A MANAGEMENT INFORMATION SYSTEM FOR A PUBLIC HOSPITAL

CASE STUDY: BUGANDO REFFERERAL HOSPITAL IN TANZANIA.

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A Project Report submitted to the School of computer studies
in partial fulfilment of the requirements for the award of
Degree of Bachelor of computer science of Kampala International University.
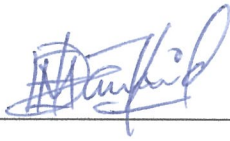
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DECLARATION

We hereby declare to the best of our knowledge, the work presented in this project is original and has not been presented in any other institution anywhere for a similar award. Where reference to other publications has been made, it has been clearly acknowledged.

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DEDICATION

This book is dedicated to our parents. Thanks for all your support that you accorded us through out our lives, our friends for having given us the morale to study at Kampala International University you people have really given us a new meaning in our lives and may God bless you forever.

ACKNOWLEDGEMENT

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ACRONYMS

BHC	Bugando Hospital Center
ECG	Electro-cardiogram
ICT	Information and computer technology
HMIS	Health Management Information system
NGO	Non Governmental organization
WHO	World Health Organization
MIS	Management Information System
IT	Information Technology
SDLC	System Development Life Cycle
CEO	Chief Executive Officer
HRM	Human Resource Manager
VB	Visual Basic
DB	Database
SQL	Structured Query Language

ABSTRACT

The major objective of the study was to examine the role of record and data keeping at Bugando Hospital, Mwanza Tanzania. This follows the deep public concern on the need to understand the role of modernization and computerization in the information age. The study was conducted in Mwanza. A total of 50 respondents were chosen; 35 were mixture of doctors and nurses, sponsors and advertisers while the remaining 15 were selected from Mwanza City to represent the voice of the community during the study.

The data was collected using tranquilization formulae which involved grouping different methods of collecting data which included structured interview using interview schedule, in-depth interview in form of interview guide, focused group discussion using discussion guide, questionnaires and observation.

The researcher was prompted to find out the role of modernization and the reason to the information as a way to introduce the whole community the organization to be of the current status as the information technology is concerned.

Conclusions and recommendations were then made after presenting and interpreting the data.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Bugando Hospital Centre

Bugando Hospital Center is a public owned health center located at Mwanza city in Northern Tanzania. It offers the following services; post-natal and prenatal health center, ICU sectors, maternity services, small nursing courses are also available at the hospital, volunteer counseling and testing center, child immunization, X-ray, laboratory facilities, dispensary, preventive medical screening, health education and counseling.

BHC is a twenty-four hour full patient hospital centre that manages its operations in shifts. This is done by the shifting sequence of nurses and doctors. By doing so, the hospital is well equipped with all the necessary requirement or equipments that are not available from other hospitals or small hospitals that usually bring the patients who are serious to the hospital. The small hospitals that bring the patients that is referred patients are either from Seukourture hospital, Kirombero clinic and many more clinics, health centers and hospitals with less staff and equipment.

1.2 Problem statement

The system of record keeping in Bugando Hospital Center was predominantly through the use of a manual filing system which the patients records were stored in files which were kept in drawers and a partially automated system which dealt with records of the patients with the overwhelming number of patients there was need to fully automate the records in the hospital in order to keep track of the activities being undertaken at different levels and at different times. The need for an automated hospital management information system comes so as to solve this problem.

1.3 Objectives

1.3.1 Main objective

The objective of this study was to come up with a computerized management information system for Bugando Hospital that would efficiently help to record and store patient's records, staff records, drug records and come up with statistics and the information that pertain the hospital and all the updates about the hospital.

1.3.2 Specific objectives

> To study the hospitals needs and activities and to put in place a hospital's MIS that would be used in the storage of information about selected departments of the hospital and the services offered.
> To make appropriate recommendations on what could be done to improve the current system to serve efficiently.
> To design a system that could be used to store information on patient, drugs and staff status.
> To develop and test the database that would be used to manage the records of the patients such that a person could query them and come up with quick and timely data.

1.4 Purpose of the study

The purpose of this study was to develop a computerized information system that cuts down on use of a manual file based system, solves the problem of lost patients files or records, knowing drug availability and purchase, staff status and came up with statistics that would hold in analysis of the revenue that was got from the audited accounts from the previous years.

1.5 scope of the study

The scope of the project was to cover some specific departments that are contained in the hospital center these include the staff, pharmacy, reception, store, wards and the patients.

1.6. Research questions

i. Is it possible to design an information system that is efficient, time saving, more reliable, current and computerized which can reduce congestions in the different departments in the hospital when in use?
ii. Is it possible to change the current management information system for the hospital so as to make the hospital look more current with the changing IT world?
iii. Is it possible to produce a document that can help the hospital or a systems administrator and other stakeholders understand key design and implementation issues in the hospital and the system so as to be able to control or manage the proper use of the new system in the hospital?

1.7 Justification of the study

This system was going to make work easy in the management of these heath centers and many other more centers. The record keeping process was to be computerized and this would help in that, updates were going to be done automatically, easy retrieval of data, improved data security, provision of backup and recovery, provision of reports etc. the system was to be very efficient, it was to minimize resources like time and money. When the system was implemented; Information was going to be organized for the efficient management of health centers.

The study would make an attempt to change the current manual filing system and semi-automated system and come-up with a system that would greatly improve the acquiring of information in the entire system it would also help in the coming up of statistics that could be used to keep track of the different activities being undertaken.

CHAPTER TWO
2.0 LITERATURE REVIEW

2.1 Introduction

In his business information book, *Curtis (1998)* defines an information system as a collection of interrelated parts which when taken together form a whole such that;
  - ➤ Collectively have same purpose.
  - ➤ A change in any part leads to a change in other parts.

It is no secret that modern health practices do require good and reliable information systems that are based on the following characteristics:
  - ➤ Relevant and reliable information on which management can base its decisions.
  - ➤ The success of an organization is based on the efficient use of information about the various activities that have been undertaken at different levels.
  - ➤ Organizational resources such as people and time become expensive to maintain in the long run and the cost for their services and production also continues, according to *Harmony and Mayer (1986)* organization theory stresses that every organization must be management if it's to be effective and efficient thus a HMIS can reduce on the cost.

Information is crucial at all levels of the health services from the periphery to the center according to *Lippeveld, SAuerbeun & Bodard (2000)* this statement showed that health facilities require information. The project can further elaborates that modern information technology has revolutionized methods of storage, processing and dissemination of information it also helps private institutions to carry out their functions more effectively than when records are help in folders, fillings cards or in conventional book form.

The project further points out that ICT application provide new tools for improving access to information and knowledge sharing.
Unfortunately information systems in most countries fail to provide adequate support according *Lipppeveld et al (1992)* furthermore the ministry of heath attaches great importance to the development of HMIS that on a regular basis provides accurate complete and relevant information management of the health investments at different levels.

The designing and redesigning of a health information system requires systematic attention to each complement of both the information process and the management structure with the aim of being able to provide specific information support for the decision making process in health facility at large.

In Tanzania a HMIS was developed by the government in order to keep track of the activities that are being undertaken at the different levels of the country the problem of this system is that its does not really profit the health center.

2.2. Scope of the literature review

This project would be on a management information system for Bugando Hospital. It would explain the need to have a system which would be more current for the hospital. It would provide the patients with ease and it would serve as required by the workers. It would also improve in the running of the hospital.

However, when implementing this project, it would be based on planning, analysis, design and implementation of a management information system which would be in the form of a database.

2.3. Fact finding techniques.

i.   Questionnaire
     This is a document containing standard questions asked to be answered by a large group of people to gather data form them; it is mainly used when a group of people are geographically scattered. (According to Jeffrey I. Whittin, Lonnie D. Bently, Kevin C. Dittman, *System analysis and design methods, 5th edition*)

     The researcher used this method based on the time and money which was set aside or budgeted for, the researcher found this method appropriate because this method was cheaper and also saves the researcher time for collecting data.

ii. Interviews
     This is a method where the interviewer interacts with the interviewee face to face or over a telephone.
     The process involves the following steps:
     a. The interviewer should appoint his/herself with the work of the interviewee.
     b. The interviewer should draft questions before hand.
     c. The interviewer should establish the objectives of the interview.
     d. The interviewer should conduct the interview one person at a time and if the interview is interrupted try and stop interruption or do not make the interruption part of the interview.
     e. Documenting the interview, at the end of the interview, conclude with a brief resolute of what has been discussed and should be able to distinguish between facts and opinions.
     f. Evaluation of the interview.
     The researcher preferred to use this technique because, since a perfect research comes out reliable sources and since this method gives a close contact between the interviewees and the interviewer that gives an element of reliability and also it gives a chance to the interviewee to give their suggestions.

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2.4. Computing and medical info systems

Curtis (1998) stated that the essential idea of a MIS is the ability to retrieve data and use it for the production of the targeted information for the different purposes.

"Information systems have been designed to generate cost information and manage this process (Doolin 2000)"

From the above statement made by Doolin it can be seen that information systems can effectively manage the resources and profit maximizations of a form. It is no secret that information can effectively manage information.

"Critical approach to interpret information systems is required to open up the black box of information technology and communication (Doolin 2000)"

In Tanzania the health management and information system was developed to provide an integrated system relevant and functional information on a routine basis the new system relates to the improvement of efficiency to enhance competitiveness.

Reed and Armstrong (1993) said that as a site of research the hospital is a complex organization with strong internal culture and within which organizational activity depends on the negotiated order and cooperation between diverse occupational and proficiency groups.

From the above statements we can strongly see that the research to the hospital had to come up with the following;

- ➢ The heterogeneous nature of the health information system and technology suggest the construction of a new system that is integrated with that of a new organization structure from which much of the systems are included.
- ➢ The new system may be implemented in monitoring a particular representation of organizational reality through incorporation of all aspects that may be dominant to the organizational decisions.

2.5. Statistics and medical information systems:

It is common today for statistical computing to be considered as a special sub-discipline of statistics, however, such a view is far too narrow to capture the range of ideas and methods being employed and the range of problems awaiting solutions.

Statistics is a science that deals with methods of data collection, analysis and interpretation. Most of the data analysis programs are based on statistical computing. According to *Ronald A.T, (1987)*, statistics deals with how information accumulates, how information is optimally extracted from the data, how data can be collected to maximize information content, and how forecasts can be made from the data to extend information.

According to the *George, Pox and Gregory (1987)* time series is a sequence of observations taken over time and they further said that time series are important in four areas of application that include:

    i.   Forecasting of future values of a time series from the current and past values.

    ii.   Determinations of a transfer function of the system subject to inertia.

    iii.   Use of indicator input variables in the transfer function models to represent and access the effect of usual occurrences.

    iv.   Design of simple control schemes by means of which potential deviations of the system output may be compensated by adjustment of input series values.

Forecasting is one of the important aspects that are covered by statistics and surely forecasts cannot be relied upon if the statistics are unreliable to be more specific forecasting takes into the world of time series analysis.

We cannot know certainly what the future holds but it would be more comfortable if that uncertainty was diminished somewhat. Furthermore knowledge of the future can help the hospital to plan for their staffing, drug inventory and also assist in the day-to-day decisions that may have to be taken by the management it is no secret that for today's firm:

1. Forecasting is an unavoidable activity.
2. Forecasting is an essential input to decision making. The better the forecast the better, all else equal, will be the decisions that are to be made by the management.

