

**AUTOMATED EXAMINER ALLOCATION SYSTEM FOR
KENYA NATIONAL EXAMINATION COUNCIL**

BY

CHARLES M. NYAGAH

BCS/11572/62/DF

AND

TARURU I. SAIGUT

BCS/11138/62/DF

**A PROJECT REPORT SUBMITTED TO THE SCHOOL OF
COMPUTER STUDIES AS A PARTIAL FULLFILLMENT
OF A BACHELORS DEGREE IN COMPUTER
SCIENCE OF KAMPALA
INTERNATIONAL
UNIVERSITY**

2011

DECLARATION

This project report has been done by **TARURU I SAIGUT BCS/11138/62/DF** and **NYAGAH CHARLES MURIUKI BSC/11572/62 /DF** and it is an original composition. This report has never been presented in any university or higher institution of learning for any award or publication.

Sign

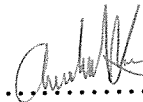
.....

TARURU I SAIGUT

Date

.....11/08/2011.....

Sign

.....

NYAGAH CHARLES MURIUKU

Date

.....11/08/2011.....

APPROVAL

This project has been submitted for examination with the approval of the following supervisor

Signed: Banani Paul

Date: 12/08/2011

Mr. PAUL BAKAKI

Department of Computer Science

School of Computer Studies

DEDICATION

We dedicate this report to our loving parents, brothers, cousins and close friends who stood by us all through the course.

ACKNOWLEDGEMENT

Our sincere gratitude goes to our supervisor Mr. Bakaki for his support and the patience. May the Almighty bless you.

I must also thank Honorable Professor Helen Sambili – Minister for Higher Education in Kenya

Our credit goes to all our lecturers for all their knowledge and support they gave us help us accomplish this course.

We acknowledge our fellow students for their support in this work.

TABLE OF CONTENTS

Declaration.....	i
Approval	ii
Dedication.....	iii
Acknowledgement.....	iv
Table of contents.....	v
Acronyms.....	ix
Abstract.....	x
CHAPTER 1	
1.0 Introduction.....	1
1.1 Background.....	2
1.2 Statement of the problem.....	3
1.3 Objectives of the problem.....	3
1.3.1 General objective.....	3
1.3.2 Specific objectives.....	4
1.4 Project scope.....	4
1.5 Justification.....	4
CHAPTER 2	
LITERATURE REVIEW	
2.0 Introduction.....	6
2.1 Other related work.....	7
2.2 Critique of the literature review.....	9
CHAPTER 3	
METHODOLOGY	
3.0 Introduction.....	10
3.1 System study and investigation.....	10

i. Interviews	
ii. Questionnaires and forms	
iii. Document review	
iv. Observation	
3.2 System analysis and design.....	11
(i) Data dictionaries	
(ii) Entity relationship diagrams	
(iii)Enhanced Entity Relationship diagram	
3.3 System development and implementation.....	12

CHAPTER 4

SYSTEM DESIGN AND IMPLEMENTATION

4.1 System analysis.....	13
4.2 System requirements.....	16
4.2.1 User requirements.....	16
4.2.2 Functional requirements.....	16
4.2.3 Non – functional requirements.....	17
4.2.4 Hardware requirements.....	17
4.2.5 Software requirements.....	18
4.2.6 Operation requirements.....	19
4.3 System design.....	20
4.4 Database design.....	22
4.4.1 Design objectives.....	22
Logic design of the data store	
Conceptual design	
4.4.2 Relationship modeling.....	24
4.4.3 Design relationship between entities.....	26

4.4.4 Tables for the database design.....	29
CHAPTER 5	
PRESENTATION AND RESULT/FINDINGS	
5.1 Programming environment.....	33
5.1.0 Database management system (DBMS).....	33
5.2 Data manipulation.....	33
5.3 Program flow.....	33
5.4 System features.....	34
5.4.1 Forms.....	34
5.4.2 Links.....	35
5.5 Snapshots for the system.....	36
5.5.0 Administrator log-in page.....	36
5.5.1 Add centre page.....	37
5.5.2 Examiner registration page.....	38
5.6 Security.....	39
5.7 System testing.....	39
5.8 System maintenance.....	39
CHAPTER 6	
SUMMARY, CONCLUSION, RECOMMENDATIONS AND FUTURE RE-WORKS	
6.0 Introduction.....	41
6.1 Summary.....	41
6.2 Recommendations.....	42
6.3 Conclusion.....	43
6.4 Future works.....	44
REFERENCES.....	45
APPENDICES.....	46

(i) Questionnaire.	46
-------------------------	----

LIST OF TABLES

Table 4.2(a) hardware requirements.....	18
Table 4.2(a) software requirements.....	18
Table 1: Center table.....	30
Table 2: Administration table.....	30
Table 3: Exam table.....	31
Table 4: Examiner table.....	32

LIST OF FIGURES

Figure 4.1 (a) context diagram for the current system	14
Figure 4.1 (a) context diagram for the new allocation system	15
Figure 4.2 system architecture of the e-allocation of examiner system.....	20
Figure 4.3 Flow chart diagram of the system.....	21
Figure 4.4 EER diagram for E-Allocation Process for Examiners.....	28

ACRONYMS

PhP – Hypertext Preprocessor

HTML – Hypertext markup Language

CSS – Cascading Styling Sheet

ER – Entity Relationship Model

EER – Enhanced Entity Relationship Model

IT – Information Technology

DFD – Data Flow Diagram

DBMS – Database Management System

GUI – Graphical User Interface

KNEC – Kenya National Examination Council

MySQL – My Structured Query Language

ABSTRACT

This study about examiner allocation system was conducted at Kenya Examination council in Nairobi. It was clearly observed that the current allocation system is time and resource consuming and also not convenient due to repetition of examiner to the same centre they were allocated last season, thus creating the need for a system that will automatically allocate examiners.

An administrator receives exams from different centers and forwards them to examiners for marking and then they forward the results to administrators.

Data collection was achieved by use of interviews, observation, reading and questionnaires. Implementation was done by use of PHP, MySQL, CSS and HTML.

The system can automatically allocate examiners to centers without repeating or sending an examiner to the same center he/she marked the previous year. Also an examiner can't mark more than one subject.

Authentication is also put into consideration whereby the system validates the inputs where the administrator the only one responsible for adding, editing and allocating examiners and centers.

CHAPTER 1

1.0 Introduction

The world of information technology (IT) has been under continuous and rapid change over the last decade which has been characterized by explosion of advanced technology. The diffusion and effective utilization of this technology however has not been evenly spread throughout the world (Lesley – 2001)

Robert Heller (2000) [2] defines information system as a system that collects records, stores and computes transactions data and presents the results of processing to the appropriate personnel in an organization in form of information.

Kendall and Kendall (2002) [3] describes the importance of information systems. It maximizes the usefulness of information; a business must manage it correctly just as it manages others resources. Managers need to understand that cost is associated with the production, distribution, security, storage and retrieval of information. Information is all around us, it's not free and its strategic use for positioning a business competitively should not be taken for granted.

The ready availability of networked computers, along with access to the internet and the World Wide Web has created an information explosion throughout the society in general and business in particular managing computer generated information differs in significant ways from handling manually produced data. Usually there is a greater quantity of computer information to administer. Cost of organizing and maintaining it can increase at alarming rates and users often treat it less skeptically than information obtained in different ways.

An information system enhances the organizations ability to change processes and services hence bridging flexibility in administration since big changes are effected by small changes.

1.1 Background

Kenya National Examination Council (KNEC) is a government organization in the ministry of education. Education system in Kenya is under its supervision and also responsible for final examination formulation, marking and certificates award.

For the past years, since KNEC started there has been a problem of allocating examiners to different centers. KNEC has approximately 600 centers country wide and each center must be examined by at least some examiners either primary or 'O' level depending on the number of subjects to be taken by the center or depending on the number of subjects students are registered for.

