

**DEVELOPING A STOCK MANAGEMENT SYSTEM FOR A  
SUPERMARKET**

**CASE STUDY: KIBULI SUPERMARKET**

**BY**

**OMOLLOH ELMAD DAVE**

**BIT/10018/81/DF**

**AND**

**NGUGI KARIUKI JOSEPH**

**BBC/15087/71/DF**

**SUPERVISED BY**

**PROFESSOR GONZALEZ A.VICENTE**

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### DECLARATION

We, Joseph Kariuki and Omolloh Elmad, do hereby declare to the best of our knowledge that this graduation project is our original work and that it has never been submitted to any university or any other institution.

Signed by.......... Date 21/06/2010.....

Joseph Kariuki

Signed by.......... Date 21/06/2010.....,

Omolloh Elmad

**APPROVAL**

This Graduation project has been submitted with the approval of the following supervisor

Signed.....

Date.....

PROFESSOR GONZALEZ A. VICENTE

### **DEDICATION**

This report is dedicated to the entire family of Omolloh Elmad, and Joseph Kariuki not forgetting guardians and friends plus the entire staff of Kampala International University Computer science and the almighty God.

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## **CHAPTER ONE**

### **1.0 INTRODUCTION**

Kibuli Supermarket is a Supermarket which manages sales, products, stock and information about the buying and supply of commodities. The manual system of data entry, updates and storage of data of riddled with problems. As a way of solving the above problems a computerized system has been introduced where there will be easy accessibility of data, reliability, and security which makes decision making and administrative activities simplified even with fewer employees.

### **1.1 Back ground of the Study**

A Management Information System is a formal method of making available to management the accurate and timely information necessary to facilitate the decision making process and enable the organization's planning, control and operational functions to be carried out efficiently and effectively (Laudon, 2000) [15]. Management Information Systems forecast trends, support routine decisions, provide answers to queries thus making the business strategies of Supermarkets come to fruition in an efficient manner. However, as always; Management Information Systems are difficult to maintain and costly to construct (Turban, 2002) [03].

A Supermarket is a food store that carry a wide selection of edibles and non edible products, the concept was started in United states in the 1930's although the large Supermarket is a fixture in the united states; it has not caught on to a large extent in other parts of the world and it must be remembered that a wide variety is less important than quality and local ambience. They deal in the buying and selling of commodities. Supermarkets have become famous for retailing of various commodities including building materials, office products and of course groceries through self service at low prices and support of national development through tax payment and providing employment to citizens ( Michael, 2001 ) [02]

Kibuli Supermarket is our case study; it manages sales, products, stock and information about the buying and supply of commodities. The Supermarket ensures that commodities

like food stuffs, drinks essential for human health are brought nearer to the customers for consumption at the needed time.

It's located along Kibuli-Muyenga highway 1km from Kampala International University. It has been in existence for 7 months selling food stuffs and drinks.

The Supermarket deals with data and information about the commodities bought and sold to customers, records are made on paper and stored in a number of files. However during the course of managing data and information manually the Supermarket presents a lot of problems such as tiresomeness, slowness, unreliability, inconsistency and redundancy.

Therefore implementing a MIS will stamp out these problems because with this system monitoring, controlling activities, making decisions and administration activities are simplified even working is efficient with fewer employees.

## **1.2 Statement of the Problem**

Kibuli Supermarket currently uses a manual filling system which is characterized by the following problems; data redundancy and inconsistency, difficulty in accessing data, data isolation, integrity problems, atomicity problems, concurrent-access anomalies, and security problems.

This has affected the proper management, supervision and monitoring of the Supermarket hence making service delivery to the client time consuming and costly.

The study is set out to develop a Management Information System that will provide easy access and timely retrieval of clients and management records.

## **1.3 Objectives of the study**

### ***1.3.1 General objective***

To develop a Management information system that will provide easy access and timely retrieval of clients and management records.

### ***1.3.2 Specific objective of the study***

The following are the specific objectives of the study.

1. To investigate the approaches of developing Management Information System.

2. To identify information or data that is necessary in building the Management Information for the Kibuli Supermarket.
3. To design the Management Information System.
4. To implement the Management Information System developed.
5. To validate the Management Information System during the course of the study.

#### **1.4 Scope of the Study**

The Management Information System developed shall address the routines of the Supermarket subject to customers' need; it will present a graphical user interface that will provide an opportunity to calculate the sold stock, current stock, total sales of the day, month and year and also keeping proper track of both management and clients records.

#### **1.5 Significance of the Study**

- i) The study has made the Supermarket realize high profits in short spells of time this is because the Supermarket has reduced on the number of employees thus little money is paid out to employees and yet work is done efficiently.
- ii) The researchers have acquired practical skills and knowledge for designing and implementation of the Management Information System.
- iii) The study has enforced one of the government policies among the many; computerizing of all commercial institutions.
- iv) Clients are now served very fast thus time taken at service delivery is short.
- v) The study has made the management of the Supermarket to make effective analysis of the Supermarket performance.

Therefore the study has overcome the earlier faced problems where there is easy accessibility of data, reliability, and security which has made decision making and administrative activities simplified even with fewer employees.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 INTRODUCTION**

This chapter elaborates the importance of a computerized system as viewed by different authors and researchers, the effects and benefits of using computerized system where there will be accessibility of data, reliability and security.

#### **2.1 Management Information System**

This chapter involved looking through earlier research documents and related literature with an aim of identifying a problem of concern such that no duplication of earlier research work is done. This was sourced by reviewing documented resources such as text books and online publications, related with our research topic, we have described the Database , the Database System and the database management Information system, benefits, the effects of the Database and database management system as addressed by the earlier writers.

It must be remembered that today in the 21<sup>st</sup> century the information systems have become the order of the day and their impacts are witnessed by almost every organization ranging from small, medium sized and big.

In the old days way back in the 1990's managers were responsible for controlling, maintaining and standardizing paper records, office supervisors were responsible for day-to-day management of office work, secretaries and office workers used such tools as adding machines, key punch machines and type writers to perform paper work processing tasks but today things have changed leading to a high level of technology in information management.

#### **2.2 Information Technology**

This is the bringing about changes in the organization that make the firm even more dependent than in the past on the knowledge learning and decision making of individual employees Kenneth (Laudon, 2000) [15].

Information refers to data that has been shaped into a form that is meaning full and useful to human beings. Data are streams of raw facts representing events occurring in organizations or the physical environment before they have been organized and arranged into a form that people can understand and use (Laudon, 2000) [15].

Information flows in a system therefore a need to take a quick look at what *a system is*:

A system is a set of interrelated components that must work together to achieve some common goal, failure for the components to work together the system will malfunction example suppose marketing (one component of the system that is the organization) sells more than expected of some product then production (another component) would have to special-order materials or pay over time to produce more than the planned time Martin *etal*, (1999)

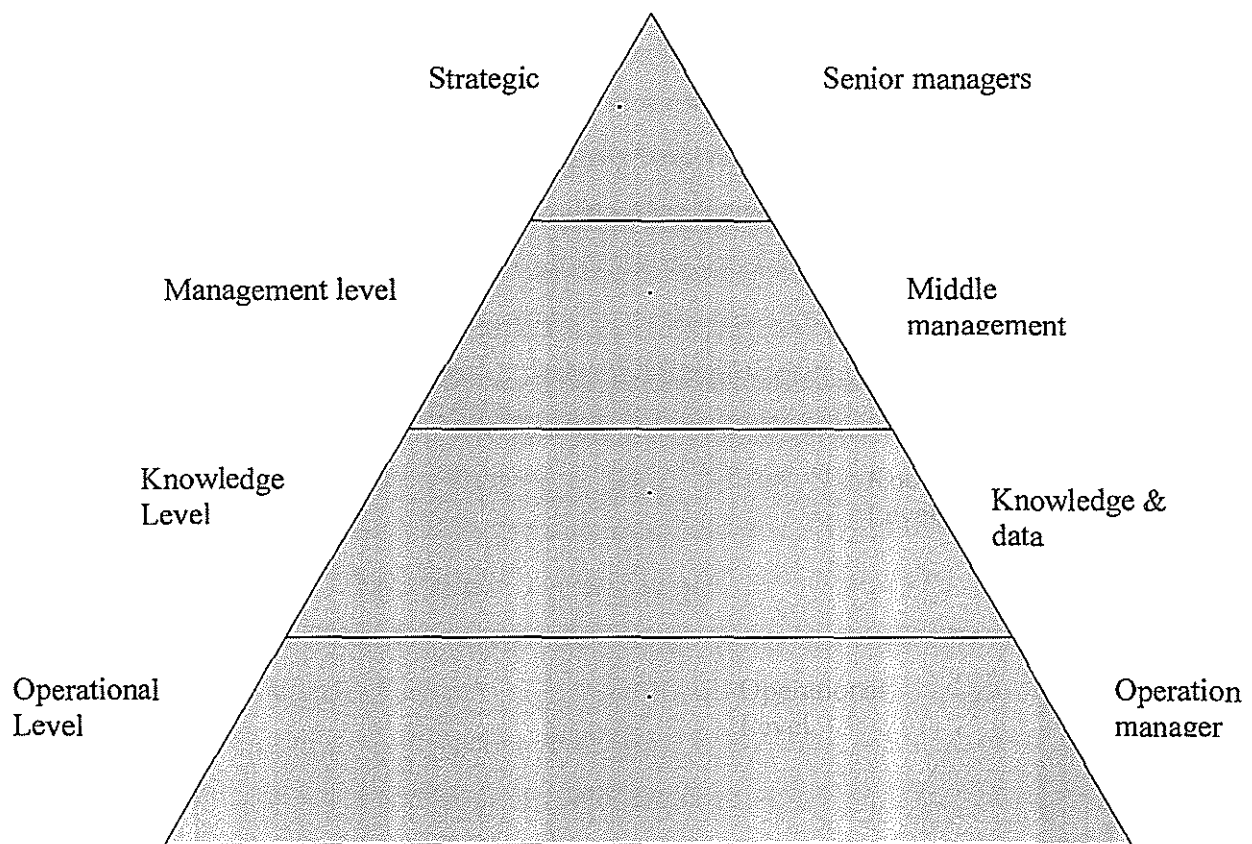
Therefore information systems contain information about significant people places and things within the organization or in the environment surrounding it.

### **2.3 Information system**

Is a collection of computer hardware and software, procedure, documentation, forms and people responsible for the capture, movement management and distribution of data and information. As with many systems it's crucial that the components of the IS work together the components must be consistent, minimally redundant complete and well connected with each other (Carol, 1999) [10].

The figure below will help to address the roles of information systems more effectively and appropriately.

**Figure 1.1**



### ***2.3.1 The roles of information system***

- a) Enable managers to keep track of elementary activities and transactions of organizations like sales, receipts, cash deposits, payroll, credit decisions and flow of materials in the factory (Jane, 1998).
- b) Helps organization get new knowledge into business to help the organization control the flow of paper work. (Kenneth, 1996).

c) Through information systems organizations are able to monitor, control make decisions and also do administration activities (Kenneth, 2000) [15].

d) Organizations are able to operate efficiently with fewer employees (Kenneth, 1998).

### ***2.3.2 Components of information systems***

Components of information system comprise of computer hardware and software, telecommunications, database human resources, and procedures A brief description of each of these components is below:

#### **Hardware**

For an information system to be effective it has to integrate a number of components and activities on work on the raw data to produce useful information. An information system therefore accepts raw data as inputs and processes them into useful information.

It provides information on the operation of system to management which it uses as a tool for control and maintenance of the system. An information system depends on the resources of people (end users and IS specialists), hardware (machines), software (programs and procedures) data and knowledge bases) and networks (communication media and network).

A brief description of each of these components is given in the table

**Figure 1.2**

components of information systems	Component	Description
	Hardware	Multiple computers, micro computers, mainframe, peripherals. Computer system components are central process(s) Memory hierarchy, input and output devices
	Software	Systems programs and applications programs.
	Database	Organized collections of data used by applications software
	Telecommunications	Local area networks, metropolitan area networks, and wide area networks.
	Human resources	Professional cadre of computer specialists and users when performing task involving information systems.
	procedure	Specifications for the use operation and maintenance of information systems collected to facilitate user manuals, operator manuals and similar documents frequently delivered in an electronic form.

## 2.4 Database and all its aspects

For any information system to function to the satisfaction of its need it must have a database to enable the storage of data. Therefore basing on this background we have seen it right and fitting to address a brief view of Databases as the information below depicts.



Database systems are designed to manage large bodies of information. Management of data involves both defining structures for storage of information. In addition databases ensures safety of information stored , despite system crashes or attempts at an authorized access since this shared data to be shared therefore the system must avoid possible anomalous results.

According to Martin *etal* (1999), a database is a shared collection of logically related data, organized to meet the needs of an organization. It is a support software that is used to create, manage and protect organization data .A database management system works with the operating system and modify data and to make data accessible in variety of meaningful and authorized ways Martin *etal* (1999).

Database is a collection of related data and processed by the computer Gerald and Anderson (1997).

James(1995) [06], found that a database is an integrated collection of logically related records or objects . Database management system is asset of computer programs that controls the creation, maintenance, and use of databases of an organization and its end-users by O'Brien(1995) [06].

Date (2001) [09], states that the database is a collection of persistent data that is used by the application systems of some given enterprise. Enterprise is a convenient generic term for any reasonably self contained commercial, scientific, technical or other organization. An enterprise can be a single individual (with a small database) or a complete corporation or A Supermarket, bank. Any organization must necessarily maintain data about its operations .Such data is referred to as "*persistent data*" as referred above Therefore among the persistent data we could have sales made, account data among others.