2.6 Development methodology

Systems are created to solve problems, before a system is conceived, a problem must exist, and once the problem is defined, the system is developed to solve it, before a given systems developed, however, different alternatives may have to be studied and analyzed.

However, here the five fundamental phases of the SDLC as follows:

1. **Planning** This phase identifies the scope and boundaries of the problem and plan the development strategy and goals.
2. **Analysis** These deals with the study and analyzing the problems, causes and the effects then identify and analyze the requirements that must be fulfilled by any required successful solution.
3. **Design** This is where the design of the solution starts, but not all solutions require the design, so if it has a solution the researcher will develop the physical design, architecture design, interface design, database and file specifications and program design.
4. **Implementation** The solution is implemented and tested whether it works as designed.
5. **Support** Here analysis of the implemented solution takes place, refinement of the design and the solution to the design is implemented.

CHAPTER THREE
3.0 METHODOLOGY

3.1 Introduction

This chapter gives the details of the project study design, study population, research instruments, data collection and presentation, development tools, information systems plan, design tools and tools for the system. It will mention the limitations of the study and will be conducted at Bugando hospital in Tanzania.

3.2 Study design.

The system was to be designed in such a way that it would curb all the current problems that the current system was facing like; delay in the serving the patients faster and reliable services from the workers with less or minimum efforts. It would be designed using the following tools: In the database design, Microsoft Access, Visual basic and came up with user friendly interfaces to enhance easy usage of the system.

3.3 Organization Units

According to the way or to have a better study with concrete foundation, the researcher was to be so keen so that the results produced would have some sense. Therefore, in this study, the researcher saw the unit in charge of the storage of data for the hospital. Through that unit, the researcher knew how the data was received and kept so that he could improvise a way to curb the situation to the proposed project. The unit also gave him its difficulties it was facing and the suggestions to the problems they had with the former system and also some of the tips so that he could come up with a complete system.

3.4 Study population

The study was going to involve a number of stakeholders and their respective places of work. The researcher would also study their sub systems to give an insight of how each sub system used to function and came up with a problem definition. The systems to be studied included storage, processes and data manipulation and information giving. Lastly, the researcher would approach a number of relevant staff for some interview.

3.5 Sample size

The project was going to use the following people according to their position at work. Chief Executive Officer (CEO) as the senior manager, IT manager as a targeted field, Human Resource Manager (HR), workers and patients. The CEO gave the information about strategic objectives, policies, organization structure, while an IT Manager gave the information about the operations of the old system and his suggestions about the establishment of a new system. Lastly, the workers and some of the staff gave their views about the old system. By doing so, the researcher had ample time to take out some of the points which seem to be out of the study.

3.6 Research instruments

In this research, several research instruments were used to get the actual point of problem which for a long time had been a major problem to the former system which was in use. Therefore, the following instruments will be used:

3.6.1 Structured interview

Through this form of instrument, the researcher was involved in physical contact with direct questions posses to the people being interviewed. It proved to be useful in obtaining first hand information on the topic being investigated and therefore, identifying requirements and gathering ideas and opinions. The interviews were mainly structured type with specific questions asked. To add on, the questions were short, precise.

3.6.2 Questionnaires

This project also used this type of instrument to get information that had not been obtained from the above research methods. This method involved written question sent to the target group. It proved to be useful as it provided ample time for the respondents to collect relevant information and send the feedback at their convenient times.

3.6.3 Observation

Observation was very useful especially where the required information was not easily obtained due to restrictions imposed on the obtaining of such information that would be relevant to this research. Observation involved visiting the hospital where the information was kept and took note of what was going on and then came up with a proper conclusion. Observation included the relevant staff going and picking bits of information they required. By observing this pattern, it was possible to define from the information they picked their roles and possibly came up with an analysis that helped in developing a better system.

3.6.4 Document analysis

At this level, several and different types of documents were read and analyzed. The documents analyzed included: journal articles, internet sources, books.

3.7 Data collection and Presentation

According to the research done, the data showed that the hospital, Bugando, without a MIS was poorly managed with very few updates since the days of the colonies left till now nothing had been done to make the system much better. This led to poor performance especially when the files mixed up and made it hard for the workers to serve the patients effectively.

3.8 Data analysis and analysis of user requirements

Having collected the data from all sources, a thorough analysis was done. All the problems which were found were used as guide lines to the solutions and thus the implementations of the new system within the organization. Designs of the new system lied under the category of solutions of those problems. The design checked the network to make sure no manual use in management information because of network failure. Moreover, the system was made with user friendly interfaces to perform the input and output with the required design efficiently.

3.9 Development methodology

The project used the four phases of the SDLC which were in place to make sure that the new system was put in place with the correct and efficient working conditions. The phases are; Planning, analysis, design and implementation.

➢ Planning phase: the project explained the limitations of the old system and the benefits of the new system.

➢ Analysis phase: under this phase, it analyzed the effects of the old system towards the hospital and the patients, and then laid strategic solutions to overcome those problems.

➢ Design phase: the project developed the physical design, architecture design, interface design, database file and program design.

➢ Implementation phase: the system had its rules which guided the developers to develop the new system.

3.10 Design technique and tools

The design technique used in this research was the data flow diagram. A data flow diagram is a graphical representation of the flow of the data through information. This data flow describes how the network was designed to show the data flow in the organization.
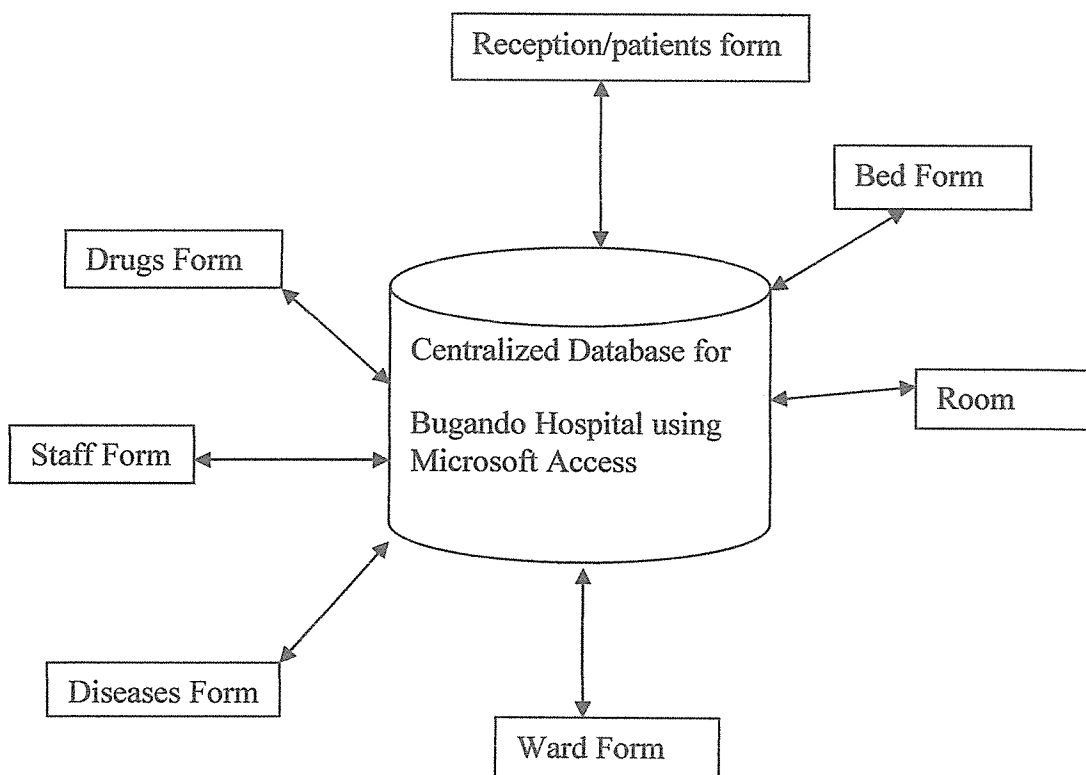
3.11 Development tools

3.11.1 Operating system

Windows XP service pack two was better because the system built is user friendly and entails the use of the graphical interface to the workers using the system. Therefore, strong anti viruses were installed into the machine to prevent the machines from collapsing most of the time hence loosing data.

3.11.2 Programming languages and tools

The programming language used was Visual basic 6.0 because it supports object oriented programming and for that, the developers were well off with the language.

3.11.3 Database management systems.

This is software that enables users to define, create and maintain databases and also provides controlled access to the database. Database was a major fact in this system because without the database the information that would be received would not be able to be stored or processed.

3.12 Information systems plan

3.12.1 System requirement

This document is used to identify and solve the problems and finally document it showing the value of the organization.

Project Name

Development and implementation of a management information system.

Name

Bugando Referral Hospital

Business needs of the organization.

The new system should be able to curb the present problems which hinder a lot of profit being made due to lack of a computerized system. Therefore, this new system should be more computerized with much and far better services.

Expected functionality

As a result of the new system, this project involved the design and implementation of a management information system and was able to capture and store patients' details and those changes made were reflected everywhere and throughout the whole database. This was paramount to the efficient flow of activities in the hospital, hence, it increased the production output and eased the workers work and these were achieved through the implementation of a perfectly designed system.

Expected value of the system

The system was expected to be absolutely important in that increased the performance of the hospital and provided the workers with more time to deal with other issues, hence increased productivity to the system. Due to the manual way of the current system there was a need to have a system which would be more computerized than the other.

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3.12.2 Feasibility analysis

Technical feasibility

Project size and structure

The project was a bit large since it involved complex use of the software and hardware hence making it large.

Experience with application area

The researcher chose the application since he was good at each software/application he chose and made sure he had necessary experience on it, that is, he did not use software he was not good at.

However, there are other software applications that were used which he did not have enough experience and he employed an expert to implement that part for him and later taught him how to use it.

Experience with development tools

From the experience gained in the study of system analysis and design 1 on the development tools, he used the experience to implement all the parameters in these development tools.

Organizational feasibility

Attitudes of the stake towards the new system

Due to the improved way of the system to be in place, he expected the stakeholders to comment on the new system as excellent, since the implementation were put in place were definitely as a result of a perfect system.
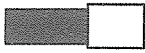
How hard it will be to collect data.

Data collection from stake holders especially top managers it will be difficult since it involves a lot of bureaucracy to get the data and not all what you requested for can be given, this is usually done most of the times forrity purposes.

3.12.3 Project plan and schedule

Here, the researcher had to state the activities and lay down the way he was going to do this project from the planning, analysis and design activities.

As the project undergoes the transformation, he provided a table showing the activities in the period of the project development. He used the Gantt chart diagram to present the schedule. Gantt chart is a simple horizontal bar chart that depicts project task against calendar, each bar represents a named project task, the tasks are listed vertically in the left hand column, and the horizontal axis is called time line.

	December	January	February	March	April	may	June
Preliminary Investigation	▰▱						
Problem analysis		▰					
Request analysis			▰				
Decision analysis				▰			
Design					▰		
Construction						▰	
Implementation							▰

Meaning: ▰▰▰ completed task

▰▱ Incomplete task

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3.12.4 Risk assessment

Throughout the information system plan, he assessed on the probability of a successful implementation using the technology and approach. However, this included the following one factor can be lack of knowledge about the application area can lead to delays in completing the project, there was need to read and understand the application area the relieving sources.