For primary level there are only five examinable subjects which include mathematics, English, science, Swahili and Social Studies and these only needs only ten examiners whereby the five examine primarily and the other five examine secondarily and here is so simple to allocate since the subjects are few. In 'O' level KNEC has more than 20 subjects to examine which include mathematics, English, biology, chemistry, physics, health science, general science, geography, economics, fine art, commerce, accounts, and many more. Each subject has many examiners who must examine different centers from the school they teach and must examine different centers each year.

Examiners are teachers in registered schools and a teacher from any school with a center must not examine that very center. He or she must be allocated to another center different from the school he or she teaches.

The manual way of allocating examiners to different centers from those that they teach and those examined in the past years has been a problem because it is time consuming and results into errors of allocating an examiner to the center where they teach or to the center which he or she examined the previous year.

This project wishes to automatically generate a list of examiners to examine a certain center each year with proper check that that the examiner are not from the center where they teach and they did not examine the very center the past year.

1.2 Statement of the problem

At the moment the system is manual whereby teachers who are examiners are sometimes allocated to centers where they teach and also to the same centers they examined the previous year. Some of them are left without centers to examine. There is lack of a quick way of getting information about an examiner e.g. which examiner examined which center in which year and which subject and also lack of quick way of getting examiners bio data.

1.3 Objectives

1.3.1 General objectives

The main objective of this project is to develop a system that will improve KNEC's allocation of examiners to different centers.

1.3.2 Specific objectives

- i. To carry out a field study of the current system by investigating and finding out weakness in the system
- ii. To design a new automated system that will solve the problem with the current system.
- iii. To develop and implement a new automated system to be used in allocation of examiners to different centers.
- iv. To test and validate prototype with data samples

1.4 Project scope

The project is only dealing with examiners and centers only but not about the results they produce or anything outside examiners and center.

1.5 Justification

After the application has been put into place the system for allocating KNEC examiners will be automatic in that if the chief examiner would like to distribute examiners to centers and examiner just need to be registered by entering a center name or code then click. Allocate would automatically a list of examiners to examine which will be quick compared to the manual way of allocation.

The program will be able to check that examiner is allocated o only one center in order t avoid some examiners being left out without a center to examine and yet they are eligible. Incase an

examiner examined a certain a certain center last year then the application will check that and she or he will not be allocated the same center again.

The application will check for any examiner who is a teacher and will make sure that the very examiner is not assigned a center where he or she teaches.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This literature review explains the significance of the data managed by information systems to improve management operations. The researchers define information system as a collection of hardware, software and computer users that work together in order to make decision making efficient and easy.

Terry (19970 [1] Defines IT as combination of human and computer based resources that result in the collection, storage, retrieval, communication and use of data for the purpose of efficient management of operations for decision planning. She also defines it as system using formalized procedures to provide management at all levels in all functions with appropriate information based on data from internal and external sources to enable them to make timely and effective decisions for planning, directing and controlling activities for which they are responsible.

Laudon (2000) [2] says information system can add value to administrative process. Processes become more efficient, faster and more enjoyable while results continue gaining value.

Information systems support day to day operations of management and maintain a detailed form of record keeping while making work faster.

They also facilitate real time user interaction with the system resulting into faster and more efficient decision making even on the unstructured problem of management.

Lonnie (2000) [3] the livelihoods of information workers depends on decisions made from information some information workers (such as a system that process and distribute information. (Such as clerks, secretaries and managers) primarily capture, distributes and use data and information. Today more than 60% of the US labor force is involved in the production, distribution and use of information not surprisingly, an information technology industry (which includes hardware, software, networks and consulting has developed to support the growing information needs of business.

Kroenke (1993)[4] States that information systems contribute to institution in various ways. Among these is the contribution to decision making through expanding the boundaries of the decision process. They can add value to institutions process through making the process faster, efficient and more enjoyable.

KNEC being an institution on its own, it will gain in various ways such as proper and timely delivery of procedures and decisions affecting equipment which creates levels hence improvement.

2.1 Other related work

Onying (2001) [5] “ automated complaint registration system’s system for the inspectorate of government “ in this system once somebody takes a complaint recorded and research about it is started and incase they met a problem they always need to refer to the person who brought the complain. This system is similar to e – allocation of examiners in that the chief administrator

wants to know who examined what center. It is now going to be as easy as searching by use of center name or center code as it will be easy as typing the complaint name and code.

Ryan (2000) [6] “Latin Security Allocation Personnel System” Another system developed in UK for security personnel where being allocated to different companies for security purposes every month in which no security personnel is supposed to safe guard any company or house for two consecutive months. Every person is supposed to change monthly. This system is similar to e – allocation for examiners because no examiner is supposed to examine for two consecutive years.

Wachieni (2005) [8] “A school Information Management System for Routine Duties” A system for Nairobi High School, which assigns teachers and staffs routine duties per term and per week in which allocation of teachers to head the week, was being done. Teachers are changed regularly to be on duty in a certain week. So this system does allocation and it is related to the e – allocation process of examiners.

2.2 Critique of literature review

From the literature review there is so much consideration on the benefits of an information system which is quite appropriate. However there is a lot to be considered on the negative side. Sometimes data falls on unauthorized users who might modify, delete or edit the information. Automatic allocation of examiners considers this problem in maintaining its data integrity through use of passwords.

Also being an online system, it is exposed to hacking attacks.

CHAPTER 3

METHODOLOGY

3.0 Introduction

This is a detailed description of the selected methodology i.e. step by step methods that were used by researchers to achieve the objectives of the proposed system. This includes the tools, instruments, approaches, processes, techniques and methods that were employed in the data collection, analysis, design and implementation of the proposed system.

The methods used for system study and investigation of system design and analysis, development and implementation are;

3.1 System study and investigation

The methods used for data collection include;

(i) Interviews

Interview was carried out to the chief examiner on how the process of allocating examiners has been taking place before the automation process was introduced such that the application development satisfies the examiners.

(ii) Questionnaires and forms

Questionnaires were supplied to examiners to get information about how allocation of examiners to different centers has been taking place all along and how much time they spent in the examination process, the problem they face and what they want to be changed in the system and what they feel if a new automated system is brought in.

(iii) Document review

By reading the current examiners allocation records, ruled and procedures regarding allocation of examiners and minutes of the previous examiners allocation meetings helped by the chief examiners and the administrators provided useful information.

(iv) Observation

Observing how the chief examiner has been doing the work before was useful in knowing how the system should perform other than what they should do.

3.2 System analysis and design

These are the tools used in creating and designing the system.

(i) Data dictionaries

Data dictionaries were used for storing information, names and properties of the entities involved in the project.

(ii) Entity relationship diagrams (E R)

These were used to show the main entities and the relationship between the entities.

(iii) Enhanced Entity Relationship Diagram

These ERR diagrams were mapped on the schema in order to be used in creating the database to store data.

3.3 System development and implementation

Tools used include:

MySQL - Database management system for creating databases and tables. We also used a flow chart to show the processing steps as data flows through the system, EERD's were used to define the different entities and their relationship to another and context diagrams to show all the external entities that receive information from or contribute information to the system.

HTML for developing the interfaces and connecting the interfaces

PHP which was used for server side scripting

CSS – for maintaining a uniform look throughout the system in terms of page pixels and height

CHAPTER 4

SYSTEM DESIGN AND IMPLEMENTATION

System analysis and design relates to how the job of transforming the existing system to the new system was performed. System design is a practical tool used to realize the concept and pattern laid by logical design

4.0 System analysis

Data collected was used to analyze the current allocation system. Context diagrams were used to show all the external entities that received information from or contribute information to the system. It shows overall processes just as one process.

The figure below illustrates how the current allocation system relates with external entities.