#### ***2.4.1 Advantages of databases***

a) Data can be shared;

It might be possible to satisfy the data requirements of the new applications without having to add new data to the database (Date, 2001) [09].

b) Redundancy can be reduced;

In file based system redundancy is unavoidable, but with the database files are integrated and this problem is eliminated as long as the data administrator is aware of the data requirements for both applications (Date, 2001) [09].

c) Inconsistence can be avoided in file based.

Suppose there is a change in one file means changes have to be made in all other files otherwise data becomes inconsistent but for the database a change in one record is done automatically to all others as well through a process called *Propagating updates* (Date, 2001) [09].

d) Transaction support is provided.

Having a logical unit of work typically involving several database operations in particular, several update operations. Examples transferring cash amount from account A to account B clearly two updates are required one to withdraw cash from A and the other to deposit to account B, if the user has stated that the two updates are part of the same transaction then the system can effectively guarantee that either both of them or neither is even (say because of power outage) half way the process (Date, 2001) [09].

e) Integrity can be maintained;

To ensure that the data in the database is correct, data is controlled centrally by permitting the data administrator define and the database administrator implement integrity constraints known as *business rules* (Date, 2001) [09]

f) Security can be enforced.

Data access is restricted to those with passwords and proper permissions (Date, 2001) [09].

g) Conflicting requirements can be balanced.

Here the database administrator under the instruction of the data administrator's direction can so structure the system as to provide an overall service that is "best for the enterprise" to avoid the conflicting requirements issue (Date, 2001) [09].

h) Standards can be enforced.

Date (2001) [09], states that the database administrator under the data administrator's instruction ensures that all applicable standards are enforced in the presentation of data. The applicable standards may include any or all of the following departmental installation, international standards. Standardizing data representation is particularly desirable as an aid to interchange or movement between systems.

In this chapter, we shall explore a lot about data management as it's our guide to this research / study. But before looking at data management in we shall first look at IT itself which is the prime holder of data.

In each organization there is normally a department that is given the responsibility of data and information processing together with the task of ensuring smooth flow of commodities among all organizations departments this department is IT. The database originates from in it, it's huge and difficult to explore fully but we shall take a quick look on its subset which is a database today DB has gained Momentum at data management for any Organization to accomplish its activities.

Database management system, today the shape of the work has significantly changed where the success of the organization depends entirely on its ability to acquire accurate and timely data about its operations.

#### ***2.4.2 Database Maintenance***

Databases of an organization need to be updated continually to reflect new business transactions and other events. Other miscellaneous changes must be made to ensure accuracy of data in the databases. The above task is achieved through transaction processing programs and other end user application packages in collaboration with the database management system. The activities performed here in the database are:

- ✓ Deletion of obsolete records.
- ✓ Expansion of database capacity, so that it can cater for growth in data volume for enhanced application requirement
- ✓ Addition of new files to the database
- ✓ Incorporation of fields on to the existing records in the database
- ✓ Finally linking up all the items in the database logically

#### **2.5 Application architecture and development process**

The application architecture and development life cycle are closely linked and have a great impact on the quality and maintainability of the resulting application.

The application consists of several components that allow the user to manipulate records in the main database only using the components they require. This modular approach allows for a staged development of the most important and high-risk components first

these separate components share functionality because they will manipulate the same database and hence having the same data structure. This shared functionality affords itself to the analysis classes to be shared among several components.

The steps to the approach would have a function in each component that would handle the database connection. If there is a change in the way this component function, each application has to be modified and recompiled. The advantage of an object-oriented system is that change can be easily managed if the system is designed well. This equates to easier maintenance and cost savings.

## **2.6 Database management system**

According to ( Ramez, 2001) [07], states that a database management system is a complex software system that consists of many components or modules for implementing the catalogue query language, interface processors, data access concurrency control, recovery and security.

Database management system; is software that handles all access requests to the database (Date, 2001) [09], this is typically, what happens:

- ✓ A user issues an access request, using some particular language (typically SQL)
- ✓ The database intercepts that request and analyses it.
- ✓ The database inspects, in turn (the objects versions of) the external schema /conceptual mapping, the conceptual schema, the conceptual, internal mapping and the storage structure
- ✓ The database management system executes the necessary operation on the stored database.

### ***2.6.1 Merits of database management system***

a) Controlling redundancy.

Since the views of the different user groups are intergraded during the database design, hence this does not permit inconsistence thus saving space therefore leading to control of files being repeated and in turn performance of queries is improved (Ramez, 2001) [07].

b) Restricting unauthorized access;

Data access is only to those with proper permissions. Example only the DBA' S staff may be allowed to use certain privileged software, such software for creating new accounts (Ramez, 2001) [07].

c) Representing complex relationships among data.

A DB may include several data interrelated in many ways therefore representing it in complex relationship as well as to retrieve and update related data easily and efficiently (Ramez, 2001) [07].

d) Enforcing integrity constraints.

This is to ensure that the data entered in the system is valid. This is achieved through the rules which must remain true for the database to preserve integrity. These rules are specified at the time of creating the database (Ramez, 2001) [07].

e) Backup and recovery.

Despite of the DB being protected from unauthorized access as well as invalid entries there is always a danger of data in the DB being lost any time. This could be due to some hardware problem or system crush therefore resulting in the loss of data, to guard the data from this database management system have in built backup and recovery techniques that the DB is protected from these kind of fatalities ( Elmasri, 2001) [07].

### ***2.6.2 Limitations of database management system***

Although a database management system has several strengths we cannot stand and say that it has no limitations thus proving the views below:

1) Complexity.

A database management system is extremely a complicated software therefore the database designers and developers DA's and DBA's and end users to take advantage of it they need to understand its functionality.

2) Size.

It's a large piece of software occupying a lot of MB or GB disk space there requiring substantial memory space to run efficiently

3) Cost of the database management system.

This varies significantly depending on the functionality provided by the database management system and the environment.

4) Additional hardware costs.

The disk storage requirement for the database management system may necessitate the purchase of additional hardware, to achieve the desired performance. Hence this results into additional expenditures.

5) Cost of conversion.

The cost of database management system and extra hardware is insignificant as opposed to the cost of converting the existing application to run on the new hardware and the database management system. This consists of training the staff, employing the specialists to help with conversion and running of the system.

6) Performance.

Typically a file based system is designed to serve a specific application such as invoicing as a result the performance is always good but for database management system is designed to serve several applications rather than just one therefore applications may never run as fast any more.

7) Higher impact of failure.

The centralization of resources increases the vulnerability of the system. Since all the users and applications depend on the on availability of the database management system, the failure of any component can the operations to a halt.

**The database management system must produce the following:**

Forms: These are the screen display of the database management system of the computer form that someone fills in for a particular entity.

Reports: It is printed document, output for the system in a paper. It's especially applicable in VB.

**Characteristics of database management system**

a) Own describing Database System; it contains a database itself which in turn contain well defined constraints.

b) Data independence; in file system, the structure of a file may require changing all the programs that access this file. By contrast, database management system, access programs do not require such changes. The structure of data file is stored in the database management system catalog separately from the access programs.

- c) Incorporate views of different users; A database typically has many users of who may require a different perspective or view of the DB. A view may be a subset of the DB or it may contain virtual data i.e. desired from the database file
- d) supports many users; A multi-user database allows multiple users to access the database at the same time. The database management system includes; concurrency control software to ensure that several users are trying to update the same data that the result is correct.
- e) In a database environment, the primary resources is the database itself and the secondary resources is the database management system and related software.

## **2.7 Description of the system**

Information system can be defined technically as a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and controlling organization. Additionally it helps managers to analyze problems

Visualize complex subjects and create new products (Laudon, 2001) [14].

Nyakana Ronald and Semakula Joel while doing their final project at Kampala International University being supervised by Mr. Matovu Moses developed a stock and Sales for Golden Investments Pharmaceuticals Uganda Limited. The system is used to monitor management activities taking place at the hospital, Nabukenya Norah designed similar system for stock and sales monitoring, he called it a “stock and sales” monitoring system for Payless Supermarket. This provides the manager and his associate with the relevant and review reports to assess performance from time to time. This system is similar to the proposed system, of the Kibuli Supermarket.

To manage data efficiently and use it to analyze guide its activities and /or its operations. This strongly reveal that information that can be available to us at any time is literally exploding without the ability to manage the vast amount of data and quickly find the information relevant to a given question as the amount of information increases it tends to become a liability rather than an asset.

## **2.8 Developing Management Information System**

Development of a MIS begins with a well defined plan called Information Architecture; it's a high level map or plan of the Information requirements in the organization and the manner in which these requirements are being satisfied. It's a guide for current operations and a blue print for future directions. It helps to ensure that organizations IT meet the organizations strategic business needs that is it must tie together the information requirements, the infrastructure and the applications. It is not far from the planning of a house. When planning for a high level drawing of a house, the architect needs to know the purpose of the house, the requirements the dwellers and the building constraints ( time, money, materials etc ) also MIS takes the same trend and it occurs in two parts;

- Business needs for information; that is organization objectives and problems and the contribution that IT can make. The potential users of IT must play a critical role in this part of the design process.
- The existing and planned information infrastructure and applications in the organization. The information includes how the planned system and its applications can be combined among themselves or with future systems to support the organizations needs.

Information Systems; are aimed at report production by extracting information from the co-operate database and processing it according to the needs of the user. Today, not only managers can benefit from MIS's but also organizational employees. Still in the same vein Support Systems for office employees began to emerge in the late 1960's and early 1970's when Networked computing and electronic communication gained a lot of momentum an example which has been presented as the best is Air line reservation systems. In late 1970's and early 1980's word processing systems spread to many organizations. Later on, document management and other productivity software were added as part of office automation .Since early 1970's, computers have also been introduced to the manufacturing environment. Applications ranged from robotics to computer aided design and manufacturing (CAD/CAM) to inventory and logistics management. By the early 1970's, the demand for all types of information technology, for all levels of workers, had began to accelerate. Increased capabilities and reduced costs justified increased support for a growing number of no routine and online applications.



Today the impact of MIS is still with us as many end-user computing has been implemented as well as networked computing (Group support systems ) and more still lately intelligent systems that can perform functions normally associated with human intelligence have been delivered on market ( Turban, 2001 ) [04].

## **2.9 Review of Supermarkets**

What Supermarkets produce?

Supermarkets provide a service to the economy, a service of food distribution by acting as a middle man. Food that is at Supermarkets is not produced at Supermarkets but these items to arrive at the Supermarket is a long process (journey) that is we have the producers at the start of the journey, the Supermarket as a middle man and the consumers at the end of the journey. Food distribution occurs in two ways;

- ✓ Selecting and ordering goods ranging from food to paper goods to cleansers and pharmaceuticals; the store might or might not be responsible for transporting these goods to a ware house and then store itself.
- ✓ Once at store, items have to be shelved, customers have to be informed and attracted through local advertising, discount coupons and promotion inducements like saving stamps .Once in store , customers help themselves until they use the Supermarket food distribution service of weighing meat /produce, checking out goods and placing them in bags.

How a service is produced?

It is a scenario that is looked at in three perspectives:

*Land:* These require a large area; a typical store is more than half the size of a football field –approximately 39,000 square feet (A regulation football field is 57,600 square feet). Newer “superstores” are as large as football fields and stock is large as 25,000 items.

*Labor:* A large business unit is made up of many individual Supermarket stores grouped as chains, they are managed by a managerial staff making important decisions about building or buying new stores, major purchases and general store policies and within a store there is a store manager and people in charge of different departments, they in turn have variety of workers who assist in fruit and meat packaging, shelving goods, mark

prices, check out items,. Among these individuals might be an entrepreneur or two who is in particular responsible for the success of the store or the chain of stores. Responsibilities require more than physical abilities. As a service business in which many employees have direct contact with customers being helpful and courteous and personal qualities could also be required.

*Capital:* It includes store fixtures, the inventory on shelves and computerized equipment. A Supermarket is a large building ,in side of which are shelves ,refrigerators ,freezers ,food and non food items ,signs and counter-all traditional store equipment and inventory. Lately Supermarkets have acquired running records of their sales, more specific knowledge of goods being sold, ordering information and their current cash position. Similarly in Supermarkets ware houses and business offices, with the assistance of computers employees are able to compile and use information that was not readily available a few years ago and thus providing additional efficiency, which can lead to higher profits however, as always, there is a trade-off; computerized equipment is expensive (Schwartz,1990) [05].

In conclusion, Supermarkets have reacted to complete pressures in either of the two ways; some cut costs and stressed low prices, offering more private brands and generic products and few customer services. Others have expanded their store sizes and assortments adding more non foods lines and groceries-ethnic foods, the also added more service departments; video rentals, delicatessens, financial institutions and pharmaceuticals (Michael, 2001) [02].

## **2.10 Systems Currently Serving Supermarkets**

Presently, most Supermarkets are using one among the many systems in place for keeping records that is keeping the information on a computer stored in the operating system files however, as always; some Supermarkets are using Database systems. In using the file processing system to allow users to manipulate the information, the system can present a number of application programs; these are written to meet the needs of the organization, new application programs are added as the need arises.

Typically, file processing system is supported by a convectional O/S. The system stores permanent records in various files and it needs different application programs to extract

records from and add records to, the appropriate files .Before the databases came along, organization usually stored information in such systems.

## **2.11 Strength of manual filling systems**

- a) Complexity. They are a bit easy to construct as their building does not involve higher technicalities as opposed to the s.
- b) Cost of conversion. Conversion is less difficult as opposed to the s because it only involves addition of one or more applications depending on the need.