Lack of familiarity with the development tools led to delays in completing the programming tasks and therefore, there was need to upfront training in these tools.

The different phases of the SDLC were not easy to manage, implementation took the longest time followed by design, then analysis and planning last.

Designing good questionnaires and interview questions could not be under estimated, and needed ample time.

3.13 Limitations of the study

The new system faced some difficulties during the preparation, establishment and operation. During data collection, there were some expenses incurred for the study to be successful. Moreover, the system was new to users and this automatically led to training of the staff and some of the people who need to have some knowledge about the system and thus it cost some amount of money.

3.15 The existing management information system

The overview of the management information system is reached through the gathered facts relative to the objectives of the study. The relative methods used of data collection, all of which enabled the researcher to access the existing system. The existing system may be criticized against the following procedures and principles in which the shortcomings and advantages are highly detectable.
- o Need for improvement
- o Performance
- o Reliability
- o Effectiveness
- o Consistency

3.16. Architectural Requirements

a) Hardware Requirements

- o Pentium IV Computer, 256 MB Ram,
- o 2 GB Hard disk free space.
- o 17inch Monitor
- o 700 Mb CD Rom –Drive
- o UPS

b) Software Requirements

- o Windows XP and higher versions.
- o Microsoft Visio- Studio 6.0 software.
- o Office XP software.

3.17 Conclusion

In conclusion, the project to be put in place will be of more importance and of more advantageous to the patients and the workers, however, it will involve a lot of work like training of the staff and some of the trusted fellows in the organization. I hope to this research will be able to produce a project that will relieve the both sides of the tedious work.

CHAPTER FOUR
SYSTEM DESIGN

4.1 Systems Design

According to Jeffrey (2003) [5], system can be described as a process of defining the hardware and the software architecture, components, modules and data for a system to satisfy specified requirements. The preparation of an assembly of methods, procedures or techniques united by regulated interaction to form an organized whole. In other words this chapter describes the hardware and the software which will be used to develop the system.

This phase follows the analysis phase. After the analysis phase has been completed successfully, this phase uses the information already obtained in system analysis and it produces a design specification for the new system by building its representation. It normally involves two broad stages namely; logical design or physical design. At this stage the interaction between users and the developers is key to a successful system which will meet the required information requirements determined by the system analysis.

4.2 New Computerized System

A new computerized system has been developed with the capability of storing a vast piece of data/information. The main difference between the old system and new system is that data capturing and processing is computerized and that computers are used instead of papers or books. It requires less storage space, it is also much more efficient since it can generate reports within minimum time and with minimal flaws.

In this section each process is explained precisely including inputs, conditions /logic outputs and data stores associated with each process. The functionality of the new system is built on the processes shown

Input

Data being received or to be received by a device or by a computer program was captured into the computer system using a keyboard by just typing it. Required details about a given activity like account creation, inputting patients' details or any payment is done at this stage.

Data Manipulation

Data manipulation and processing was in different forms for example updating and editing to make it legible to the management. Data is changed into information and saved awaiting retrieval for any purpose.

Storage

Looking at storage, data was automatically stored on the hard disk. It can be updated or edited and these changes are stored into the system. Data can also be transferred using external devices like flash disks, zip disks.

Output

Data processed into information was output inform of reports and presented to the management for evaluation and during planning and annual budgeting. Specific data can also be output depending on the request given for example available balance for a certain patient before he/she is discharged. This is done by creating queries.

4.3 Data Dictionary of the New System

In an information management system, a file that defines the basic organization of a database. A data dictionary contains a list of all files in the information system, the number of records in each file, and the names and types of each field. Most information management systems keep the data dictionary hidden from users to prevent them from accidentally destroying its contents. For this case a data dictionary is a collection of descriptions of the data objects or items in the data model for the benefit of programmers and others who need to refer to it.

Data Element	description
Lname	last name
Fname	first name.
Patient ID	Patients Identification
Receipt no	Receipt number
Telno	Telephone number
DOB	Date of Birth
DOE	Date of employment
DOM	Date of Manufacture

4.4 Stages of System Design
4.4.1 Logical Design

This is concerned with the conversion of logical record structures to a data model supported by data base management system identifying the entities and their matching attributes and the relationship types determining the attributes domain.

4.4.2 Physical Design

Transforms the logical design material into real computer work by designing t he input/output processes and to decide how logical structure is to be physically implemented (as relations) in the target database management systems.

Under physical database design the following are to be accomplished; designing base relations for tables, designing representation of derived data, designing enterprise constraints, analyzing transactions, choosing file organizations, indexes, estimating disk space requirements, designing user views, designing security mechanism, considering the introduction of controlled redundancy, monitoring and tune t he operational system.

The following are the data stores which are the back end of the information systems; they are tables

Table 1: PATIENT/RECEPTION

Field Name	Data type	Size	Constraints	Required	Description
Patient ID	Text	25	Primary key	Yes	Patient identification
First name	Text	25	Null	Yes	First name
Other names	Text	25	Null	No	Other names
Age	Integer/numeric	4	Null	Yes	Age
Profession	Text	30	Null	No	Profession
Nationality	Text	25	Null	Yes	Nationality
Address	Text	20	Null	Yes	Address

Region/province	Text	20	Null	Yes	Province
District	Text	20	Null	Yes	District
Mobile No	Text	16	Null	No	Mobile number
Home No	Text	16	Null	No	Home number
Fax	text	16	Null	No	Fax number
Email	Text	16	Null	No	Email Address
Passport photo	Hyperlink	10	Null	No	Passport photo

Table 2: LOGIN

Field Name	Data Type	Size	Constraints	Required	Description
ID	Auto increment	10	Primary key	Yes	Identification
Username	Text	10	Null	Yes	Username
Password	Text	10	Null	Yes	Password

Table 3: STAFF

Field name	Data Type	Size	Constraint	Required	Description
Staff ID	Text	9	Primary key	Yes	Staff identification
First name	Text	25	Null	Yes	First name
Other names	Text	25	Null	No	Other names
DoB	Text	10	Null	Yes	Date of birth
Title	Text	30	Null	No	Position in work
Qualification	Text	35	Null	Yes	Level of education
DOE	Text	10	Null	Yes	Date of employment
Nationality	Text	25	Null	Yes	Nationality
Region/province	Text	20	Null	Yes	Province
District	Text	20	Null	Yes	District
Address	Text	16	Null	No	Address
Mobile no	Text	16	Null	Yes	Mobile number
Home No	Text	16	Null	No	Home number
Fax	Text	16	Null	No	Fax number
Email	Text	16	Null	No	Email address
Patient ID	Text	25	Foreign key	Yes	Patient identification
Passport photo	Hyperlink	10	Null	No	Passport number

Table 4: FINANCE

Field name	Data type	Size	Constraint	Required	Description
Receipt No	Text	9	Primary key	Yes	Receipt number
Patient ID	Text	9	Foreign key	Yes	Patient identification
Staff ID	Text	9	Foreign key	Yes	Staff identification
Name	Text	20	Null	Yes	Cahiers name
Amount charged	Integer/numeric	10	Null	Yes	Amount charged
DoP	Date	10	Null	Yes	Date o payment

Table 5: Drugs/ Pharmacy

Field name	Data type	Size	Constraint	Required	Description
Drug ID	Text	9	Primary key	Yes	Drug identification
Patient ID	Text	9	Foreign key	Yes	Patient identification
Amount	Integer/numeric	10	Null	Yes	Amount charged
DoM	Date	10	Null	Yes	Date of manufacture
Expiry date	Date	10	Null	Yes	Expiry date
Disease ID	Text	9	Foreign key	Yes	Disease identification
Staff ID	Text	9	Foreign key	Yes	Staff identification
Dosage	Text	30	Null	No	Dosage
Ward ID	Text	9	Foreign key	Yes	Ward identification
Suppliers	Text	40	Null	No	Suppliers name
Issued date	Date	10	Null	Yes	Issued date

Table 6: STORE

Field name	Data type	Size	Constraint	Required	Description
Store ID	Text	9	Primary key	Yes	Store identification
Name	Text	20	Null	Yes	Name of item
Cost	Integer/numeric	10	Null	Yes	Cost charged
Quantity	Integer/numeric	10	Null	Yes	Quantity
DoM	Date	10	Null	No	Date of manufacture
DoE	Date	10	Null	No	Date of entry
Expiry date	Date	10	Null	No	Expiry date
Received by	Text	25	Null	Yes	Received by
Total	Integer/numeric	10	Null	Yes	Total amount

Table 7: WARD

Field name	Data type	Size	Constraint	Required	Description
Ward ID	Text	9	Primary key	Yes	Ward identification
Staff ID	Text	9	Foreign key	Yes	Staff identification
Patient ID	Text	9	Foreign key	Yes	Patient identification
Drug ID	Text	9	Foreign key	Yes	Drug identification
Ward type	Text	20	Null	Yes	Ward type
Disease ID	Text	9	Foreign key	Yes	Disease identification

Table 8: ROOM

Field name	Data type	Size	Constraint	Required	Description
Room ID	Text	9	Primary key	Yes	Room identification
Patient ID	Text	9	Foreign key	Yes	Patient identification
Rom type	Text	20	Null	Yes	Room type
Ward ID	Text	9	Foreign key	Yes	Ward identification

Table 9: BED

Fieldname	Data type	Size	Constraint	Required	Description
Bed ID	Text	9	Primary key	Yes	Bed identification
Room ID	Text	9	Foreign key	Yes	Room identification
Staff ID	Text	9	Foreign key	Yes	Staff identification
Patient ID	Text	9	Foreign key	Yes	Patient identification
Ward ID	Text	9	Foreign key	Yes	Ward identification
Room type	Text	20	Null	Yes	Room type
Status	Text	10	Null	Yes	Status

Table 10: DISEASE

Field name	Data type	Size	Constraint	Required	Description
Disease ID	Text	9	Primary key	Yes	Disease identification
Name	Text	25	Null	Yes	Disease name
Patient ID	Text	9	Foreign key	Yes	Patient identification
Drug ID	Text	9	Foreign key	Yes	Drug identification
Symptoms	Text	40	Null	No	Symptoms
Dosage	Text	40	Null	Yes	Dosage
Staff ID	Text	9	Foreign key	Yes	Staff identification

4.5 Data flow diagrams for the New System

These are Diagrams that are used to model the flow and transformation of data through a system

Level 0 DFD summarizes the flow of data from the user's point of view, processing done on data, storage, up to the reporting functionalities of the system.

