

**DESIGN AND MODELING OF SCHOOL TIME TABLE APPLICATION
SYSTEM A CASE STUDY OF KAMPALA INTERNATIONAL
UNIVERSITY'S SCHOOL OF COMPUTER STUDIES**

BY

KANTALAMA MARGARET

DCS/16698/72/DU

AND

NATOCHO JACQUELYN

DCS/19487/72/DU

**RESEARCH REPORT SUBMITTED TO THE SCHOOL OF
COMPUTER STUDIES IN THE PARTIAL FULFILLMENT**

FOR THE REQUIREMENTS OF THE AWARD

OF A DIPLOMA IN INFORMATION

AND COMPUTER SCIENCE OF

KAMPALA INTERNATIONAL

UNIVERSITY

JUNE, 2010.

DECLARATION

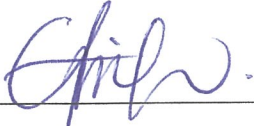
We declare this research report with no duplication or photocopy of it from any institution of higher learning either for the reward of a certificate, diploma, degree, or beyond in the field of computer studies. It is the work achieved from our research and analytical study.

Name.. KANITAZAMA MARGRET.....
Signature.. [Signature]
Date:.. 06-07-2010.....

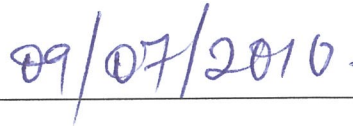
Name.. NATOCHO JACQUELYN.....
Signature.. [Signature]
Date:.. 06/07/2010.....

APPROVAL

This is our research has been submitted for examination on my approval as the university supervisor.



date



Ssegawa E James Kigundu.

DEDICATION

Kantalama margret , I wish to dedicate this project to my dear **parent** Mrs. Ssebuyama Budensi for her moral, spiritual, financial and academic support, **brothers**, Kaitana Saimon, Ngaboziza Christopher, and **sister**, Kamukama Mable. lecturers but most of all to our supervisor Mr. Ssegawa E. James Kigundu for his strong encouragement, help, corrections and guidance which played a significant role during our research. Finally in a more sincere way to my Almighty God for his amazing strength granted to us, which in turn helped us with the successful completion of our project.

And

Natocho Jacquelyn, I dedicate this project to my dear parents Wandera Charles and Mrs. mulucha Dorothy, for their moral, spiritual, financial and academic support, brothers, **sisters**, Ajambo Alen, friends, Namara Sarah and Kantalama Margaret lecturers but most of all to my supervisor Mr. Ssegawa E. James Kigundu for his strong encouragement, help, corrections and guidance which played a significant role during the research. Finally in a more sincere way to the Almighty God for his amazing strength granted to us, Thanks.

ACKNOWLEDGMENT

We wish to thank the Almighty God for his love and protection to my life. We would like also to express our sincere gratitude and acknowledgement for support and the highly motivated attitude of all lecturers of Computer Studies that really played a great deal to the completion of this project report.

We thank every one at the University Guidance and support. Our special thanks go to Odoi Samuel of Kampala International University for his support during the research.

Lastly, we are grateful to our fellow course mates and friends with whom we were able to work with during our time at Kampala International University. Special thanks Mr. Ssegawa E James Kigundu for his support and encouragement with out which this project would not have been complete.

A LIST OF ABBREVIATIONS

BASIC	-----	Beginners All-purpose Symbolic Instruction Code
CSD	-----	Control system development
DBMS	-----	Database Management System
DFD	-----	Data flow Diagrams
DOS	-----	Disk Operating System
EDI	-----	Electronic Data Interchange
ERD	-----	Entity Relationship Diagram
ICDC	-----	Industrial Commercial & Development Corporation.
IS	-----	Information System
ISF	-----	Information System Functionalities
IT	-----	Information Technology
LAN	-----	Local Area Network
LED	-----	Light Emitting Diode
POS	-----	Point of Sale
KIU	-----	Kampala International University
V.B	-----	Visual Basic

LIST OF FIGURERS

<u>PAGES</u>	<u>FIGURERS</u>
28:	Fig: 1showing Login Form
29:	Fig 2showing the MDI Timetable Form
30:	Fig 3..... showing Course form
31:	Fig 4..... showing Course units form
32:	Fig 5showing Lecturer's form
33:	Fig 6..... showing Time Form
34:	Fig 7showing Schedule Form
35:	Fig 8..... showing Intake Years Form
36:	Fig 9showing Rooms Form
37:	Fig 10..... showing General Timetable form
38:	Fig 11showing Report 1
39:	Fig 12showing Report 2

LIST OF TABLE

Table: 1 showing respondents interview analysis.....	17
Table: 2 showing respondents interview analysis.....	17
Table: 3 showing respondents interview analysis.....	19
Table: 4 showing respondents interview analysis.....	20
Table 5 Students table.....	25
Table 6. Lecturers table.....	26

TABLE OF CONTENTS

TABLE OF CONTENTS.....	i
DECLARATION	i
APPROVAL.....	ii
DEDICATION.....	iii
ACKNOWLEDGMENT.....	iv
LIST OF ABBREVIATIONS.....	v
LIST OF FIGURES.....	vi
LIST OF TABLES.....	vii
ABSTRACT.....	viii
 CHAPTER ONE	 1
INTRODUCTION.....	1
1.0 Introduction.....	1
1.1 Background of the study	1
1.2 Statement of the problem.	1
1.3 General Objective	2
1.4 Specific Objectives	3
1.5 Research Question.....	3
1.6 Scope.....	3
1.6.1 Geographical Scope	3
1.6.2 Research Scope	3
1.7 Significance.....	4
1.8 Conceptual Framework	4
 CHAPTER TWO	 6
LITERATURE REVIEW.....	6
2.0 Introduction.....	6
2.1 Definition a time table.....	6
2.2 State of Timetable application in Uganda.....	8
2.4 Challenges facing education development in Uganda	9

CHAPTER THREE	10
METHODOLOGY	10
3.0 Introduction	10
3.1 Research design	10
3.2 Study Population	10
3.3 Sampling technique	10
3.4 Sample size	11
3.5 Questionnaires	11
3.5.1 Advantages of questionnaire:	11
3.6 Observation	11
3.7 Interviewing	12
3.8 Reading	12
3.14 Development Methodology and Tools	12
3.14.1 Tools	12
3.15 Information System Plan	13
3.15.1 System Request	13
3.15.2 Name of the project	14
3.15.4 Business needs of the organization	14
3.15.5 Expected functionality of the system	14
3.15.6 Expected value of the system	14
3.16 Feasibility Analysis	14
3.16.1 Economic feasibility	15
3.16.2 Intangible benefits	15
3.16.3 Organization feasibility	15
3.17 Risk assessment	16
3.18 Conclusion	16
 CHAPTER FIVE	 21
SYSTEM ANALYSIS, DESIGN AND DEVELOPMENT	21
5.0 Introduction	21
5.4 Stages of database design	23

5.4.1 logical design	23
5.4.2 Physical design.....	24
5.5 Project implementation	26
5.5.1 System implementation.....	27
5.5.2 User training.....	27
5.6 User Interface.....	27
CHAPTER SIX	51
DISCUSSION, RECOMMENDATIONS AND CONCLUSION	49
6.0 Introduction	49
6.2 Evaluation of the new design.	49
6.3 Anticipated Problems and Limitations.....	49
6.4 Recommendation	50
6.5 Conclusion	50
REFERENCES.....	51
APPENDICES	52
APPENDIX A: A sample questionnaire	52

CHAPTER ONE

INTRODUCTION

1.0 Introduction

Time table application for the School of Computer studies is one of the difficult aspects. It is the actual making and use of the Time table in the school so that time table application for the School of Computer studies is paramount for it offers the school schedule for which the school goes by time table application for the School of Computer studies goes hand in hand with the general time timetable because it must tally with other schools and faculties for various reasons. One of such reasons is the same lecturer handles other classes in other schools and faculties.