### ***2.11.1 Weaknesses of Manual Filling Systems***

- Data redundancy and inconsistency ; since different programmers create the files and application programs over a long period, the various files are likely to have different information and the programs may be written in several programming languages example if an address and telephone number of a particular customer appear in a file that consists of savings-account records; and in a file that consists of checking-account records; thus this leading to a higher storage and access cost. In addition it may lead to *data consistency*; that is various copies of data may no longer agree that is, a changed customer address may be reflected in saving-account records but not elsewhere in the system.
- Difficulty in accessing data. Suppose a bank with this kind of system wanted to find out the names of all customers who live within a particular postal-code area. The officer asks the data processing department to generate such a list. Because the designers of such a system did not anticipate this request, there is no application on hand to meet it. In other words the point here is that conventional file processing environment do not allow the needed data to be retrieved in a convenient and efficient manner.
- Data isolation. Because data are scattered in various files and files may be in different formats, writing new application program to retrieve the appropriate data is difficult.
- Integrity problems; the data values stored in the database must satisfy certain types of *consistency constraints*. Example the balance of a bank account may never fall below a prescribed amount (say \$25). Developers enforce these

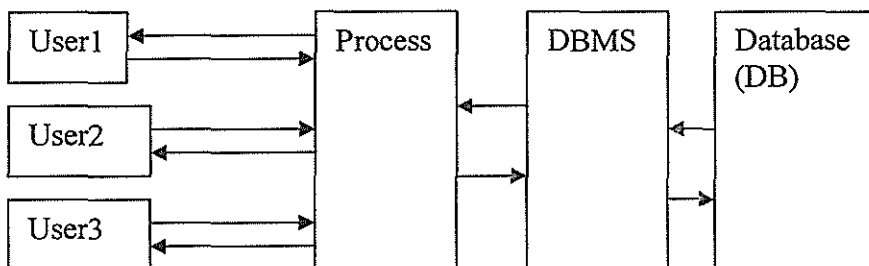
constraints in the system by adding appropriate code in the various application programs. However, when new constraints are added, it's difficult to change the programs to enforce them. The problem is compounded when constraints involve several data items from different files.

- Atomicity problems. A computer system like any other mechanical or electrical device, is subject to failure. In many applications, it's crucial data, if a failure occurs the data be restored to a consistency state that existed prior to the failure. Clearly, it's to database consistency that either both the credit and debit, or that neither occur. That is the funds transfer must be atomic-it must happen in its entirety or not at all. It's difficult to ensure atomicity in conventional file processing system.
- Concurrent-access anomalies. For the sake of the overall performance of the system and faster response, many systems allow multiple users to update the data simultaneously. In such an environment, interaction of concurrent updates may result inconsistent data. Suppose that two people withdraw funds from the same account at about the same time, the result of the concurrent executions may leave the account in an inconsistent state. To guard against this possibility, the system must maintain some form of supervision, but supervision is difficult to provide because data may be accessed by many application programs that have not been coordinated previously.
- Security Problems. Not every user of database systems should be able to access all the data like a bank employee does not need to know about customer account information. But since application programs are added to the system in an ad hoc manner enforcing such security constraints is difficult.

These weaknesses among the many prompted the development of DBMS (Silberschatz, 2002)

[08]

### Graphical Notation of the system



**Figure 1.3**

A database system can be looked at as an electronic collection of several records that are organized to service many applications at the same time by organizing data so that it can appear to be in one location rather than storing data in separate files for each application, data is stored physically to appear to users as being stored in only one location Example several files for personal, payroll and benefits, the corporation could create a single common Human Resources database. Kenneth (1995).

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0. Introduction**

In this section we have solely described the data techniques we employed in the collection of the data we required so as we could be able to present right full answers to the research questions that is the designing and implementing of the Management Information System, we have precisely addressed the method of system development and also in a similar development we looked at the system information flow and the architecture of the proposed system. It must be remembered that systems frequently replace existing manual filling systems and the new systems may themselves be replaced after some time, the process of replacing old systems with new systems exists in stages called the System Development Life Cycle (SDLC).

#### **3.1. System Development Life Cycle (SDLC) description;**

It is a well defined process by which a system is conceived, developed and implemented.

This process makes us run through the domain of our study.

a) Data collection and requirement analysis;

Data collection

Data collection methods

In this research we employed primary and secondary ways in gathering data

i) Primary data; this was sourced by physically visiting the field and collecting data through various tools.

ii) Secondary data; this was sourced by reviewing documented resources such as Textbooks and Online publications.

#### **3.2. Data collection instruments**

Requirement analysis

This involves capturing the needs of the client so that they are clearly communicated to everyone involved in the project; it requires interaction between the client and the system developer and also involves the functional (what the system does) and non functional

requirements; these are the things like performance, response time and so forth of the system. At the end of this stage we a requirement specification document is produced.

b) System design.

After the requirement specification document is produced through the requirement analysis phase, the requirement specification document undergoes two consecutive design processes. First comes, the Logical design in which the requirements are partitioned into components. These result into the architectural design document which describes what each component must do and how they interact with each other to provide the overall required services. Then each component in turn is designed; this process is termed as detailed or physical design and also this produces a document called the detailed design document .The detailed design document describes how each component does what it is required to do and thus how the whole system does what its required to do.

c) System implementation and testing.

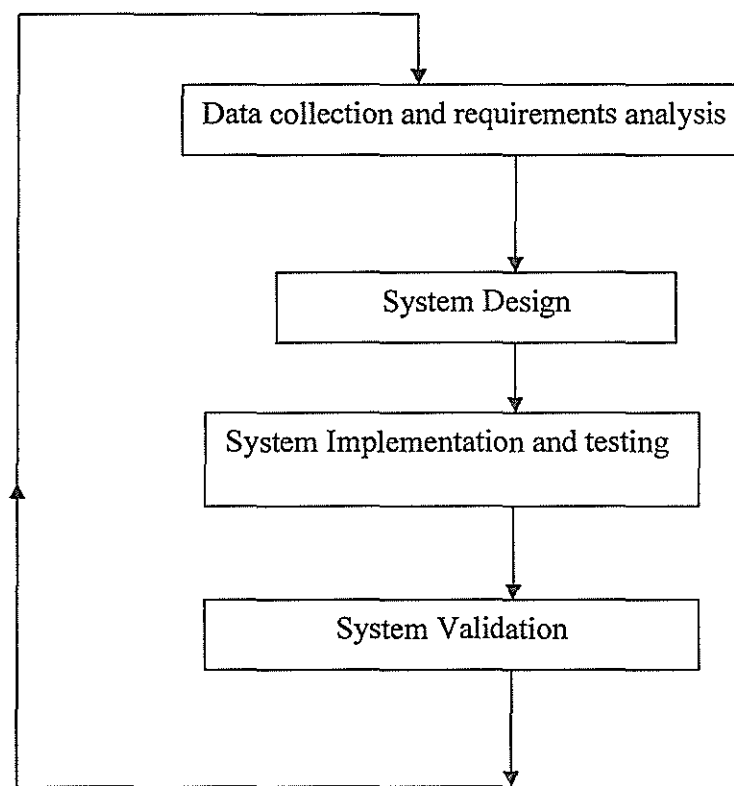
Are the physical realization of the system and the process of exhaustive and thorough?

Activities that helps to eliminate the errors that may be existing in the system and also to check if this system produces the desired results under known conditions

d) System Validation.

Kibuli Supermarket Management Information system has been tested and a full result have been obtained under known conditions and through careful investigations, it has got known that the system satisfies the desired needs of the Supermarket and functions according to their expectations subject to the services offered by Kibuli Supermarket. However, as always; it had a bit of some miscommunications, because it was difficult to cater for more services for instance if the Supermarket grows bigger than it is now.

### Graphical notation of the Stages of the System development life cycle



**Figurer 1.4**

Data collection methods;

In this research we employed primary and secondary ways in gathering data

a) Primary data; this was sourced by physically visiting the field and collecting data through various tools.

b) Secondary data; this was sourced by reviewing documented resources such as Textbooks and Online publications.



## Data collection instruments

The following data collection instruments were employed.

### 1. Questionnaire.

It's a technique in which a number of printed questions were used for obtaining data. The list of questions was sent to the respondents by email; were after filling up the questionnaire they were returned to us investigators (Mugenda, 2003).

Through questionnaires we were able to address the specific objective and our research question.

In this technique we were able to follow two broad categories of the questions that is the closed ended and open ended in designing our questions.

The rules below; are some of the ones we used to construct our questionnaires and questionnaire items.

- a) We were able to list the objectives that we wanted our questionnaires to accomplish; in turn this helped us to write items since each item is related to a certain objective.
- b) We majored at short questions so as it could help those who answered them to easily understand them and many more rules.

### Advantages

- The method was relatively cheap and expeditious
- The information we obtained was valid and reliable
- It ensured anonymity.
- It placed less pressure to our respondents and gave them more time to respond to our questions.

### Disadvantages

In spite of all the good of this technique this does not rule out the other side of unpleasantness, therefore they are depicted below;

- We were uncertain whether all people will respond to our cell of answering the questionnaires.
- Some were somehow the information that was needed in the study was unable to be catered for.
- It also presented confusion to the respondents as to the nature of the information we exactly required

2) Group discussions with the concerned parties

3) Interviews. We carried out interview schedules by directly asking questions to the respondents who were expected to give immediate answers for record purposes.

An interview is an oral administration of a questionnaire; interviews therefore are face-to-face encounters and to get you need to create maximum co-operation from respondents and thus a need for establishing a friendly relationship with the respondent prior to conduction the interviews.

It's a commonly used technique of data collection it's a direct method of collection data.

#### Advantage

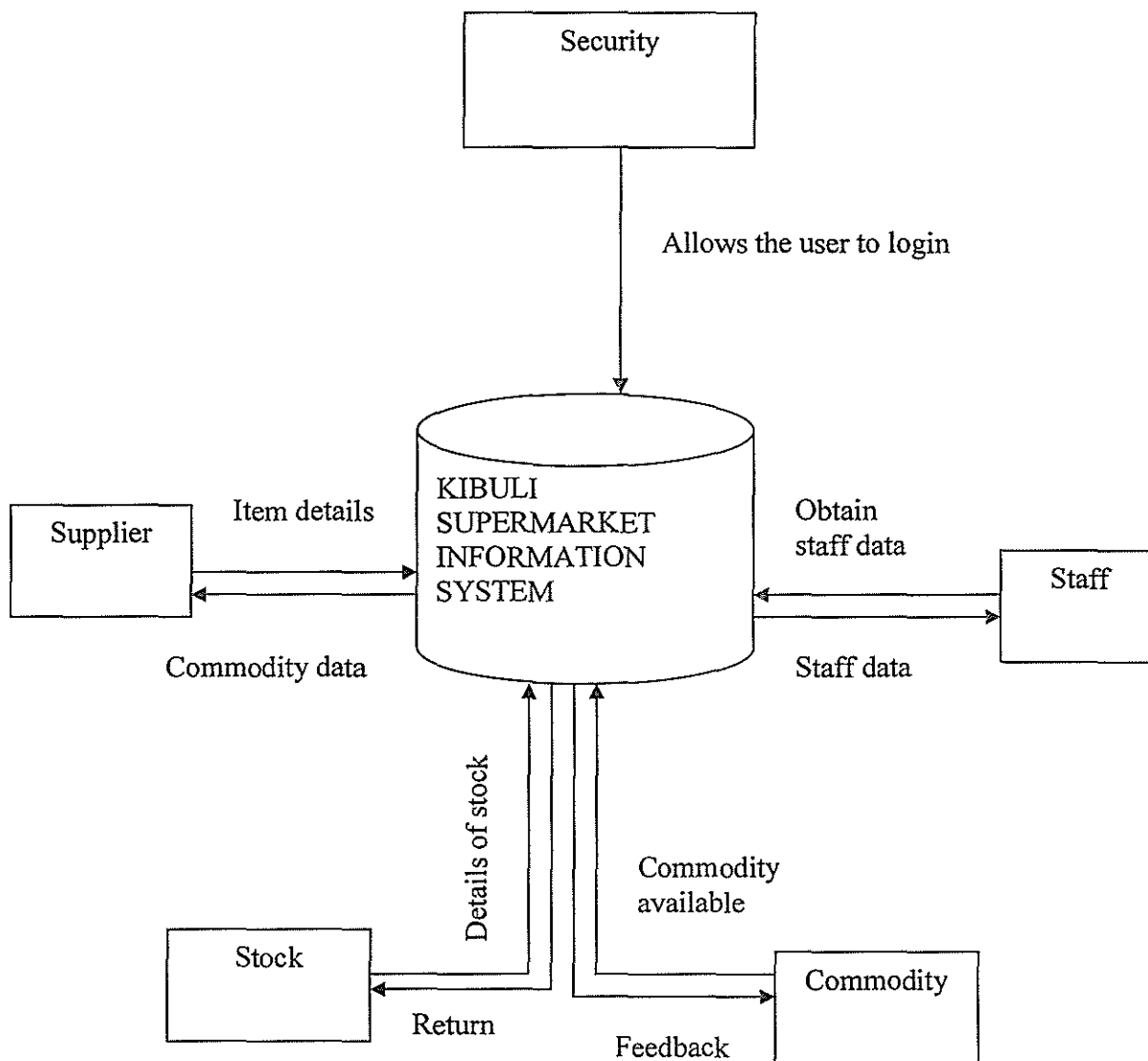
- They provided in depth data which we not able to get using a questionnaire.
- Interview guarded against confusing questions since the interview could fully clarify the questions there by helping the respondent give relative responses.
- Interviews catered for an opportunity of interviewees to ask for questions that they did not understand.
- We were able to clarify and elaborate the purpose our research and effectively convinced respondents about the importance of the research, therefore respondents gave more complete and honest information.
- We yielded higher response rates mainly because it was difficult for subjects to completely refuse to answer the questions or to ignore us

#### Demerits

There are several good parts of this techniques already witnessed above but this does not mean that it does not register any part that makes it bad. Hence below are some of the bad parts of this technique;

- They required having full skills on the kind of language to use.

