BURSARY MONITORING SYSTEM

CASE STUDY: KENYAN HIGH COMMISSION IN UGANDA

By

SD/O14
SYSTEMS DEVELOPMENT
DEPARTMENT OF COMPUTER SCIENCE
FACULTY OF COMPUTING AND INFORMATION TECHNOLOGY

A Project Report Submitted to the Faculty of Computing and Information Technology for the Study Leading to a Project in Partial Fulfillment of the Requirements for the Award of the Degree of Bachelor of Science in computer science of Makerere University.

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June, 2007
Declaration

We group members of SD/014 hereby declare that this Project Report is original and has not been published and/or submitted for any other degree award to any other University before.

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Approval

This Project Report has been submitted for Examination with the approval of the following:

Supervisor. Signed: .................................................. Date: ...........................................

Kizza James
Dedication

We wish to dedicate this entire project report to our beloved parents for the tireless support they accorded to us ever since we were young. We thank them for the spirit of hard work, courage and determination they had instilled in us through out our school days till today. We also honor and owe our dear friends, brothers and sisters whom we share our happiness and appreciation for the guidance and protection offered.

The Almighty God for the Grace, mercy, wisdom and understanding.
Acknowledgments

This project would not have been possible without the support and guidance of the group members, classmates, Faculty, our supervisor Mr. Kizza James and our lecturers.

We greatly glorify our Almighty God for the Grace, mercies, faithfulness, wisdom and understanding with all the provision of all kind. Glory be to His Name.
# Table of Contents

DECLARATION .......................................................................................................................... II
DEDICATION .............................................................................................................................. III
ACKNOWLEDGMENTS ............................................................................................................. IV
LIST OF TABLES ..................................................................................................................... VII
LIST OF FIGURES .................................................................................................................. VIII
LIST OF APPENDICES ........................................................................................................... IX
LIST OF ABBREVIATIONS ...................................................................................................... X
ABSTRACT .............................................................................................................................. XI

INTRODUCTION .................................................................................................................... 1

1.1 BACKGROUND ................................................................................................................ 1
1.2 PROBLEM STATEMENT .................................................................................................. 2
1.3 MAIN OBJECTIVE ......................................................................................................... 2
1.4 SPECIFIC OBJECTIVES ................................................................................................. 3
1.5 SCOPE ............................................................................................................................ 3
1.6 SIGNIFICANCE ............................................................................................................... 3

LITERATURE REVIEW .......................................................................................................... 4

2.1 INTRODUCTION .............................................................................................................. 4
2.2 PREVIOUS RESEARCH ON MONITORING SYSTEMS ......................................................... 4
   2.2.1 Academic systems .................................................................................................. 4
   2.2.2 Student achievement monitoring system (SAMS) ....................................................... 5
2.3 RELATED SYSTEMS ...................................................................................................... 5
   2.3.1 Performance monitoring systems ........................................................................... 5
   2.3.2 NICE Monitoring Systems ................................................................................... 5
2.4 CASE STUDIES ............................................................................................................. 6
   2.4.1 Heart Monitoring System ..................................................................................... 6
   2.4.2 Policy Relevant Monitoring Systems for Natural Resource Management .............. 6
2.5 CONCLUSION .................................................................................................................. 7

METHODOLOGY ................................................................................................................... 8

3.1 INTRODUCTION .............................................................................................................. 8
3.2 REQUIREMENTS GATHERING ....................................................................................... 8
   3.2.1 Interview ............................................................................................................... 8
   3.2.2 Observation ......................................................................................................... 8
   3.2.3 System design ...................................................................................................... 8
3.3 DEVELOPMENT ENVIRONMENT .................................................................................. 8
3.4 SYSTEM TESTING ....................................................................................................... 8
   3.4.1 Unit testing .......................................................................................................... 9
   3.4.2 Integrated testing ............................................................................................... 9
List of Tables

Table 1: Hardware Requirements-----------------------------------------------12
Table 2: Software Requirements-----------------------------------------------12
Table 4: Decision Table------------------------------------------------------18
Table 5: University Table-----------------------------------------------------19
Table 6: Member Table----------------------------------------------------------19
List of Figures