1.1 Background of the study

Kampala International University (KIU) commenced operation as a private University in October 2001. It is located in Kansanga, a rapidly growing suburb of Kampala. KIU is only 3 km from Kampala city centre and 2 km from the shores of Lake Victoria, which is the largest fresh water lake in the world. The location of the University, near Uganda's commercial capital, provides students opportunities of social and cultural enrichment. The university offers both under graduate and graduate programs on full-time as well as part time basis during the day; evening and weekend. At KIU, academic programmes run on semester basis except the access program and in-service education courses that run on separate schedules. Computer science is one of the initial courses at the University of Kampala international university; it is as old as the university. The Faculty of Computer Science is the biggest faculty at the university. Courses offered at K.I.U, The amount of the money to be paid, the results needed for a degree, diploma and certificate.

1. 2 Statement of the problem.

This research or study intends to find out how effect of time tabling in Kampala International University affects the whole study structure especially in the computer studies not only to safeguard the economic interests in education but also social one to protect students from lot more confusion without a time table. Hence the need to seek to change the society's negative attitudes towards best attainments of timetabling and applications, which are supposed to be free disregards by users. The timetable is difficult to interpret by user in the first place. It's also crushes many times often. This is where for example the same lecturer is given two different classes in a same hour. It is also unfavorable to visiting lecturers who many times complain of having other duties in the same hour allocated on it. The challenges met during the research were: Crushing time schedule for individual lecturers whereby we devised a means of improving the time table by collectively making it than sitting singularly to make one; Another challenge yet is confusing timetable to students whereby we have minimized such confusion by releasing the time table in time before the start of the semester for clear analysis and due collections in time. Lecture halls are few and there is lack of sufficient space for allocation of the lectures which hampers the timetable application. Yet another problem arising from lecturer competition for teaching space on particular days when their schedules are not tight is high. For example almost all lecturers would preferably allocate their lectures on Saturday which hampers the students' right to rest on weekends. This, through our research was resolved by student-lecturer agreement which settles the timetable at the most convenient time schedules. This however, includes even wee late hours of the night. The issue of duplication and omissions of the time-table is one great challenge we faced in this research. However, we found a solution through all the above methods of problem analysis. For example by computerizing the time table we evaded the duplicity which minimally exists with the computerizing such work.

1.3 General Objective

To design and model a school timetable application for computer studies. That was to manage and provide a systematic way of allocating lecturers and students to different classes or lectures where every one both the students and lecturers know the time and day when different course units were to be taught through out the week.

1.4 Specific Objectives

- i. To investigate the factors that has led to the increased necessity for timetable application.
- ii. To analyze the courses of the crushes of the old time table.
- iii. To test and validate the development of the system

1.5 Research Question

- i) How will the new timetable liberate lecturers and students from schedule crushes?
- ii) Can the new timetable eliminate confusion of students in case of crashes?
- iii) What do you think is the problem with the old timetable?

1.6 Scope

1.6.1 Geographical Scope

The study was carried out at Kampala International University in the faculty of computer studies, the study will be carried out in at most 9months and it will focus more on designing and modeling a school timetable of the faculty of computer studies. Kampala international university is located in Kansanga, a rapidly growing suburb of Kampala. Kampala International University is only 3 km from Kampala city centre and 2 km from the shores of Lake Victoria, which is the largest fresh water lake in the world. The location of the University, near Uganda's commercial capital, provides students opportunities of social and cultural enrichment.

From above, it indicates that, the lecturer and head of departments will draft timetable then displays it, the students will check to see whether the timetable crushes and lecturer too and if the timetable doesn't lectures will commence.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter provides a critical review of the issues that have been explored and studies both theoretically and empirically in the existing literature made by other scholars and academicians on timetable design and modeling. Literature review covers different knowledge of various authors about the proposed system.

2.1 Definition a time table

A **timetable** or **schedule** is an organized list, usually set out in tabular form, providing information about a series of arranged events: in particular, the time at which School timetables usually cycle every week or every fortnight. The phrase "School timetables" largely refers to high schools, because primary schools typically have trivially simple structures. High school timetables are quite different from university timetables. The main difference is the fact that in high schools, students have to be occupied and supervised every hour of the school day, or nearly every hour. Also, high school teachers generally have much higher teaching loads than is the case in universities. As a result, it is generally considered that university timetables involve more human judgment whereas high school timetabling is a more computationally intensive task. Starting from a heuristic program, the author has tried to develop a timetable program which can be applied to practical cases. In constructing a timetable, conflicts usually arise as to the availability of teachers, classes and classrooms. So we set up a timetable starting from the subjects most likely to lead to conflicts. When a conflict occurs in the heuristic procedure, exchange facilities are provided for the "dead ends" with the aid of certain "alternating sub graphs". The main procedure is followed by a program that analyses the result and uses the exchange routine for an improvement within certain limits, Jeffrey L. Whitten Lonnie D.Bently. Kevin C. Dittman (2000).

Notice that the time period you have defined repeats every day, including Saturday and Sunday. However, the loan officer is not supposed to be available on these days. To remove these days from the schedule, you will create a second timetable called Weekends. This Weekends timetable will then be identified as an exemption table for the Day Shift timetable. This means that any times that appear in the Weekends timetable are removed from the Day Shift timetable.

Terms used in timetable arrangement

- **Block:** This term is ambiguous, but in this article it refers to a set of lessons of different courses that must be placed concurrently.
- **Student body:** A set of students who are timetabled together, for example the 8A roll-call group.
- **Band (or Cluster):** A set of classes involving the same student body, which are therefore horizontally linked, meaning they must be on separate periods
- **Year group or Year level:** A set of students at the same stage of their schooling, for example Year 6.
- **Elective Line:** A block of many classes of many subjects such that each student may choose one subject from the line.

Types of School Timetables

Primary schools typically have timetables; however the timetable is usually so simple that they can be constructed manually or in a basic spreadsheet package.

In some countries, such as China and Peru, high school students are not given any choice in subjects, and this makes timetabling easy - e.g. the students can remain in the one room all day while the teachers rotate.

In other countries, such as USA, the whole school is typically run on a system of units, where each subject has the same number of lessons per cycle and subjects are placed into 'lines'. This also makes timetabling easy. Other schools use block scheduling.

In other countries, such as Australia, Canada, and most European countries, timetables can be extremely difficult to construct. The process can take weeks of effort and typically computers are needed in the process.

2.2 State of Timetable application in Uganda

According to Nsibambi, (2007), it is indicated that many school and faculties in universities don't apply time tables thus time table application in Uganda is not well developed in a way that Uganda has a very few standardized annual university tables. Makerere as prototype has had difficulties in time table making and application due to multiplicity of Schools and faculties.

According to Integrated Master Plan, (1993), survey by the Ministry of Education, to establish the state of time table making and application, each university due to private mushrooming universities is allowed to adopt and apply its timetable according to its needs. On the other hand, time table making and application capacity is found in Kampala, only 9% in the northern districts and 20% in the western districts. The rest as per research operate at their own will. However, note that while these findings could serve as basis for planning, they may be at the same time be taken as they are for they are not supported by statistics on the level of occupation do they give picture of other, although establishments and facilities provided.

