

**MODELING AND IMPLEMENTING BUSINESS PROCESSES AND
INFORMATION SYSTEM FOR A VIDEO LIBRARY USING VISUAL
BASIC AND ORACLE**

CASE STUDY: KANSANGA VIDEO LIBRARY (KVL)- KANSAGA

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APPROVAL

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

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ABBREVIATION

KVL

i.e.

UGS

IS

IT

DBMS

etc

MIS

ACRONYM

kansanga video library

For example

Uganda shillings

Information System

Information technology

Database management system

And many others

Management information systems

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DEDICATION

We dedicate this document to all our friends, classmates, lecturers, brothers, sisters and mostly parents who have supported us financial in the accomplishment of this project.

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CHAPTER ONE

BACKGROUND

1.0 Introduction

Information technology and information system are an important aspect of the business world today. Organizations must cope with the competitive market hence IT helps to achieve this through integrity of data, confidentiality, fast retrieval and storage of information, data backup and recovery of data.

An information system is a system that consists of all communication channels in an organization. It is comprised of all the components that collect, manipulate and disseminate data or information. It includes hardware, software, people, communication system and the data itself. In business, information systems normally support business processes and operations, decision-making and competitive strategies.

This project will involve modeling and implementing of a computerized stock control system which will allow an easy way to control and maintain business process like the levels of videos in stock and out of stock prominently known as maximum stock levels and minimum stock levels.

Information technology, the fusion of computing and communications is creating far-reaching changes in the way we work, the way we live and even in the way we think.

Manual file handling system is inefficient in that there is data duplication, loss of data storage, tedious data updating and time consuming file retrieval. It is from these problems that an information system is necessary. This chapter describes the background of the case study, the problems faced by current system, the objectives, significance and limitations of the study.

1.1Background of the study

The rigid timing and inconvenience of attending public film shows leave video discs as the most convenient and cost effective source of movies. Nevertheless, the cost effectiveness is only valid for rented discs as opposed to viewing personal ones that requires that someone buys. In a bid to satisfy the video discs viewing market, several video libraries have been set up.

These libraries stock thousands of discs which customers borrow at a fee.

Kansanga video library (KVL) is a private enterprise located at kansanga, 3km from Kampala city center near Kampala International University. The video library has a mission which is:

“To be a premier video library enterprise, providing high quality entertaining videos to all their customers”.

KVL is characterized by its own administration and has its own procedures and guidelines as to how duties and tasks are carried out. One of the activities carried out at KVL is the registration of new members and keeping records of the customers thus the need for reference and monitoring purposes. Currently, the registration of customers is done manually as there is no automated system that is characterized by several shortcomings such as keeping of redundant data, data dependence and lack of a comprehensive means of cross referencing data from the customers' records.

Due to the large number of customers and the need to keep accurate records for each and every customer, the need to have a comprehensive and reliable automated information system that can store the relevant information as well as handle the steady growth of the customer database is of utmost importance. The library lends out video discs to people who are registered members. For one to become a member, they have to fill in a registration form and pay a membership fee of UGSH 200000 per month. The business, established in 2002, is a sole proprietorship, the owner being the library manager assisted by a sales person. The library has a stock of approximately 200 video discs that are kept on shelves based on video categories which include: Detective, War, Romance, Horror, Nigeria, Comedy, Cartoons.

Each video category has a series of video titles and every title may have more than one copy. Customers can borrow video discs by leaving their identity cards behind and pick them as they return back the videos. As the customer borrows the discs, his or her name is recorded, title of the video and date borrowed.