FIGURE 1: DOCUMENT FLOW DIAGRAM ................................................................. 13
FIGURE 2: SYMBOLS USED IN THE DFD ............................................................ 14
FIGURE 3: A CONTEXT DIAGRAM ........................................................................ 15
FIGURE 4: LEVEL 1 DFD .................................................................................. 16
FIGURE 5: ERD .................................................................................................. 18
FIGURE 10: CURRENT BENEFICIARIES INTERFACE .................................. 24
FIGURE 11: ERROR MESSAGE 1 ......................................................................... 25
FIGURE 12: ERROR MESSAGE 2 ......................................................................... 25
FIGURE 13: ERROR MESSAGE 3 ......................................................................... 25
FIGURE 14: REPORT ............................................................................................ 26
List of Appendices

Appendix ‘A1’.........................................................................................................................22
Appendix ‘A2’.........................................................................................................................23
Appendix ‘B’..........................................................................................................................24
List of Abbreviations

HELF- Higher Education Loans Fund
KHC – Kenyan high commission
USLS -University Students Loans Scheme
OS- operating system
RAM- Random Access Memory
BMS –Bursary monitoring system
GB- Gigabyte
UPS-uninterruptible power supply
ERD- Entity Relationship Diagram
DB- Data Base
DFD- Data Flow Diagram
HTML-Hyper Text Mark Up Language
Abstract.

The project report was centered towards the development of a bursary monitoring system to regulate the expenses the KHC used to face in the distributing bursary to students in Ugandan universities. The bursary monitoring system guarantees that each beneficiary registers and is given specific duration at the university.

The study started with the requirement analysis, study of the existing system, system analysis and design, implementation and system testing.

This study is concerned with the design of monitoring systems that have direct relevance for the management of bursary distribution.

This system provides, online application form, easy co-ordination between the Universities, main office and the Embassy. It enables the administrator to add a course and the University and also to remove the students who have completed studies from the database. The system gives the administrator the capability to grand or deny a bursary to the applicants online.

For proper monitoring and minimal losses, the administrators should enter the correct duration and amount money allocated to different courses.
Chapter 1

Introduction

1.1 Background

The history of the Higher Education Loans Board dates back to 1952 when the then colonial government awarded loans under the then Higher Education Loans Fund [HELF] to Kenyans pursuing university education in universities outside East Africa notably Britain, the USA, the former USSR, India and South Africa.

Students who were pursuing university education in universities outside East Africa and were not on scholarships were advanced loans by the then government against securities such as Land Title Deeds, Insurance policies and Written Guarantees. However by 1974, provision of education in general had expanded dramatically as a result of the heavily subsidized primary and secondary education and the general yearning for education by most Kenyan families. Consequently, the number of students seeking university education had grown to an extent that it was becoming increasingly difficult to adequately finance university education by providing full scholarships and grants by the Government.

The Government therefore introduced the University Students Loans Scheme (USLS), which was managed by the Ministry of Education. Under the scheme, Kenyan students pursuing higher education at Makerere, Nairobi and Dar es Salaam universities received loans to cover their tuition and personal needs, which they would repay on completion of their education.

However, the USLS was plagued with a number of problems right on the onset. It lacked the legal basis to recover matured loans from loanees. In addition, the general public and university students wrongly perceived that the loan was a grant from the government, which was not to be repaid.

In order to address this problem, in July 1995 the Government through an act of Parliament established the Higher Education Loans Board to administer the Student Loans Scheme. In addition, the Board is also empowered to recover all outstanding loans given to former university students by the Government of Kenya since 1952 through HELF and to establish a Revolving Fund from which funds can be drawn to lend out to needy Kenyan students pursuing higher education. The establishment of a revolving fund was also expected to ease pressure on the exchequer in financing education, which currently stands at 40% of the annual national budget.

The bursary scheme is under the ministry of education funded by the Kenya government. It is under the commission for higher education which deals with Kenyan students who study in institutions outside Kenya. The bursary scheme was started basically to help needy students who perform well but do not have support to the higher institution of learning. The students who want to benefit from the scheme apply to the ministry of education in Kenya. The application process
is managed by the student leaders in collaboration with the education attaché at the embassy or through direct application to the ministry in Nairobi. The department of the ministry of education that is responsible for allocating bursaries to Kenyan students studying in foreign countries notifies the beneficiaries and sends the money to the Kenyan embassy in a given country, for instance Uganda. The education attaché at the embassy takes the initiative of sending the cheque and the list of beneficiaries to the university accounts office who then supplies the receipts to the students.