According to Education Uganda under sustainable development programmer (2004), Africa's friendliest country, Uganda's reputation as stems partly from the tradition of education common to its cultural diverse populace and partly from the remarkably low level of illiteracy directed to the citizens. Uganda's formidable educational reputation also hinges on the formidable time table making and application. Still again, an elegant adventure from the moment one lands into any University efficient and modern international education is noticed. This has been an attraction to even international students.

Once more, according to Education Uganda, national universities sprawling across both sides of the equator, net work of several universities which offer enthusiast a thrilling

opportunity to experience Uganda's education to associate with equatorial East Africa, but also the world entire which makes time table making and application rendered impossible for the universities.

The receptive culture is also an educational issue in Uganda. Uganda has a people so hospital and their situation in the pearl of Africa, that is the heart of Africa there are over thirty languages of the different indigenous people which makes it possible for international students to adopt and enjoy their education at any time they set to come in and study. According to The New Vision Monday May 25th (2009), Ministry of Education advised on universities to adopt standard time table making and application

2.4 Challenges facing education development in Uganda

According to The New Vision Monday May 11th 2009, education faces 470 billion deficits, due to poor timetabling in schools annually which is a fatal issue for development. The principal policy analyst Ministry of Economic development and Planning told the Parliament on Trade Committee that the Ministry needed over 386 billion however he said only about 40 billion had been allocated. The World Economic Melt down Hits Uganda's education many international students have cut back on education spending preferring cheap education at home.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter includes research procedure, target population, sample population, data collection, fact finding techniques, project plan, schedule, and risk assessment which were the steps taken to arrive at the design.

3.1 Research design

The study employed both descriptive analytical research design in collection and analysis of data to enable the researcher systematically collect and present data. Both quantitative and qualitative data were used to aid in depth data collection. Under qualitative method, questionnaires were administered while the quantitative method figures and tables were used to give a clear picture.

3.2 Study Population

According to Mouton (1996), a population is a collection of objects, events or individuals having some common characteristics that the researcher is interested in studying. According to Babbie and Mouton (2001), the population for a study is that group (usually of people) about whom we want to draw conclusions. The study population will include lecturer and students of Kampala international university.

3.3 Sampling technique

To select the sample population the researcher used simple random sampling technique because everyone involved in conducting business with the project will have an equal chance of being selected in the sample. This method ensures randomness so that personal bias doesn't influence the selection. The procedure to carry out random sampling involved obtaining a list of students from Kampala international university. For instance the ten 20 students were identified and 15 of the 20 students was picked at random

3.4 Sample size

A sample of 120 respondents was used in the study. It was distributed in the ratio of 30, were lecturers, 15 respondents were heads of department and 75 were students. The distribution has been opted for because it gives an equal and fair representation of all respondents focused on in the study.

3.5 Questionnaires

The researcher used a close ended questionnaire with a little provision of an open ended format as well. By doing so it was possible to obtain accurate and useful information that's to say facts, opinions and ideas. On the questionnaires given out according to the response it showed that most the staff and management of computer studies affected by timetable crushes. It was the most used tool for data collection.

3.5.1 Advantages of questionnaire:

- i. The questionnaire was answered quickly. People finished quickly and returned them at their convenience.
- ii. Questionnaire proved to be relatively cheap in gathering the information.
- iii. Response came very fast.
- iv. The researchers found out that questionnaire allowed individuals to maintain anonymity, therefore individuals provided real facts rather than what their bosses wanted them to tell us.

3.6 Observation

Observation was used to get information about the problems the school of computer studies face and how the timetable crushes. The researcher used this method to acquire proof of information gathered through other techniques or methods. By noticing what's happening in the school the researcher was able to record on paper what had been noticed.

3.7 Interviewing

An interview is a data collection technique that involves oral questions of respondents either individually or as a group. The researcher was able to identify a group of people who had been seriously affected by timetable crushes that's to say lecturer who have had past experience with such problems, requested if these individuals were willing to help the researcher carry out the interview to better understand the different situations each one had experienced.

3.8 Reading

Documentation and literature on available control data management or related systems were studied. This was done by reading of relevant Journals; some relevant software also had documentation which was studied, for example Visual Basic and access.

This is important for the establishment of the control data management system.

3.14 Development Tools

The system was developed using the system development life cycle. During the planning step, the researcher identified the scope and the boundary of the system and planned the development strategy and goals. In the analysis stage, the researchers studied and analyzed the problem, causes and effects of the new system and also analyzed the requirements that had to be fulfilled for the new system to be successful. The researchers then designed the new system and developed a prototype .In the implementation stage, the system was put into use then the system was developed using modern technology tools.

3.14.1 Tools

Visual basic programming language was used to develop the user interface. This is because visual basic offers a strong Graphical User interface (Aronson, 2001). The application operates on Windows operating systems this is because windows operating system is widely used in many organizations.

3.15 Information System Plan

3.15.1 System Request

System request report is a document which tries to solve the problem of the organization. It shows the value of the system to the organization.

3.15.2 Name of the project

Designing, Developing and Implementation of the school of computer studies time table system in the faculty using access, mysql, and Visual Basic (V.B)

3.15.4 Business needs of the organization

The business needs of the company includes placing and processing of orders, maintaining Inventory levels and also keeping customers information private. The supermarket deals in selling consumer goods which includes products like Electric appliances, Cosmetics, Food stuffs, Clothing, Decoration components, Drinks among others.

3.15.5 Expected functionality of the system

The system is expected to automate the business process of the school of computer studies. The system will also run on a networked environment (LAN) share the resources i.e. the database.

3.15.6 Expected value of the system

The system was expected to improve efficiency in conducting the business processes, hence saving time and money. For example if the systems' levels are maintained automatically then few employees would be employed hence saving cost and increasing the faculty's profitability status. The system would also increase the security of the student's information from unauthorized persons. Sensitive information would also be protected from access by unauthorized people by using views and granting of privileges in the database.

3.16 Feasibility Analysis

The users were not experienced with the new system hence they needed to be trained but it did not take a lot of time. The programmer was also well experienced with the development tools. For instance the programmer was knowledgeable with visual basic

programming language which was used to develop the user interface. The development tools were also available that is, the DBMS and other software like the visual basic were readily available.

3.16.1 Economic feasibility

The expected benefits of building the system were tangible with fewer processing errors because all processes were automated and decreased response time between when a query was sent and when the feedback was received would be expected, also elimination of job steps that is keeping the system levels could be done by one individual. Also the overall expenses of the faculty of computer studies were reduced because of reduced number of staff members

3.16.2 Intangible benefits

Improved students goodwill was expected because the system ensured that time is saved and this increased efficiency. The employee moral was improved because it was less tedious to use the new system than using the manual system. The system was likely enhance better decision making, that is, through reviewing the computerized summaries the managers were able to make quick decisions based on accurate information because computers rarely make errors. The cost of developing the system was estimated from the outset of the project and it will be reviewed after the end of each project phase.

3.16.3 Organization feasibility

The management and the end users were likely to have a positive attitude towards the system because it had been tedious conducting business processes manually. Although some end-users resisted the new system, for the fear of losing jobs, this problem was avoided by retraining the employees and motivating them. It was also expected to be difficult getting information from the owners because of their tight schedule. Training users was expected to be easy because the system had an easy to use graphical user interface.

3.17 Risk assessment

Every business decision has a degree of risk and uncertainty; this also includes building a new system. For instance lack familiarity of development tools may delay the project completion making it lag behind schedule. However this risk was avoided by training and acquiring expertise on the unfamiliar tools. Also managing the four phases of the system development life cycle was not easy. It is not easy to manage the implementation phase and complete it in time. This can be controlled by acquiring professional guidance whenever possible.