## Graphical Notation of System development life cycle (SDLC)



**Figure 1**

During this phase of system development we explored the methodologies we employed in data collection, system development and also came up with a context level diagram of Kibuli Supermarket (this shows information flow subject to management in the Supermarket).

## CHAPTER FOUR

# SYSTEM ANALYSIS DESIGN, IMPLEMENTATION AND EVALUATION

### 4.0. Introduction

This chapter focuses on the presentations of the data generated during the course of the field study, using the questionnaire.

The respondent's comprised of both staff and clients as illustrated in the table below

Respondents	frequency	Percentage
Staff	10	65%
clients	25	25%
Total	35	100%

**Table 4.0**

From the Above table, ten staff members of Kibuli supermarket were questioned and randomly selected number of 25 clients were also questioned who gave different opinions and views towards the interview which in turn helped us in designing the new system that responded positively towards the betterment of the supermarket itself and the wellbeing of the clients and staff.

It was found out that there is nothing like computerized means of stock record keeping and this was found out that it was because, they lack proper skills to use the modern computerized system (management information system) which is being introduced to the supermarket.

#### **The problems which the staff experienced in using the current system;**

Accessibility of data was difficult.

The manual system of data entry, updates and storage is complex.

This chapter explains how the specification document is broken down into components and how they relate to each other to provide the overall services that is the logical design.

Incorporated estimated equipments we required for the development like software and hardware. The section further involves an explanation on how the new system will be maintained, adjusted and improved through system audit, user returns and regular monitoring.

## 4.1. Logical Design

This describes the components of the new system and how these components work together to realize the overall function of the system.

### Commodity Table

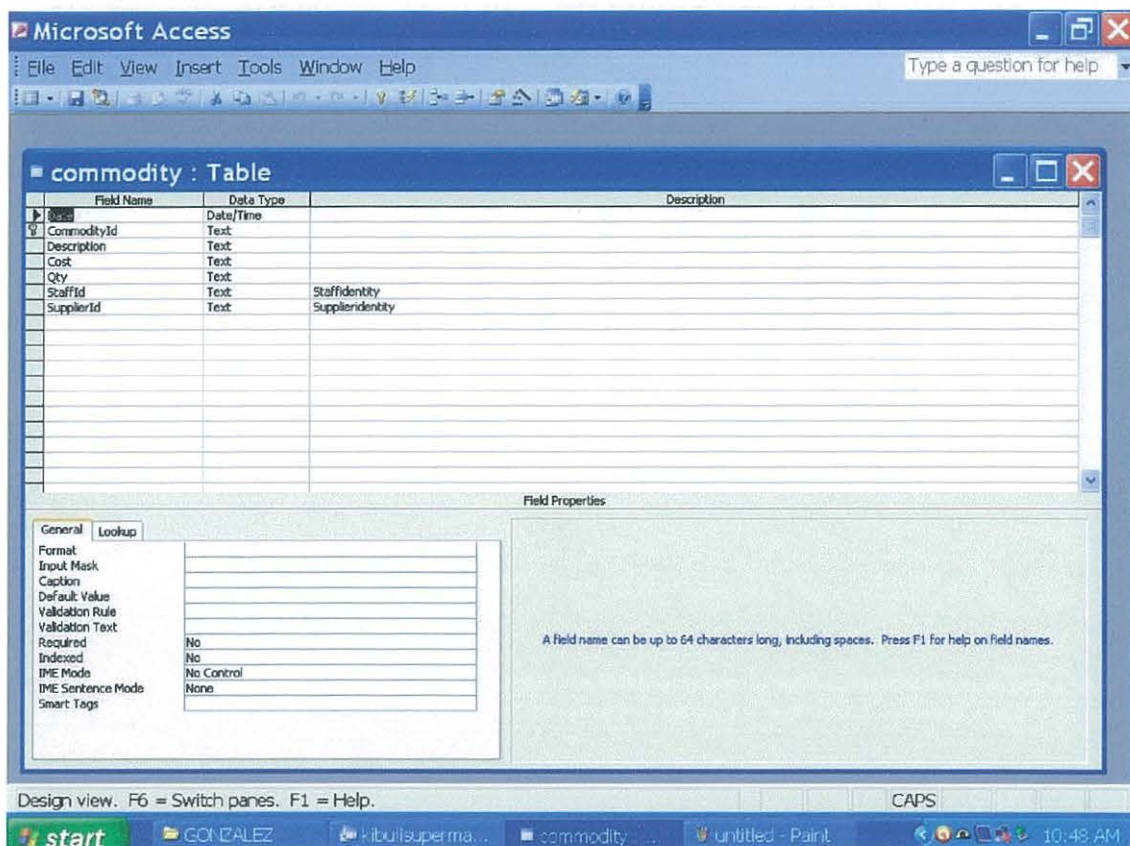


TABLE 4.1

The above presentation is the design for commodity

Table, in this table information or details for particular commodities will be stored and retrieved in respect to the guiding constraints. This design has three columns; the field name which contains attributes, the data type which contains the data type for a particular attribute and last is the description column which explains the abbreviations and full meanings for the names given to the attributes.

## Staff Table

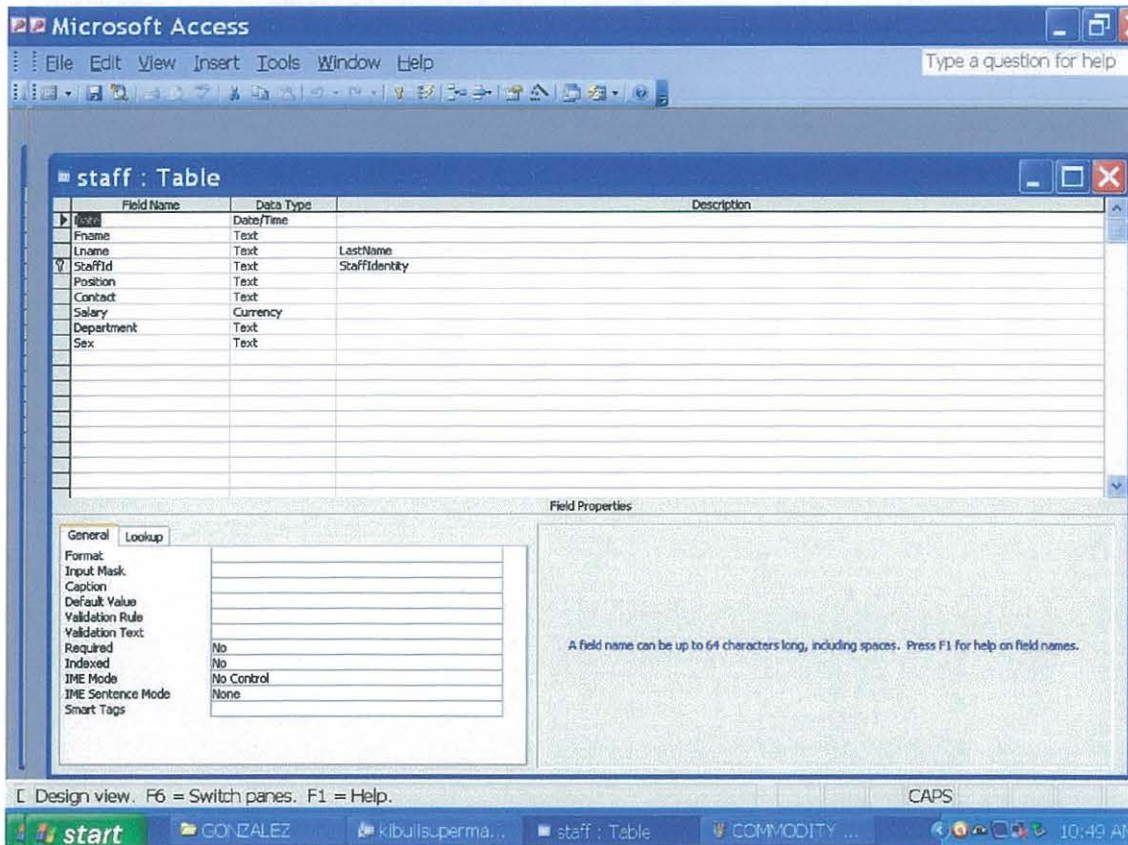


TABLE 4.2

The above presentation is the design for staff

Table, in this table information or details for staff will be stored and retrieved in respect to the guiding constraints. This design has three columns; the field name which contains attributes, the data type which contains the data type for a particular attribute and last is the description column which explains the abbreviations and full meanings for the names given to the attributes.



## Stock Table

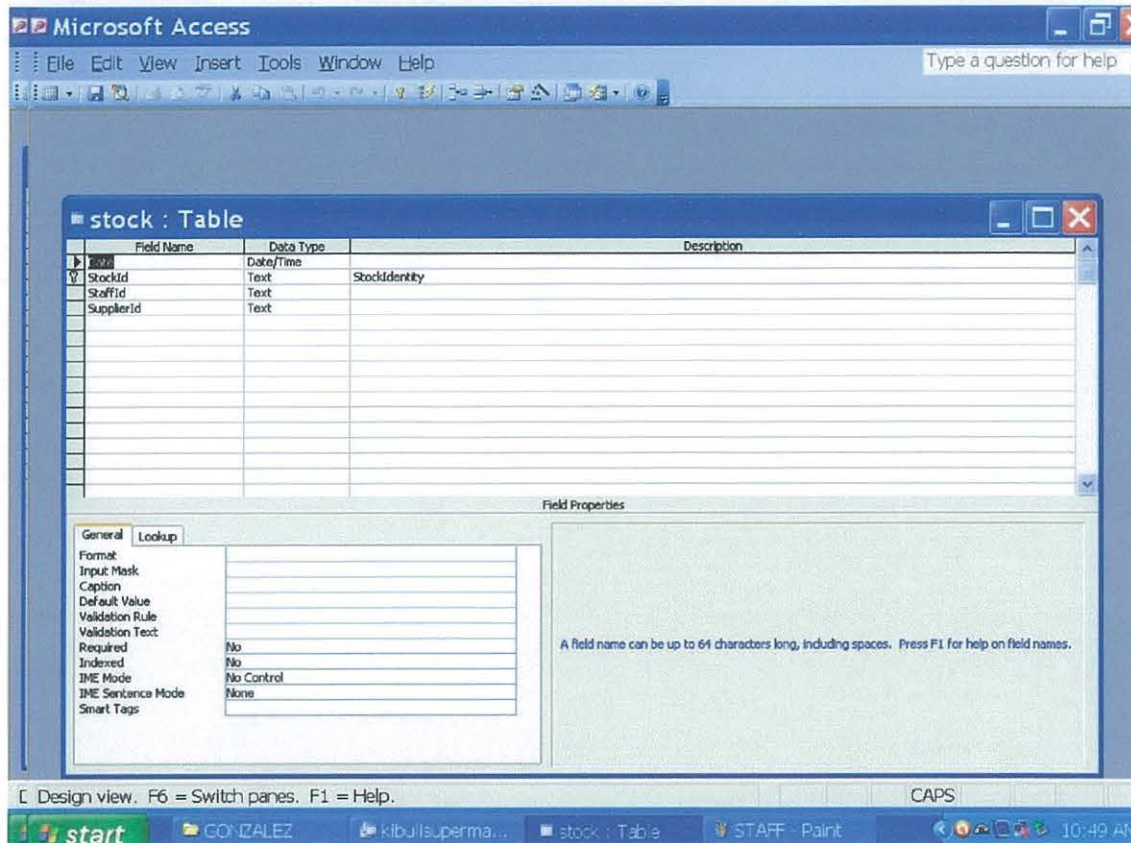


TABLE 4.3

The above presentation is the design for stock

Table, in this table information or details about stock will be stored and retrieved in respect to the guiding constraints. This design has three columns; the field name which contains attributes, the data type which contains the data type for a particular attribute and last is the description column which explains the abbreviations and full meanings for the names given to the attributes.



## Supplier Table

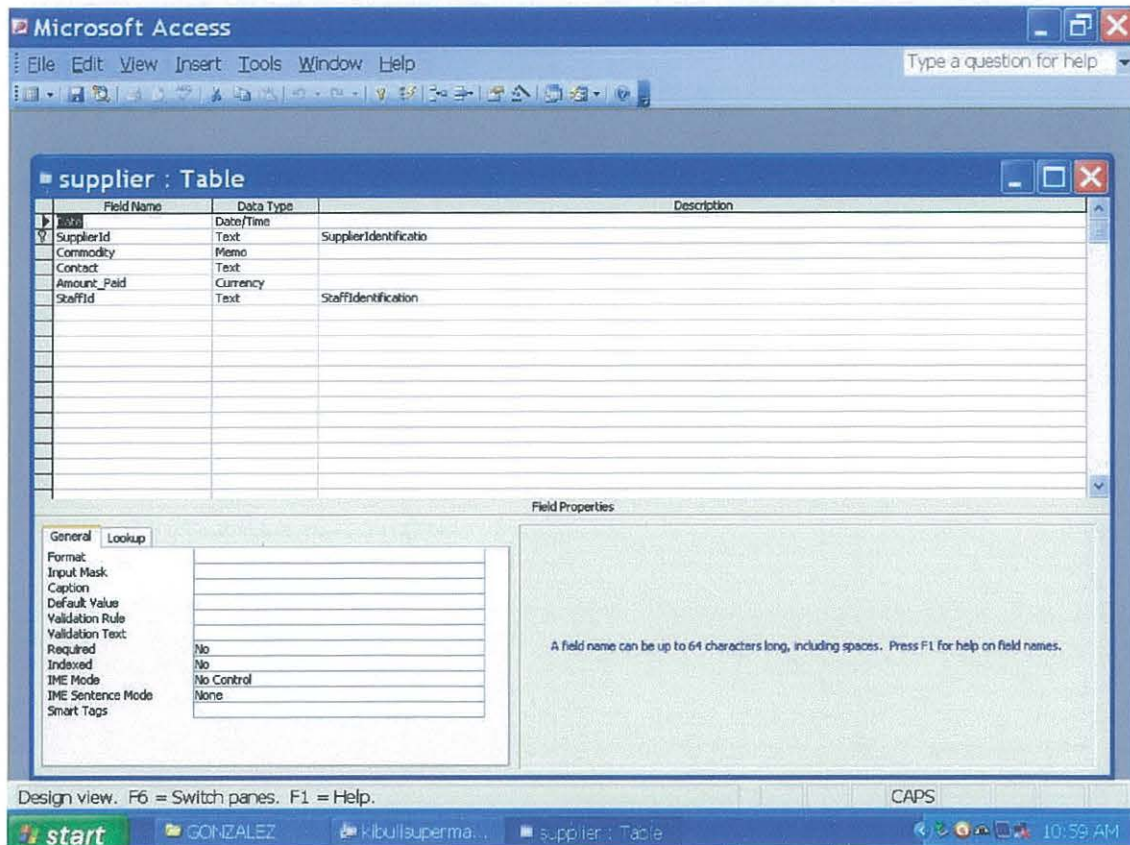


TABLE 4.4

The above presentation is the design for stock

Table, in this table information or details about stock will be stored and retrieved in respect to the guiding constraints. This design has three columns; the field name which contains attributes, the data type which contains the data type for a particular attribute and last is the description column which explains the abbreviations and full meanings for the names given to the attributes.