1.2 Statement of the problem

Kansanga video library's mission is to provide customers with a chance to watch their favorite movies at a very low cost without the need of buying them at an expensive cost. KVL maintains a variety of videos movies that have all been stored in different classifications. With the increasing number of borrowers, KVL is currently facing the difficult challenge of developing a collection of services that reflect the needs of the customers. There is a need for KVL to have a solution to the ever mounting problem like an increasing need to handle the huge number of people and maintain information in a consistent order. KVL is managing and administering video collections manually which involves keeping records of the collections by entering all the required information on catalogue cards and paper, thus difficult to prepare reports, update and modify records of library material. The current system used at KVL to manage videos has problems such as difficulty of knowing the available videos and total borrowers, tracking information on borrowers and lost videos which leads to poor management of library information in terms of analyzing, searching and identifying the borrowers and videos borrowed. The process of updating and retrieving data about clients and their transactions is slow and inefficient especially when customers turn up in big numbers resulting in unnecessary delay to the clients because videos are rented out and returned on a daily basis. Paper being the only form in which records are kept, data security cannot be enforced. Papers are prone to getting torn and destroyed and this leaves the video library without a reliable and secure form of storing information.

1.3 Objectives of the study

1.3.1 Main objective

Modeling and implementing business processes and information system for a library using visual basics and oracle to solve the problems currently being faced at KVL.

1.3.2 Specific objectives

- ✓ To develop a DBMS that will ease entry, updating, and output of information as well as fast retrieval and recording of information.
- ✓ To develop a records management system that will facilitate convenient and secure storage and retrieval of information that is relevant to serving customers on time.

1.4 Research Questions

Is it possible to design and develop an information system that will solve the problems currently being experienced at Kansanga video library and provide a convenient, effective system for storage and retrieval of information?

Is it possible to develop a DBMS that will ease entry, updating, output of information, fast retrieval and recording of information?

Is it possible to develop a records management system for convenient and secure storage?

1.5 Scope of the study

The study will focus on designing an IS that can meet the satisfaction of staff members and customers. A comprehensive system that will keep track of video

Collections, record customer's name, number of videos borrowed, date borrowed, date returned, payments and the length of time the customer will keep it. KVL is located near Kampala International University opposite Kansaga market.