3.18 Conclusion

This chapter explained all the possible methods that enhanced the effectiveness of the proposed system. This was in line with the use of the methodologies described in its various stages of which range from feasibility study of the current system definition of requirements and solution of technical system.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION

4.0 Introduction

This chapter sets out to give the findings of the research instruments used in the study. A detailed analysis, interpretation and discussion of the results is obtained from a group of informants (sample) selected from a target population comprising of students and lecturer of Kampala international university in Kampala.

4.1 Results from interviews

The research interviewed 120 respondents in total. They were purposively chosen because they were expected to have information pertaining to the study.

A: the factors for the increased necessity for time table application.

The students' frequencies and percentages were higher because their need for the time table was important as they wanted to know which lectures or lessons they where supposed to have through out the week.

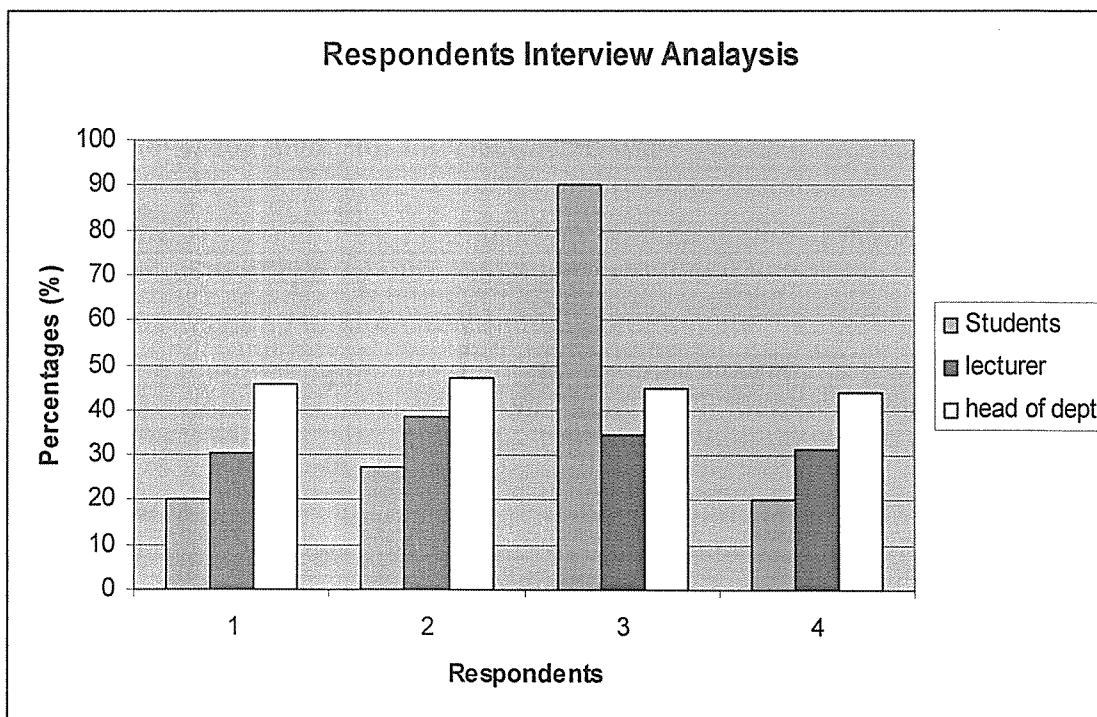
Lecturers had the second response because they wanted to know which lectures they have and at what time of the day and when to lecture and which class

Head of departments where the last to react because some of them were not supposed to lecture at the same time attend to the office work so the time table was not very vital to them

Table: 1 showing respondents interview analysis

Respondents	Frequency	Percentage (%)
Students	75	63 %
Lecturers	30	25%
Heads of dept	15	12%
Total	120	100%

Table: 2 showing respondents interview analysis



The table above reflects the number students, lecturer and heads of departments who responded to the interview. Out of the population of 120 respondents 75 were student making 63%, lecturers were 30 making 25% and 15 were heads of department making 12%. The interview revealed that student responded to the study because they much affected with timetable crushes, in that some students often misses lectures.

Similar questionnaire was administered to student, lecturer and heads of department; the number of students was higher because they were much affected with the problem.

4.2 Results from questionnaire

Among 200 questionnaires distributed 185 questionnaires were collected from respondents, after removing 5 unusable questionnaires, one hundred eighty (n=180) were retained for data analysis.

The response rate was 90 % this percentage was high because these questionnaires were filled by student, lecturer of Kampala international university at their own time. After collecting the information from the sampled group of students by the use of questionnaire the researcher presented the data in the table, the samples of the table are discussed below.

4.3 Response from questionnaire

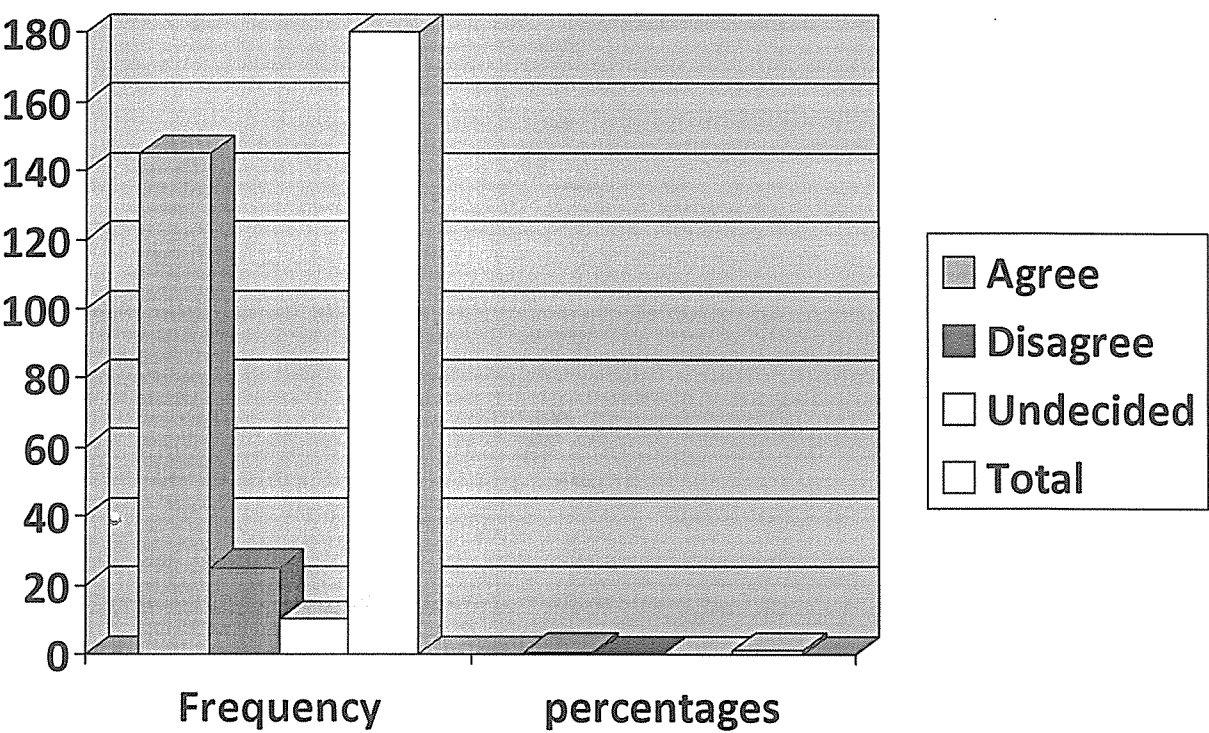
Designing new timetable to solve the problem

This statement was to help in determining the perspectives of the respondents about the problem

Table: 3 showing respondents interview analysis

Response	Frequency	Percentages
Agree	145	81%
Disagree	25	14%
Undecided	10	6%
Total	180	100%

Table: 4 showing respondents interview analysis



The total population surveyed gave their views on this statement and indicate 81% of the population agreed that designing another timetable will solve the problem of crushes, 14% disagreed, the were lecturers and some student were the old timetable favours them, and 6% were I don't care students and lecturers.