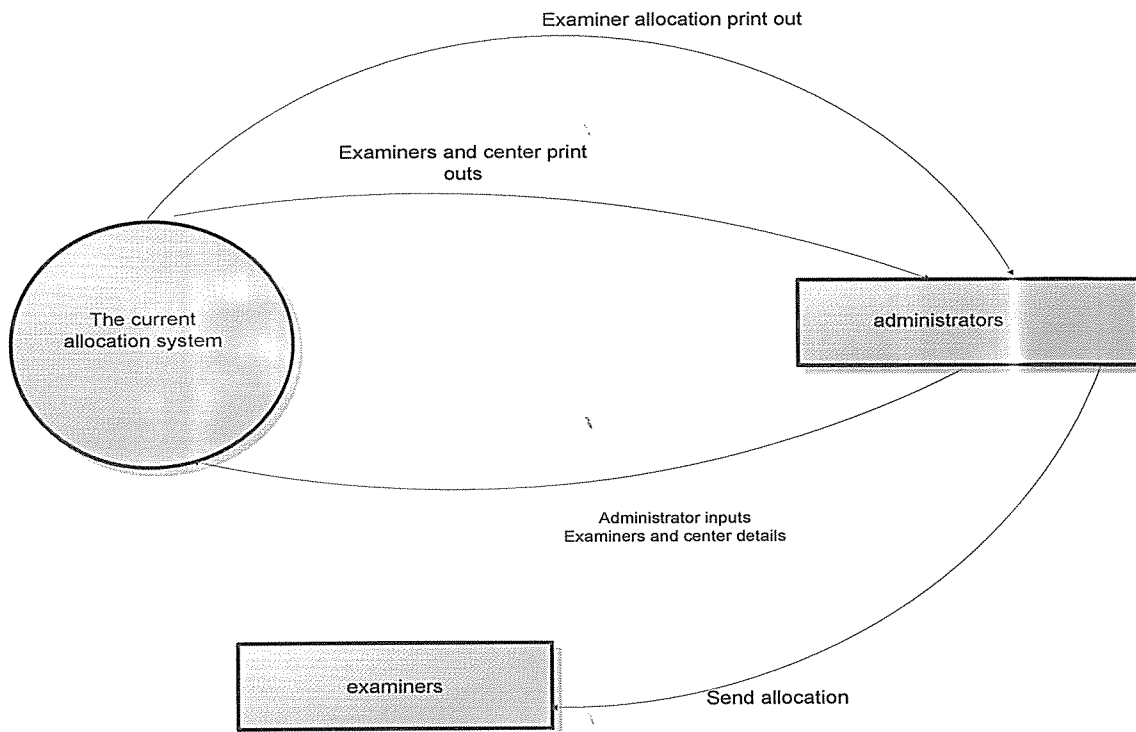


Figure 4.1 (a) context diagram for the current allocation system

The above system has the following problem;

- I. All records are kept on paper based documents and books. These can be quite hard to store safely and often gets lost
- II. There is data redundancy as data is kept in each department
- III. The registration book can get very bulky and as they are paper based they are subject to destruction by pets
- IV. The ink on paper documents fades and becomes unclear with aging.

V. Referencing the centers and examiners data can be very difficult as the registration of books are either indexed or lined. This makes looking up on a particular individual a very difficult exercise.

The context diagram below illustrates how the online allocation system interacts with its external entity;

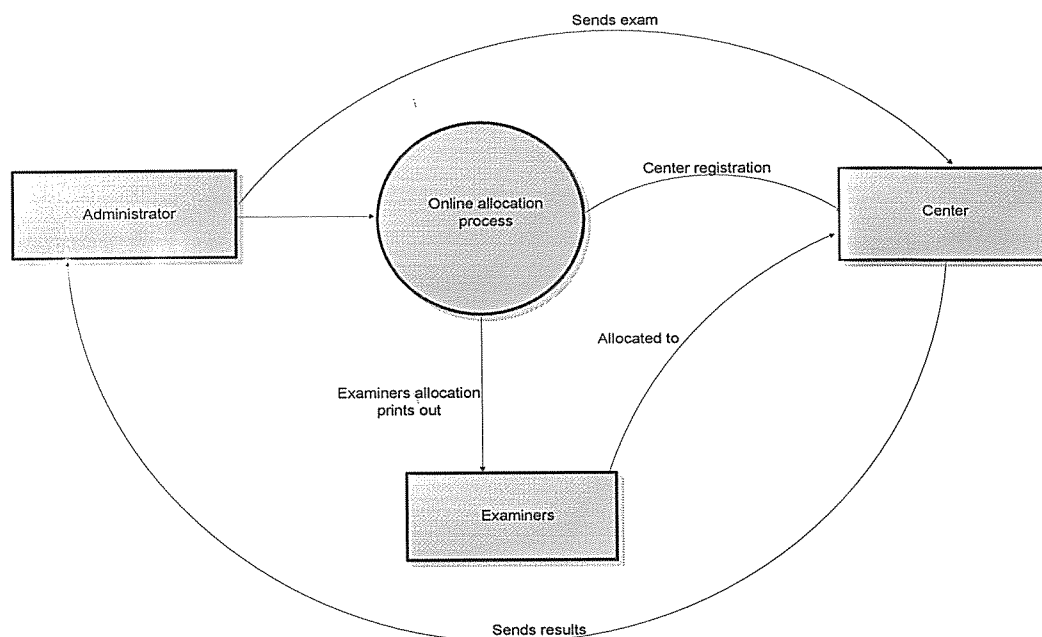


Figure 4.1 (b) context diagram for the new allocation system

The above system allows the allocation of examiners automatically without repetition. All information is in the database therefore no data redundancy. The system administrator monitors and manages the system.

4.2 System requirements

System requirements for the E-allocation of examiners system were categorized as follows;

- I. User requirements
- II. Functional requirements
- III. Non functional requirements

4.2.1 User requirements

- I. The system is going to be used by the heads of examination process and these are their requirements.
- II. The system should be able to process and store details of the examiners and centers.
- III. The system should be able to update data automatically whenever needed by the user.
- IV. The system should be able to monitor the examiner of each subject from each center.
- V. The system should process and retrieve examiners details of the center whenever needed by the centers.
- VI. The system should produce the number of students examined by each examiner.

4.2.2 Functional requirements

- I. The new system should be able to provide security by the use of password.

- II. The new system should cater for the particulars of centers and examiners.
- III. The system should uniquely identify all examiners records.
- IV. The system should keep a database of the entire department.
- V. The system should be able to save and retrieve information.
- VI. The system should allow for entry and deletion of records.

4.2.3 Non-functional requirements

- I. The system should be able to limit errors during from received and issued.
- II. The system should be secure in that only the heads of department can use it.
- III. Each examiner should not examine the center he as examined in the past examination process.
- IV. Each examiner must take only one subject.
- V. No examiner can examine where he/she teaches.
- VI. No examiner should go beyond 2000 scripts.
- VII. The examination process should take a maximum of three weeks for 'O' Levels.
- VIII. An examiner can only examine up to a maximum of 10 centers in a particular examination process.

4.2.4 Hardware requirements

Table 4.2(a) hardware requirements

Hardware	Minimum system requirements
Processor	2.0 GHZ processor speed
Memory	128 MB (256 recommended)
Disk space	80 GB (including 20 GB for database management system)
Display	800 * 600 colors (1024 * 786 high color – 16 bit recommended)

4.2.5 Software requirements

Table 4.2(b) software requirements

software	Minimum system requirements
Operating system	Windows XP and Linux
Database Management System	MYSQL
Run-time environment	Web server

4.2.6 Operational requirements

It is required that the machine on which the system is installed should be in an environment that is free from dust, the room should be well painted, air conditioned, security be provided and regular back ups are done for purpose of safeguarding against any system failure.

4.3 System design

The system should describe which functions have to be done by the user (front-end) and which functions have to be carried out by the computer.