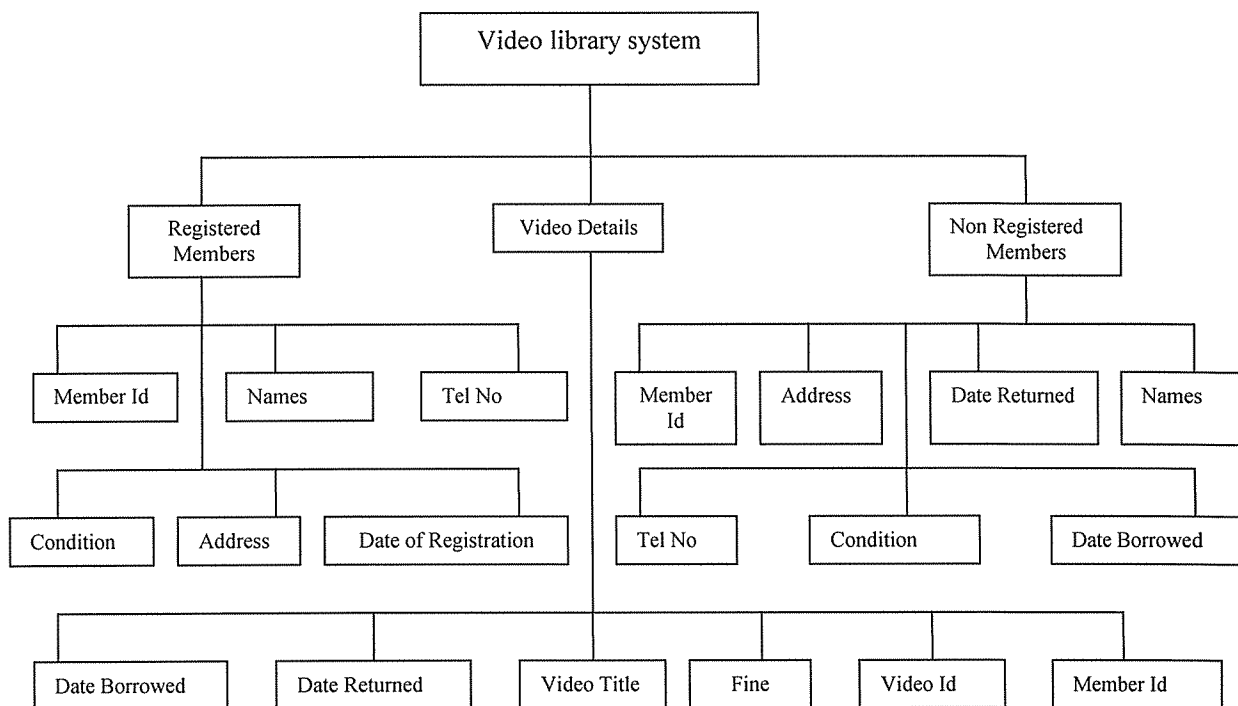
1.6 Significance of the study

This study is important to the customers because they will be serviced quickly and to the staff members because they will have access to customer's information quickly and easily due to the fact that all the information is stored electronically, thus saving time and to the researchers more knowledge in the cause of the project.

1.7 Justification of the study

Many companies have realized the strength and power of information communication and technology and have taken advantage of this unique asset knowing that it will make work easier for the employees and better services for the customers resulting in quick financial returns and enhance better performance geared towards efficient communication and technology

1.8 Conceptual framework



1.9 Conclusion

After studying the background and the current problems being encountered at KVL, the researcher came up with a general and specifics objective of why this study is significant and also suitable methods were applied to gather information about the current system in order to come up with an alternative solution.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Literature review will concentrate on what various authors, websites, and electronic material say about designing and implementing database management system that will ease entry, updating, and output information as well as retrieval, recording and security issues.

2.1 Recent development

The key to today's efficiency in our work lies in the way we handle our information. It's from this view that video libraries need management information systems (MIS) for efficient management of their data. MIS is a system that collects, processes, stores and distributes information to aid in decision making for managerial functions of planning, organizing, directing, controlling and staffing a business organization.(Fitzgerald, 1987).

2.2 Problem area

According to the ACCA Information Systems Study Text (2001), people are used to manual methods of working and find it more convenient to jot down notes with pen and paper than to use computers which are waste of time, especially if the user is not properly trained or if the system has deficiencies. However the reason why manual systems are less beneficial than computerized systems are;

- ✓ Difficult to make corrections or alterations.
- ✓ The risk of errors is great.
- ✓ Information is less accessible among others.
- ✓ Paper based systems are generally very bulky both to handle and store.

2.3 Application area

Application area according to the project is the automation of all the business processes of KVL that is from the time the customer borrows a video to its returning, thus enabling

- ✓ **Processing:** For example CPU and main memory.
- ✓ **Communications devices:** These are used for interactions and interfaces between some input and output devices e.g. modem and NICs.

2.4.2 Software

Software is the instructions that tell the computer what to do. It is generally of two types; applications software (that has been developed to solve a particular problem, to perform useful work on specific task, or provide entertainment), and system software (which include the operating system that enables the application software to run on the computer).

2.4.3 Data/ information

Data is basically raw inputs by the end users of an information system. The users may be the people directly or another information system. Information is the processed data (output) of a system.

2.4.4 Procedures

Description of how things are done, steps of accomplishing a result or rules and guidelines for what is acceptable. They may be spelt out in the manuals, documentation which may be printed out in books, pamphlets or softcopies to be browsed online.

2.4.5 People

They are the most important component of an information system because the whole point of a system is to benefit them. They are basically of two types; computer professionals and end users.

2.5 ADVANTAGES OF DATABASE SYSTEMS

Several advantages arise from using a database system. These can be summarized as follows:

✓ **Control of data redundancy**

This is achieved through limiting of the same data being entered many times. This cannot be controlled with the use of current manual file based system. A database attempts to eliminate redundancy by integrating files so that multiple copies of the same data can be stored.