CHAPTER FIVE

SYSTEM ANALYSIS, DESIGN AND DEVELOPMENT

5.0 Introduction

This chapter explains the logical design, physical design developed by the researcher, the new design. The new system is designed to meet the needs of students. It will be expected to overcome the shortfalls associated with the current system.

5.1 Design analysis

The new Design.

The new design of time table will over come the problem being faced by students and lecturer, that's to say it will eliminate confusion of students incase of confusion, it will eliminate duplication and omissions, it will make prompt at the beginning of the semester and it will liberate lecturers and students from schedule crushes.

Problem of old design

The researcher made a survey about the old timetable to find out schedule every week, the study revealed that it was disaster with full crushes and confusion.

It was found out that the old system wasted a lot of time for both students and lecturers since there was no organized system where lessons or lectures could be followed hence leading to crushes and confusion in the studies.

Purpose of the System

The major purpose of the system is to over come the problem of crushes and confusion with the timetable at faculty of computer studies in Kampala international university.

Design a system based on user requirements that will automate the running of the faculty of computer studies.

To implement a system that was to suit the design in the objectives in the specific objective above (iv).

System Requirements

Before embarking on the project, an analysis was carried out to determine what will be required in order for the project to be a success. This analysis mostly included the cost benefit analysis, collection of the necessary data to be displayed on the timetable.

5.3 Software Requirement

For the design of new timetable, the following software was needed:

- Network operating system software (windows XP)
- Visual basic 6.0
- Mysql was also used

Hardware Requirements

The following hardware needs were identified

- 1 computer (Pentium 5) server
- 200 GB
- 1 GB of RAM-P
- 4 or more computer for the client computers

Security requirements

- Firewalls
- Data encryption

5.4 Stages of database design

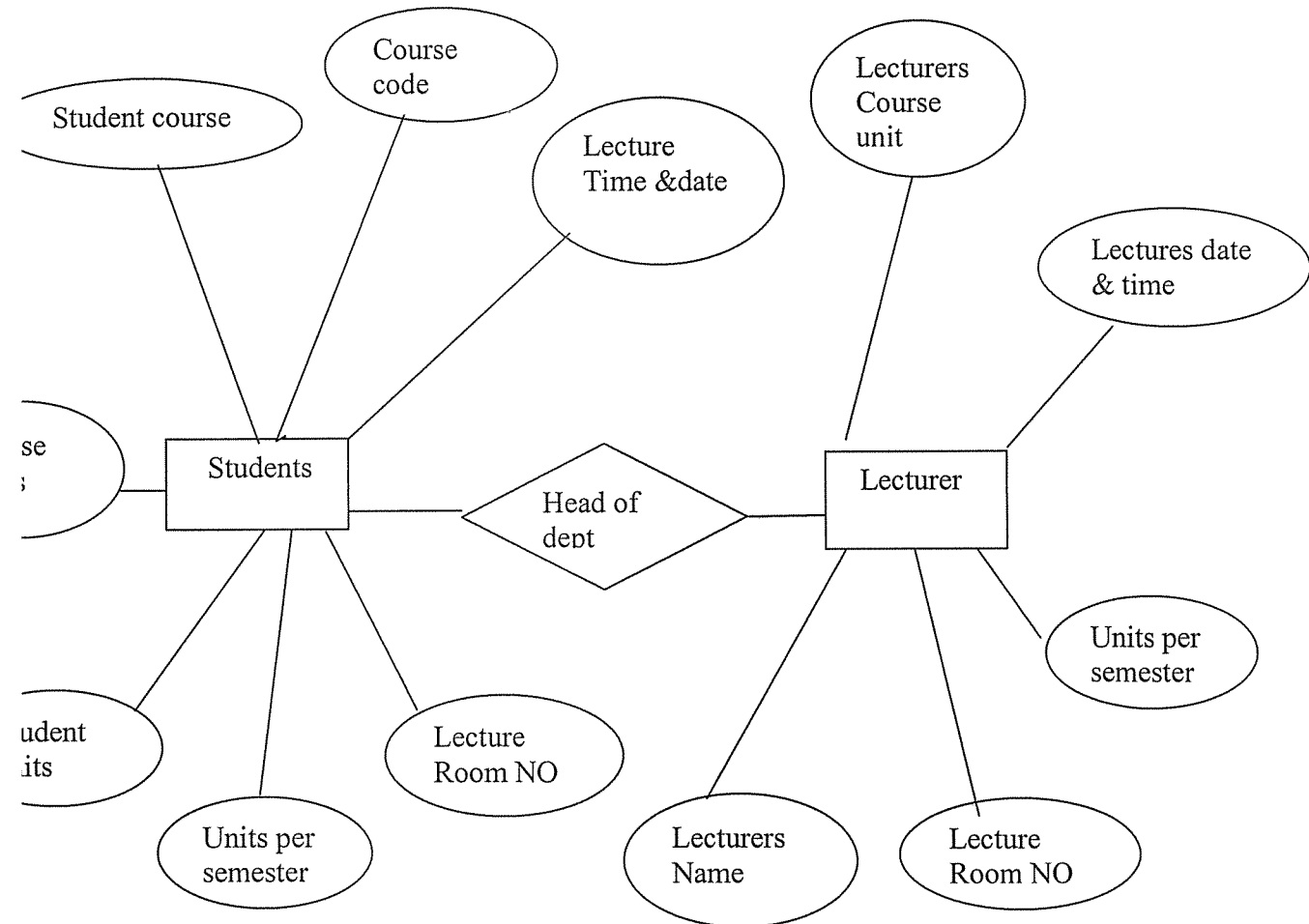
5.4 .1 logical design

This is 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 involves the use of entity relations diagrams.

5.4.1.1 Entity Relationship Diagram

An entity relationship model is part of design development methodology that provides an understanding of the logical data requirement of a design independently of the design's organization and process. Its also reflects a static view of the relationship between different entities

Figure 5.0 Entity Relation Diagram



From the above diagram, it shows how the design will be, the heads of departments will down and draft the timetable, and with this ideal it can avoid schedule crushes.

5.4.2 Physical design

Design shows not only what a system does, but also how the system is 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 in the target database management system.

Table 5 Students table

Field	Type	Constraints	Description
Course code	Varchar(10)	Primary key	Code that identify a course
Course units	Varchar(15)	Required	Units a student is supposed to take in course
Student units	Varchar(15)	Required	Units a student takes
Units per semester	Varchar(19)	Required	Units a student is supposed to have semester
Room NO.	Varchar(27)	Required	Room number in which lectures are supposed to take place on diff schedule
Student course	Varchar(19)	Required	Course of student
Date &time	Varchar(15)	Required	Date and time when lectures are supposed take place

Field shows the attributes in the student table, where course code shows identification of course, units per semester which describes the units a student is supposed to have a semester, room number which describes room number in which lectures are supposed to take place on different schedules. Type shows the data type and data size of each attribute while Null describes whether the field should be left blank or not (null or not null)

Table 6. lecturers table

The table show the various schedule for lecturers .