## Entity Relationship Diagram

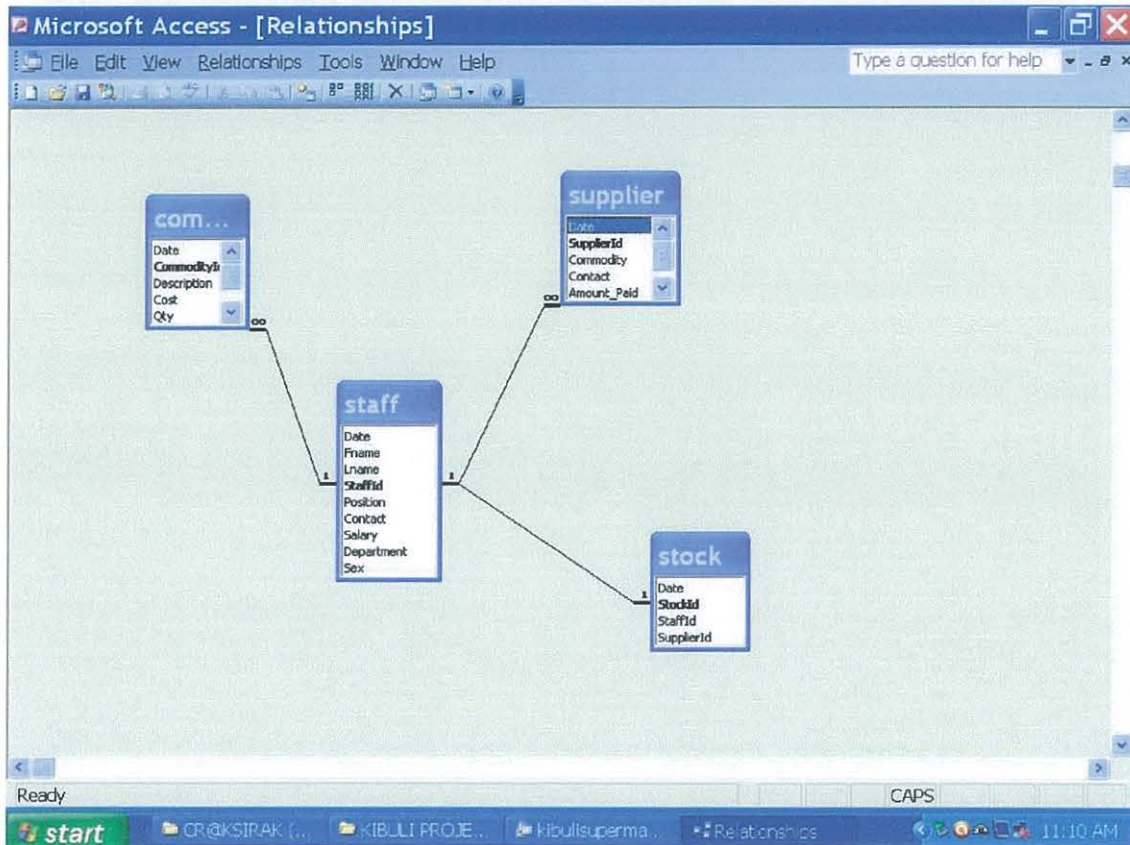
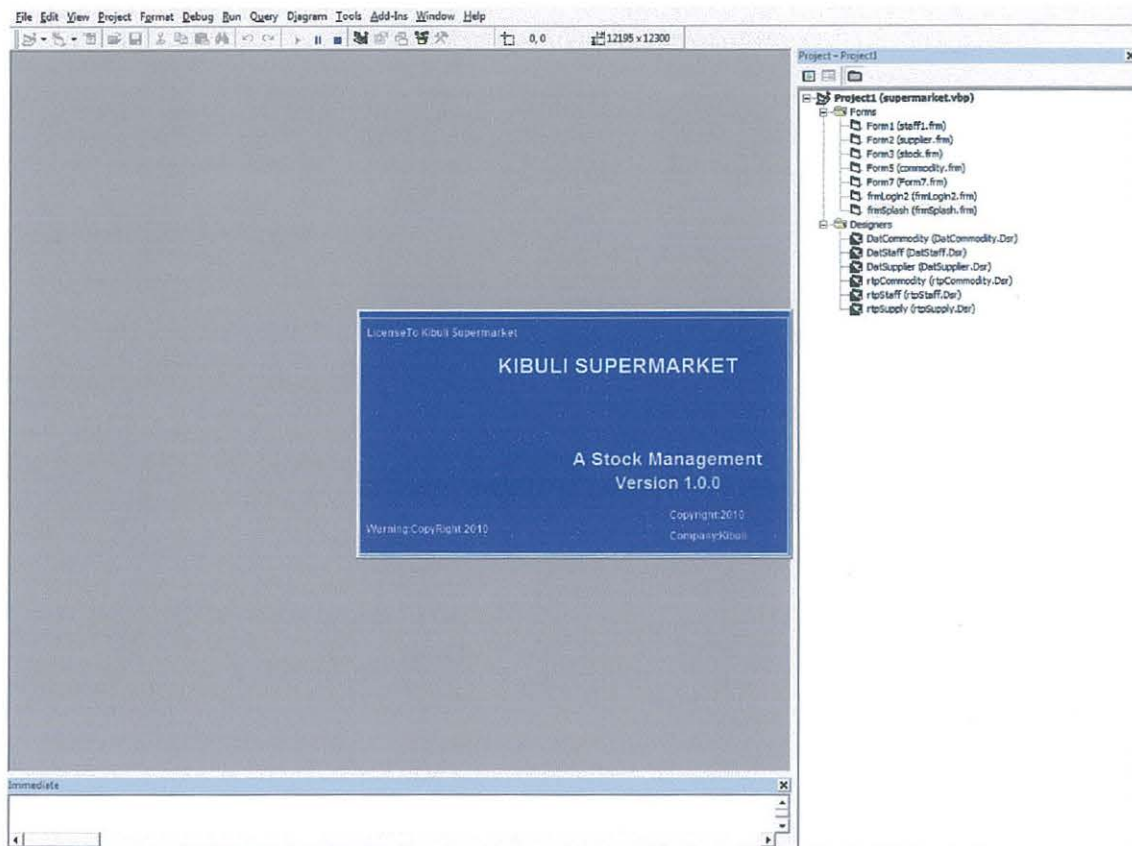


TABLE 4.6

An Entity Relationship diagram; is an illustration of the associations that exists between the different tables found in a particular database of a given Management Information System for example, in this case; the above Entity Relationship diagram is for the database of Kibuli Supermarket Management Information System.

## The first interface



### User login Interface



TABLE 4.7

When the program is run, this is the second interface to be seen by the user. The above interface allows the user to enter the user name and the password, having entered the user name and password the login command button is pressed to confirm the information entered and to allow access to the entire application that is by displaying the multiple document interfaces.

This form also contains the CANCEL command button. This exits the program

Incorrect password entered





TABLE 4.8

If the user name or the password entered does not match with those within the database (security table) then the user is denied access to the application on pressing the login command button and this confirmed by displaying a message box that indicates that the password or the user name entered is incorrect? In this case if the user wants to re-enter a correct password, clicks on the OK button on the message box then is given a provision to re-enter the password and user name

## STAFF FORM

The screenshot shows a Visual Basic application window titled 'Form1' with a 'STAFF TABLE' form. The form contains the following data:

StaffId	FName	LName	Date	Salary	Sex	Position	Contact
1	CHRIS	KAMAU	12/12/2010	\$250,000.00	MALE	STOCK MANAGER	077555647

Below the data fields are several command buttons:

- FIRST RECORD, NEXT RECORD, PREVIOUS RECORD, LAST RECORD
- Add, Save, DELETE, EXIT, CANCEL
- Add Supply, View Staff Report, Calculate Profit/Loss

The background shows the Visual Basic IDE with a project explorer on the right listing forms and designers.

TABLE 4.9

This form is linked to the staff table in our database through the data controller, therefore all the information in staff table in the database ; it's viewed on this form through manipulation of the command buttons on it, and thus it is important to know how these command buttons work and this can be done through the study noted below;

### **FIRST RECORD**

It's used to access and view all the first records in database table on to the form.

### **LAST RECORD**

It's used to access and view all the first records in database table on to the form.

NEXT RECORD | It's used to access, view and move to the next record immediately after our current record in database table on to the form

PREVIOUS RECORD | It's used to access and view the previous record immediately before the current record in database table on to the form

OK | It's used as confirm button

SEARCH | It's used to find a specific record in the database table on to the form

ADD | It is used to include more information into the database table

DELETE | It is used to drop or exclude records from the database table.

EXIT | It's used to close the form and the application which is running currently

CANCEL | It's used to close the form.

## SUPPLIER FORM

The screenshot displays a Visual Basic application window titled 'Form2' with a blue background. The main form is titled 'SUPPLIER TABLE' and contains several data entry fields and a set of control buttons. The fields are arranged in two columns: StaffId (value: 1), Date (value: 12/12/2010), Commodity (value: SUGAR), and Amount\_Paid (value: \$40,000.00) on the left; SupplierId (value: 1) and Contact (value: 4966767) on the right. Below the fields is a grid of buttons. The first row contains 'FIRST RECORD', 'NEXT RECORD', 'Add', 'EXIT', and 'CANCEL'. The second row contains 'PREVIOUS RECORD', 'LAST RECORD', 'Save', and 'DELETE'. The third row contains 'Enter Stock' and 'View Supply Report'. In the background, a 'Project - Project1' window is visible, showing a file explorer for 'Project1 (supermarket.vbp)'. It lists several form files (Form1 to Form7) and data controller files (DclCommodity, DclStaff, DclSupplier, rtpCommodity, rtpStaff, rtpSupply) under the 'Designers' folder. The main application window has a menu bar with options: File, Edit, View, Project, Format, Debug, Run, Query, Diagram, Tools, Add-Ins, Window, and Help. The status bar at the bottom shows 'Immediate'.

TABLE 4.10

This form is linked to the Supplier table in our database through the data controller, therefore all the information in Supplier table in the database ; it's viewed on this form through manipulation of the command buttons on it, and thus it is important to know how these command buttons work and this can be done through the study noted above.



## COMMODITY FORM

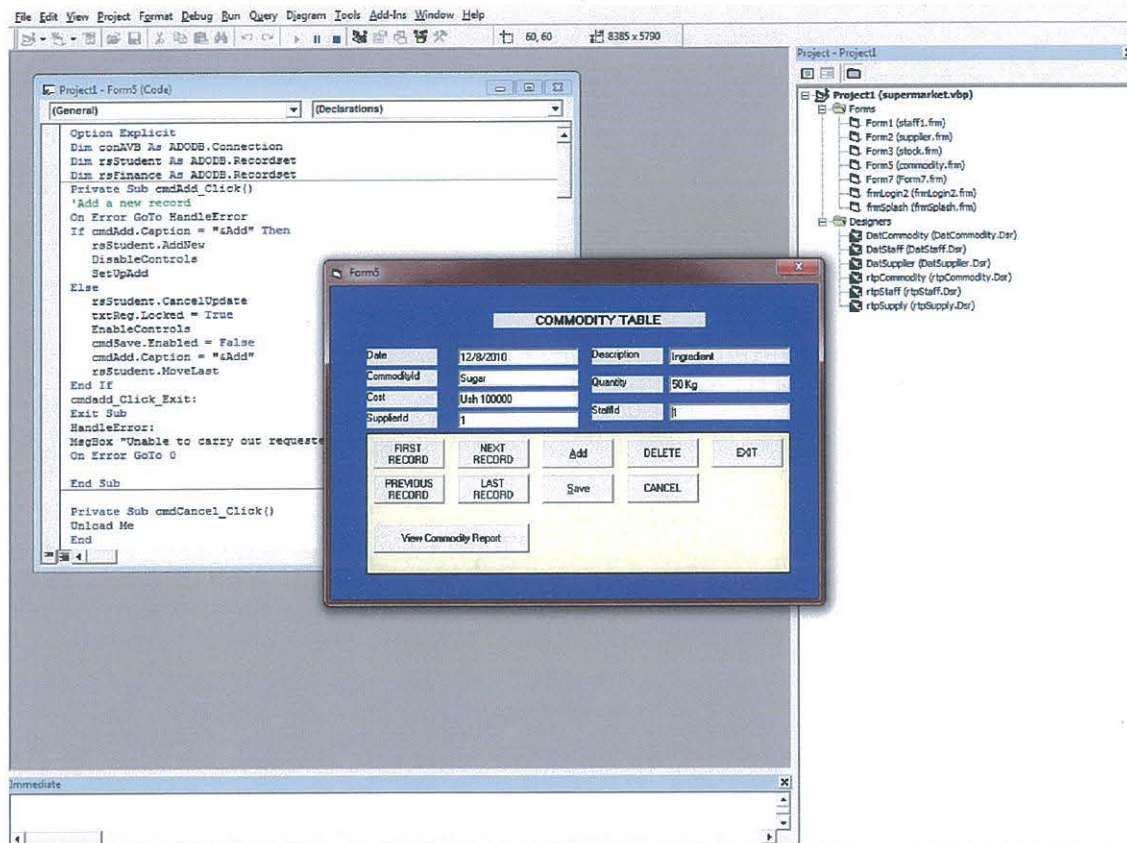


TABLE 4.11

This form is linked to the commodity table in the database through the data controller, therefore all the information in commodity table in the database ; it's viewed on this form through manipulation of the command buttons on it, and thus it is important to know how these command buttons work and this can be done through the study noted above.