✓ **Data consistency**

By eliminating and controlling redundancy, risk of inconsistency is reduced. This is possible when a data item is stored only once in a database.

✓ **More information from the same amount of data**

This is achieved by the integration of data as compared to the file based system that stores data in independent files with no relations.

✓ **Improved data integrity**

Database integrity refers to the validity and consistency of stored data. Integrity is usually expressed in terms of constraints, which are consistency rules that the database is not permitted to violate.

✓ **Improved security**

Database security refers the protection of the database from unauthorized users. Without security, integration of data makes it more vulnerable than file based systems. However integration allows a database administrator to define a database management system. (Connolly, Begg, 2000). This is achieved through passwords access control lists.

However, the database management system (DBMS) has its disadvantages namely;

✓ **Economy of scale**

Combining the data into automated system results in saving costs. This is due to the reduction in manpower needed to manually sift through the files that are characteristic of the file based system.

✓ **Improved backup and recovery services**

This is achieved through use of devices such as optical CD ROMs and magnetic tapes that shall ensure availability of data for longer periods if they are stored in appropriate conditions.

However, the database management system (DBMS) has its disadvantages namely:-

Enterprise collaboration systems (ICS)

Enterprise collaboration systems enhances team and work group communications and productivity

Management Information systems (MIS)

Management information systems provides information in the form of reports and displays to managers and many business professionals

Decision support systems (DSS)

Decision support systems give direct computer support to managers during the decision making process

Executive information systems (EIS)

Executive information system provide critical information from a wide variety of internal and external sources in easy-to-use displays to executives and managers

Expert systems (ES)

Expert systems can provide expert advice for operational chores like equipment diagnostic or managerial decisions such as portfolio managements

Knowledge Management system (KMS)

Knowledge Management system are knowledge based information system that support the creation, organization, and dissemination of business knowledge to employees and managers throughout a company

Functional information systems (FIS)

Functional informational systems that focus on operational and managerial applications in support of basic business functions such as accounting or marketing

Strategic information systems (SIS)

Strategic information systems apply information technology to firm's products, services, or business processes to help it gain a strategic advantage over its competitors

2.9 CONCLUSION

From the above views of what different authors say about managing data the researcher came up with a system that meets the user requirements thus an appropriate system for the library.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter will give research design methods of data collection, sample methods, population study, analysis and presentation of data from the field of study.

3.1 Study design

The study will center on Kansaga video library on which data collection will be based. This will enable the objectives to be fulfilled effectively and efficient as the problems will be studied closely.

3.2 Organizational units to be studied

These are the members and non-members of the company who will participate in the research process. The researcher will take the whole staff members of the Kansaga video library who had the close dealings with the creation of the company database and the automation of the company documents. Also the researcher will take the non-members of the company. These non-members were the customers visiting the company from different parts of the world.

3.3 Study population

The data collection method will target the management and operational staff in KVL because they will be in a better position to provide the required information due to their deeper understanding of the existing system. The researcher will also view documentation of similar systems from other libraries to compare ideas.

3.4 Sample size

The sampling technique to be used will be simple random sampling which means that each person within KVL population will have equal chance of inclusion in the sample. A sample size of 7 out of 15 will be used that is 5 staff members and two new customers.

3.5 Development Methodology

System Development Life Cycle

The chosen development methodology for the information system shall be the classical System Development Life cycle (SDLC). This is also known as the waterfall model. It is a structured approach for managing the development of information systems (Turbman Aaronson's, 2002).

The SDLC breaks up the steps of developing software into independent stages that can be carried out at various times. The process of software development can be summarized as follows:

Need Stage

The need for a new system is determined by the inadequacies of the existing which, as have been determined by the statement of the problem stage. The needs of the system arose from failures of the current system such as data redundancy and lack of data integrity and security and consumption of storage space

Planning Stage

Planning of the system occurs after identification of the value of having an efficient information system. It involves determining the requirements of both the user and the system and noting the functions the system is expected to accomplish after it has been developed.