Field	Type	Constraints	Description
Lecturers name	Varchar(15)	Primary key	Name s of lecturer
Lecturer course unit	Varchar(17)	Required	Course units lecturer is supposed to teach
Lectures date &time	Varchar(15)	Required	Date & time when lecturer is supposed to teach
Lecture room No	Varchar(17)	Required	Room in which lectures are supposed to take place

Field shows the attributes in the lectures table, where lecture name identify a lecturer, lecturer course unit describes a unit lecturer is supposed to teach, lecturer date& time which describe the date and time a lecturer is supposed to teach. The data type and data size of each attribute while Null describes whether the field should be left blank or not (null or not null).

5.5 Project implementation

To implement the system acquiring the installation requirements for example hardware and software was needed. Planning analysis and project writing was done. The System was designed and users were trained on how to use the Time table system. This was done in a period of two days because the user interfaces provided a short learning curve. System testing and review was also done to ensure that it was performing as it was

designed to perform. It was reviewed to ensure that it has met the objectives. The System was then implemented.

5.5.1 System implementation

The system interfaces designed were tested and put to work using time table data from the School of Computer Studies. The database was tested and worked well.

5.5.2 User training

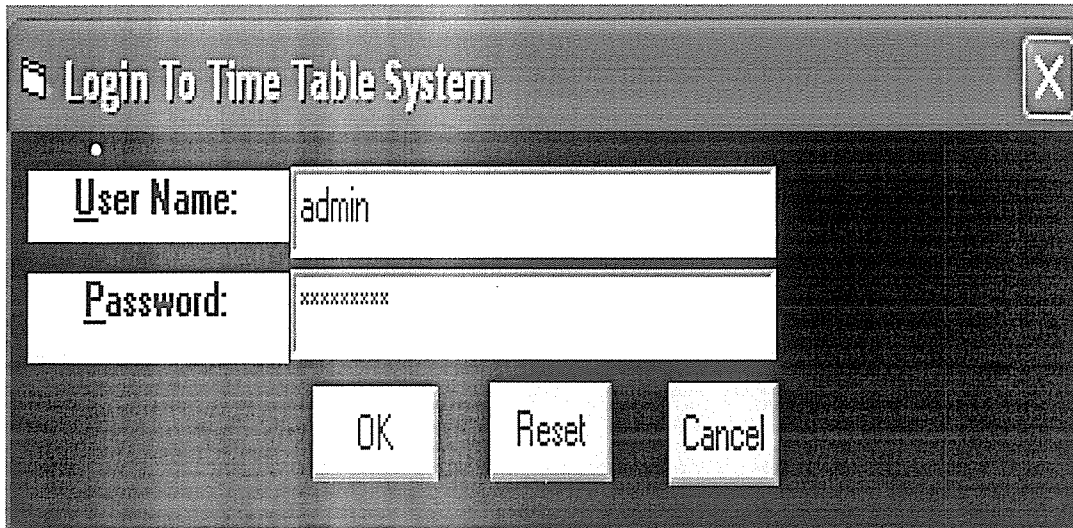
The trainees to work with the new system were selected and trained. These are system users and training involved teaching and guiding the users on how to operate and manage the system program plus interfaces.

5.6 User Interface

The goal of the interface design is to provide the best way for people to interface with the computers, or what is commonly known as human computer Interface (HCI). Provision of good interface is becoming more important because of its impact on organizations. This impact is increasing, because most people in organization are spending more time with computers as part of their normal work, they enter transactions retrieve data, design artifact, and do other myriad things that are to be done in the organizations. Their work and satisfaction are improved with better interface, leading to an improvement in their quality of work and effectiveness of the organization.

Many people believe that improving interaction between people and computers is one of the most important activities in design. One of the most important reasons for paying attention to HCI is that, nowadays, computers are used nearly by everyone, not only people closely associated with computers. People are no longer interested in technology behind the computers; they simply want a tool that is easy to use and can help them with their problems. They do not want to spend a lot of time learning about computer software, they just want computers to make their own work easier. A good interface certainly helps to fulfill this goal.

Fig: 1 showing Login Form



A screenshot of a Windows-style dialog box titled "Login To Time Table System". The dialog box has a dark gray background and a title bar with a close button (X) in the top right corner. Inside the dialog, there are two input fields. The first field is labeled "User Name:" and contains the text "admin". The second field is labeled "Password:" and contains a series of eight asterisks "xxxxxxxx". Below the input fields, there are three buttons: "OK", "Reset", and "Cancel".

Field Label	Field Value
User Name:	admin
Password:	xxxxxxxx

Buttons: OK, Reset, Cancel

Fig: 2 showing the MDI Timetable Form

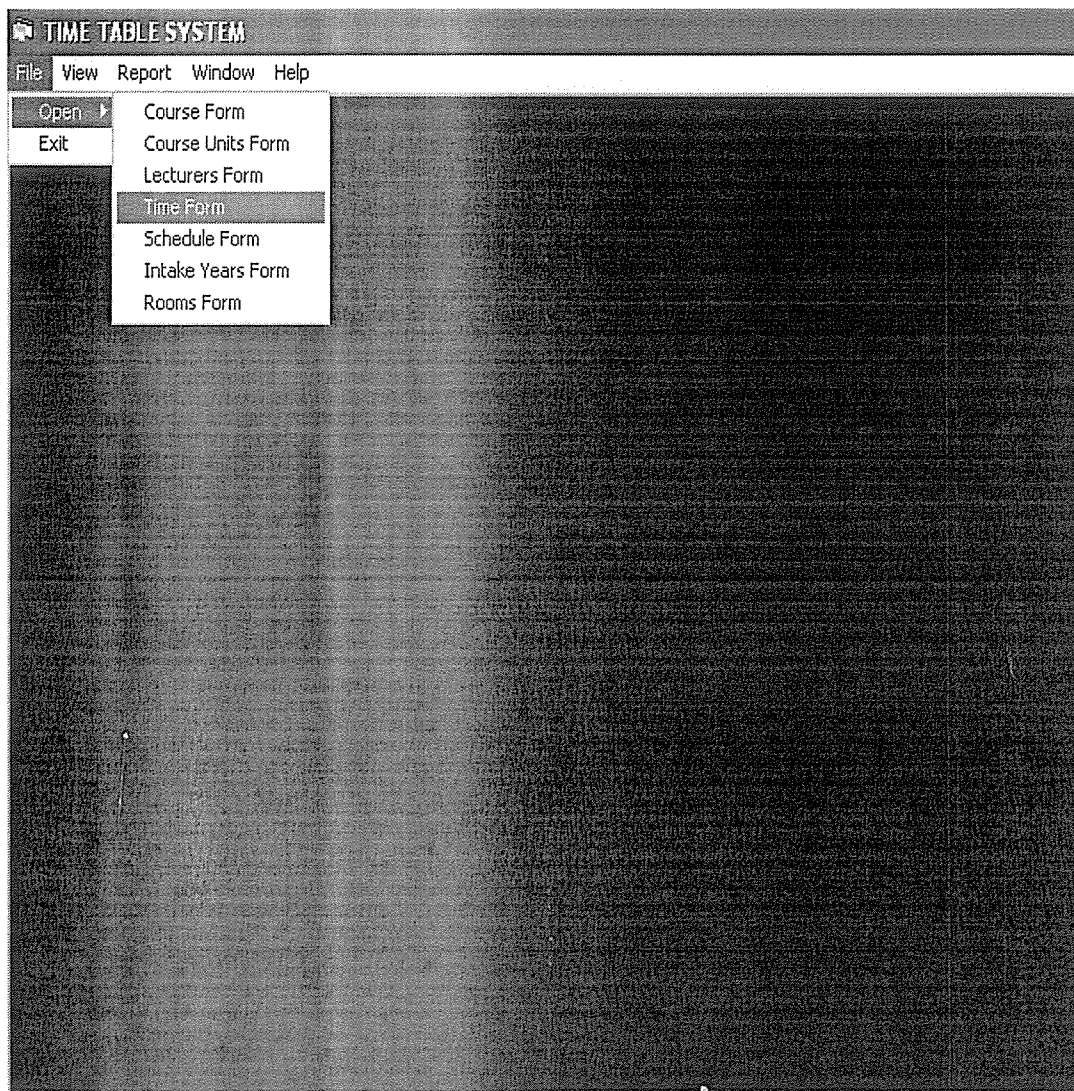


Fig: 3 showing Course form

COURSE

Course Initials: BCS

Course Title: Bachelor of Computer Science

First Record	Next Record	Save	Search	Exit
Previous Record	Last Record	Add	Delete	Cancel