Data flow charts were used to show the processing steps and data flow through the system because it is simple and intuitive notations that users can understand.

I also employed the use of entity relationship diagrams to define the different entities and their relationships to another. These diagrams show the different attributes of each entity reflecting the relationships between occurrences in one entity to another occurrence in another entity.

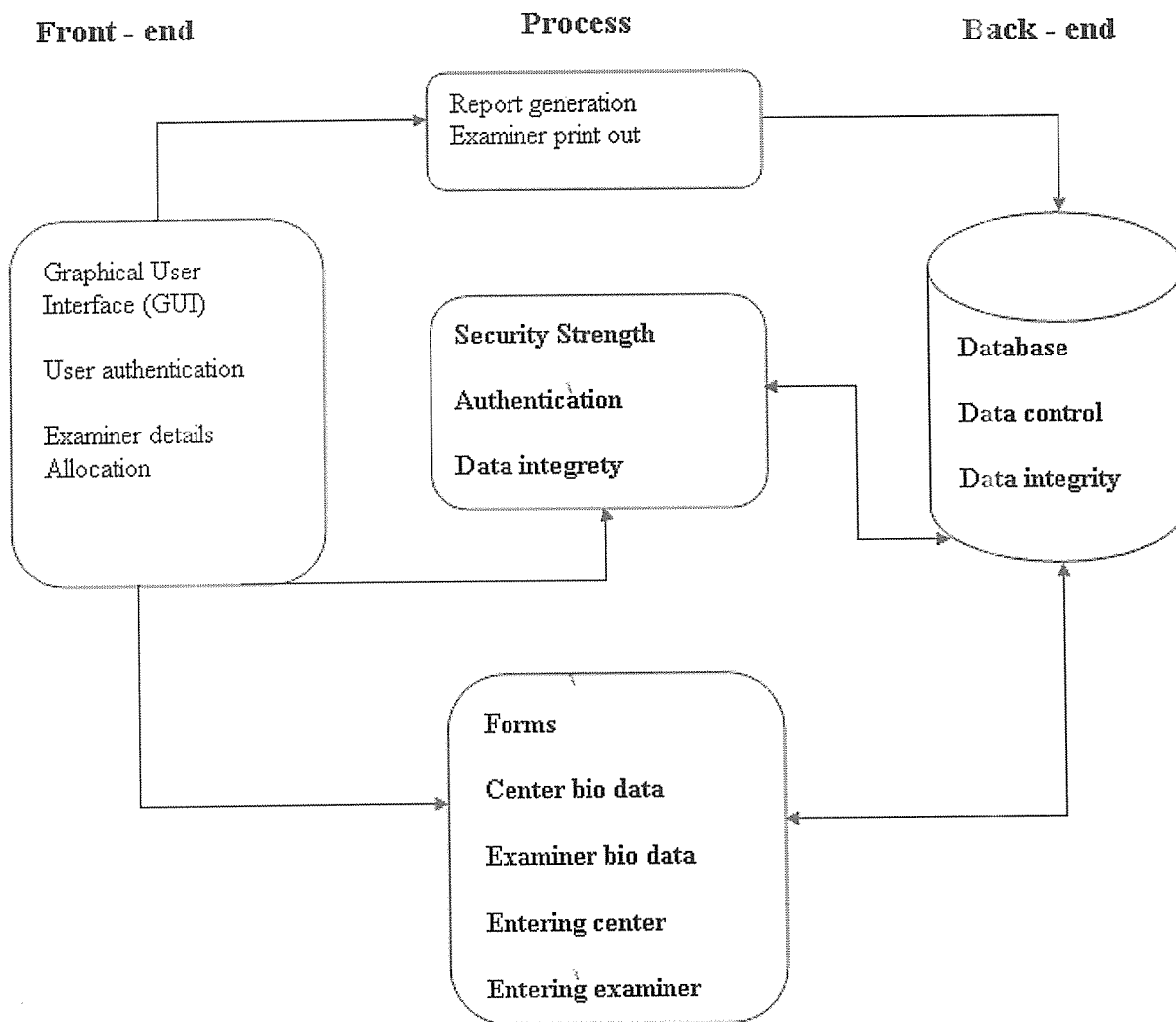


Figure 4.2 system architecture of the e-allocation of examiner system.

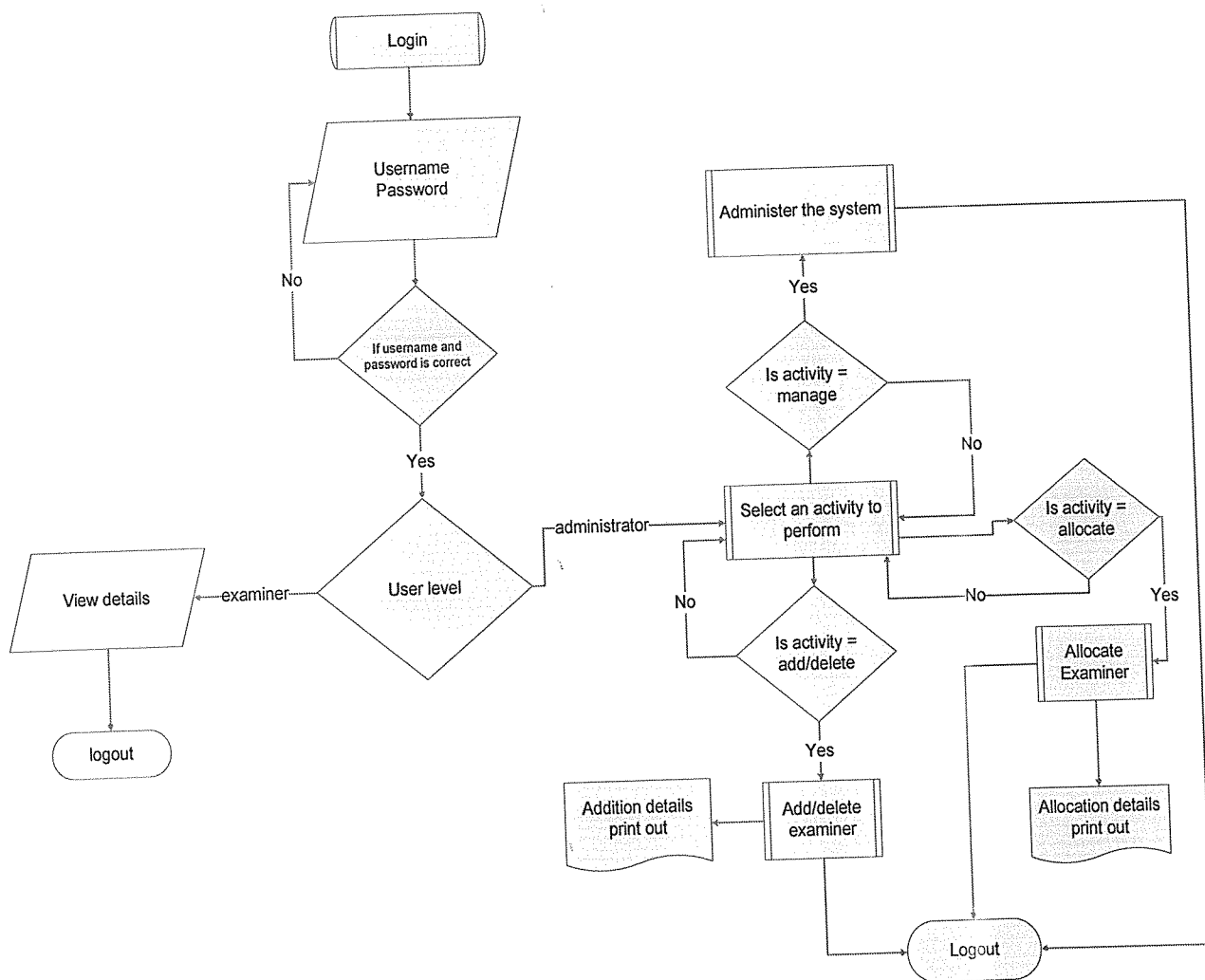
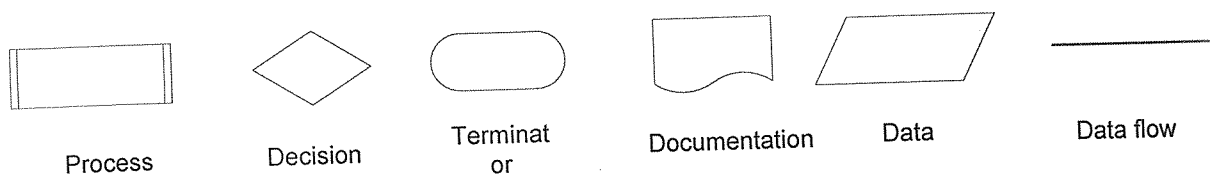