Analysis Stage

The analysis phase serves to determine what shall the system need for its inception as well as how viable is the prospect of developing the new system. This accomplished by carrying out a cost benefit analysis of the proposed information system. This phase is aimed at ensuring the new system shall meet its objective and that of the organization considering its implementation shall benefit from the desired system. It will also determine where and when it will be run.

Design Stage

After the analysis phase comes the design of the system which covers the development of the system in depth. It is here that all aspects of the programme shall be determined. Design of the structure of the database, the user interfaces, input forms, reports and the tables is done here. The values to be held by the tables are stated. This is followed by the development of the system using an appropriate software programme.

Implementation and Integration Stage

Implementation of the developed software programme is the sequel to the design phase. It involves transformation of planned ideas into work and putting into use of the developed system. Integration amounts to assembling the application from the set of components that were developed and tested separately.

Maintenance Stage.

System maintenance is the set of activities that are performed after the system is implemented. It consists of correcting and removing errors in the system (corrective maintenance), adapting the application to changes in the environment (adaptive maintenance), and improving, changing or adding features and qualities to the software (perfective maintenance).

Retirement Stage.

Retirement stage involves ending the process of system development life cycle. After the system is put into operation and its operating as required.

3.6 Data collection

Data collection will involve reviewing the primary and secondary sources. Primary sources will include interviews and questionnaires by the researcher.

3.6.1 Primary methods

Interview

Interview method will be used in order to get first hand information from the user of the current system at Kansaga line video library. This method provides an opportunity to respondent to give their opinions on the applications on the automation of the records and the creation of their database in improving the performance, and also to determine if there was any conflict or complains between the company and its client and to gather data concerning the effectiveness of the library service

Interviews will be carried out on the target population who had been informed about the study prior to the interview and were given a set of interview guides which had 5 questions.

Their responses and answers were recorded as the interview proceeds using paper and a pen and this provided relevant feedback to facilitate the development of the new system.

Interview being the main significant and productive fact finding method was used to determine how to improve productivity at Kansaga video library.

Questionnaires

The researcher will also use questionnaires, which included a set of questions which are well selected in order to obtain the needed data based on the study topic which were distributed to the individual respondents to fill the blank spaces and return back the questionnaires to the researcher.

The structure of the questionnaire was a mixture of close ended question and open ended questions. This was used to facilitate the gathering of specific information as well as general opinion of the people who interact with the existing system. It also provided a more diverse response from the users from diverging from the essence of the study. The questions were arranged in a pyramidal structure with specific question placed first and more general question towards the end of the questionnaire.

In total 15 questionnaires were distributed to the library's staff, and customers .The responded were supposed to answer the questions by filling in the forms and there after

such questionnaires were collected by the researcher from the respondents for further analysis. The method was used to determine and realize the need for automation of punch line video library operation.

3.6.2 Secondary methods

This will involve reviewing the supermarket's books, magazine, journal and charts. These sources will help in determining the requirements of the new system. There after the data collected will be presented in a more short and understandable manner.

3.7 Data presentation and discussion of findings

Here the collected data is presented and the findings from the study discussed. It includes the subsequent interpretations from the data collected on the topic of study. The aim of the study was to examine the challenges and recommendations of developing an automation system for a library. It gives the characteristics of the respondents and presents the findings in relation to the objectives and research questions of the study

The data collection tools included: questionnaires and interviews.

3.7.1 Category of respondents

Researcher distributed questionnaires and interview guides and all together a total of 15 respondents were categorized as shown.

Table 1 Category of respondent

Respondent	Frequency	Percentage %
Staff	10	74
Customer	5	26
Total	15	100

(Source: field data)

According to the findings 26% of the respondents were library staff while 74% were student. This means that the staff in the video library is enough to cater for the customers. However, this is no guarantee that the library staff are enough and able to carry all library carry out all the library work.