Fig: 4 showing Course units form

The screenshot shows a software window titled "COURSE UNITS". Inside the window, there are three input fields with labels to their left: "Course Code" with the value "IT201", "Course Unit" with the value "programming methodology", and "Lecturer Number" with the value "L001". Below these fields is a rectangular panel containing ten buttons arranged in two rows of five. The first row contains buttons labeled "First Record", "Next Record", "Save", "Search", and "Exit". The second row contains buttons labeled "Previous Record", "Last Record", "Add", "Delete", and "Cancel".

Course Code	Course Unit	Lecturer Number
IT201	programming methodology	L001

First Record	Next Record	Save	Search	Exit
Previous Record	Last Record	Add	Delete	Cancel

Fig: 5 showing Lecturer's form

The image shows a software window titled "LECTURERS" with a standard Windows-style title bar. Inside the window, there is a form for entering lecturer information. The form consists of three labeled input fields arranged vertically:

- Lecturer Number:** The input field contains the text "L001".
- Title:** The input field contains the text "Mr." and has a small downward arrow on the right, indicating it is a dropdown menu.
- Lecturer Name:** The input field contains the text "Kasozzi Jerry".

Below the input fields, there is a rectangular container holding a grid of ten buttons arranged in two rows and five columns:

- Row 1:** "First Record", "Next Record", "Save", "Search", "Exit".
- Row 2:** "Previous Record", "Last Record", "Add", "Delete", "Cancel".

Fig: 6 showing Time Form

TIME

Day Monday

Time Duration 8:00 - 9:00 am

First Record Next Record Save Search Exit

Previous Record Last Record Add Delete Cancel

Fig: 7 showing Schedule Form

The image shows a software window titled "SCHEDULE" with standard Windows window controls (minimize, maximize, close) in the top right corner. The main area of the window is dark gray and contains three input fields, each with a label in a light gray box to its left. The first field is labeled "Schedule Number" and contains the text "p01". The second field is labeled "Year" and contains the text "1". The third field is labeled "Semester" and contains the text "1". Below these input fields is a rectangular panel with a thin border, containing ten buttons arranged in two rows of five. The first row contains buttons labeled "First Record", "Next Record", "Save", "Search", and "Exit". The second row contains buttons labeled "Previous Record", "Last Record", "Add", "Delete", and "Cancel".

Schedule Number	p01
Year	1
Semester	1

First Record	Next Record	Save	Search	Exit
Previous Record	Last Record	Add	Delete	Cancel

Fig: 8 showing Intake Years Form

INTAKE YEARS

Year Session 2008/2009

First Record	Next Record	Save	Search	Exit
Previous Record	Last Record	Add	Delete	Cancel

Fig: 9 showing Rooms Form

ROOMS

Room Number

Room Name

Location

rm06

New building 1st floor

First Record

Next Record

Save

Search

Exit

Previous Record

Last Record

Add

Delete

Cancel

Fig: 10 showing General Timetable form

GENERAL TIME TABLE

SCHOOL OF COMPUTER STUDIES TIME TABLE

Course Title: Bachelor of Computer Science Course Initials: BCS

Day	Monday	Year Session	2008/2009
Time Duration	8:00 - 9:00 am	Course Code	IT201
		Course Unit	programming methodology
		Year	1
		Semester	1
		Room Name	m06
		Title	Mr.
		Lecturer Name	Kasozi Jerry
		Location	New building 1st floor

First Record Next Record Save Search Exit

Previous Record Last Record Add Delete Cancel

Sample printed reports for Timetable

Fig: 11 showing Report 1

Friday, July 02, 2010		
SCHOOL'S TIME TABLE		
courseTitle: Bachelor of Computer		cInitial: BCS
day:	Monday	yearsession: 2008/2009
timeDuration:		year: 1
8:00 - 9:00	coursecode: IT201	semester:1
	courseUnit: programming	room Name: rm06
	title: Mr.	location: New building 1st floor
	lectureName: Kasozi Jerry	
courseTitle: Bachelor of Information		cInitial: BIT
day:	Monday	yearsession: 2008/2009
timeDuration:		year: 1
8:00 - 9:00	coursecode: IT201	semester:1
	courseUnit: programming	room Name: rm06
	title: Mr.	location: New building 1st floor
	lectureName: Kasozi Jerry	
courseTitle: Diploma in Computer		cInitial: DCS
day:	Monday	yearsession: 2008/2009
timeDuration:		year: 1
8:00 - 9:00	coursecode: IT201	semester:1
	courseUnit: programming	room Name: rm06

Fig: 12 showing Report 2

GENERAL TIME TABLE REPORT

Zoom 100%

SCHOOL'S TIME TABLE

day: timeDuration:	Monday	yearsession: 2008/2009 year: 1 semester:1 room Name: rm06 location: New building 1st floor
8:00 - 9:00	coursecode: IT101 courseUnit: communication title: Mrs. lectureName: Ntezi Jane	

courseTitle: Bachelor of Computer cinitial: BCS

day: timeDuration:	Monday	yearsession: 2009/2010 year: 1 semester:1 room Name: rm06 location: New building 1st floor
8:00 - 9:00	coursecode: IT101 courseUnit: communication title: Mrs. lectureName: Ntezi Jane	

courseTitle: Bachelor of Information cinitial: BIT

day: timeDuration:	Monday	yearsession: 2009/2010 year: 1 semester:1 room Name: rm06 location: New building 1st floor
8:00 - 9:00	coursecode: IT101 courseUnit: communication title: Mrs. lectureName: Ntezi Jane	

Pages: 20

start magret kan... screenshots... TimeTable - ... TIME TABLE...