## STOCK FORM

The screenshot displays a Visual Basic IDE with a project named 'Project1 (supermarket.vbp)'. The main form, 'Form3', is titled 'STOCK TABLE' and features a data grid with the following content:

Date	SupplierID
12/8/2010	1
StockID	1
StaffID	1

Below the data grid, there are several command buttons: 'FIRST RECORD', 'NEXT RECORD', 'Add', 'DELETE', 'EXIT', 'PREVIOUS RECORD', 'LAST RECORD', 'Save', 'CANCEL', and 'Add Commodity'.

The Project Explorer on the right shows the following structure:

- Project1 (supermarket.vbp)
  - Forms
    - Form1 (staff.frm)
    - Form2 (supplier.frm)
    - Form3 (stock.frm)
    - Form5 (commodity.frm)
    - Form7 (Form7.frm)
    - frmLogin2 (frmLogin2.frm)
    - frmSplash (frmSplash.frm)
  - Designers
    - DelCommodity (DelCommodity.Dor)
    - DelStaff (DelStaff.Dor)
    - DelSupplier (DelSupplier.Dor)
    - tpCommodity (tpCommodity.Dor)
    - tpStaff (tpStaff.Dor)
    - tpSupply (tpSupply.Dor)

TABLE 4.12

This form is linked to the stock table in our database through the data controller, therefore all the information in stock table in the database ; it's viewed on this form through manipulation of the command buttons on it, and thus it is important to know how these command buttons work and this can be done through the study noted above.

## CALCULATOR FORM

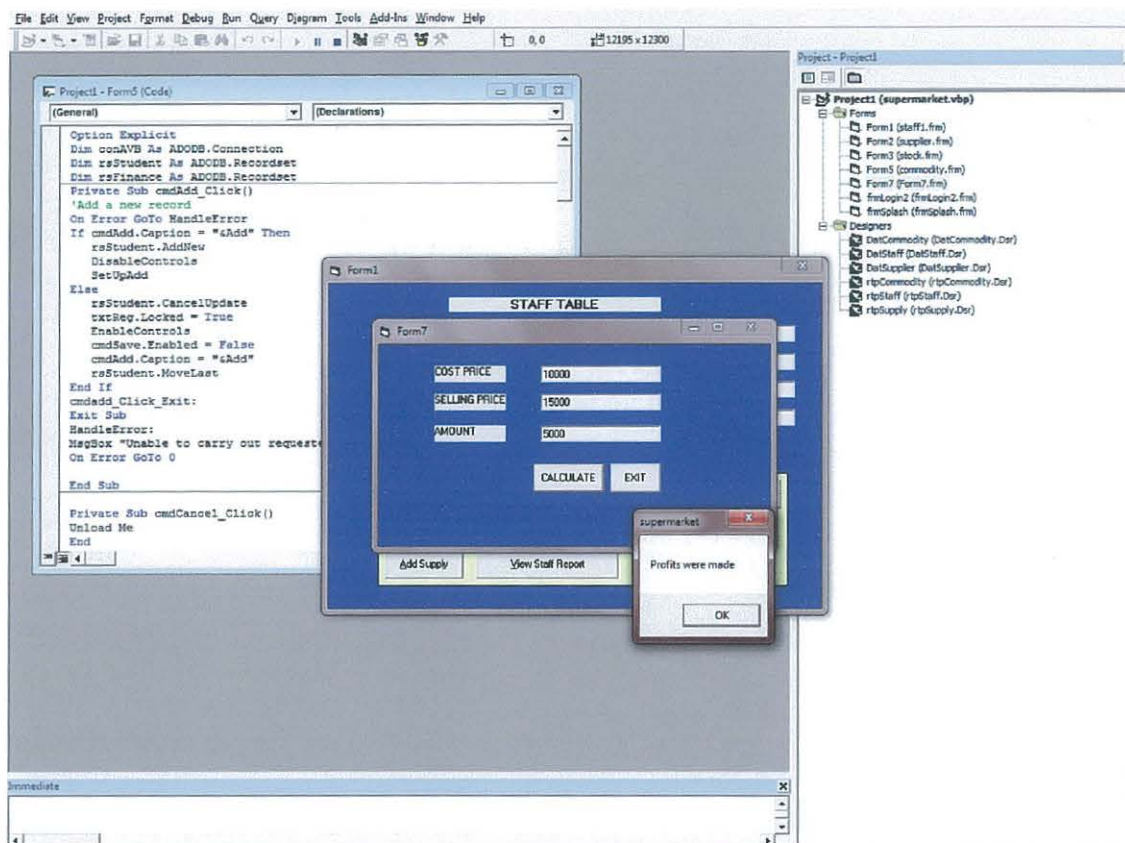


TABLE 4.13

This form is used to calculate profits and losses; it contains a button Calculate; this is pressed after entering the required prices to display figures of either the profits or a loss made this is preceded by a pop up message box that indicates either profits or a loss made.

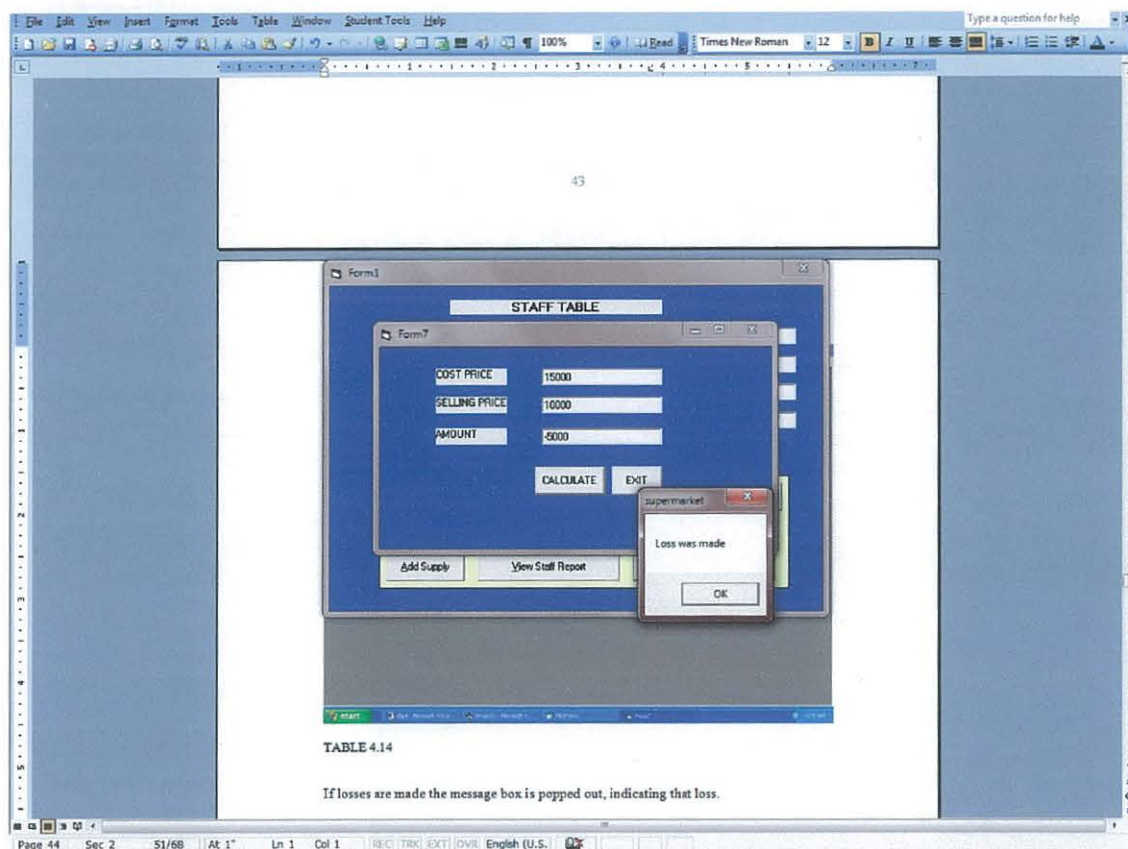


TABLE 4.14

If losses are made the message box is popped out, indicating that loss.



## **4.2. Detailed design**

Detailed design considers the output requirements like profits made, losses, storage requirements, system control and backup.

## **4.3. Output requirements**

The product is both softcopy and hard copy. These are paths that translate information executed by the computer into a form that people comprehend.

## **4.4. Hard copy**

It's a printout of information stored in a computer. It is looked at as hard, because it's physically on paper. The hard copy will be printed by the user of a printer, which will be related to the computer and it will be in report form.

## **4.5. Softcopy**

It's graphical user interface (GUI). It provides the way to interact users and its advantages include;

- ✓ It is easy to learn
- ✓ It is easy to use
- ✓ It is multitasking
- ✓ Provides an easy access interface for faster use
- ✓ It is efficient in printing of reports
- ✓ Provides an up to date backup and update of data stores

#### **4.6. Input Requirements**

These are devices that translate data into a form a computer can access. Data shall be input and administered centrally by the systems administrator.

The keyboard and mouse will be used as the input devices to input data into the system.

#### **4.7. Processing Requirements**

The system requires the following to perform efficiently and operate optimally.

#### **4.8. Operating system**

An operating system with Microsoft Visual Basic 6.0 installed on your computer. This describes the minimum configuration requirements for a computer where visual Basic 6.0 is to be installed. Microsoft Windows NT with service pack, with the latest windows service pack, Microsoft windows XP, Microsoft windows server 2003 family are examples of operating systems preferably suggested for the venture. This is because Windows NT supports, NTFS file system, which among many competitive features offers adequate security. It offers not only user level security, but also folder and file level security. Stability, ease of use, easy of train and its Graphic user interface makes it competitive in comparison to other operating systems.

#### **4.9. Database management system.**

Currently, the system users Microsoft Access as the database platform. However, the database can be exported to other popular database management system such as informatics, Sybase at the request of the client who purchases the system. The database management system must be installed for the system to run.

#### **4.10. Anti – Virus software**

There is desired need of having an anti-viral program, to detect and disinfect viruses that may affect stored records.

#### **4.11. Documentation**

After software specifications satisfy client's needs, it's documented. The boundaries of documentation are;

A guide for people who will maintain the code in future availability of updates or versions of the program. A soft copy of the source code which easy to understand is made available. Knowledgeable people who may wish to alter the software to cater for new needs could use it. User guide; this provides explanations to all items in case of any assistance, the guide does it.

System design calls for a foresight on the truth of the system performance. It is at this point where the conceptual and the physical aspects were addressed. In this stage the output design, input design, rules and guidelines and the database was specified in inclusion to the information on personnel and a hardware requirements.

## **SYSTEM, IMPLEMENTATION, AND EVALUATION**

### **4.12. Hardware acquisition**

The following specifications are recommended:

- 60 Gigabytes hard disk
- 15" inch monitor
- 256 megabytes RAM
- Hp desk jet 6543 printer
- Pentium III and on processor.

### **4.13. Software requirement**

- Windows expert operating system (WIN-XP)
- Visual Basic 6.0
- Microsoft office 2003.
- System testing

### **4.14. Software testing**

This stage is carried out to check whether what is done works efficiently and effectively as it was planned, it takes the forms below;

### **4.15. Unit testing.**

Here the components were realized as programs (test plans) and prepared test data, the path has a number of test runs like valid paths throughout the programs. A list of conditions is tested for each program to determine their correctness, the forms observed



in the system were checked against these test plans and conditions as well as the database subject to the enforced rules.

#### **4.16. System testing**

This is a testing of the whole system by integrating all the modules. It involves:

- ✓ **Performance testing**; that is how long the system takes to respond to a user's request.
- ✓ **Volume testing**; that is it involved checking whether the system can handle the expected load.
- ✓ **Acceptance testing**; that is the client checked if the system met what was stated in the specification document, the test data was replaced with actual data provided by the client .The client recorded all errors and discrepancies if any ,these were discussed with the client and the changes implemented immediately without interfering with the system specification

#### **4.17. System implementation**

In this subsection parts of the new system are brought in gradually. Here experts are involved so that in case of any issues that may arise are dealt with at the time; it's an exercise that takes a period of two weeks to develop the recommended system. At this point maximum cooperation with the authorities was considered so that implementation could be done appropriately; it's a task of the researcher.

