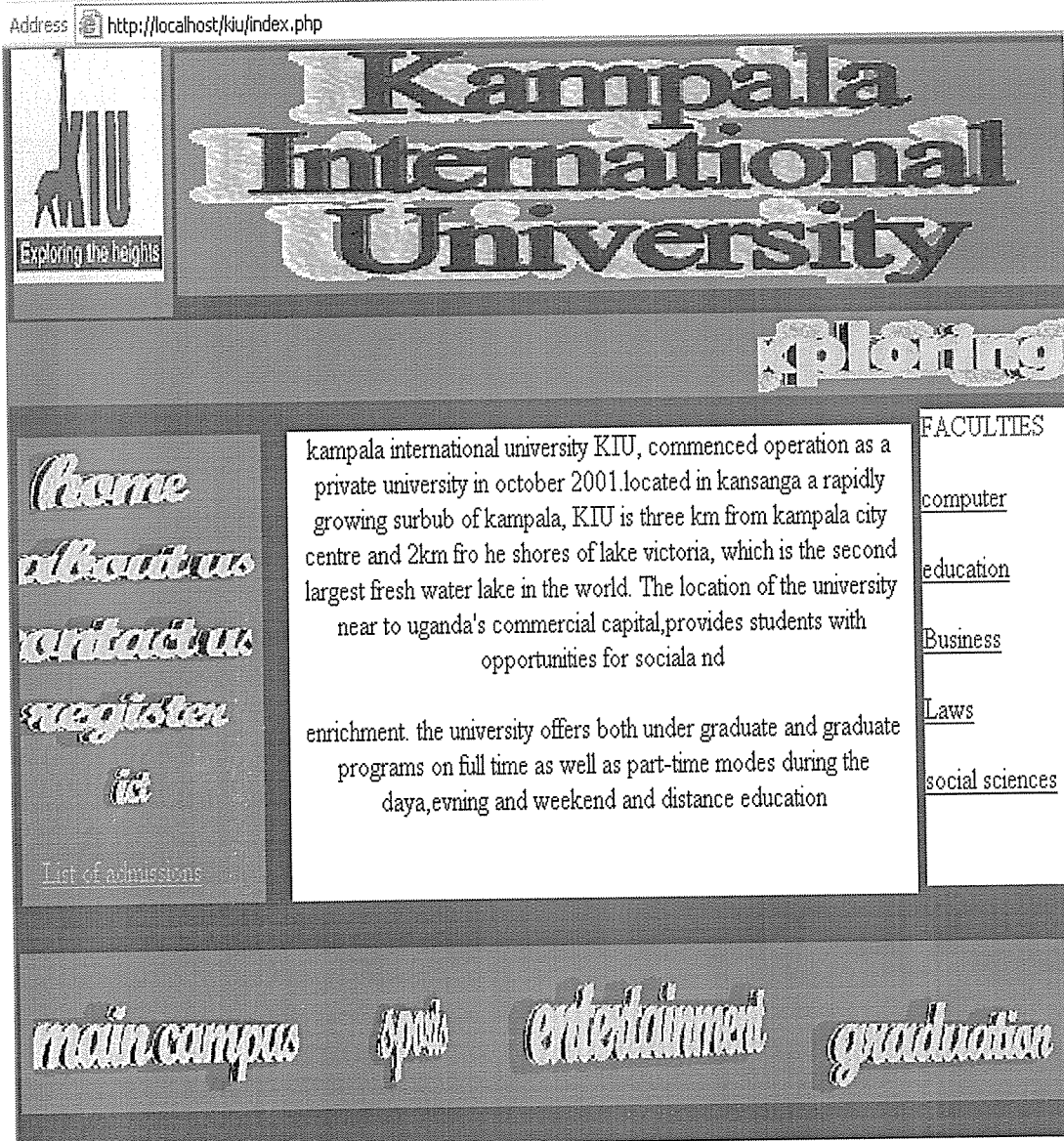
Appendix A

Sample static web page




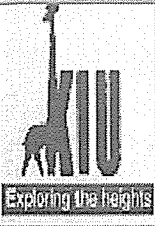
Appendix B

The home page



Appendix C

Address  http://localhost/kiu/register.php



Kampala International University

Exploring the heights

[Home](#)
[About us](#)
[Contact us](#)
[register](#)
[it](#)

[main campus](#)

Applicant id:

First name:

Last name:

Gender:

Address:

Nationality:

Occupation:

FACULTIES

[computer](#)

[education](#)