Figure 4.3 flow chart diagram for the system

KEY



4.4 Database design

4.4.1 Design objectives

- i. The system was design to be easily used by KNEC examiners.
- ii. Security, this means that the system should be able to handle data security by guiding against accidental and improper use of the system as well as malicious tempering and this is done by use of passwords.
- iii. The system has easy access and retrieval of information.
- iv. The system is less time consuming while searching for records.
- v. It is portable and therefore works on different common hardware and software platforms.

a) The logic design of the data store

This encompasses the logic behind the creation of the database. The database system is based on the following entities for which the several tables are made.

Examiner

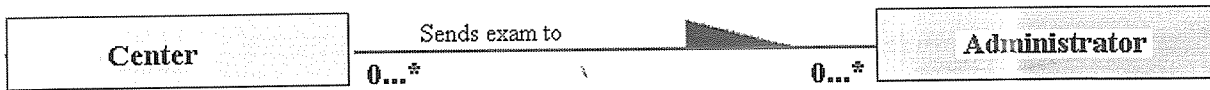
Administrator

Center

Exam

b) Conceptual design

a)



A center can send a minimum of 10 and a maximum of many exams to the administrator because a center must be having some examination to be sat for if it does not exist.

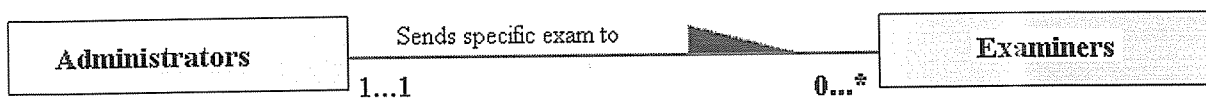
An administrator may receive a minimum of 10 and a maximum of many exams for a particular center and there is no optional participation here

b)



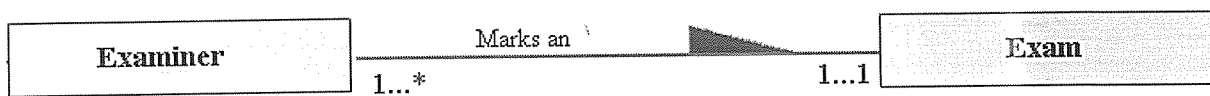
The administrator can sort a minimum of 0 exams and a maximum of many exams incase he/she gets from many centers while an exam can be sorted by a minimum of one and a maximum of one exam.

c)



The administrator can send a minimum of zero exams and a maximum of many exams in case many subject examiners get exams from the same administrator while an examiner can receive a minimum of 1 exam and a maximum one exam

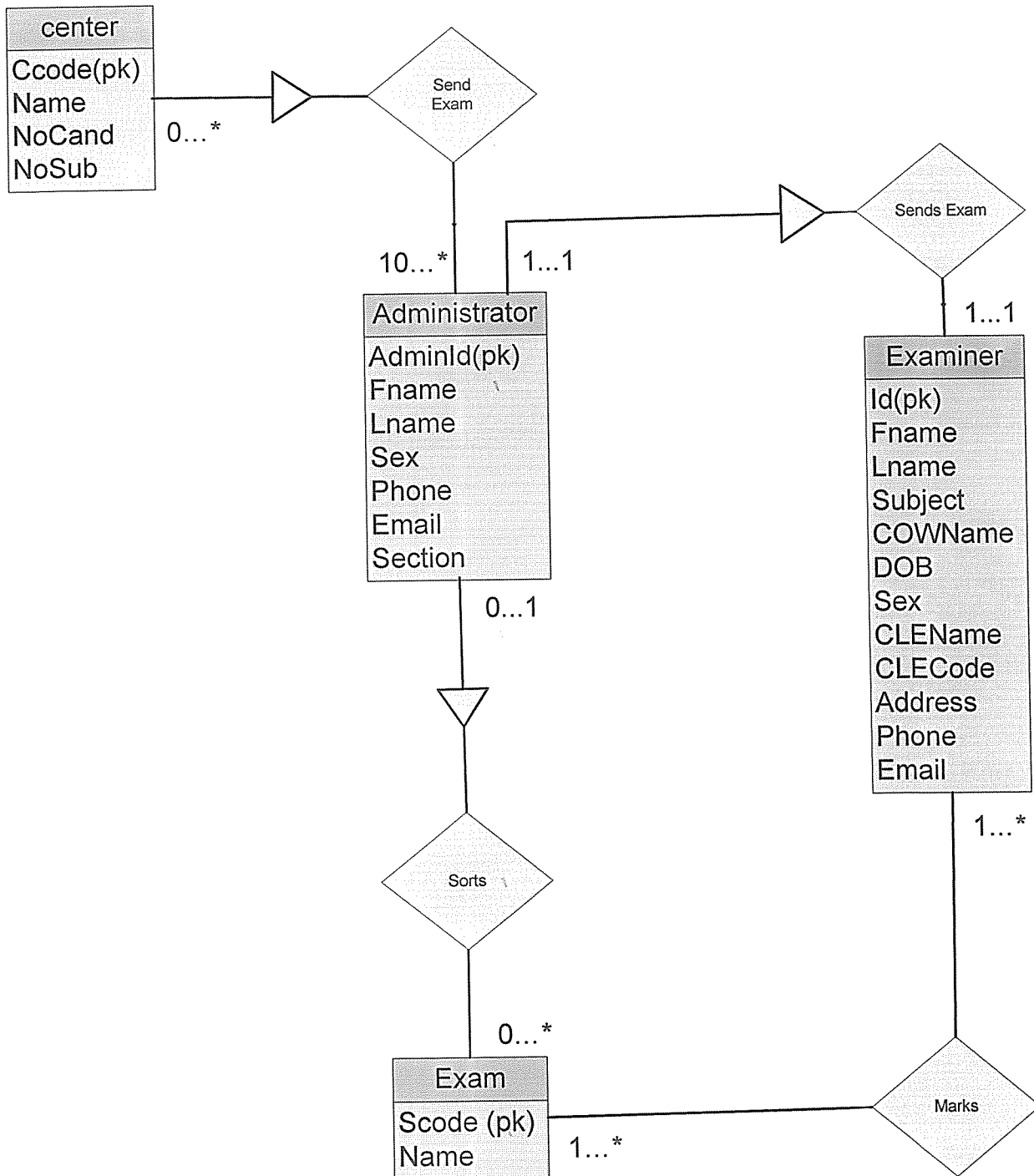
d)



An examiner can mark only one exam while an exam can be marked by one or many examiners because chief examiner has to go through this exam after being marked by the normal examiners.

4.4.2 Relationship modeling

The diagram shows the main entities and the relationship between entities.



Entities

Center

Examiners

Exam

Administrator

4.4.3 Design relationship between entities.

Relationship between the center and the administration



This type of relationship is many to many relationships. This means that the centers can send exam to many administrators.