#### **4.18. System Maintenance**

It's an ongoing exercise after a system has been put into operation .It involves program maintenance and system improvements, it involves:

- ✓ Correcting bugs that have been due to design miscommunication that is errors that a researcher was unable to predict.
- ✓ Recovering a system from an inconsistency a task of a system analyst.
- ✓ Helping users through observing them, they do things, a task achieved by conducting specification surveys, providing additional training and enhancements.

#### **4.19. Security implementation**

In this sub section it was made possible that only those users with legitimate access rights are allowed to use the system. It means that authentication was defined through use of user names and passwords; also addition of more users and elimination of users especially those who left the supermarket were defined to be performed explicitly by the administrator.

#### **4.20. System Evaluation**

It's sometimes referred to as "Stem Check Subsystem" it is a subsection that identifies whether the system satisfies the earlier determined requirements. It's expected to fulfill the following:

- ✓ It should be a system that controls data redundancy.
- ✓ It should be a system that is fast thus making time for customer service delivery short.
- ✓ It's should be a system that maintains data integrity since it has a central area for data storage.
- ✓ It's should be a system that increases the efficiency and effectiveness of the supermarket performance
- ✓ Productivity in the supermarket increases
- ✓ Data security should be high thus making the data unavailable for those people without proper permissions and passwords.

#### **4.21. System Validation.**

Kibuli Supermarket Management Information System (KSM-MIS) has been tested and a full result have been obtained under known conditions and through careful investigations, it has got known that the system satisfies the desired needs of the supermarket and functions according to their expectations subject to the services offered by Kibuli supermarket. However, as always; it had a bit of some miscommunications, because it was difficult to cater for more services for instance if the supermarket grows bigger than it is now.

#### **4.22. System maintenance and Operations**

It's usually a continuous process throughout the life time of the system. The system is put into use. It occurs in two stages:

1. The software is first distributed among a selected group of users before official release meant to perform a controlled experiment to determine if any changes are necessary subject to this user's feedback prior to official release a process called Beta testing.
2. The other phase part of system development usually involves correcting errors which were unable to be predicted or foreseen called Corrective Maintenance.

The main reason for this subsection is to keep the system functioning at a required level. It has been discovered that the major source of system is requirement analysis because it's difficult to capture requirements as it makes them change time and now. There can be a number of errors that are not able to be discovered until the system is delivered. It's serious because errors discovered late are too difficult and expensive to remove there it is better and cheaper to remove requirements error during analysis time than after a system is delivered.

## **CHAPTER FIVE**

### **DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0. INTRODUCTION**

In this part of the study researcher has summarized the field discoveries, drawn a conclusion and provided recommendations before ending with areas he is convinced deserved further research. The objectives of the study were established causes of poor record entry which are a manual system of data entry, update and storage of data of products and sales which is riddled with problems.

#### **5.1. Discussions**

The software has led to large amounts of data of Kibuli Super market that is management and client's data handling to be improved, quicker and better. The system presents a comfortable working environment by availing forms for all services at different points in time based on the current need. Therefore it just right and fitting to believe that the system has not been subjected to all kinds of miscommunication check up that is necessary for the system to be implemented to several platforms.

A thorough and exhaustive investigation on the constraints should be carried out to determine the appropriate data values for different fields in order to ensure data integrity, though the little sample data that the system was tested on was a success.

## **5.2. Conclusions**

It would be more rewarding to consider other forms of the same nature as the Management system continues to change over time .Microsoft access is recommended for smaller data centers(like databases) thus we employed the same. Other platforms like ORACLE 9i and so forth require to be addressed keeping an alert that Management Information System wholly is the prime ideology as to why systems are developed.

Therefore it goes without say in future this will become a very huge database and thus in the end long term problems will be solved.

In this Kibuli Supermarket information system it was made sure non users are prohibited from accessing it, because those people who use the system have passwords that followed all it goes with.

## **5.3. Recommendations**

In future user requirements should take a more central consideration. Users should be educated about the facilities the store offers a part from providing them with various items .They should be fully involved in the process of development of the system that they are to use. Since no single store can claim to be stocking each item, possibly of inter-store link should be pursued and finally implemented in order to serve their clients to satisfaction; more so the following should be put to mind:

- a) A network service should be sought in this regard.
- b) Regular deletion of unwanted (obsolete) records should be corrected to maintain an adequate memory for better performance. The members of staff or any other user involved in data entry in the system should validate the data before entry in order to maximize accuracy and system reliability.

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## APPENDICES

### Appendix A

#### Questionnaire Guide for knowledge Acquisition

1. Who owns the supermarket?.....  
.....
2. How long has the supermarket been in operation?.....  
.....
3. How far is the supermarket from the central town of Kampala City?.....  
.....
- 4 What is the exact location of the supermarket?.....  
.....
5. What are the major and specific items does the supermarket sell?.....  
.....
6. What problems are you experiencing in using the current system?.....  
.....
7. What would you like the new system to do?.....  
.....

## **Appendix B**

### **Interview Guide for knowledge acquisition**

1. Establishing whether the organization would be comfortable with change of old to new system or needs no change of system.
2. Determine the mind of employees towards the new system to be implemented.
3. Determine the skill of computer use among the employees.
4. Establish the security of records provided by the system currently used by the supermarket.
5. How does the management carry out its management activities?
6. How many employees does the supermarket have and how does it maintain their records

## APPENDIX C

### Source Code

#### Staff form

Option Explicit

Dim conAVB As ADODB.Connection

Dim rsStudent As ADODB.Recordset

Dim rsFinance As ADODB.Recordset

Private Sub cmdAdd\_Click()

'Add a new record

On Error GoTo HandleError

If cmdAdd.Caption = "&Add" Then

    rsStudent.AddNew

    DisableControls

    SetUpAdd

Else

    rsStudent.CancelUpdate

    txtReg.Locked = True

    EnableControls

    cmdSave.Enabled = False

    cmdAdd.Caption = "&Add"

    rsStudent.MoveLast

End If

cmdadd\_Click\_Exit:

Exit Sub

HandleError:

MsgBox "Unable to carry out requested action.", vbInformation, "kibuli"

On Error GoTo 0

End Sub

Private Sub cmdCancel\_Click()

Unload Me

End

End Sub

Private Sub cmdDelete\_Click()

Dim confirm As String

confirm = MsgBox("Are you sure you want to delete this record?", vbYesNo, "Delete Confirm")

On Error GoTo HandleError

If confirm = vbYes Then

With rsStudent

```

.Delete
.MoveNext
MsgBox "Record Deleted!", vbInformation, "KIBULI SUPERMARKET"
If .EOF Then
    .MovePrevious
    If .BOF Then
        MsgBox "The record set is empty.", vbInformation, "KIBULI SUPERMARKET
Records"
        DisableControls
    End If
    End If
End With
Else
MsgBox "Record NOT deleted!", vbInformation, "KIBULI SUPERMARKET"
End If

cmddelete_click_exit:
Exit Sub
HandleError:
MsgBox "Unable to carryout requested action.", vbInformation, "KIBULI
SUPERMARKET"
On Error GoTo 0

End Sub

Private Sub cmdExit_Click()
End
End Sub

Private Sub cmdMoveFirst_Click()
'move to the first record
On Error Resume Next
rsStudent.MoveFirst

End Sub

Private Sub cmdMoveLast_Click()
'move to the last record
On Error Resume Next
rsStudent.MoveLast

End Sub

Private Sub cmdMoveNext_Click()
'Move to the next record
On Error Resume Next

```

```

With rsStudent
    .MoveNext
    If .EOF Then
        .MoveFirst
    End If

End With

End Sub

Private Sub cmdMovePrevious_Click()
'Move to the previous record
On Error Resume Next
With rsStudent
    .MovePrevious
    If .BOF Then
        .MoveLast
    End If
End With
AdoSupermarket.Recordset.MovePrevious

```

```
End Sub
```

```

Private Sub cmdSave_Click()
'Save the current record
On Error GoTo handleErrors
rsStudent.Update
txtReg.Locked = True
EnableControls
cmdSave.Enabled = False
cmdAdd.Caption = "&Add"
cmdSave_click_Exit:
Exit Sub
handleErrors:
Dim strmessage As String
Dim errDBError As ADODB.Error
For Each errDBError In conAVB.Errors
strmessage = strmessage & errDBError.Description & vbCrLf
Next
MsgBox strmessage, vbExclamation, "Duplicate Add"
On Error GoTo 0

End Sub

```

```
Private Sub Command1_Click()  
Unload Me  
Form2.Show
```

```
End Sub
```

```
Private Sub Command5_Click()  
End
```

```
End Sub
```

```
Private Sub Command2_Click()  
Form7.Show
```

```
End Sub
```

```
Private Sub Command3_Click()
```

```
rtpStaff.Show
```

```
End Sub
```

```
Private Sub Form_Load()  
    'create the connection and get the data  
    Set conAVB = New ADODB.Connection  
    Set rsStudent = New ADODB.Recordset  
    Set rsFinance = New ADODB.Recordset  
    conAVB.ConnectionString = "Provider=Microsoft.Jet.OLEDB.4.0;" & "persist security  
info=false;Data Source=" & App.Path & "\kibulisupermarket.mdb;mode=readwrite"  
    conAVB.Open  
    With rsStudent  
        .CursorLocation = adUseClient  
        .CursorType = adOpenDynamic  
        .LockType = adLockOptimistic  
        .Open "select * from staff", conAVB, , , adCmdText  
    End With  
    BindData  
End Sub  
Private Sub BindData()  
    'Bind the text boxes to the recordset  
    Set txtReg.DataSource = rsStudent  
    Set txtFname.DataSource = rsStudent  
    Set txtDate.DataSource = rsStudent
```

```

Set txtSalary.DataSource = rsStudent
Set txtSex.DataSource = rsStudent
Set txtPosition.DataSource = rsStudent
Set txtLname.DataSource = rsStudent
Set txtContact.DataSource = rsStudent
Set txtDepartment.DataSource = rsStudent

```

```
End Sub
```

```

Private Sub SetUpAdd()
'Set up controls for the add
With txtReg
    .Locked = False
    .SetFocus
End With
cmdSave.Enabled = True
cmdAdd.Caption = "&Cancel"

```

```

End Sub
Private Sub DisableControls()
cmdMoveNext.Enabled = False
cmdMovePrevious.Enabled = False
cmdMoveLast.Enabled = False
cmdMoveFirst.Enabled = False
cmdAdd.Enabled = False
cmdDelete.Enabled = False

```

```

End Sub
Private Sub EnableControls()
cmdMoveNext.Enabled = True
cmdMovePrevious.Enabled = True
cmdMoveLast.Enabled = True
cmdMoveFirst.Enabled = True
cmdAdd.Enabled = True
cmdDelete.Enabled = True

```

```
End Sub
```

### **Supplier form**

```

Option Explicit
Dim conAVB As ADODB.Connection
Dim rsStudent As ADODB.Recordset
Dim rsFinance As ADODB.Recordset
Private Sub cmdAdd_Click()
'Add a new record
On Error GoTo HandleError

```

```

If cmdAdd.Caption = "&Add" Then
    rsStudent.AddNew
    DisableControls
    SetUpAdd
Else
    rsStudent.CancelUpdate
    txtReg.Locked = True
    EnableControls
    cmdSave.Enabled = False
    cmdAdd.Caption = "&Add"
    rsStudent.MoveLast
End If
cmdadd_Click_Exit:
Exit Sub
HandleError:
MsgBox "Unable to carry out requested action.", vbInformation, "e-Registra System"
On Error GoTo 0

```

```
End Sub
```

```

Private Sub cmdCancel_Click()
Unload Me
End
End Sub

```

```

Private Sub cmdDelete_Click()
Dim confirm As String
confirm = MsgBox("Are you sure you want to delete this record?", vbYesNo, "Delete Confirm")
On Error GoTo HandleError
If confirm = vbYes Then
With rsStudent
    .Delete
    .MoveNext
    MsgBox "Record Deleted!", vbInformation, "KIBULI SUPERMARKET"
    If .EOF Then
        .MovePrevious
    If .BOF Then
        MsgBox "The record set is empty.", vbInformation, "KIBULI SUPERMARKET Records"
        DisableControls
    End If
    End If
End With
Else

```



```
MsgBox "Record NOT deleted!", vbInformation, "KIBULI SUPERMARKET"  
End If
```

```
cmddelete_click_exit:
```

```
Exit Sub
```

```
HandleError:
```

```
MsgBox "Unable to carryout requested action.", vbInformation, "KIBULI  
SUPERMARKET"
```

```
On Error GoTo 0
```

```
End Sub
```

```
Private Sub cmdExit_Click()
```

```
End
```

```
End Sub
```

```
Private Sub cmdSave_Click()
```

```
'Save the current record
```

```
On Error GoTo handleErrors
```

```
rsStudent.Update
```

```
txtReg.Locked = True
```

```
EnableControls
```

```
cmdSave.Enabled = False
```

```
cmdAdd.Caption = "&Add"
```

```
cmdSave_click_Exit:
```

```
Exit Sub
```

```
handleErrors:
```

```
Dim strmessage As String
```

```
Dim errDBError As ADODB.Error
```

```
For Each errDBError In conAVB.Errors
```

```
strmessage = strmessage & errDBError.Description & vbCrLf
```

```
Next
```

```
MsgBox strmessage, vbExclamation, "Duplicate Add"
```

```
On Error GoTo 0
```

```
End Sub
```

```
Private Sub Command5_Click()
```

```
End Sub
```

```
Private Sub Command1_Click()
```

```
Unload Me
```

```
Form3.Show
```

```
End Sub
```

```
Private Sub Command2_Click()  
rtpSupply.Show
```

```
End Sub
```

```
Private Sub Form_Load()
```

```
'create the connection and get the data
```

```
Set conAVB = New ADODB.Connection
```

```
Set rsStudent = New ADODB.Recordset
```

```
Set rsFinance = New ADODB.Recordset
```

```
conAVB.ConnectionString = "Provider=Microsoft.Jet.OLEDB.4.0;" & "persist security  
info=false;Data Source=" & App.Path & "\kibulisupermarket.mdb;mode=readwrite"
```

```
conAVB.Open
```

```
With rsStudent
```

```
    .CursorLocation = adUseClient
```

```
    .CursorType = adOpenDynamic
```

```
    .LockType = adLockOptimistic
```

```
    .Open "select * from supplier", conAVB, , , adCmdText
```

```
End With
```

```
BindData
```

```
End Sub
```

```
Private Sub cmdMoveFirst_Click()
```

```
'move to the first record
```

```
On Error Resume Next
```

```
rsStudent.MoveFirst
```

```
End Sub
```

```
Private Sub cmdMoveLast_Click()
```

```
'move to the last record
```

```
On Error Resume Next
```

```
rsStudent.MoveLast
```

```
End Sub
```

```
Private Sub cmdMoveNext_Click()
```

```
'Move to the next record
```

```
On Error Resume Next
```

```
With rsStudent
```

```
    .MoveNext
```

```
    If .EOF Then
```

```
        .MoveFirst
```

```
    End If
```

```
End With
```