Codes for Lecturer Form

```
Private Sub Adodc1_WillMove(ByVal adReason As ADODB.EventReasonEnum,  
adStatus As ADODB.EventStatusEnum, ByVal pRecordset As ADODB.Recordset)
```

```
End Sub
```

```
Private Sub cmdadd_Click()
```

```
On Error Resume Next
```

```
Adodc1.Recordset.AddNew
```

```
End Sub
```

```
Private Sub cmdCancel_Click()
```

```
Unload Me
```

```
End Sub
```

```
Private Sub cmddelete_Click()
```

```
On Error Resume Next
```

```
confirm = MsgBox("Are sure you want to delete this record?", vbYesNo +  
vbExclamation, "Deletion confirmation")
```

```
If confirm = vbYes Then
```

```
Adodc1.Recordset.Delete
```

```
MsgBox "Record deleted!", , "Message"
```

```
Else
```

MsgBox "Record not deleted!", , "message"

End If

End Sub

Private Sub cmdexit_Click()

o

Unload Me

End Sub

Private Sub cmdfirst_Click()

On Error Resume Next

Adodc1.Recordset.MoveFirst

End Sub

Private Sub cmdlast_Click()

On Error Resume Next

Adodc1.Recordset.MoveLast

End Sub

Private Sub cmdnext_Click()

On Error Resume Next

Adodc1.Recordset.MoveNext

End Sub

Private Sub cmdprevious_Click()


```
On Error Resume Next
```

```
Adodc1.Recordset.MovePrevious
```

```
End Sub
```

```
Private Sub cmdsave_Click()
```

```
On Error Resume Next
```

```
Adodc1.Recordset.Save
```

```
End Sub
```

```
Private Sub cmdsearch_Click()
```

```
On Error Resume Next
```

```
Dim strsearch As String
```

```
strsearch = InputBox("Enter the Lecturer Number.")
```

```
Adodc1.Recordset.MoveFirst
```

```
While Not Adodc1.Recordset.EOF
```

```
If UCase(strsearch) = UCase(Adodc1.Recordset.Fields(0)) Then
```

```
MsgBox ("search successful")
```

```
Exit Sub
```

```
Else
```

```
Adodc1.Recordset.MoveNext
```

```
End If
```

Wend

MsgBox ("Record not found")

End Sub

Private Sub Combo1_Change()

End Sub

Private Sub Text1_Change()

End Sub

Private Sub Text2_Change()

End Sub

Codes for General Time table

```
Private Sub cmdadd_Click()
```

```
On Error Resume Next
```

```
Adodc1.Recordset.AddNew
```

```
End Sub
```

```
Private Sub cmdCancel_Click()
```

```
Unload Me
```

```
End Sub
```

```
Private Sub cmddelete_Click()
```

```
On Error Resume Next
```

```
confirm = MsgBox("Are sure you want to delete this record?", vbYesNo +  
vbExclamation, "Deletion confirmation")
```

```
If confirm = vbYes Then
```

```
Adodc1.Recordset.Delete
```

```
MsgBox "Record deleted!", , "Message"
```

```
Else
```

```
MsgBox "Record not deleted!", , "message"
```

```
End If
```

End Sub

Private Sub cmdexit_Click()

Unload Me

End Sub

Private Sub cmdfirst_Click()

On Error Resume Next

Adodc1.Recordset.MoveFirst

End Sub

Private Sub cmdlast_Click()

On Error Resume Next

Adodc1.Recordset.MoveLast

End Sub

Private Sub cmdnext_Click()

On Error Resume Next

Adodc1.Recordset.MoveNext

End Sub

Private Sub cmdprevious_Click()

On Error Resume Next

Adodc1.Recordset.MovePrevious

End Sub

Private Sub cmdsave_Click()

On Error Resume Next

Adodc1.Recordset.Save

End Sub

Private Sub cmdsearch_Click()

On Error Resume Next

Dim strsearch As String

strsearch = InputBox("Enter the day of study.")

Adodc1.Recordset.MoveFirst

While Not Adodc1.Recordset.EOF

If UCase(strsearch) = UCase(Adodc1.Recordset.Fields(0)) Then

MsgBox ("search successful")

Exit Sub

Else

Adodc1.Recordset.MoveNext

End If

Wend

MsgBox ("Record not found") End Sub

CHAPTER SIX

DISCUSSION, RECOMMENDATIONS AND CONCLUSION

6.0 Introduction

This chapter explains the design analysis, evaluation, recommendation and conclusion arrived at by the researchers.

6.1 Findings from questionnaires and observation

It was observed that Kampala international university has been facing these problems of timetable crushes and confusion. It was also found that majority of the people like the idea of the new design if implement the new design will solve the problem.

6.2 Evaluation of the new design.

The new system if implemented were to achieve the following: the information design was to ensure data integrity within the faculty since there was only one single storage area of data. The system was to increase efficiency and effectiveness in its operations.

6.3 Anticipated Problems and Limitations

- The time allocated for this research was inadequate to cover the subject exhaustively;
- Unresponsive time table makers, stakeholders and officers in charge of the time table making are likely to refuse to talk about modes of time table making and application. They fear for their jobs in many ways. They are often the cause of timetable in-application when they have made them. Due to business elsewhere in their other duties than teaching or their bosses are;

- The research is limited only to a small protected area in ICT and computer science for data collection due to limited resources;
Due to busy schedule the researcher is limited to some area;
- There is still limited or even little documented information on the topic, despite the time table making and application modes.

6.4 Recommendation

After understanding all the benefits of the new timetable system, it should adopt the database system in order to store all the information details regarding timetable changes within the school of computer studies of Kampala international university. This enables easy retrieval of printable time tables in time and quick manipulation of time table changes to the database where necessary. The school should also test the system in order to ensure that it meets the expected quality. Testing the system avoids unexpected failure or break down which may lead to inconveniences. Testing the system ensures that bugs are identified and taken care of before full system implementation takes place.

6.5 Conclusion

This project can be considered to have achieved most of the set goals and objectives as they were intended during the analysis phase. For instance a database to store the information about the time table details was designed and implemented. This is expected to increase efficiency and proper time table record keeping in the school of computer studies.

The time table system has attractive interfaces which are easy to learn. This has reduced the time and money spent by the university on training new staff, this is because user-interactive systems have a short learning curve.

After the system was developed, it was tested to ensure that it was functioning as expected and to ensure that it had no bugs. System testing avoids future system breakdowns which may cost the supermarket dearly

REFERENCES

Books

1. Aronson E, (2001) Decision Support Systems And Intelligent Systems
2. Case J, Bradely A, Millspaugh C (2000) Programming in Visual Basic 6.0. McGrawHill. David Flanagan, (1997) Java in A Nutshell. O'Reilly and Associates Inc. New York
3. Hally, Mike (2005:79). Electronic brains/Stories from the dawn of the computer age. British Broadcasting Corporation and Granta Books, London. ISBN 1-86207-663-4.
4. Hoffer J, George F. and Valancith (2005) Modern system analysis and design, Benjamin/cummings. Massachusetts.
5. Jeffrey Whittin, Lonnie .D Bentley, Kevin C Dittman (2000) System Analysis And Design Methods. McGraw-Hill. New York.
6. John Edwards, Sage Software (2006) <http://itconsulting.com/interviews/sfa-trends-chris-reich-12> (2006)
7. John Tukey, 85, Statistician; Coined the Word 'Software', New York Times, Obituaries, 2000-07-28.
8. Ramachandra, T.m Nambissan, (1995) Computerized Business Application. Suned Golgotia. India
9. Wordreference.com: WordNet® 2.0. Princeton University, Princeton, NJ. Retrieved on 2007-08-19.
10. Software (n.d.), Dictionary.com Unabridged (v 1.1). Retrieved 2007-04-13, from Dictionary.com website: <http://dictionary.reference.com/browse/software>

APPENDICES

APPENDIX A

A sample questionnaire

Dear respondent,

. I kindly request you to fill this questionnaire below to facilitate the research study to a success and helpful to the timetable

- PLEASE feel free and give the important information as required to make the project feasible.
- Your information will be treated and kept with a lot of confidentiality, great care and will be highly appreciated.

Much regards:

1) Your occupation

- Student
- Employed
- None
- Others

.....

2) Age bracket

15 – 20 , 20 – 25 , 25 – 30 , 30 and above

9) What problems do you face with students?

.....

10) Do you have backup copies for your information? (please tick where appropriate)

Yes ☐ NO ☐

- If yes state the kind of the information you back up, and where it is stored.

.....

Your support is highly appreciated.

Thanks