4.5.1   LEVEL 0

21
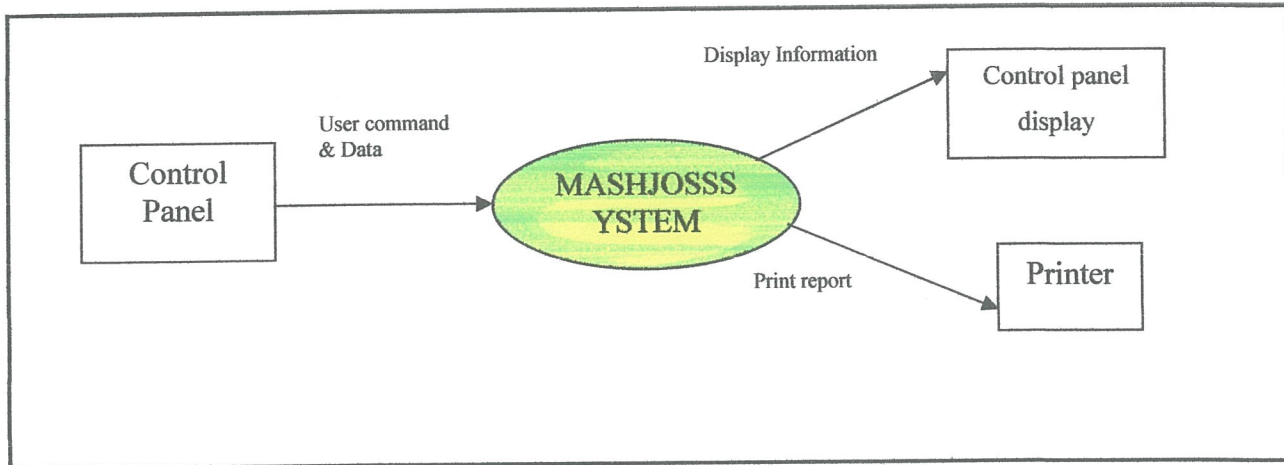
4.5.2   DATA FLOW DIAGRAM (DFD)

4.5.3   LEVEL 1

This describes in details the flow of data right from the data entry point, processing, storage through to the reports, its much detailed as compared to the Level 0 DFD shown above.
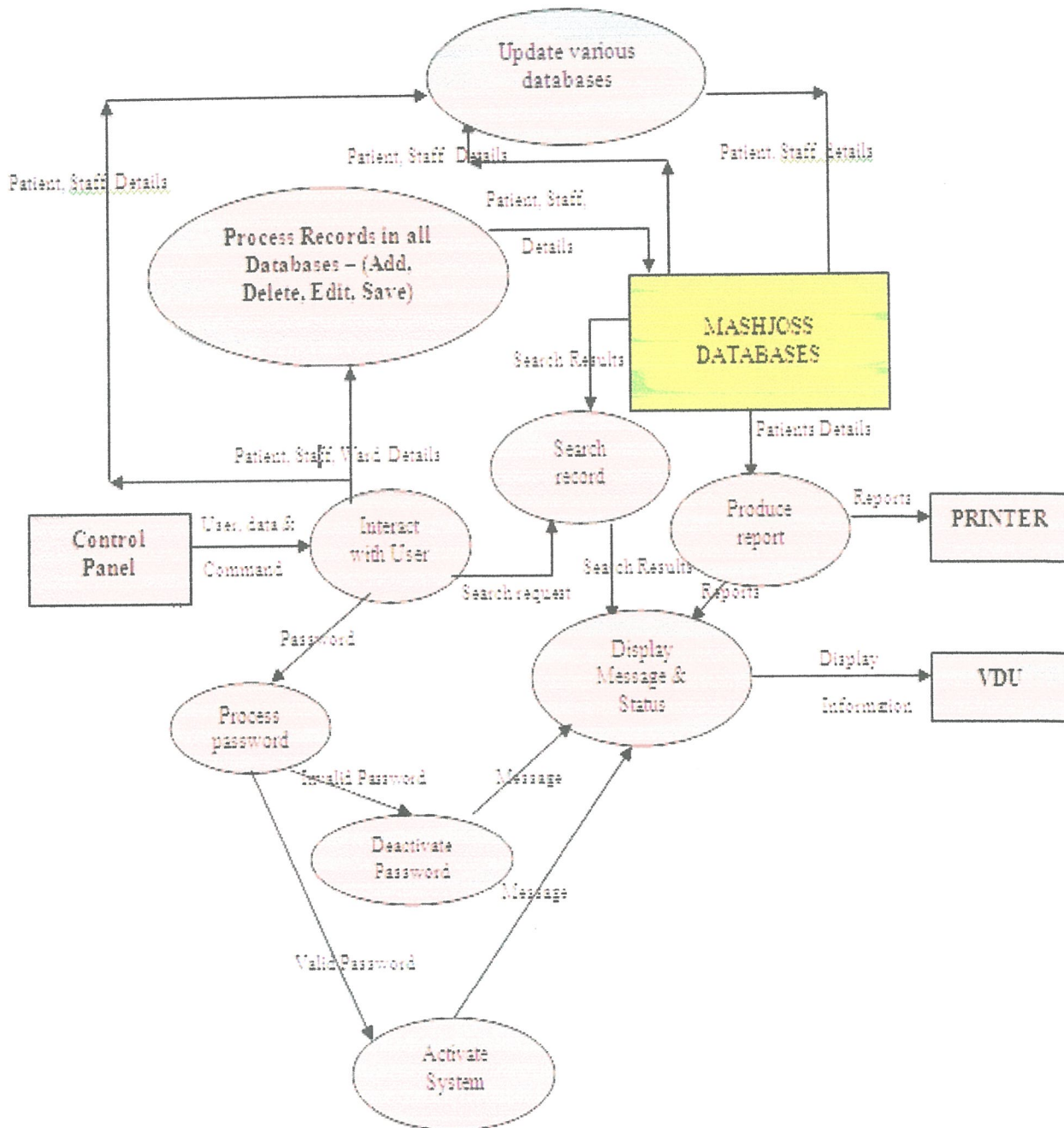
Entity Relationship Diagram, ERD describes the relationship between the entities and its attributes.
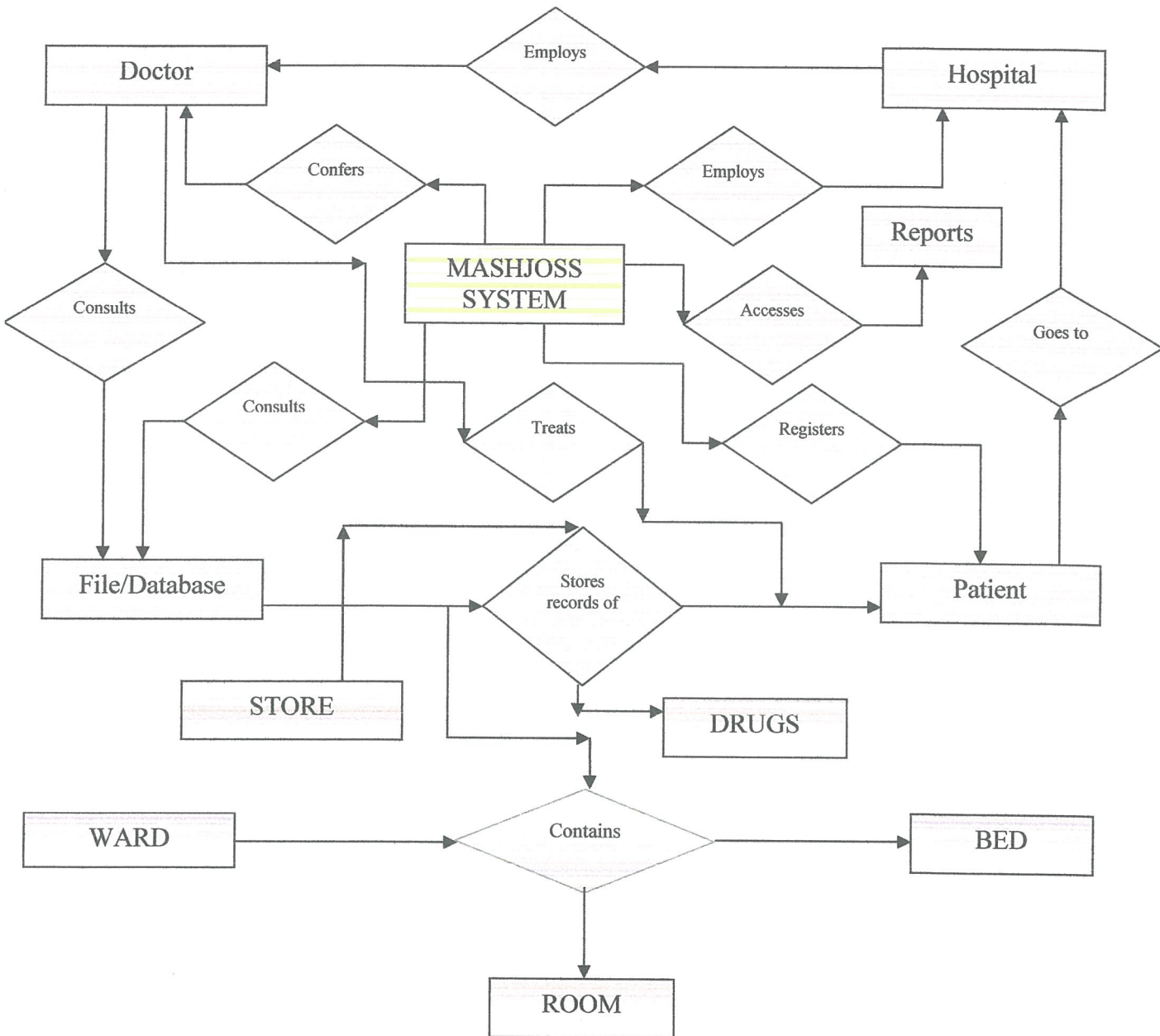
The new system use the computerized system, it is able to store a vast number of entries in the system. Though it is difficult to have the paperless office, this system shall try to reduce on the number of paper files in the shelves. The shelves shall be rarely visited to pick files of the patients and the staff members.