Currently, the bursary distribution process at the Kenyan High Commission (KHC) in Uganda is experiencing problems in monitoring the distribution of funds to the students who are currently beneficiaries and those who have completed. The above problem is due to the increasing number of beneficiaries in different institutions.

The KHC in Uganda has experienced difficulties in monitoring the funds given to the current beneficiaries and to verify those who should be out of the program. As a result of this problem, the high commission has encountered losses because even those students who have completed studies and are out of the program still claim money from the high commission and therefore they keep on offering money to students who have finished. In addition, there are many receipts at the accounts office which have never been collected. Some students who encounter problems in the process such as withdraw from studies find problems to claim their funds when they resume studies. Students who are in the system take long to get their tuition because the process of verification at the high commission and at the bursar’s office in the respective Universities is long. Application for the bursary can only be done at the KHC in Uganda and in the commission for higher education in Nairobi, which means one has to move long distances to the offices to apply and also to check whether they have been offered the bursary because there are no services online.

1.2 Problem Statement

The Kenyan High Commission in Uganda is finding difficulties in monitoring the bursary distribution process to student beneficiaries, who are currently in the system, and to find out those who have finished their studies. There is poor coordination between the Kenya High Commission, the ministry of education in Kenya and the universities in Uganda especially Makerere. This problem is due to the fact that the existing or current system is a flat file system (excel spreadsheets) and it is hard to link the data since related data records are stored in different files.

1.3 Main Objective

This project aims at developing a bursary monitoring system for Kenyan High Commission which will help in distribution of funds to student beneficiaries, and also to find out those who have finished their studies.
1.4 Specific Objectives

i. Investigate the bursary system.

ii. Identify the requirements of the system.

iii. Design a required system.

iv. Implement the system which ensures efficiency.

v. Test and validate the developed system to ensure proper functionality.

1.5 Scope

The system will only deal with Kenyan students studying in Uganda.

1.6 Significance

The absence of an automated system had a serious effect on the beneficiaries, leading to lack of reliable evidence as a beneficiary from the system, lack of information delivery mechanisms amongst the parties involved, the project has led to improved communication of information through the website interface, quick student identification, retrieval of students information from the database among others.

As the KHC came up to help the financially handicapped students, the existing system had a lot of inconveniences, delays, losses and other associated shortcomings being experienced and this system has solved these loopholes to a great extent.

The system is intended to change the way records are being stored and how information is retrieved. The system improves upon the co-ordination and monitoring of student beneficiaries at all universities.

The developed computerised system ensures safe storage and easy accessibility of records at any given time.

The methodology used is appropriate and there is hope that it shall be a model for such similar systems which can go along way in meeting the needs of various organizations and institutions not only in those under study here but a vast application in Uganda, Kenya and the rest of Africa.
Chapter 2

Literature Review

2.1 Introduction

According to Ujjayan, Dixon, Hazell, Perrot-Maître, and Segnestam (2004) [12], a monitoring system is an on-going system to collect data on a program’s activities and outputs, designed to provide feedback on whether the program is fulfilling its functions, addressing the targeted population, and/or producing those services intended. Monitoring systems have several key characteristics, they provide: A decision framework for selecting resource problems to monitor that offer potentially large social payoffs relative to the costs of monitoring, timely, including early warning information on emerging problems, a means of identifying the causes of an emerging problem, an analytical framework for identifying options for corrective action, an institutional framework for achieving ownership among key stakeholders (the resource users and those affected by the resource use) and agreement about emerging problems, the corrective actions to take, and effective implementation, and a built-in mechanism for learning from past experience to improve the performance of the monitoring system over time.

2.2 Previous Research on Monitoring Systems

There exists a voluminous literature on the choice of indicators for sustainable development. Several alternative frameworks have been proposed. The theoretical discussion has focused on developing an analytical framework that begins by defining what sustainable development means in practice. These writings have mostly focused on the choice of discount rates, inter-generational equity, and uncertainty issues. However, the focus of the operational literature has largely been on choice of monitoring indicators. Although most studies talk about the need for use of indicators in policy development as well as in sustainable management of systems, there is clearly a huge gap between the theory and its application in policy-making. Policy makers do not have a consistent set of operational tools for system policy analysis and most analysis is performed on an ad hoc basis. Monitoring systems that are already in place have served as data collection efforts but without any systematic analysis of the data or involvement of stakeholders in data collection and in policy analysis and dialogue. (Dasgupta and Maler, 1991; Dasgupta, 1993; Pearce, Atkinson and Dubourg, 1994).[4].