Relationship between the administrator and the examiner



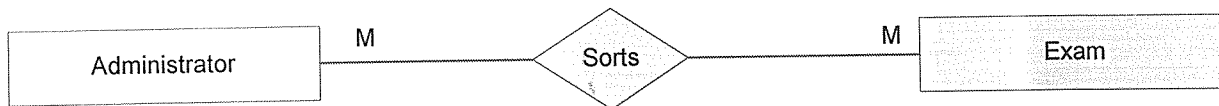
This type of relationship is one to many relationships. This means that the administrator can issue one exam to many examiners.

Relationship between the examiners and the exam



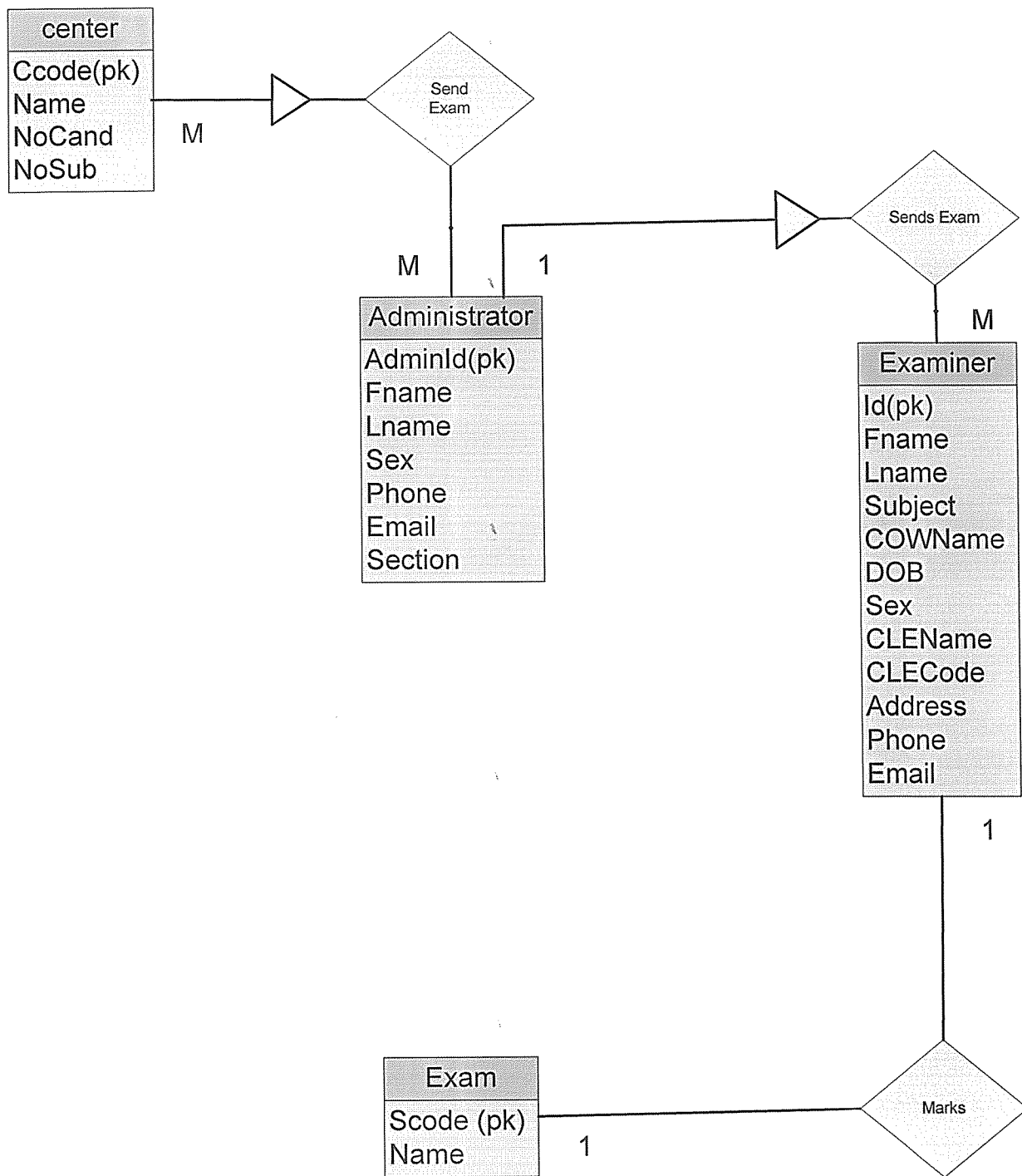
This type of relationship is one to many relationships. This means that one exam can be marked by many examiners.

Relationship between administrator and the exam



This type of relationship is many to many relationships. This means that many administrators may sort many exams.

Figure 4.4 EER diagram for the E-allocation process of examiners.



4.4.3 Tables for the database design

Table 1: Center table

Fields	Data types	Size	description
CCode	Varchar	5	Unique center identification
Name	Varchar	100	Name of the center
NOCand	Varchar	10	Number of candidates registered in the center
NOsub	Varchar	10	Number of subjects registered in the center

Table 2: Administration table

Fields	Data types	Size	description
AdminID	Varchar	5	Unique identification of administrator
FName	Varchar	100	First name of administrator
LName	Varchar	100	Last name of administrator
Sex	Varchar	10	Sex of administrator

Phone	Varchar	20	Phone number of administrator
E-mail	Varchar	50	Electronic mail of the administrator
Section	Varchar	30	Section where the administrator belongs

Table 3: Exam table

Fields	Data types	Size	description
SCode	Varchar	5	Unique identification of the exam
Name	Varchar	100	Name of the exam

Table 4: Examiner table

Fields	Data types	Size	description
ID	Varchar	5	Unique identification of the examiner
FName	Varchar	100	First name of the examiner
LName	Varchar	100	Last name of the examiner
DOB	Varchar	10	Date of birth of examiner
Sex	Varchar	10	Sex of the examiner
Address	Varchar	100	Physical address of the examiner
Phone	Varchar	20	Phone number of the examiner
E-mail	Varchar	50	Electronic mail of the examiner
Subject	Varchar	30	Subject marked by the examiner
COWCode	Varchar	50	Center code of home center
COWName	Varchar	50	Center code of working center
CEName	Varchar	50	Center name attended to the previous year
CLECode	Varchar	50	Center code for the previous attended center

CHAPTER 5

PRESENTATION AND RESULT/FINDINGS

5.1 Programming environment

5.1.0 Database management system (DBMS)

The DBMS used to was achieved using MYSQL. The relations were created using scripts that would be run on a database that was created using WAMP server.

Primary keys uniquely identified all entries and check duplication while foreign key tables enhanced referential integrity.

5.2 Data manipulation

Insertion, deletion and retrieval were achieved using MYSQL

Scripting

PHP was used to code the system. PHP codes were written such that the database can be searched for the staff members' details. JavaScript was used to validate data.

Interfaces

The interface was designed using hypertext markup language (html) this made the overall graphical interface in which PHP and CSS were used to maintain a uniform look through out the system.

5.3 Program flow

The program welcomes users and these users can search for the examiners details but cannot add a record. Only seeing stored records. An administrator has to login then add and delete the examiners details.

5.4 System features.

- a. Forms
- b. Links

5.4.1 Forms

i. Log in forms

This prompts the administrator to entry the user name and password. If the login details are not valid, a link to the details insertion is provided for administrators and for examiner they are able to view where they are allocated otherwise an access denied feedback is provided.

ii. The detail insertion form

These forms give the administrator a chance to insert details about examiners and centers.