4.5.5 ARCHITECTURAL DESIGN

Architecture applied here is called *call and return*. This consists of the following subsystems.
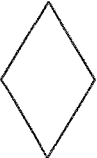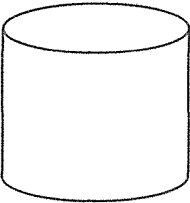
- ❖ Splash screen form
- ❖ Login form
- ❖ Main MDIForm
- ❖ Patients Register Form
- ❖ Staff Records
- ❖ Drug/pharmacy records
- ❖ Finance Transactions
- ❖ Ward Records
- ❖ Reports
- ❖ Quit the system
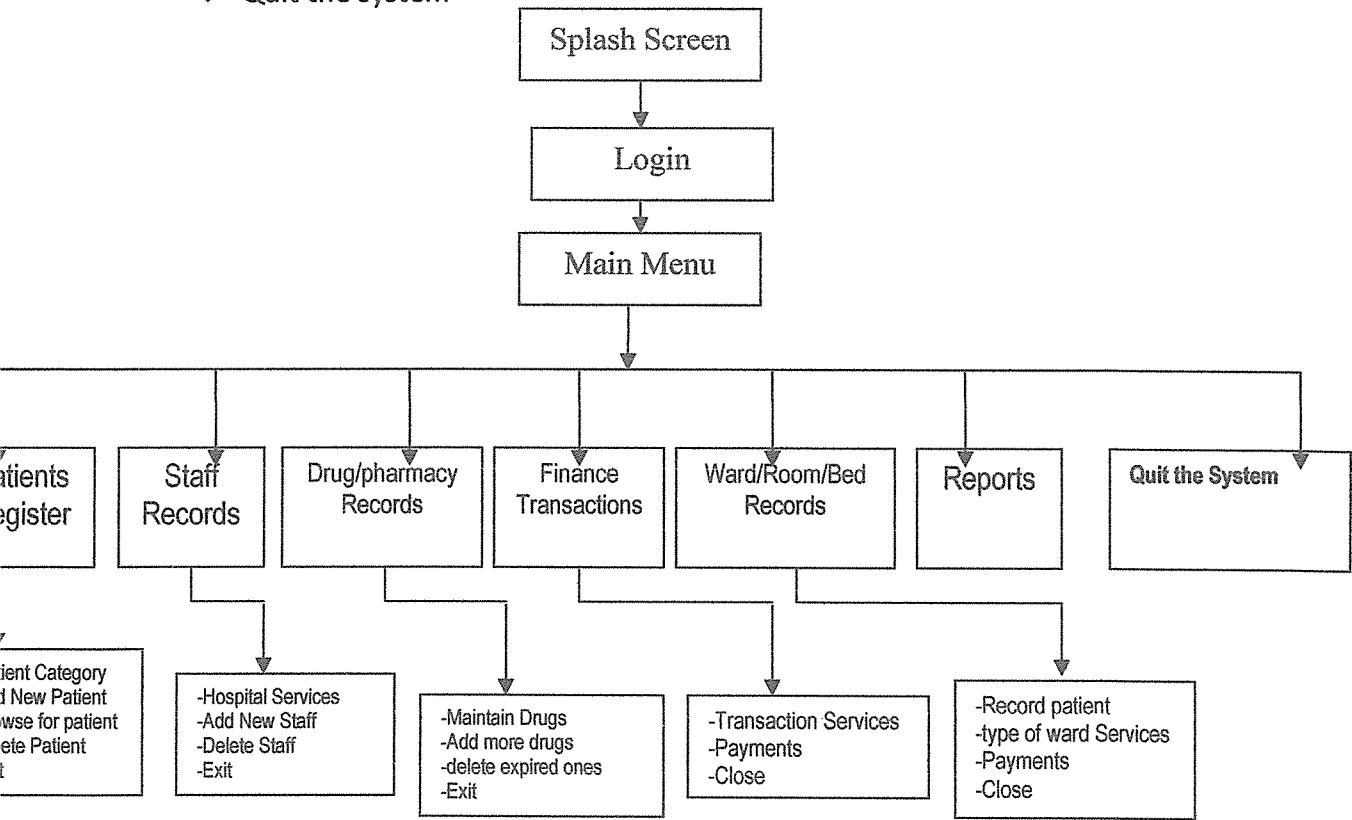
4.6 System Flow Chart

A system flow chart is a diagrammatic representation of all the processes of a system. It shows how data is captured, processed then output. The data processes include, adding new patients, staff, drugs etc, any computations made and formatting it such that reports are generated at the end of a each transaction date. Once data is input into the system, all the processes stated above can be performed on the data at a later date.

Some of the symbols used in flow charts include:

Symbol	Description
⬭	Start / End
◇	Decision making
▱	Data processing
⬟ (cylinder)	Data storage/ Database

4.7 Flow chart for the new system
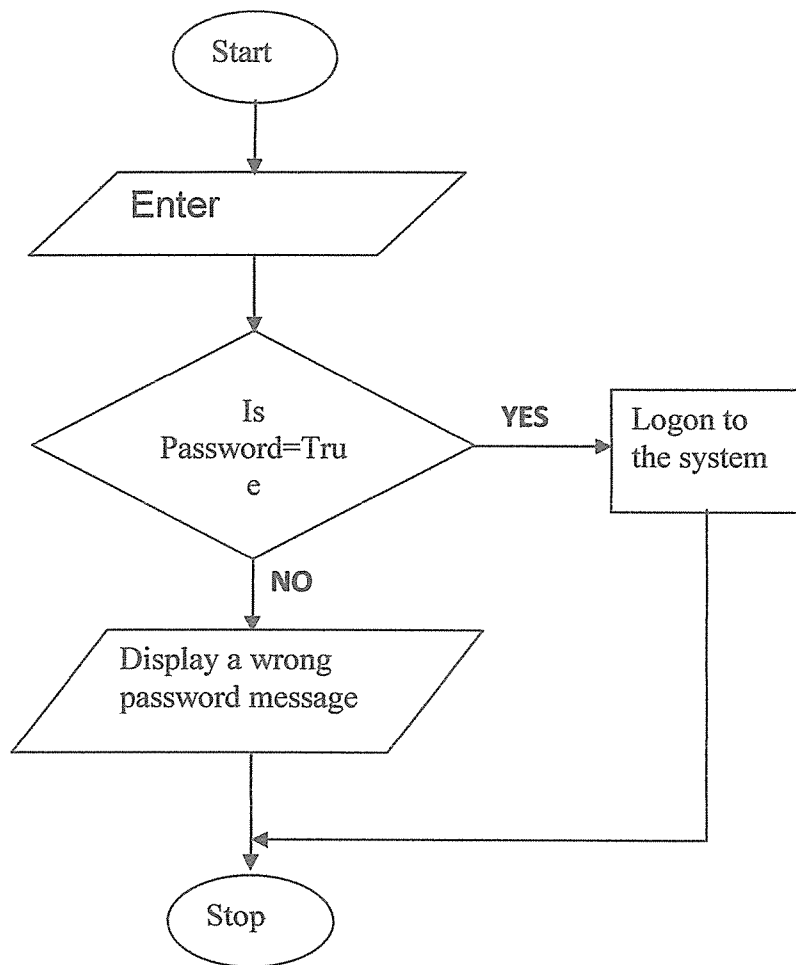
4.7.1 Algorithm

BEGIN

ENTER username, password

    IF (username= True AND password =True) THEN

DISPLAY splash screen

    ELSE

DISPLAY "Wrong password or username"

END.

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CHAPTER FIVE

SYSTEM TESTING, IMPLEMENTATION AND EVALUATION

Having finished the system design, the researcher went on to system testing, implementation and evaluation in which overview of the entire system was done. It combines all concepts that led to the development of the program code.

5.1 System testing

The system was used experimentally to make sure that the system does not fail. To ensure that the system runs according to its specifications, special data was used for processing and the results examined.

5.1.1 Unit testing

Unit testing was preferred ahead of system testing, individual parts of the program were tested using made up data and positive responses were received e.g. the command buttons showed consistency without any error reports, program response time was good thus rendering the testing phase success.

5.2 Data capturing/ input

Data is input using the keyboard. The user feeds in the patients' and staff details into the system following the needed specifications for the graphic user interface.

5.3 Data processing

Data processing and manipulation is in different forms, it can be editing the already stored data, updating the already stored data, retrieving the data from the database or processing it to generate.

5.4 Data storage

All the data entered/captured by the user is automatically saved into the database attached to the graphic user interface. This data can be retrieved later and manipulated as required by the data managers.

5.5 Data output

Data output can be in any form depending on what is required by the management this time the researcher looked at the report generation or data retrieval by setting queries to the database.

5.6 Implementation of the new system

After the approval of the system tests, the researcher and departmental managers were involved in system implementation. When the system was implemented, the researcher converted the hardware, software, updated the files and outdated information was deleted.

5.6.1 System implementation approach

The researcher recommended parallel implementation which allowed both the old and the new system to run concurrently until the new system was approved reliable. The benefit of this approach was that if the new system failed to work, the organization can switch back to the old system. This approach allowed for time for training the users and clear opportunity of comparisons between the old system and the new system.

5.7 User training

The personnel to work with the new system was selected and trained. Training involved teaching and guiding the users on how to operate and manage the system programs plus interfaces.

   i.   Providing user guide documentation

   ii. One on one side by side teacher staff training.

   iii. Staff class training and awareness seminars.

Users are one of the important elements in a computer system. Mis however is not better than its users hence involving users from the beginning and ensuring proper training were essential.

5.8 User guide documentation

This is the instruction manual that was designed to provide information to those responsible for operating and using the new system. It was also used in user training for guidelines.

5.9 The Development System

Form 1: Showing the splash screen.

The following welcome screen when the software is opened, that is after it has been successfully installed. The software connects to the database.

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Form 2: Showing the login Screen

Here the person working with the system shall have to enter the user name and password so that he or she can work with the system.

Form 3: Confirmation Form

The form is used to test and see if the user logging in the system has administrative rights to access the system and also to check if he or she has the rights to create new users.

29
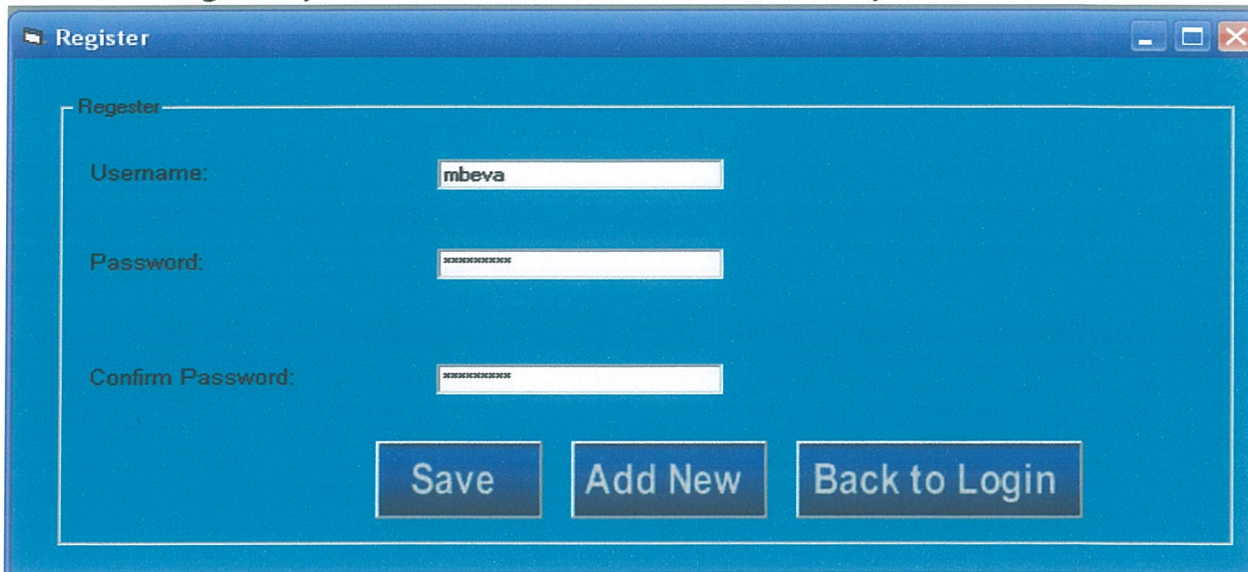
Form 4: New users' registration form.