2.2.1 Academic systems

Academic intervention monitoring systems (AIMS) together with academic competence evaluation scales (ACES) where developed to provide a quick, intergraded system to explore student’s needs and uniform way to monitor intervention effectiveness. Having assed the
situation using ACES, AIMS can be used by school and college professionals to pin point strengths and weakness thus targeting intervention in a systematic way. AIMS includes student parent and teacher forms which can be used to identify, implement and monitor those strategies most likely to enhance student performance, including strategies for use at home. Based upon the principals of goal attainment scaling, professionals are able to set measurable goals and mark the students’ progress, towards this goals. Diperna.C, Shapiro.E, and Elliott.N (2001) [5].

2.2.2 Student achievement monitoring system (SAMS)

Is recognized as a viable solution for a effective monitoring of student progress to improve instruction, it is especially critical in high-priority schools but there be a timely dissemination and review of assessment data, including data from state, school district, and class room assessments.

Instructions pivot on the effective use of data at the class room level therefore, the timely collection and analysis of assessment data from statewide tests, school district measures and classroom assessments should influence the placement of students and subsequent selection and delivery of instruction. (California Education department 2007) [1].

2.3 Related Systems

2.3.1 Performance monitoring systems

This systems are of major importance in corporate governance and because of their design affects the incentives of managers and thereby the efficiency of the firm. There are defined as the systems that make it possible for the firm’s constituencies to gather information about the firm. Sensen and Meckling (1976), Copeland, koller and murrine (1996) [11]

2.3.2 NICE Monitoring Systems

According to Ra’anana and Israel (2003) [10] stated that “a provider of multimedia recording solutions, applications and related professional services for business interaction management, today announced that cabela’s inc. the worlds foremost outfitter of hunting solution from NICE to help improve agent performance and customer satisfaction as well as to ensure the success of marketing campaigns”

According to Cabelas (2004) [9], immediately after installing the NICE system across it’s five Nebraska-based call centers, its quality assurance department was able to utilize the voice and screen recording to accurately identify call center agents, strengths, as well as the skills that needed improvement.

System specialist Meyer and Cabelas (2003) [9] added, “we not only use the NICE monitoring system to make sure the quality of our agents is world class, but also make sure the systems and software they use to do their job are performing well. We can see almost immediately if there is a system problem or improvement that could be made that would help the agents do their job more efficiently and provide better service. This new idea of how both our people and systems work together helps us gain a better understanding of our employee and customers needs.”
2.4 Case Studies

2.4.1 Heart Monitoring System
A medical device developer requested help developing custom software for a new type of heart monitoring system. Software development for medical systems was guided in part by 21CFR port 820, which provided the framework by which the software is designed, written, tested, modified and managed. The software comprises the control system for the electromechanical portion of the system. A set of data collection and operator interface functions to display heart beat, blood pressure and other parameters and diagnostic function containing the signal analysis algorithms needed to diagnose specific heart conditions.

2.4.2 Policy Relevant Monitoring Systems for Natural Resource Management
Sustainable development means making hard decisions on trade-offs between present and future use of natural resources, and conversion of some part of a country’s resource endowment to other forms of capital. Often the process of economic development involves extraction and use of natural resources such as forests, water, and soil used to produce food, fiber, and other products needed for industrial use as well as for direct consumption. Over time, unless corrective steps are taken, the finite stock of natural resources or natural capital is constantly being depleted. For example, agricultural production can lead to soil erosion and depletion of micronutrients in the soil. Clearing of forest lands for farming and for timber are the most important causes of deforestation in the developing world.

Monitoring of these and other variables is an important part of resource management. Indicators serve a valuable function in measuring both the stocks (or quality) of resources, but also the rates of change of these measures. This information, in turn, is used to highlight potential problems, identify trade-offs, and make more informed decisions. Another important reason for periodic monitoring of the state of natural resources in developing countries is the need for compliance with new international protocols, such as the international agreement on greenhouse gas emissions (Kyoto Protocol) and the Biodiversity Convention. For instance, under the Kyoto Protocol, there will be a need to systematically monitor land-use changes, estimate carbon sequestration by forest sinks and carbon emissions from a variety of sources including agriculture.