3.7.2 Respondent by gender

The researcher established the sex of the respondent. A total of 15 respondents were used and their genders are represented in form of the table

Table 2: Respondents by gender

Sex	Frequency	Percentage %
Female	8	54
Male	7	46
Total	15	100

(source: field data)

From the table, its evident that respondents were chosen from both sexes though the female respondent were dominant with 54% while female took up 46%. Thus the female are the biggest borrowers of movies and willing to participate in the study.

3.7.3 Adequacy of the current system

Users of the library were asked to assess the adequacy of the materials in terms of quality. The information derived from the questionnaires and interviews are presented in the table below.

Table 3: Adequacy of the current system

Response	Frequency	Percentage %
Adequate	8	22
Average	4	74
Inadequate	3	4
Poor	—	—
Total	15	100

(source: field data)

From table three, it can be inferred that 22% of the users revealed that the current system was adequate, 74% of the users rated them as average because the system sometimes is fast in terms of output, and 4% said they were inadequate while none of them thought they were poor.

3.7.4 Security of the current system

The staffs and the customers were asked about the security of the existing system and this was their response.

Table 4: Security of the current system

Response	Frequency	Percentage%
Yes	11	95
No	4	5
Total		

The table above has shown that most of the users that is 95% think that the current system is not secure because of their use of books and journals to record the existing data while the rest 5% think the system is secure if the books and journals are taken care of nicely.

3.8 System Analysis

System analysis is an important activity that takes place when new information systems are being built or existing ones are changed. Its most crucial role is in defining user requirements. This includes gathering the necessary data and developing models for the new system. Primarily, system analysts help people solve their problems by designing what new systems must do.

This involves careful analysis and study of the existing system to understand how the proposed system would differ from the old one. In other words, this was meant to describe what the system should do so as to satisfy the needs of the users. Structured analysis and physical design tools like data flow diagrams were used.

3.8.1 Strengths of the current system

- ✓ Administrative policies to the development of the library.
- ✓ Library income available.
- ✓ Clear library goals and objective.
- ✓ Staff organization structure\ human resources.
- ✓ Existing library collection.
- ✓ Central location of the library.
- ✓ Variety of library services offered.

3.8.2 Weaknesses of the current system

- ✓ Approximately 20 customers turn up every day either to take or return cassettes and answering their queries and keeping records of cassettes issued and returned were found to be too difficult to cope by the three counter staff employed for this purpose.
- ✓ Customers always require knowing the contents of the cassettes like who are the actors, what type of the film it is, what is the story like etc. Which details cannot be remembered by the staff handling them.
- ✓ Customers often complains that after taking a cassette home he realizes that he has already seen it and returns it to the library and there is thus a loss of revenue, since to keep good customer relationship, he cannot be charged rent then.
- ✓ There was no way of knowing which cassettes were in circulation and with whom were they lying. At that moment, it was being done by physical verification of the shelves and was time consuming.
- ✓ Record keeping being so voluminous, reference of data and preparation of the reports had become quite laborious and delayed beyond acceptable limits.
- ✓ Some cassettes were found to be missing. Efforts to locate who had taken it were not successive from available records-
- ✓ It was difficult to find how many cassettes were to be produced on basis of cassettes movement of given title.

3.9 Information systems plan

3.9.1 System request

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

- ✓ **Name of the project**

Designing a stock control system

- ✓ **Name of organization and address**

Kansaga video library P.O. Box 12345, kansaga, Kampala

- ✓ **Business need for the organization**

To develop a records management system that will facilitate convenient and secure storage. This will enable data to be easily retracted and processed.

- ✓ **Expected function of the system**

Input requirements- the new system should allow user to input information on clients as they register, after borrowing a movie and as soon as they return. Also the system should be able to maintain, validate, insert, delete and modify records stored within the database.