This is the form used to create new users and grant them the rights to access the system. A new user has to be given a password to be able to access and use the system.
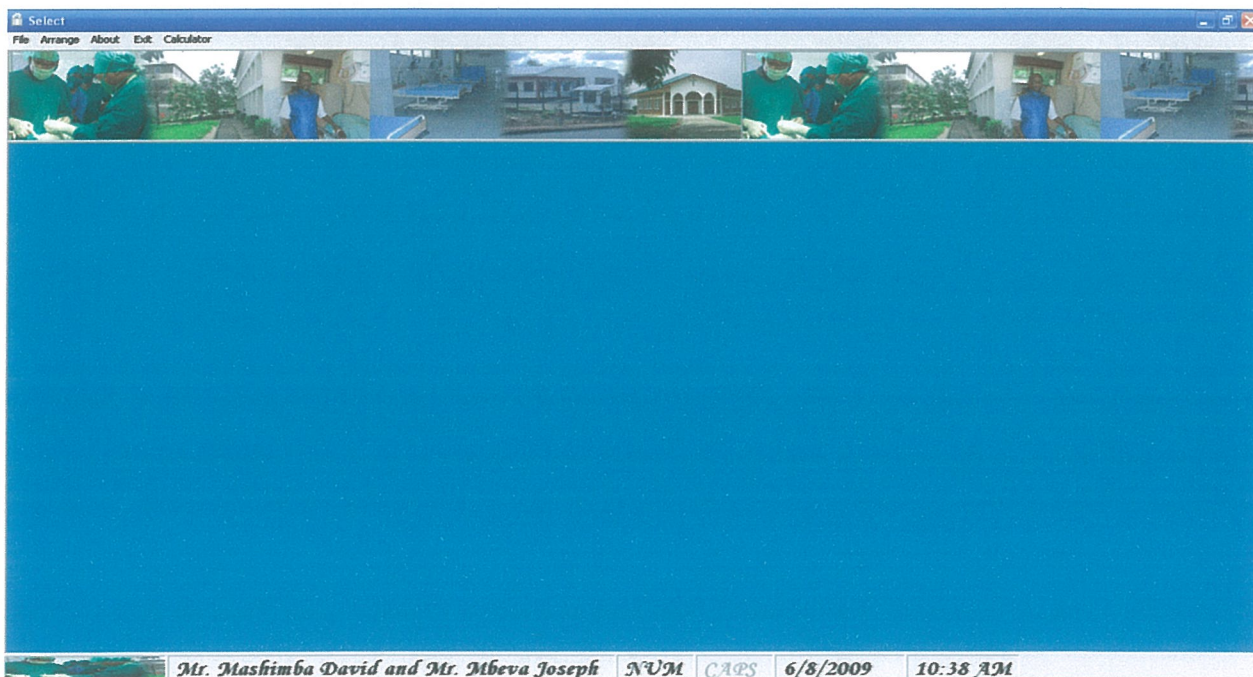
Form 5: Showing the MDI form

This is the main form which appears after a person has successfully logged into the system. Here the person chooses the work he or she wants to accomplish.
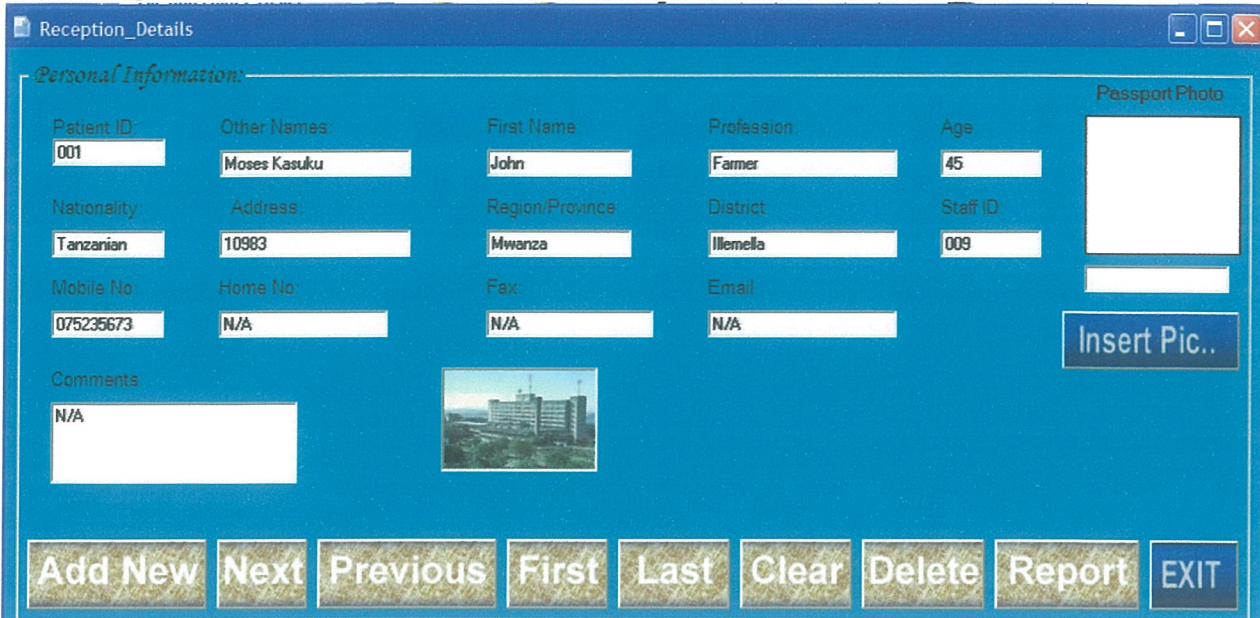
Form 6: Showing reception of a new patient

Here the receptionist captures all the data is required by the system concerning the patient's personal details. Then this information is kept in the database for the production of reports for the management and also to keep track of all the patients who attend the hospital.

Form 7: Showing Staff Details

This form can always be used by the staff in the management to include newly employed staff hence updating the database and also to delete the retired staff and the ones who have been retrenched.

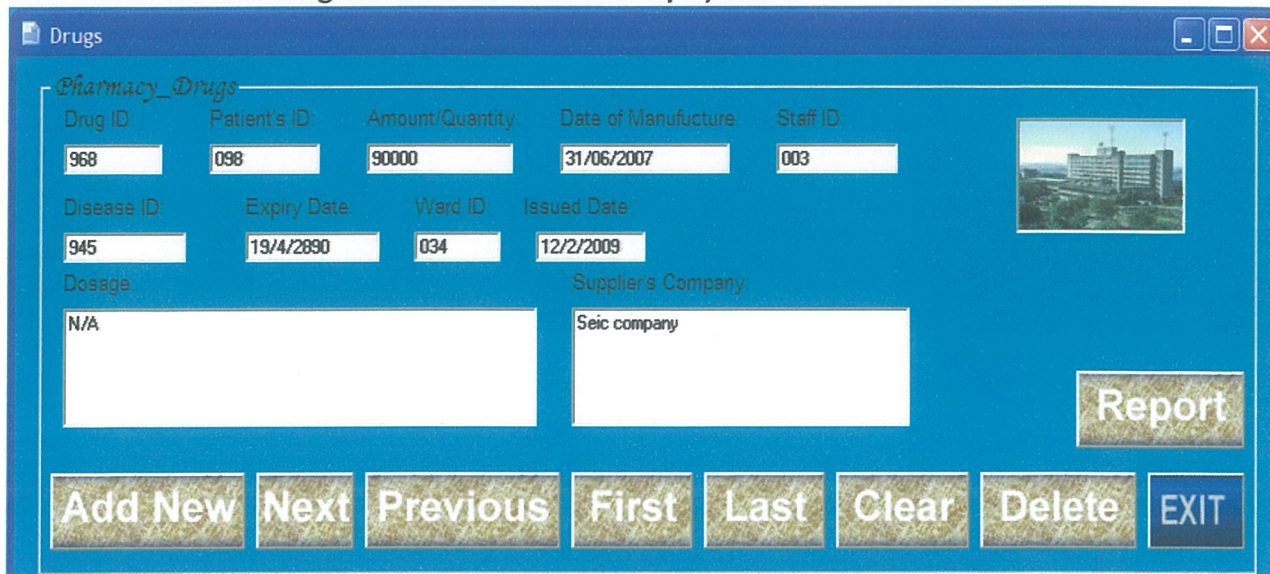## Form 8: Showing the Receipts Generated

This is the form used in the finance department for generation of receipts for the patients. The data from this form is stored in the database for the generation of reports which are used by auditors when doing their annual audit.

Form 9: showing the drugs

This form is used to update the staff on the drugs available and their expiry dates so that the doctor is aware of what to prescribe. This runs hand in hand with the inventory to notify the staff the amount of drugs in the store and their expiry dates.

Form 10: showing what is in the store

This is used by the store keeper to keep records of what is to be added and the expired drugs which need to be disposed.

Form 11: showing the ward status.

This form is used to capture all the wards, their types and the patients admitted in the respective wards.

Form 12: showing room details
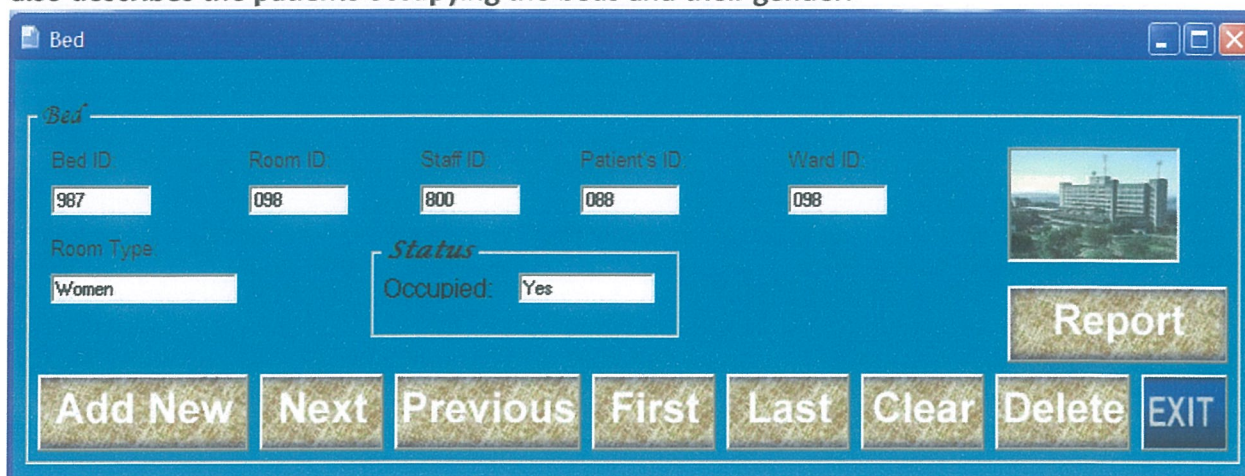
The data input in this form is about the patients in the rooms and the wards the rooms belong to.

Form 13: showing beds allocated to patients

This form shows where the beds are allocated in terms of rooms and wards and their status. It also describes the patients occupying the beds and their gender.

Form 14: showing the disease affecting the patients.
The name of a disease, symptoms of a disease, and the drug prescribed for the disease and its dosage is described in the form below.

Disease

Disease ID: 098

Disease Name: Maralia

Drug ID: 568

Staff ID: D21

Symptom: High fever

Dosage: Metacephein

Report

Add New | Next | Previous | First | Last | Clear | Delete | EXIT

Reports

The below shows the output that can be got from the various forms that are used in the system. They simply display the reports generated.