It has been said that we need to be able to measure something in order to manage it. Hence the importance of developing systems to measure, and monitor, a nation’s resource stocks. The need for developing monitoring systems also ties in with recent efforts towards developing operational notions of “sustainability” and “sustainable development.” Developing countries are constantly striving towards adopting economic development strategies that do not cause irreversible damage to their limited natural resource stocks while at the same time taking corrective measures for their protection.
Projects for "sustainable" natural resource management are being undertaken at the national, regional and local levels by a range of agencies including international organizations, national and state governments, non-governmental organizations, and the Private sector.

However, the notion of sustainable development rests on an accurate estimation of the stock of natural capital (e.g. soil, trees, mineral resources) and an agreed upon rate of their depletion and conversion to "physical capital" (i.e., machines) or for human consumption. In this sense, current notions of “sustainability” cannot be operationalised without an effective monitoring of a nation’s natural resources. If monitoring services are to serve a viable social function and to be adopted more widely, then they should be in a position to offer a potentially large social payoff relative to the costs of monitoring. Realizing favorable benefit/cost ratios is more likely if:

The environmental problems selected for monitoring have high environmental or social costs if left unchecked.

The monitoring system is designed and used in a way that leads to a correction of the environmental problems that are being monitored.

The monitoring system is designed and operated so that it is cost effective.

The above suggests that this extended notion of a monitoring system implies that it is not only a periodic stock-taking of the state of natural resources, but provides an estimate of the relative costs of resource and environmental degradation. These costs must in turn be compared with some notion of benefits from possible policy interventions. While corrective policy actions may move the economy closer to its production possibility frontier and thus the aggregate benefits to the country as a whole may be positive, the welfare consequences may lead to an inequitable distribution of the benefits and costs. Certain stakeholders affected by the intervention may suffer a welfare loss, while others see a net gain, and the sum-total of these effects may still be positive.

To be policy relevant, the monitoring system must be able to sort through these distributional implications and the associated political economy of environmental policies, Ujjayant., Dixon, Hazell, Perrot-Maître, and Segnestam (2004) [12].

2.5 Conclusion

The monitoring system must be able to generate quantitative estimates of who loses and who gains. The monitoring system would not only provide estimates of the distributional consequences of such policies but also examine the viability of alternative compensation mechanisms that ensure participation by affected stakeholders in the design and implementation of corrective policies.
Chapter 3
Methodology

3.1 Introduction
This section elaborates the techniques that the researchers used in the fact finding, analysis design and implementation.

3.2 Requirements gathering

3.2.1 Interview
The researchers interviewed the education attaché and the current student beneficiaries in person to get first hand information. We developed a few questions that we went with to the offices of the KHC in Uganda.

3.2.2 Observation
The researchers went and observed the procedures used in paying tuition at Makerere university and how the accounts section deals with receipts and the means of returns issuing.

3.2.3 System design
The researchers used the context and data flow diagrams to study the existing system.

3.3 Development Environment
The following tools were used to implement the system because they are open source (no licenses were required to download them), the researchers had profound skills in using them and they had used elsewhere by other developers to implement successful systems before.

PHP and MYSQL were used to develop the databases.

HTML was used for website designing.

DFD’s were used for system analysis.

JAVA SCRIPT language was used website development.

3.4 System Testing
Testing the system was given a high priority during the development of the system.

The developed prototype was tested to ensure that it actually meets the requirements of the system.
The designed documents were subjected to structured walk through and other reviews to ensure that they meet the requirements.

The following were the general testing carried out:

**3.4.1 Unit testing**
Individual units will be tested independently just to see how each will work.

**3.4.2 Integrated testing**
The individual units were integrated into logical modules to see how they work with each other. After, the units were integrated together to a general menu and operated as expected; a general system test was then carried out to evaluate the general functionality of the system.

**3.4.3 Performance testing**
The system performance was scrutinized to establish whether it could facilitate the testing of the equipment rather than slowing down processes that were there.

**3.4.4 Regression testing**
This was carried out to check and detect whether addition of new module to the system could generate errors in the already existing modules.

**3.4.5 Acceptance testing**
Researchers were not able to carry out this acceptance testing because it was to be done by the users.

Compatibility of the system with the hardware and system software was also tested.
Chapter 4

System Analysis, Design and Implementation

4.1 System Analysis

The researchers carried out a study about the current system came out with the following:

4.1.1 Study of the current system

The current bursary monitoring system is a flat file system where students’ details are stored using spread sheets and manual files. Needy students who have been admitted to various universities apply for the bursary either through the embassy or to the head office in Nairobi. Written applications are sent through the post office or taken in person to the embassy then forwarded to the head office in Nairobi. It is at this office that students are selected and the list of the selected students to benefit from the bursary scheme is sent to the KHC in Uganda.