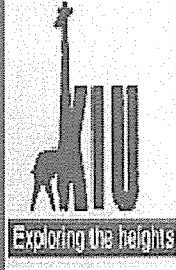
[Business](#)

[Laws](#)

[social sciences](#)

Appendix D

Address  http://localhost/kiu/application.php



Kampala International University

Exploring the heights

Home

About us

Contact us

Register

Applicant_id:

Fname:

Lname:

First_choice:

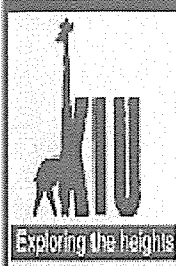
Second_choice:

Last_choice:

Qualification:

PointsOrgrade:

Session_preffered:



Kampala International University

Exploring the heights

Home
attractus
contactus
register
it

we are located at kansanga along kampala Ggaba road just three kilometers from fresh waters of lake victoria;you can contact us on
www.kiu.ug.org

call 04143333333,0414555555

or call director admission on

+256786889995(mobile) or 0414567849

adms2000@yahoo.co.ug

[DOWN LOAD ADMISSION FORM](#)

FACULTIES

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[Business](#)

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[social sciences](#)



main campus

sports

entertainment

graduation

Appendix E

Address  http://localhost/kiu/ADM%20FORM.PHP  Go [Links](#)

KIU/AP

APPLICATION FOR STUDENT ADMISSION

READ THE APPLICATION INSTRUCTIONS BEFORE COMPLETING THE FORM

COMPLETE ALL APPROPRIATE SECTIONS BELOW AND SUBMIT YOUR NON-REFUNDABLE APPLICATION FEE

(see fee schedule) and other supporting documents to:-

admissions coordinator, p.o box 20000, kampala, Uganda Tel +256-41-4267634

Mr. <input type="checkbox"/>	SUR NAME	OTHER NAMES
Mrs <input type="checkbox"/>	<input type="text"/>	<input type="text"/>
Ms. <input type="checkbox"/>		

(The order and Names that appear on your academic documents only)

MAIDEN NAME

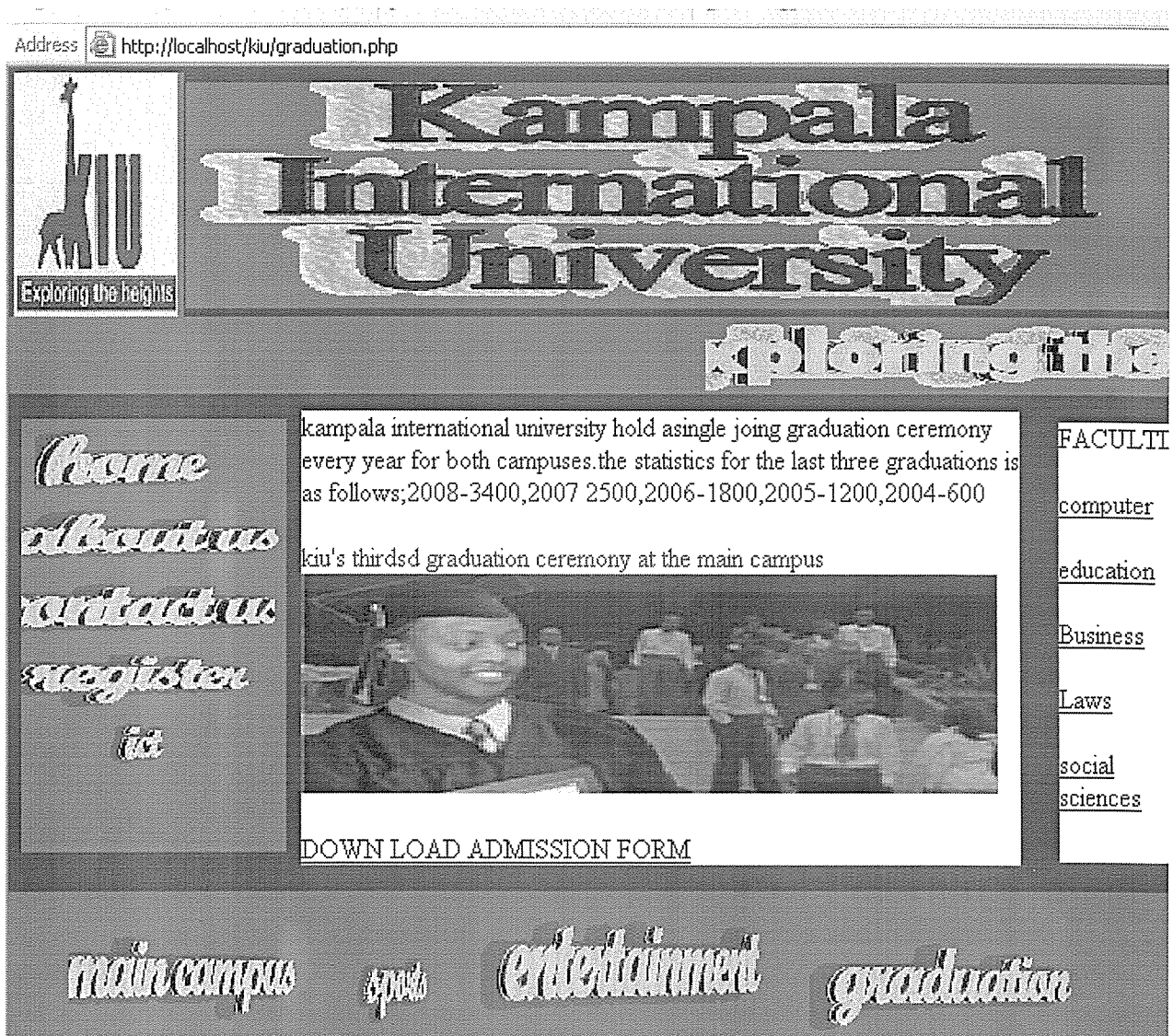
CITY <input style="width: 150px;" type="text"/>	P.O BOX NUMBER
COUNTRY <input style="width: 150px;" type="text"/>	