End Sub

```
Private Sub cmdMovePrevious_Click()  
'Move to the previous record  
On Error Resume Next  
With rsStudent  
    .MovePrevious  
    If .BOF Then  
        .MoveLast  
    End If  
End With  
AdoSupermarket.Recordset.MovePrevious
```

End Sub

```
Private Sub BindData()  
'Bind the text boxes to the recordset  
Set txtReg.DataSource = rsStudent  
Set txtDate.DataSource = rsStudent  
Set txtCommodity.DataSource = rsStudent  
Set txtAmount.DataSource = rsStudent  
Set txtSupplied.DataSource = rsStudent  
Set txtContact.DataSource = rsStudent  
End Sub
```

```
Private Sub SetUpAdd()  
'Set up controls for the add  
With txtReg  
    .Locked = False  
    .SetFocus  
End With  
cmdSave.Enabled = True  
cmdAdd.Caption = "&Cancel"
```

End Sub

```
Private Sub DisableControls()  
cmdMoveNext.Enabled = False  
cmdMovePrevious.Enabled = False  
cmdMoveLast.Enabled = False  
cmdMoveFirst.Enabled = False  
cmdAdd.Enabled = False  
cmdDelete.Enabled = False  
End Sub  
Private Sub EnableControls()  
cmdMoveNext.Enabled = True
```

```
cmdMovePrevious.Enabled = True
cmdMoveLast.Enabled = True
cmdMoveFirst.Enabled = True
cmdAdd.Enabled = True
cmdDelete.Enabled = True
```

```
End Sub
```

### **Stock form**

```
Option Explicit
```

```
Dim conAVB As ADODB.Connection
```

```
Dim rsStudent As ADODB.Recordset
```

```
Dim rsFinance As ADODB.Recordset
```

```
Private Sub cmdAdd_Click()
```

```
'Add a new record
```

```
On Error GoTo HandleError
```

```
If cmdAdd.Caption = "&Add" Then
```

```
    rsStudent.AddNew
```

```
    DisableControls
```

```
    SetUpAdd
```

```
Else
```

```
    rsStudent.CancelUpdate
```

```
    txtReg.Locked = True
```

```
    EnableControls
```

```
    cmdSave.Enabled = False
```

```
    cmdAdd.Caption = "&Add"
```

```
    rsStudent.MoveLast
```

```
End If
```

```
cmdadd_Click_Exit:
```

```
Exit Sub
```

```
HandleError:
```

```
MsgBox "Unable to carry out requested action.", vbInformation, "e-Registra System"
```

```
On Error GoTo 0
```

```
End Sub
```

```
Private Sub cmdCancel_Click()
```

```
Unload Me
```

```
End
```

```
End Sub
```

```

Private Sub cmdDelete_Click()
Dim confirm As String
confirm = MsgBox("Are you sure you want to delete this record?", vbYesNo, "Delete
Confirm")
On Error GoTo HandleError
If confirm = vbYes Then
With rsStudent
.Delete
.MoveNext
MsgBox "Record Deleted!", vbInformation, "KIBULI SUPERMARKET"
If .EOF Then
.MoveNext
If .BOF Then
MsgBox "The record set is empty.", vbInformation, "KIBULI SUPERMARKET
Records"
DisableControls
End If
End If
End With
Else
MsgBox "Record NOT deleted!", vbInformation, "KIBULI SUPERMARKET"
End If

cmddelete_click_exit:
Exit Sub
HandleError:
MsgBox "Unable to carryout requested action.", vbInformation, "KIBULI
SUPERMARKET"
On Error GoTo 0

End Sub

Private Sub cmdExit_Click()
Unload Me
End

End Sub

Private Sub cmdMoveFirst_Click()
'move to the first record
On Error Resume Next
rsStudent.MoveFirst

End Sub
Private Sub cmdMoveLast_Click()
'move to the last record

```

```
On Error Resume Next
rsStudent.MoveLast
```

```
End Sub
```

```
Private Sub cmdMoveNext_Click()
'Move to the next record
On Error Resume Next
With rsStudent
    .MoveNext
    If .EOF Then
        .MoveFirst
    End If
End With
```

```
End With
```

```
End Sub
```

```
Private Sub cmdMovePrevious_Click()
'Move to the previous record
On Error Resume Next
With rsStudent
    .MovePrevious
    If .BOF Then
        .MoveLast
    End If
End With
AdoSupermarket.Recordset.MovePrevious
```

```
End Sub
```

```
Private Sub cmdSave_Click()
'Save the current record
On Error GoTo handleErrors
rsStudent.Update
txtReg.Locked = True
EnableControls
cmdSave.Enabled = False
cmdAdd.Caption = "&Add"
cmdSave_click_Exit:
Exit Sub
handleErrors:
Dim strmessage As String
Dim errDBError As ADODB.Error
```

```

For Each errDBError In conAVB.Errors
strmessage = strmessage & errDBError.Description & vbCrLf
Next
MsgBox strmessage, vbExclamation, "Duplicate Add"
On Error GoTo 0
End Sub

```

```

End Sub
Private Sub Command1_Click()
Unload Me
Form5.Show

```

```

End Sub

```

```

Private Sub Form_Load()
'create the connection and get the data
Set conAVB = New ADODB.Connection
Set rsStudent = New ADODB.Recordset
Set rsFinance = New ADODB.Recordset
conAVB.ConnectionString = "Provider=Microsoft.Jet.OLEDB.4.0;" & "persist security
info =false;Data Source=" & App.Path & "\kibulisupermarket.mdb;mode=readwrite"
conAVB.Open
With rsStudent
.CursorLocation = adUseClient
.CursorType = adOpenDynamic
.LockType = adLockOptimistic
.Open "select * from stock", conAVB, , , adCmdText
End With
BindData
End Sub
Private Sub BindData()
'Bind the text boxes to the recordset
Set txtReg.DataSource = rsStudent
Set txtDate.DataSource = rsStudent
Set txtSupplierId.DataSource = rsStudent
Set txtStaffId.DataSource = rsStudent

```

```

End Sub

```

```

Private Sub SetUpAdd()
'Set up controls for the add
With txtReg
.Locked = False
.SetFocus

```

```
End With
cmdSave.Enabled = True
cmdAdd.Caption = "&Cancel"
```

```
End Sub
Private Sub DisableControls()
cmdMoveNext.Enabled = False
cmdMovePrevious.Enabled = False
cmdMoveLast.Enabled = False
cmdMoveFirst.Enabled = False
cmdAdd.Enabled = False
cmdDelete.Enabled = False
```

```
End Sub
Private Sub EnableControls()
cmdMoveNext.Enabled = True
cmdMovePrevious.Enabled = True
cmdMoveLast.Enabled = True
cmdMoveFirst.Enabled = True
cmdAdd.Enabled = True
cmdDelete.Enabled = True
```

```
End Sub
```

### **Commodity table**

```
Option Explicit
Dim conAVB As ADODB.Connection
Dim rsStudent As ADODB.Recordset
Dim rsFinance As ADODB.Recordset
Private Sub cmdAdd_Click()
'Add a new record
On Error GoTo HandleError
If cmdAdd.Caption = "&Add" Then
    rsStudent.AddNew
    DisableControls
    SetUpAdd
Else
    rsStudent.CancelUpdate
    txtReg.Locked = True
    EnableControls
    cmdSave.Enabled = False
    cmdAdd.Caption = "&Add"
    rsStudent.MoveLast
End If
cmdadd_Click_Exit:
```



```

Exit Sub
HandleError:
MsgBox "Unable to carry out requested action.", vbInformation, "e-Registra System"
On Error GoTo 0

End Sub

Private Sub cmdCancel_Click()
Unload Me
End

End Sub

Private Sub cmdDelete_Click()

Dim confirm As String
confirm = MsgBox("Are you sure you want to delete this record?", vbYesNo, "Delete
Confirm")
On Error GoTo HandleError
If confirm = vbYes Then
With rsStudent
.Delete
.MoveNext
MsgBox "Record Deleted!", vbInformation, "KIBULI SUPERMARKET"
If .EOF Then
.MovePrevious
If .BOF Then
MsgBox "The record set is empty.", vbInformation, "KIBULI SUPERMARKET
Records"
DisableControls
End If
End If
End With
Else
MsgBox "Record NOT deleted!", vbInformation, "KIBULI SUPERMARKET"
End If

cmddelete_click_exit:
Exit Sub
HandleError:
MsgBox "Unable to carryout requested action.", vbInformation, "KIBULI
SUPERMARKET"
On Error GoTo 0
End Sub

Private Sub cmdExit_Click()

```

Unload Me  
End

End Sub

Private Sub cmdMoveFirst\_Click()  
'move to the first record  
On Error Resume Next  
rsStudent.MoveFirst

End Sub

Private Sub cmdMoveLast\_Click()  
'move to the last record  
On Error Resume Next  
rsStudent.MoveLast

End Sub

Private Sub cmdMoveNext\_Click()  
'Move to the next record  
On Error Resume Next  
With rsStudent  
    .MoveNext  
    If .EOF Then  
        .MoveFirst  
    End If

End With

End Sub

Private Sub cmdMovePrevious\_Click()  
'Move to the previous record  
On Error Resume Next  
With rsStudent  
    .MovePrevious  
    If .BOF Then  
        .MoveLast  
    End If  
End With  
AdoSupermarket.Recordset.MovePrevious

End Sub

```

Private Sub cmdSave_Click()
'Save the current record
On Error GoTo handleErrors
rsStudent.Update
txtReg.Locked = True
EnableControls
cmdSave.Enabled = False
cmdAdd.Caption = "&Add"
cmdSave_click_Exit:
Exit Sub
handleErrors:
Dim strmessage As String
Dim errDBError As ADODB.Error
For Each errDBError In conAVB.Errors
strmessage = strmessage & errDBError.Description & vbCrLf
Next
MsgBox strmessage, vbExclamation, "Duplicate Add"
On Error GoTo 0

End Sub

```

```

Private Sub Command1_Click()
rtpCommodity.Show

End Sub

```

```

Private Sub Form_Load()
'create the connection and get the data
Set conAVB = New ADODB.Connection
Set rsStudent = New ADODB.Recordset
Set rsFinance = New ADODB.Recordset
conAVB.ConnectionString = "Provider=Microsoft.Jet.OLEDB.4.0;" & "persist security
info=false;Data Source=" & App.Path & "\kibulisupermarket.mdb;mode=readwrite"
conAVB.Open
With rsStudent
.CursorLocation = adUseClient
.CursorType = adOpenDynamic
.LockType = adLockOptimistic
.Open "select * from commodity", conAVB, , , adCmdText
End With
BindData
End Sub
Private Sub BindData()
'Bind the text boxes to the recordset
Set txtReg.DataSource = rsStudent

```

```

Set txtDate.DataSource = rsStudent
Set txtCost.DataSource = rsStudent
Set txtSupplierId.DataSource = rsStudent
Set txtDescription.DataSource = rsStudent
Set txtQuantity.DataSource = rsStudent
Set txtStaffId.DataSource = rsStudent

```

End Sub

```

Private Sub SetUpAdd()
'Set up controls for the add
With txtReg
    .Locked = False
    .SetFocus
End With
cmdSave.Enabled = True
cmdAdd.Caption = "&Cancel"

```

End Sub

```

Private Sub DisableControls()
cmdMoveNext.Enabled = False
cmdMovePrevious.Enabled = False
cmdMoveLast.Enabled = False
cmdMoveFirst.Enabled = False
cmdAdd.Enabled = False
cmdDelete.Enabled = False

```

End Sub

```

Private Sub EnableControls()
cmdMoveNext.Enabled = True
cmdMovePrevious.Enabled = True
cmdMoveLast.Enabled = True
cmdMoveFirst.Enabled = True
cmdAdd.Enabled = True
cmdDelete.Enabled = True

```

End Sub

### **Calculator form**

```

Private Sub cmdCalculate_Click()
Dim AMOUNT As Integer
AMOUNT = Val(txtSellingprice.Text) - Val(txtCostprice.Text)
txtAmount.Text = AMOUNT
If (txtCostprice.Text > txtSellingprice.Text) Then

```

```
MsgBox ("Loss was made")
Else
MsgBox ("Profits were made")
End If
End Sub
```

```
Private Sub Command1_Click()
End
End Sub
```

```
Private Sub Form_Load()
```

```
End Sub
```

### **Login form**

```
Option Explicit
```

```
Public LoginSucceeded As Boolean
```

```
Private Sub cmdCancel_Click()
    'set the global var to false
    'to denote a failed login
    LoginSucceeded = False
    Me.Hide
End Sub
```