Beneficiaries of the scheme are notified through the embassy notice board and the university bursar’s department. The embassy sends a cheque of the selected students to their respective Universities; the students collect their receipts and submit them to their various faculties.

4.1.2 Weakness of the current system

These are the weaknesses that the existing system incurs.

1. Some students who have completed studies still come back and collect the receipt from the bursar as long as their names are short listed.
2. There is poor communication and co-ordination between the embassy and the head office in Nairobi.
3. There is no proper way of notifying students on whether they have been offered the bursary or not.
4. Since there is use of file records they are prone to mistakes due to duplications, which may lead to loss of funds and some times students fail to get their benefits.
5. The present system of using files occupies a lot of office space where many files have to be kept in offices for future references as compared to the steps taken by a computer that is used to store all the information.
6. There are many receipts at the bursar’s office which have never been collected, yet the money was paid, this is due to poor monitoring of students and coordination between the embassy and the bursars’ office.
After the study of the existing system was done, the data collected was analyzed and used to determine different requirements of the developed system. Context diagram and data flow model were used in the analysis of data collected for the proposed system.

4.1.3 User requirements

The users require a system that has the following features.

1. A user friendly graphical user interface.
2. An informative and intuitive website.

4.1.4 Functional requirements

This is how the system shall look like and do. The system shall meet the following functional requirements:

1. The system shall allow only students with the National ID to apply online.
2. The system shall accept only valid data to be entered into a database.
3. The system shall allow registered or authorized administrators who are logged in to perform operations on the system.
4. The system shall only allow students who have applied for the bursary to track their information (getting feedback whether granted or denied) using a pass code.
5. Only authorized administrator shall be able to add and/or delete the University and a particular course in that very University. Shall also be able to grant/deny the bursary to students.
6. The system shall allow the students to register their problems and the administrator shall be able to view them and act accordingly.
7. The system shall be able to clearly outline the duration of the course.

4.1.5 Non functional Requirements

The non functional requirements of the system include.

4. The system shall display an alert reminding the user to enter valid data if he/she enters invalid data.
5. The system shall be able to run on a networked environment efficiently and effectively.
6. The system shall display an error message when a user attempts to enter wrong data at logging window.
7. Store data in the most efficient manner possible to keep the database from growing too big with unnecessary data.
4.1.6 System Requirements

4.1.6.1 Hardware requirements

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<tr>
<td>Hard disk space</td>
<td>80GB</td>
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<tr>
<td>Memory(RAM)</td>
<td>1GB</td>
</tr>
<tr>
<td>Power supply</td>
<td>UPS</td>
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</tbody>
</table>

*Table 1: Hardware Requirements*

4.1.6.2 Software requirements

<table>
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<td>Client OS</td>
<td>Windows XP</td>
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<tr>
<td>Web server</td>
<td>Apache or Blazix web server</td>
</tr>
<tr>
<td>Server OS</td>
<td>Linux</td>
</tr>
<tr>
<td>Database management system</td>
<td>MySQL server version</td>
</tr>
<tr>
<td>Web browser</td>
<td>Internet explorer</td>
</tr>
</tbody>
</table>

*Table 2: Software Requirements*

4.2 System Design

The section describes how the new system will function and how it is going to satisfy the user requirements of the new system. The system encompasses the design of data flow, data base, user interface and physical design.
4.2.1 Document flow Diagram of the Current System

The DFD is used to show the physical flow of information in the organisation. The lettered arrows show the flow of information.

Figure 1: Document Flow Diagram

A. Student takes the receipt to the faculty
B. Faculty issues financial statements
C. Students request for the receipt.
D. The Accounts office issues the receipt.
E. The embassy notifies the students.
F. Students make inquiries.
G. The embassy sends the applications and the feedback from the Universities.
H. The head office sends the list of beneficiaries and the Cheque to the embassy.
I. Accounts’ office sends the returns to the embassy.
J. The embassy sends list of beneficiaries and the cheque to the Accounts office.
K. Students send their application letters to the Head office
4.2.2 Symbols

The diagram below shows a group of conventional symbols used in drawing the DFD’s and Context Diagram

![Diagram showing symbols](image)

- External entity
- Process
- Data flow
- Data store
- Physical flow

Figure 2: Symbols used in the DFD
4.2.3: A Context Diagram of the system

A Context Diagram below shows the relationship between the main process and external entities.