Output requirements- the system should be available according to the specification of the new system. These documentations includes: user manuals of the system and well commented soft copy of the source code for easy readability.

- ✓ **Expected value of the system**

The expectation of the system is that it should be able to make work easier by Improving efficiency in conducting businesses processes hence saving time and money. There will be increased profitability as work will be made easier thus less need for a lot of employees.

3.9.2 Feasibility analysis

Study carried out to find out whether you can build the new system technically economically and organizationally with the available resources.

✓ **Technical visibility**

The project will be large because the system will run on a network. The users are not experienced with the new system thus will need training. The programmer is well experienced with the development tools like visual basic programming language.

Development tools like DBMS are readily available.

Tangible aspects of building the system include;

- ✓ The overall expenses of the company will be reduced because of the reduction in the number of employees.
- ✓ Calculations errors will be reduced because it won't be done manually.
- ✓ Storage space will be reduced as book keeping records will be gotten rid of.
- ✓ Customers will increase as there will be efficiency in servicing them thus profitability.

Intangible aspects of building the system include;

- ✓ Employees will tend to work more on their work as it will be less tedious.
- ✓ Employees attitude towards work will improve
- ✓ Improved and quick decision making by the managers.
- ✓ The cost of developing the system will be done after every phase of the project.

3.10 System specification

3.10.1 System requirements

The users should be provided with facilities to define the type of external files. Each external file type may have an association.

3.10.2 User Requirement of the new system

The user should be provided with a means of representing and accessing external files created by other tools. On carrying the feasibility study, this system will consider the requirements of the end users of the system. This encompasses generation of reports as understood from stakeholders, users and clients, specific actions of their information needs

3.10.3 Security requirements of the new system

Computer security, a technique developed to safeguard information and information systems stored on computers. Potential threats include the destruction of computer hardware and software and loss, modification, theft, unauthorized use, observation, or disclosure of computer data. Security can be achieved by the following approach.

User access level security

Windows NT allows implementation of local security. Each user created belongs to a privileged group (e.g. administrators, power users, back up operators, etc). Group privileges differ from each other, administrators being super-users, granted supremacy of the system. Each group has default policies.

Apart from that each user individually can be granted access level as well as defining his or her policies, and the group he or she belongs to. These will ensure the system security incase of such intrusion.

Auditing

This is another NTFS security feature. It allows folder and file level auditing. Once implemented, as the word suggests, it can track down user's access time and other auditing practices.

Passwords

The most common approach a user friendly identifies is the use of passwords. When the user identifies herself by user ID or account name she is asked for a password. If the user supplies a password stored in the system, the system assumes, that the user is legitimate. To be effective, password must be difficult to guess and should not be found in dictionaries. Computer systems usually limit the number of attempts and restrict time it takes to enter the correct password before the user is allowed to login.

3.11 Conclusion

The chapter has looked at how the system was analyzed and the methods used to collect data. In the next chapter, a framework of how the system will be designed to accomplish the shortcomings of the current system will be looked at

CHAPTER FOUR

SYSTEM DESIGN

4.0 Introduction

This chapter explains the logical design and physical design of the system developed by the researcher. This requires great imagination with great emphasis on ground realities. The new system is designed to meet the needs of kansaga video library as far as independently monitoring of video tapes stock and transactions of the company. It is also designed to ensure that accurate records are kept and reports can quickly be generated when the need arises. It will be expected to overcome the shortfalls associated with the current system.

4.1 Context Level Diagram

According to Hutchinson and Sawyer (p228-229) context level diagrams describe the interactions of the system with the boundaries and the external data stores. A context Level diagram defines the graphical representation of the system, which shows the flow of data to, from and within the system's processing functions. They show the highest level model of the system. They are used to obtain a broad overview of what the system encompasses or not. The figures in the next pages show the context Level Diagrams of the system.