DAY TIME PHONE <input style="width: 100px;" type="text"/>	TEL NUMBER <input style="width: 100px;" type="text"/>	FAX NUMBER <input style="width: 100px;" type="text"/>
--	--	--

Current Mailing Address (if different from above)


CITY <input style="width: 150px;" type="text"/>	
--	--

Appendix F



Appendix G

Address: <http://localhost/kiu/maincampo.php>

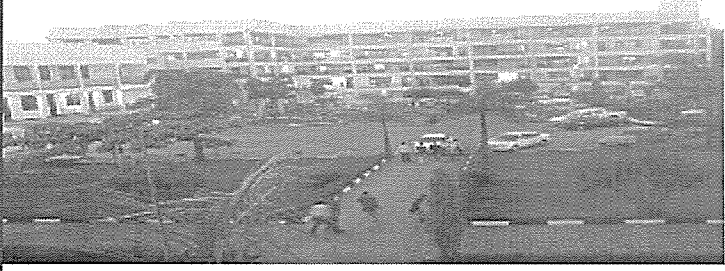


Kampala International University

The Heights

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[About Us](#)
[Register](#)
[Contact Us](#)
[FAQ](#)

the main campus at kansanga has the highest number of students compared to its other branches. it is situated at kansanga along Kampala Ggaba road. it has one main hostel for girls and it is further affiliated to external hostels run by individuals but inspected by kiu to agree with kiu's standardsmajority of kiu's students are Kiswahili speaking people.



[DOWN LOAD ADMISSION FORM](#)

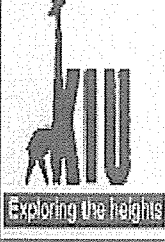
FACULTIES

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- [education](#)
- [Business](#)
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- [social sciences](#)

[main campus](#) [sports](#) [entertainment](#) [graduation](#)

Appendix H

Address  <http://localhost/kiu/sports.php>



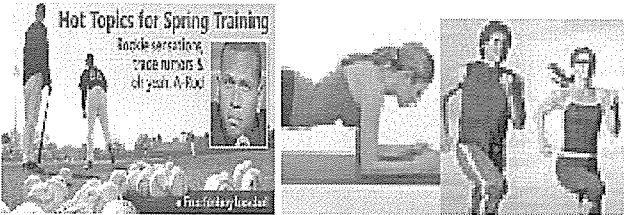
Kampala International University

Exploring the heights

Home
About us
Contact us
Register
Us

kampala international university KIU is one of the best performing higher institutions of learning in terms of sports. This can be seen from the fact that it is the defending champion of the Celtel challenge championship. It supports games like; foot ball, basket ball, volleyball, wood ball, bats, lawn tennis, table tennis among others.

Hot Topics for Spring Training
Rookie sensation, race runner S. (oh yes, it's him)
a first fantasy football



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