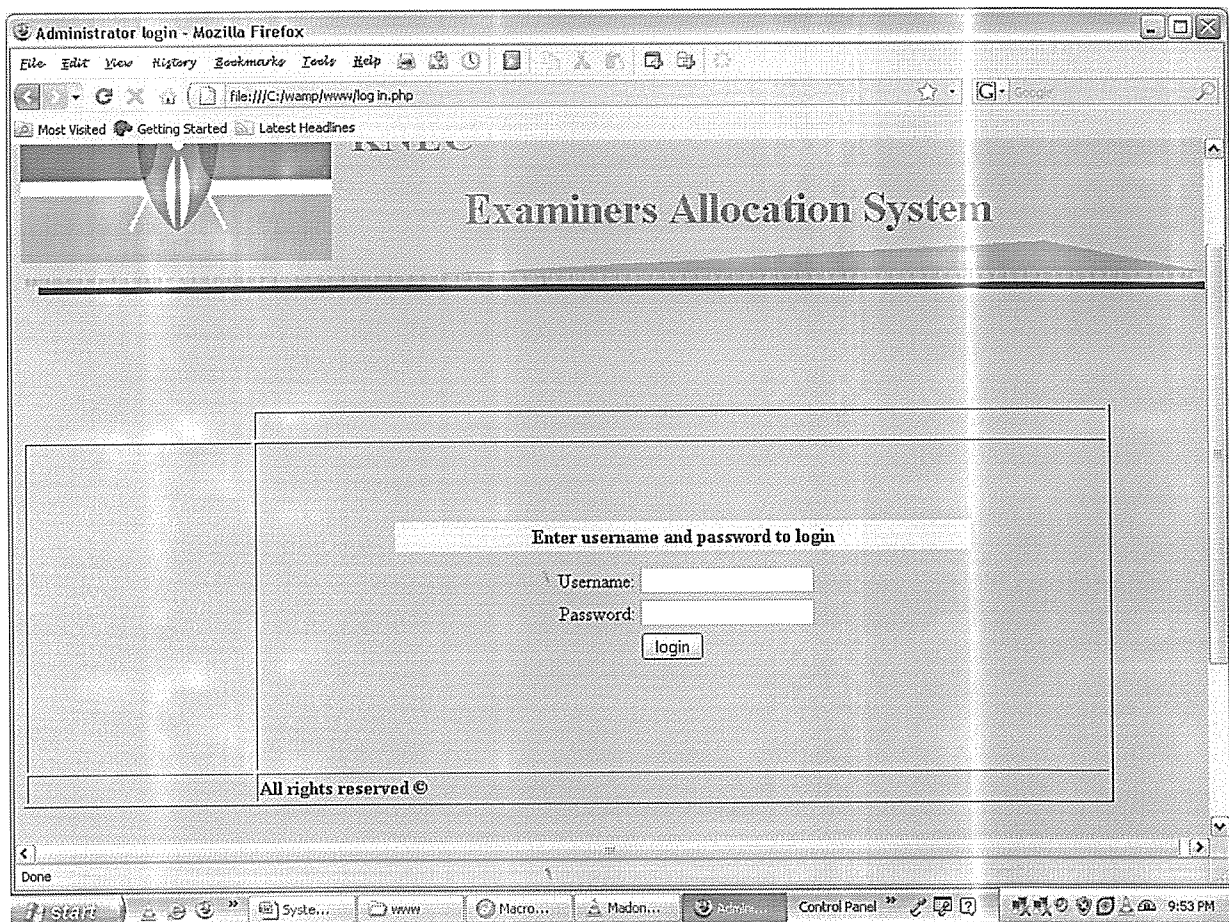
- Add new examiner/center
- Register examiner
- Delete an examiner/center
- Allocate examiner

5.4.2 Links

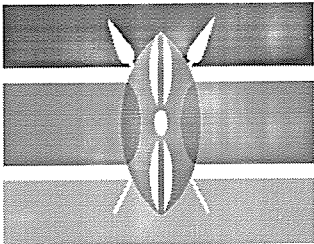
- Add center
- Allocate examiner
- Add examiner
- Delete examiner
- Delete center

5.5 Snapshots for the system

5.5.0 Administrator log in page



5.5.1 Add center page




KENYA NATIONAL EXAMINATION COUNCIL
WE BUILD THE FUTURE
KNEC
Examiners Allocation System

[Add Examiners](#)
[Allocate Examiners](#)
[VIEW CENTERS](#)
[VIEW EXAMINERS](#)

[<<Back](#)

Edit Center Details Enter Center Details

Center Code :
Center Name:
No of Candidates :
No of Subjects :



5.5.2 Examiner registration page

The screenshot shows a Mozilla Firefox browser window titled "Untitled Document - Mozilla Firefox". The address bar displays the file path "file:///C:/Documents and Settings/Chilax/Desktop/Untitled-1.html". The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. Below the menu bar are buttons for "Most Visited", "Getting Started", and "Latest Headlines". The main content area contains a registration form with the following fields and options:

- Id Number:
- First Name:
- Last Name:
- Date of yyyy-mm-dd:
birth:
- Gender: ☐ Male ☐ Female
- Address:
- Phone:
- E-Mail:
- Subject:
- Center Code:
- Center Name:
- Previous Center Name:
- Previous Center Code:

A "Register" button is located at the bottom right of the form area. The browser's status bar at the bottom shows "Done" and a taskbar with icons for Start, System, www, Madon..., untitled..., Control Panel, and a clock showing 10:10 PM.

5.6 Security

- The system will always request for log in details in order to prevent any illegal access
- Back up procedures need to be emphasized to cater for any system failure
- Uninterruptible power supply (ups) needs to be in place to protect against power cutbacks and surges
- Hardware need to be handled with care and protected from damage due to natural hazards like fire
- Restriction of physical access to the systems environment is need in order to protect the system from unauthorized use or system being stolen

5.6 System testing

Before the system is brought to use, it should be tested. The alpha testing has already been done by designer but the system also needs to go through beta testing by KNEC together with the designer and after that it will go through accepted testing which shall be done by the users themselves.

5.7 System maintenance

In order for the system to keep the information at an accepted level, it needs to be maintained properly. The system needs more enhancements to match with the environment for users

requirements, correct errors discovered during testing of the software and hardware platforms' it will be running on. All this shall be done in system maintenance.

CHAPTER 6

SUMMARY, CONCLUSION, RECOMMENDATIONS AND FUTURE RE-WORKS

6.0 Introduction

The project has successfully implemented the goals predetermined in chapter one. The documents also presents conclusion that were drawn by researchers from finding of the study and finally closes with presentation of suggestions for future researchers as far as this system is concerned.

6.1 Summary

The database system in this project has been designed to store examiners' records, centers records to answer questions like who examined which center and when.

The problem is having invalid data entered in to the database system and illegal access to the database has also been minimized through setting d database passwords.

Forms are created to input data of examiners and centers into the database. Problem encountered during is the entering of wrong information in the forms. The various problems encountered the course of carrying out this project should have affected the outcome of the project.

The problems encountered during the carrying out of this project include:

- Inadequate time – the amount of time given for the project was not enough for carrying out this project and the fact that examiner were very busy with the marking and only a few could respond.
- Financial limitation - the speed of execution of this project was slowed by the financial constraints as many things involved using money for transport and calling correspondents in order to collect data.
- High level f staff such as administrators was not often found in their offices and too busy.
- Examines were too hard to find as no one was around KNEC offices in Nairobi because this was not examination time. I had to look for them from their teaching centers and interview them to get data.
- A lot of time was spent seeking information which at times the interviewees were hard to get and in some cases unwilling to give the information.

6.2 Recommendations

The Kenya National Examination Council should adopt the E-allocation of examiners system which may be borrowed by other ministries such as Ministry of Health on allocating doctors to different hospitals countrywide.

The users of the online application need be trained on the use of computers and how to use the internet before they use the system.

We recommend that other researchers carry out further implementation to improve on the functionality of the system. The system needs be maintained constantly and upgrade of the hardware and software such that the system operates efficiently.

A qualified system administrator is needed to manage the system and also execute some areas of the system that were not completed.