Drugs

Monday, June 08, 2009

DATA REPORT ON DRUG DETAILS

Drug ID	Patients ID	Amount	Date of Manufacture	Exiphy Date	Disease ID	Staff ID	Dossage	Ward ID	Suppliers Company	Issued Date
674	078	60000	11/1/2009	12/11/2102	455	544	N/A	N/A	joe comp	10/1/2005
576	877	40000	6/3/2009	5/19/2010	656	548	N/A	N/A	Mrcicla comp	3/9/2009
564	677	67000	5/4/2009	7/15/2010	655	678	N/A	N/A	cire comp	4/7/2009
545	575	67000	5/11/2009	1/21/2010	766	585	N/A	N/A	fitre comp	4/16/2009
575	666	56000	4/15/2009	8/25/2010	546	465	N/A	N/A	dedic phar	5/22/2009

Store

DATA REPORT ON STORE DETAILS

Store ID	Name of Item	Cost	Quantity	Manufacture d Date	Entry Date	Expiry Date	Received By	Total Amount of Items
001	chair	500	10	12/12/2005	5/2	6/8/2	mashimb	65
879	Beds	400	67	6/17/2004	2/2	8/6/2	Emmanul	567
709	Gloves	780	90	3/10/2001	12/	2/18/	Mukasa	4356
688	spoons	340	56	1/6/2002	11/	11/5/	fridah	436
768	Plates	450	78	9/16/2003	9/8/	2/9/2	Safina	546

Ward

Monday, June 08, 2009

DATA REPORT ON WARD DETAILS

Ward ID	Ward Name	Staff ID	Patients ID	Drug ID	Ward Type	Disease ID
667	madela	6766	976	976	Women	545
003	Kikwete	003	004	003	women	033
006	mashimba	092	009	791	men	997
099	Mbeva	034	003	654	Men	467
045	Museveni	0334	034	456	Women	098

Bed

Monday, June 08, 2009

DATA REPORT ON BED DETAILS

Bed ID	Room ID	Staff ID	Patient ID	Room Type	Ward ID	Occupied
777	8888	66	001	Men	676	Yes
999	00009	9990	002	Women	778	Yes
889	898	8988	003	Women	767	No
5675	5647	475	004	Women	566	Yes
565	5475	57	005	Men	55	No
7696	67896	67896	006	Men	676	yes
45454	5475	567	007	Women		yes

Disease

Monday, June 08, 2009

DATA REPORT ON DESEASE DETAILS

Disease ID	Disease name	Drug ID	Symptoms	Dosage	Staff ID
343	Maralia	566	Fever	metacaphein	565
797	Maralia	656	fever	metacaphein	5456
987	Typhoid	780	vomitting	cytmomics	788
879	Chorela	786	Driving	olo	789
546	Heart	576	High blood	excersice	465

Finance

Monday, June 08, 2009

DATA REPORT ON FINANCE DETAILS

Receipt No	Patient ID	Staff ID	Cashiers Name	Amount	Date of payment
56475	65	5658	Michel Okall	30000	12/11/2009
54	564754		Michel Okall	900	6/10/2009
5675	5456	56	Michel Okall	8900	5/2/2009
6785	6757	67576	Michel Okall	5670	4/7/2009
676	676	6765	Michel Okall	6700	12/12/2009

Staff

DATA REPORT ON STAFF DETAILS

Staff ID	Surname	Other Names	DoB	Qualification	Address	Patient ID	DoE
686	Joyce	renatus	4/14/1986	Degree	5445654	456	6/15/2000
856	Matovu	Sasini	3/4/1987	Diploma	5454654	346	6/6/2000
658	Saida	Antony	6/12/1968	Degree	3465644	346	1/22/1990
657	Maturi	Wendy	6/27/1945	certificate	8973543	362	12/23/198
709	raymond	Zakaria	6/25/1958	Degree	9542689	3456	9/4/1997

Receptions

DATA REPORT ON RECEP

Patient ID	Surname	Other Names	Age	Proffesion	Nationality	Address
099	emmanue	mshimba	22	program	Tanzania	10903
659	john	Davis	54	farmer	Kenyan	554
8766	makoka	Isaac	65	doctor	Kenyan	5465
667	otieno	Jackson	44	driver	Kenyan	656565
687	Mark	Odegi	23	engineer	Ugandan	656565
566	David	Yudah	78	lecturer	India	656646

CHAPTER SIX
DISCUSSIONS, RECOMMENDATIONS AND CONCLUSION

6.1 Discussion

The system contains forms containing patient, drug, staff, disease, ward and many more information. The records are used to generate forecast to MASHJOSS system. This new system is flexible in that data can be examined to test the trend of patients and finance and the other department and makes appropriate adjustments like updating and modifying data. The use of validation checks during data entry reduces the entry of erroneous data into the system and this improves the accuracy of computations. The system uses passwords at the login level to ensure that only authorized persons can access the system.

6.1.1 Limitations of the package

It is not always easy to have systems that are perfect. Efforts have been made to ensure that the system is up to standard and it's in order to mention the limitations of the design which includes the following.
   i.   Data input is manual; there is no standard facility like scanner, to make the work of inputting the data easy.
   ii.   It requires personnel with basic computer skills.

6.2 Conclusion

The conclusion below has been derived from the research made.

The study focused on the design and development of MIS for Bugando hospital. It also dealt with enhancing the effectiveness of Bugando staff by making it more interactive and user friendly.

The system is capable of generating reports easily. These reports can be used for planning and preparing for the future.

In addition to the above, the system has the great capability of limiting entry of erroneous data and very reliable security wise through the use of user names and passwords. This was the main reason as to why the new system had to be modeled and implemented.

6.3 Recommendations

Modifications can be made to the new system. The hospital is expected to offer some new services that are currently not included in the new system, hence the need for modification, like security for important documents, such services have to be catered for. There is need for training employees because most of them lack the necessary skills of using the new system.

If there would be automated way of data entry for the MIS, it would be highly preferred since this system uses manual means of entry of data.

For big organizations like this one, the staff that uses this MIS should be exposed to computer literacy. This enables them to use the MIS easily; rather than using traditional manual based system that consumes lots of time in entry of data that may be needed by the users. This will strengthen the system's capacity and cost effectiveness in making available relevant and up to date services for the patients care.

Lastly, we recommend that anyone interested in more research about MASHJOSS system should design for the hospital a website since the organization is expanding in size by having branches or small sections in different areas.

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11. Rule (1973), Management information systems 5tg edition. Mc Graw Hill Publishers.

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APPENDIX A: - QUESTIONAIRE

We are Third year second semester students at Kampala International University pursuing a bachelor's degree in Computer Science. We will highly appreciate your contribution to this study.

After scrutinizing the data we got during our survey, we came up with the following questionnaire:-

1. What system do you currently use in managing patient's records?

☐ Manual   ☐ Electronic ☐ Other (Specify)

_____

2. Do you experience any problems on the system you are currently using?

☐ Yes   ☐ No   ☐ Other (Specify)

_____

3. If YES in Question 2 above, List some of the problems you encounter.

_____

_____

4. How updated or how frequent do you update your records.

☐ Real Time/Online   ☐ Occasionally   ☐ Not at All

5. How many staff are employed in the hospital?

☐ Between 50 – 150 ☐ Between 150 – 250 ☐ Other (Specify)

_____

6. Are patients satisfied with the current system you use?

☐ Yes   ☐ No   ☐ Other (Specify)

_____

7. How do you store patient's records?

☐ File Cabinets   ☐ Electronic Media   ☐ Other (Specify)

_____

8. What is the speed at which you retrieve patient's records?

☐ Very Fast ☐ Average   ☐ Slow   ☐ Other (Specify)

_____

9. How interactive is the current system both to the user and the patient's?

☐ Very Interactive   ☐ Moderate   ☐ Other (Specify)

---

10. In you own opinion; suggest any other information which will be of importance to us.

_____

_____

_____

_____

Don't include your signature. Your support is highly appreciated. Thank you

APPENDIX B: -Program Codes

Splash screen

```
Private Sub Timer1_Timer()
Timer1.Interval = 1000
frmsplashscreen.BackColor = RGB(256 * Rnd, 256 * Rnd, 256 * Rnd)
End Sub


Private Sub Image1_Click()
End Sub


Private Sub Tmrsplash_Timer()
ProgressBar1.Value = ProgressBar1 + 1
lblpercentage.Caption = lblpercentage.Caption + 1
If lblpercentage.Caption = "100" Then
Unload frmsplashscreen
userfrm.Show
Unload Me
Tmrsplash.Enabled = False
End If
End Sub
```

Username

```
Private Sub Command1_Click()
register.Show
End Sub


Private Sub exit_Click()
Dim reply As Integer
reply = MsgBox("Are you sure you want to Exit?", vbQuestion + vbYesNo, "Confirm Exit")
If reply = vbYes Then
End
End If
End Sub


Private Sub login_Click()
Dim msg As Integer
Dim reply As Integer
'check for correct password
security.Recordset.MoveFirst
While Not security.Recordset.EOF
```

```vb
If txtusername.Text = security.Recordset.Fields(1) And txtpassword.Text =
security.Recordset.Fields(2) Then
MDIForm1.Show
Unload Me
Exit Sub
Else
security.Recordset.MoveNext
End If
Wend
msg = MsgBox("Check your username and password", vbQuestion + vbYesNo, "Confirm Login")
If msg = vbYes Then
txtusername.Text = ""
txtpassword.Text = ""
Else
reply = MsgBox("Are you sure you want to Exit?", vbQuestion + vbYesNo, "Confirm Exit")
If reply = vbYes Then
End
End If
End If
End Sub

Private Sub Timer1_Timer()
Timer1.Interval = 1000
Frame1.BackColor = RGB(256 * Rnd, 256 * Rnd, 256 * Rnd)
End Sub
```

New users
Register
```vb
Private Sub Command1_Click()
If txtpassword.Text = txtconfirm.Text Then
register.Recordset.Save
MsgBox ("User has been added!")
Else
MsgBox ("Password don't match!")
txtpassword = ""
txtconfirm = ""
End If
End Sub

Private Sub Command2_Click()
register.Recordset.AddNew
End Sub
```

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```vb
Private Sub Command3_Click()
userfrm.Show
Unload Me
End Sub




Confirm
Private Sub Command1_Click()
Dim msg As Integer
If txtpass.Text = confirm.Recordset.Fields(2) And "Administrator" = confirm.Recordset.Fields(1)
Then
register.Show
Unload Me
Else
msg = MsgBox("Wrong Password!", 1)
txtpass.Text = ""
End If
End Sub

Private Sub Command2_Click()
Unload Me
End Sub

MDIForm1
Private Sub mnuabout_Click()
about.Show
End Sub

Private Sub mnubed_Click()
bed.Show
End Sub

Private Sub mnucascade_Click()
Me.Arrange vbCascade
End Sub

Private Sub mnudisease_Click()
disease.Show
End Sub

Private Sub mnudrugs_Click()
drugs.Show
End Sub
```

```
Private Sub mnuexit_Click()
Dim reply As Integer
reply = MsgBox("Would you like to Exit?", vbExclamation + vbYesNo, "Confirm Exit")
If reply = vbNo Then
MDIForm1.Show
Else
End
End If
End Sub

Private Sub mnufps_Click()
finace.Show
End Sub

Private Sub mnuhorrizontally_Click()
Me.Arrange vbHorizontal
End Sub

Private Sub mnuload_Click()
calculator.Show
End Sub

Private Sub mnurcp_Click()
reception.Show
End Sub

Private Sub mnuroom_Click()
room.Show
End Sub

Private Sub mnustf_Click()
staff.Show
End Sub

Private Sub mnustore_Click()
store.Show
End Sub

Private Sub mnuvertically_Click()
Me.Arrange vbVertical
End Sub

Private Sub mnuwrbd_Click()
ward1.Show
```

```
End Sub

Reception
Private Sub cmdExit_Click()
Unload Me
MDIForm1.Show
End Sub

Private Sub cmdFind_Click()
Dim ans As String
ans = MsgBox("Are you sure you want to delete the Item?", 1)
If ans = 1 Then
receiptiond.Recordset.Delete
Else
End If
End Sub