![A Context Diagram](image)

**Figure 3: A Context Diagram**
Figure 4: Level 1 DFD
Database design

A database is an organized collection of information records, so this process will create a design for the database that supports operations and objectives.

4.2.1 Conceptual database design

This is the process of constructing a model of information used in the organisation independent of all physical considerations.

The proposed systems database consists of entities for students, courses, decision, university, members they will store information about the details captured by the system.

4.2.2 The entities and their attributes

National ID(nid, PK), fname, lname, date, gender, email, kname, kemail, knid, kaddress, study, cname, ccode, dstart, admitted, pass, today, dfinish, tel, gross, ktel, decision ID(FK)

Student entity attributes, Courses entity attributes, University entity attributes

University ID(PK), university

Course ID(PK), cname, duration, tuition, reg, accommodation, others, totally, costal, universityID(FK)

Decision entity attributes

Decision ID(PK), decision

Member entity attributes

Administrator ID(PK), username, password

4.2.3 Entity relationships and cardinality

<table>
<thead>
<tr>
<th>Entity</th>
<th>Relationship</th>
<th>Entity</th>
<th>Cardinality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>Studies</td>
<td>Course</td>
<td>1:1</td>
</tr>
<tr>
<td>University</td>
<td>Offers</td>
<td>Course</td>
<td>1:*</td>
</tr>
<tr>
<td>Decision</td>
<td>Made for</td>
<td>Student</td>
<td>1:1</td>
</tr>
<tr>
<td>Member</td>
<td>Makes</td>
<td>Decision</td>
<td>1:*</td>
</tr>
</tbody>
</table>

Table 3: ERD
4.2.3.1 Entity Relationship Diagram

An ERD shows the relationship between the different entities

![Entity Relationship Diagram](image)

4.2.4 Physical Implementation

The following tables show the data base schema for the new system.

Decision table

Contains the details of the decision taken by the administrator upon receiving the applicants form.

Table: decision, Primary key: decisionID

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
<th>Links to</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>Int(20)</td>
<td>No</td>
<td></td>
<td></td>
<td>It’s the decision unique identifier</td>
</tr>
<tr>
<td>decision</td>
<td>varchar(20)</td>
<td>No</td>
<td></td>
<td></td>
<td>The decision taken by the administrator</td>
</tr>
</tbody>
</table>

Table 4: Decision Table
University table

Contains the details of the universities where the different courses are offered.

Table name: university, Primary key: universityID

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
<th>Links to</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>int(12)</td>
<td>No</td>
<td></td>
<td></td>
<td>University ID</td>
</tr>
<tr>
<td>University</td>
<td>varchar(60)</td>
<td>No</td>
<td></td>
<td></td>
<td>Name of the university</td>
</tr>
</tbody>
</table>

Table 5: University Table

Member table

Contains details of the administrators.

Table name: member, Primary key: administratorID

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
<th>Links to</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>int(4)</td>
<td>No</td>
<td></td>
<td></td>
<td>Administrator unique identifier.</td>
</tr>
<tr>
<td>Username</td>
<td>varchar(65)</td>
<td>No</td>
<td></td>
<td></td>
<td>The user name to log in.</td>
</tr>
<tr>
<td>Password</td>
<td>varchar(65)</td>
<td>No</td>
<td></td>
<td></td>
<td>The password to log in.</td>
</tr>
</tbody>
</table>