6.3 Conclusion

The anticipated online allocation was successfully developed and implemented to fasten the allocation of Kenya National Examination Council. The requirements of the E-allocation system were identified with the aid of interviews, questionnaires document review and observation.

From the research it was concluded that the allocation of examiners at KNEC was done manually and was therefore hectic and tedious for both administrators and staff. The main aims of the study have been achieved by implementing an online allocation system where allocation of examiners is automatically done and the examiner can know where they are allocated by simply accessing the internet from different areas of the country. The application has the following functionality:

- Add and delete operations of existing records in the database by the system administrator.
- Handles large volume of data
- Enables administrator and examiner to navigate easily through the web pages.
- Provides a secured database for examiner information

- Enhances security by providing access to only authorized users.
- Enhances large number of examiners allocating within no time

6.4 Future works

The prototype needs to be integrated with more features. Therefore the more system analysts are called upon to combine their efforts to make this system more flexible in that students can also access their results online.

REFERENCES:

1. Terry L.(1997) [1] Management Information System, 8th edition, Letts Education Aldine Place, London.
2. Laudon and Loudon (2000) [2] Essentials of Management Information Systems fourth edition Prentice Hall New York.
3. Kroenke H (1993) [3] Management Information System 3rd edition, McGraw Hill
4. Lonnie D, Bantly Kevin, C Dittman, Jeffrel L Whitten (2000)[4] System Design and Analysis Methods.
5. Wachieni Joyce (2005)[5] A School Information Management System For routine Duties, Davetech IT Solutions Nairobi.
6. Onying Penywill (2001)[6] Automated Complaint Registration system.
7. Ryn: <http://www.latinsecurity.com> [7] Latin Security Personnel Allocation System.

APPENDICES

Questionnaire

Our names are CHARLES NYAGAH and SAIGUT TARURU from Kampala International University, Faculty of Computer Studies. We are carrying out research about examiners from which we wish to develop a computerized system for allocation examiners called “Automated Examiners Allocation System for KNEC” which allocates examiners to centers throughout the country automatically.

Note:

The information filled in this questionnaire is confidential and will only be used for this research.

INSTRUCTIONS

1. What is your attitude towards the way examiners are currently allocated to centers?
(very good, no problem, good, fair, poor, very poor)(**tick**)
2. When does marking take place?(Month.....)
3. Who is in charge of the examination marking process?

4. Please approximate how many other examiners would you normally find at your marking center?
5. How many scripts do you normally mark within that period?
- a) 200-500
 - b) 500-1500
 - c) more than 1500
 - d) Any other. Specify.....
6. How do you get the scripts to mark?
7. Have you ever marked at any center more than once?
- a) Yes
 - b) No
8. Have you ever marked exams at the centre where you teach?
- a) Yes
 - b) No
9. What data about you did you give to KNEC when being selected for examining?
- (Please tick)
- a) Name
 - b) Phone No.
 - c) Name of school I teach
 - d) Code of center where I teach
 - e) Physical Address
 - f) Age
 - g) Centers examined before if any
 - h) E-mail
 - i) Sex

j) Account

k) Other? Specify

10. Where do you present the results after marking?

11. Do you think that computerizing examiners records and the way they are allocated to the centers will improve the services of KNEC?

a) Yes

b) No

12. Have you ever missed marking an exam or fail to be allocated?

a) Yes

b) No

Thank you for your time.

God bless you.

Code for allocating an examiner

```
<?php

$db=mysql_connect("localhost","root","");

mysql_select_db("kneec",$project);

$resfoo=mysql_query("SELECT code FROM center_table")

or die("cannot retrieve foo's");

echo "<b><tr><td>Select the Center code and click Allocate:</b>&nbsp;<br></td>";

echo "<br><form action=allocate.php name='trouble' method=POST>";

echo "<td><select name='foo' on change='submit(this.form)'>\n";

echo "<br><form action=allocate.php name='trouble' method='POST'>";

while($row = mysql_fetch_row($resfoo));

{

$sel = ($table === $row[0] ) ? "id_no='sel' selected" : "";

printf("<option% svalue='%s'></option>\n",$sel,$row[0],$row[0]);

}

echo "</td></select>>\n";

echo "<td><input type='button' value='pick centers' onclick='submit(this.form)'>\n</td>";

$class

echo "$class";

echo "<td><input type='submit' name='search' value='allocate' onclick='submit(this.form)'></td>";

echo "</tr></table>";

if($search)

{

$results=mysql_query("SELECT Code,Name,Candidates FROM center_table WHERE

code=$class$_POST['foo']");

$results1=mysql_query("SELECT id, FName, LName, Subject, COWCode FROM examiner_table

WHERE COWCode",$db);
```

```

}

if(!$results)

echo "No center code entered";

else

{

$myrow=mysql_fetch_array($results);

$myrow=mysql_fetch_array($results1);

if(!$myrow)

echo "No such center try again";

else

{

echo "<table border=2 cellpadding=2 cellspacing=2>";

printf("EXAMINERS ALLOCATED TO %S (U%s)"$myrow["center_name"],$myrow["Center_code"]);

printf("<tr><td>Center to examine Code:</td><td>Center to Examine Name</td><td>Number of  
Candidates</td><td>Examiner Id</td><td>First Name:</td><td>Last  
Name:</td><td>Subject:</td><td>Previous Center Examined</td><td>Previous Center  
Code:</td></tr>\n");

for($count=0;$count<mysql_num_rows($results1);$count++)

{

//$row=mysql_num_rows($results1)

print("<tr><td>%s</td><td>%s</td><td>%s</td><td>%s</td><td>%s</td><td>%s</td><td>%s</td><td>%s</td><td>%s</td></tr>",$myrow["CCode"],,$myrow["Name"],,$myrow["NoCand"],,$myrow["ID"],,$myrow["FName"],,$myrow["CLName"],,$myrow["Subject"],,$myrow["CENName"],,$myrow["CCode"],,$myrow["CLCode"]);

$result2=mysql_query("SELECT Subject FROM examiner_table",$db);

$myrow2=mysql_fetch_array($result2);

$myrow1=mysql_fetch_array($result1);

if($myrow1["subject"]==$myrow2["subject"])

{

```

```
echo "Already exists"; exit(); } ?>
```

Code for adding a center

```
<?php if(isset($id)){ ?>
    Edit Center Details
    <?php } else {?>
    Enter Center Details
    <?php }?>
</h2></td>

</tr>

<tr>

    <td align="right">Center Code :</td>

    <td><input name="CCode" type="text" id="CCode" onblur="validate(this)" value="<?php echo
$CCode; ?>" maxlength="5" /></td>

</tr>

<tr>

    <td align="right">Center Name:</td>

    <td><input name="Name" type="text" id="Name" onblur="validate(this)" value="<?php echo
$Name; ?>" maxlength="100" /></td>

</tr>

<tr>

    <td align="right">No of Candidates :</td>

    <td><input name="NoCand" type="text" id="NoCand" onblur="validatenumbers(this)"
value="<?php echo $NoCand; ?>" maxlength="10" /></td>

</tr>

<tr>

    <td align="right">No of Subjects :</td>

    <td><input name="NoSub" type="text" id="NoSub" onblur="validate(this)" value="<?php echo
$NoSub; ?>" maxlength="10" /></td>

</tr>
```

```

<?php if(!isset($id)){ ?>

<?php } ?>

<?php if(isset($id)){ ?>
<tr>
    <td>&nbsp;</td>
    <td><input type="submit" name="submit" value="edit" onclick="return
addstaff(document.sampleform)" /></td>
</tr>
<?php } else {?>
<tr>
    <td>&nbsp;</td>
    <td><input name="submit" type="submit" value="Submit" onclick="return
addstaff(document.sampleform)" />
        <input name="reset" type="reset" value="Cancel" onclick="javascript:history.go(-1)" /></td>
</tr>
<?php } ?>

```