Private Sub Command7_Click()
On Error GoTo d
cd1.Filter = "Bitmap (*.bmp)|*.bmp|Jpeg (*.jpg)|*.jpg|Gif (*.gif)|*.gif|All Files (*.*)|*.*"
cd1.ShowOpen
Picture1.Picture = LoadPicture(cd1.FileName)
d:
If Err.Number = 481 Then
MsgBox "It's Not a picture", vbExclamation
End If
Private Sub cmdAdd_Click()
receiptiond.Recordset.AddNew
End Sub

Private Sub cmdClear_Click(Index As Integer)
Text1 = ""
Text3 = ""
Text2 = ""
Text5 = ""
Text4 = ""
Text6 = ""
Text7 = ""
Text8 = ""
Text9 = ""
Text18 = ""
Text10 = ""
Text11 = ""
Text12 = ""
Text13 = ""
```

```vb
Text14 = ""
End Sub

Private Sub cmdFirst_Click()
receiptiond.Recordset.MoveFirst
End Sub

Private Sub cmdLast_Click()
receiptiond.Recordset.MoveLast
End Sub

Private Sub cmdNext_Click()
receiptiond.Recordset.MoveNext
End Sub

Private Sub cmdPrevious_Click()
receiptiond.Recordset.MovePrevious
End Sub


On Error GoTo d
cd1.Filter = "Bitmap (*.bmp)|*.bmp|Jpeg (*.jpg)|*.jpg|Gif (*.gif)|*.gif|All Files (*.*)|*.*"
cd1.ShowOpen
Picture1.Picture = LoadPicture(cd1.FileName)
d:
If Err.Number = 481 Then
MsgBox "It's Not a picture", vbExclamation
End If
End Sub

Private Sub Text15_Change()
If KeyAscii = 8 Then
MsgBox "You Cann't Erase the Path", vbCritical
Me.Hide
End If
End Sub

Staff
Private Sub cmdAdd_Click()
staffd.Recordset.AddNew
End Sub

Private Sub cmdExit_Click()
Unload Me
MDIForm1.Show
```

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```
End Sub

Private Sub cmdFind_Click()
Dim ans As String
ans = MsgBox("Are you sure you want to delete the Item?", 1)
If ans = 1 Then
staffd.Recordset.Delete
Else
End If
End Sub

Private Sub cmdFirst_Click()
staffd.Recordset.MoveFirst
End Sub

Private Sub cmdLast_Click()
staffd.Recordset.MoveLast
End Sub

Private Sub cmdNext_Click()
staffd.Recordset.MoveNext
End Sub

Private Sub cmdPrevious_Click()
staffd.Recordset.MovePrevious
End Sub

Private Sub cmdReport_Click(Index As Integer)
StaffReport.Show
End Sub
```

Finance

```
Private Sub cmdAdd_Click()
fina.Recordset.AddNew
End Sub

Private Sub cmdClear_Click(Index As Integer)
Text1 = ""
Text2 = ""
Text3 = ""
Text6 = ""
Text5 = ""
Text4 = ""
End Sub
```

```vb
Private Sub cmdExit_Click()
Unload Me
MDIForm1.Show
End Sub

Private Sub cmdFind_Click(Index As Integer)
Dim ans As String
ans = MsgBox("Are you sure you want to delete the Item?", 1)
If ans = 1 Then
fina.Recordset.Delete
Else
End If
End Sub

Private Sub cmdFirst_Click()
fina.Recordset.MoveFirst
End Sub

Private Sub cmdLast_Click()
fina.Recordset.MoveLast
End Sub

Private Sub cmdNext_Click()
fina.Recordset.MoveNext
End Sub

Private Sub cmdPrevious_Click()
fina.Recordset.MovePrevious
End Sub

Private Sub cmdReport_Click(Index As Integer)
FinanceReport.Show
End Sub

Drugs
Private Sub cmdAdd_Click()
druged.Recordset.AddNew
End Sub

Private Sub cmdCancel_Click(Index As Integer)
DrugReport.Show
End Sub

Private Sub Image1_Click()
End Sub
```

```vb
Private Sub cmdClear_Click(Index As Integer)
Text14 = ""
Text15 = ""
Text16 = ""
Text17 = ""
Text20 = ""
Text19 = ""
Text18 = ""
Text22 = ""
Text24 = ""
Text21 = ""
Text23 = ""
End Sub

Private Sub cmdExit_Click()
Unload Me
MDIForm1.Show
End Sub

Private Sub cmdFind_Click()
Dim ans As String
ans = MsgBox("Are you sure you want to delete the Item?", 1)
If ans = 1 Then
druged.Recordset.Delete
Else
End If
End Sub

Private Sub cmdFirst_Click()
druged.Recordset.MoveFirst
End Sub

Private Sub cmdLast_Click()
druged.Recordset.MoveLast
End Sub

Private Sub cmdNext_Click()
druged.Recordset.MoveNext
End Sub


Private Sub cmdPrevious_Click()
druged.Recordset.MovePrevious
End Sub
```

```
Private Sub cmdReoprt_Click(Index As Integer)
DrugReport.Show
End Sub


Disease
Private Sub cmdAdd_Click()
disa.Recordset.AddNew
End Sub

Private Sub cmdClear_Click(Index As Integer)
Text18 = ""
Text19 = ""
Text20 = ""
Text21 = ""
Text24 = ""
Text22 = ""
Text23 = ""
End Sub

Private Sub cmdExit_Click()
Unload Me
MDIForm1.Show
End Sub

Private Sub cmdFind_Click()
Dim ans As String
ans = MsgBox("Are you sure you want to delete the Item?", 1)
If ans = 1 Then
disa.Recordset.Delete
Else
End If
End Sub

Private Sub cmdFirst_Click()
disa.Recordset.MoveFirst
End Sub

Private Sub cmdLast_Click()
disa.Recordset.MoveLast
End Sub

Private Sub cmdNext_Click()
disa.Recordset.MoveNext
End Sub
```

```vb
Private Sub cmdPrevious_Click()
disa.Recordset.MovePrevious
End Sub

Private Sub cmdReport_Click(Index As Integer)
DeseaseReport.Show
End Sub
Store
Private Sub Command1_Click(Index As Integer)
finance.Recordset.AddNew
End Sub

Private Sub mnuexit_Click()
Dim reply As Integer
reply = MsgBox("Are you sure you want to Exit?", vbExclamation + vbYesNo, "Confirm Exit")
If reply = vbYes Then
MDIForm1.Show
Unload Me
Else
End
End If
End Sub

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

Private Sub cmdAdd_Click()
Stored.Recordset.AddNew
End Sub

Private Sub cmdCancel_Click(Index As Integer)
Text7 = ""
Text28 = ""
Text10 = ""
Text9 = ""
Text11 = ""
Text1 = ""
Text27 = ""
Text12 = ""
Text13 = ""
End Sub

Private Sub cmdExit_Click()
```

```vb
Unload Me
MDIForm1.Show
End Sub

Private Sub cmdFind_Click()
Dim ans As String
ans = MsgBox("Are you sure you want to delete the Item?", 1)
If ans = 1 Then
Stored.Recordset.Delete
Else
End If
End Sub

Private Sub cmdFirst_Click()
Stored.Recordset.MoveFirst
End Sub

Private Sub cmdLast_Click()
Stored.Recordset.MoveLast
End Sub

Private Sub cmdNext_Click()
Stored.Recordset.MoveNext
End Sub

Private Sub cmdPrevious_Click()
Stored.Recordset.MovePrevious
End Sub

Private Sub cmdReport_Click(Index As Integer)
StoreReport.Show
End Sub
Private Sub Stored_WillMove(ByVal adReason As ADODB.EventReasonEnum, adStatus As
ADODB.EventStatusEnum, ByVal pRecordset As ADODB.Recordset)
End Sub
Ward
Private Sub cmdAdd_Click()
WardDetails.Recordset.AddNew
End Sub

Private Sub cmdCancel_Click(Index As Integer)
Text1 = ""
Text2 = ""
Text3 = ""
Text4 = ""
```

```
Text5 = ""
Text6 = ""
Text7 = ""
End Sub

Private Sub cmdExit_Click()
Unload Me
MDIForm1.Show
End Sub

Private Sub cmdFind_Click(Index As Integer)
Dim ans As String
ans = MsgBox("Are you sure you want to delete the Item?", 1)
If ans = 1 Then
WardDetails.Recordset.Delete
Else
End If
End Sub

Private Sub cmdFirst_Click()
WardDetails.Recordset.MoveFirst
End Sub

Private Sub cmdLast_Click()
WardDetails.Recordset.MoveLast
End Sub

Private Sub cmdNext_Click()
WardDetails.Recordset.MoveNext
End Sub

Private Sub cmdPrevious_Click()
WardDetails.Recordset.MovePrevious
End Sub

Private Sub cmdReport_Click(Index As Integer)
WardReport.Show
End Sub
Room
Private Sub cmdAdd_Click()
roomd.Recordset.AddNew
End Sub
Private Sub cmdCancel_Click(Index As Integer)
Text3 = ""
Text9 = ""
```

```
Text10 = ""
Text11 = ""
End Sub

Private Sub cmdDelete_Click()
Dim ans As String
ans = MsgBox("Are you sure you want to delete the Item?", 1)
If ans = 1 Then
roomd.Recordset.Delete
Else
End If
End Sub

Private Sub cmdExit_Click(Index As Integer)
Unload Me
MDIForm1.Show
End Sub

Private Sub cmdFirst_Click()
roomd.Recordset.MoveFirst
End Sub

Private Sub cmdLast_Click()
roomd.Recordset.MoveLast
End Sub

Private Sub cmdNext_Click()
roomd.Recordset.MoveNext
End Sub

Private Sub cmdPrevious_Click()
roomd.Recordset.MovePrevious
End Sub

Private Sub cmdReport_Click(Index As Integer)
RoomReport.Show
End Sub

Bed
Private Sub cmdAdd_Click(Index As Integer)
bedd.Recordset.AddNew
End Sub
Private Sub cmdClear_Click(Index As Integer)
Text12 = ""
Text13 = ""
```

```vb
Text14 = ""
Text15 = ""
Text16 = ""
Text17 = ""
Text1 = ""
End Sub


Private Sub cmdExit_Click()
Unload Me
MDIForm1.Show
End Sub


Private Sub cmdFind_Click(Index As Integer)
Dim ans As String
ans = MsgBox("Are you sure you want to delete the Item?", 1)
If ans = 1 Then
bedd.Recordset.Delete
Else
End If
End Sub
Private Sub cmdFirst_Click()
bedd.Recordset.MoveFirst
End Sub


Private Sub cmdLast_Click()
bedd.Recordset.MoveLast
End Sub


Private Sub cmdNext_Click()
bedd.Recordset.MoveNext
End Sub


Private Sub cmdPrevious_Click()
bedd.Recordset.MovePrevious
End Sub


Private Sub cmdReport_Click(Index As Integer)
BedReport.Show
End Sub
```