Table 6: Member Table

Course table

Contains the details of courses sponsored by the high commission

Table name: course, Primary key: courseID

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Null</th>
<th>Default</th>
<th>Links to</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>int(30)</td>
<td>No</td>
<td></td>
<td></td>
<td>Course unique identifier</td>
</tr>
<tr>
<td>cname</td>
<td>Varchar(90)</td>
<td>No</td>
<td></td>
<td></td>
<td>Course name</td>
</tr>
<tr>
<td>university</td>
<td>Varchar(90)</td>
<td>No</td>
<td></td>
<td></td>
<td>University where the course is offered</td>
</tr>
<tr>
<td>duration</td>
<td>varchar(6)</td>
<td>No</td>
<td></td>
<td></td>
<td>Duration of course</td>
</tr>
<tr>
<td>Tuition</td>
<td>Varchar(30)</td>
<td>No</td>
<td></td>
<td></td>
<td>Amount paid for the course per semester</td>
</tr>
<tr>
<td>reg</td>
<td>Varchar(30)</td>
<td>No</td>
<td></td>
<td></td>
<td>Amount paid for registration of the student per year</td>
</tr>
<tr>
<td>accomodation</td>
<td>Varchar(30)</td>
<td>No</td>
<td></td>
<td></td>
<td>Amount paid for accommodation per semester</td>
</tr>
<tr>
<td>Others</td>
<td>Varchar(30)</td>
<td>No</td>
<td></td>
<td></td>
<td>Any other expenses incurred by the student</td>
</tr>
<tr>
<td>Totally</td>
<td>Varchar(20)</td>
<td>No</td>
<td></td>
<td></td>
<td>The total amount of the money to be spent on the student</td>
</tr>
<tr>
<td>costall</td>
<td>Varchar(20)</td>
<td>No</td>
<td></td>
<td></td>
<td>amount spent annually on a student</td>
</tr>
</tbody>
</table>

Table 7: Course Table
4.4 System implementation

This subsection discusses the system’s front end and back end. The system has a GUI as a front end which was implemented using PHP, HTML and Java script language. It provides the user with web forms in which the user can enter data into the system’s DB, retrieve data or query the DB.
Chapter 5
Presentation of Results/Findings

5.1  Project discussion

The bursary monitoring system offers a number of benefits that are summarized below:

Figure 6: Home page

This home page provides information to the general public (Students and parents who wants to get information about the bursary scheme and they can apply), as well as the current beneficiaries getting in touch with the embassy and forward their problems.
This interface enables students to apply easily and to enter the correct values because if students enter wrong values they receive an error massage.

This is better than the old system where incase wrong values are entered, they may not be noticed.

Figure 7: application interface
After submitting the application, the system generates the pass code for the student. Which the student uses to track the progress of their applications.

This is better than the old system where students would had no way of knowing the progress of their application.

**Figure 8: Notification interface**

Hare students can see the progress of their application and see if it still pending, granted or denied.

This is better than the old system where students had to move to the embassy and the main office in Nairobi to check on the status of their application.
Figure 10: Current beneficiaries interface

This is a current beneficiary’s page where the administrator can view all data about the sponsored students.

This is better than the old system because it helps the administrator to monitor the progress of students and knowing their finishing dates so that they can be easily identified so that no more funds can be given to them.
Figure 11: Error message 1

This error massage helps the applicant enter all the relevant data.

Figure 12: Error message 2

This error message appears when some one enters numbers in the course name.

Figure 13: Error message 3

This error message appears when some one forgets to enter their first name.
Figure 14: Report

A report generated by the system when prompted for new beneficiaries who are pursuing a degree in Computer Science.

5.2 Limitations

The researchers had a big challenge during implementation since they had never developed any system before yet they were using new programming languages.

Time given to finish the project was not enough to complete all the activities in the specified time. Accesses to computers that have relevant software to our project implementation were scarce in the faculty laboratories.

There was a big challenge during the collection of user requirements which required a lot of time since responsible parties / persons could only be met on one specific day of the week (Wednesday).
Chapter 6

Conclusion, Summary and Recommendations

Recommendations

It is advisable for administrators to enter the correct duration and amount allocated to different courses, because this will enable proper monitoring and minimize on the loses.

The researchers recommend that in the future the system should be used to monitor Kenyan beneficiaries studying in other countries other than Uganda.

Summary

We have developed a system that is able to accept online applications and allow students to track the information about their applications. The system also is capable of allowing the administrator to monitor the beneficiaries through out the studies at their various Universities.

Conclusion

The project enabled the researchers to put into practice the knowledge obtained from class that is in the use of systems study, analysis and design, and research methodology. System development implementation has improved our programming skills in PHP, MYSQL, HTML and Java Script.
References


10. Ra’anana and Israel (2003)


Appendices

Appendix A: Interview guide

1. When did the bursary scheme start?
2. What were the objectives of the bursary scheme?
3. How do students apply?
4. Whom does the scheme facilitate?
5. Who is responsible for the loans?
6. How is the bursary money distributed?
7. How is it monitored to ensure efficiency?
8. what are the major challenges faced during the process of distribution and monitoring?