Figure 4.0 the context Level Diagram for the proposed system

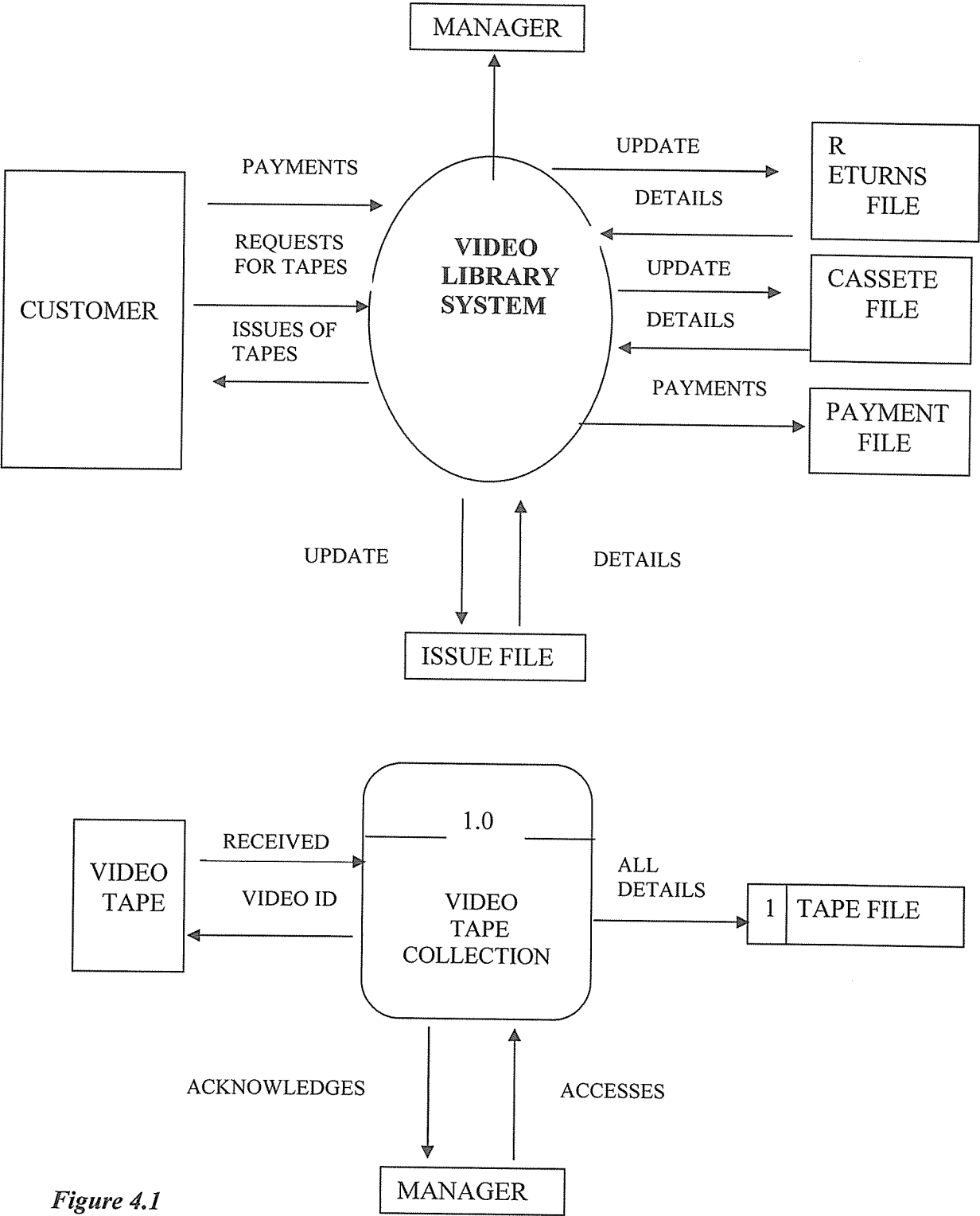


Figure 4.1

Figure 4.2

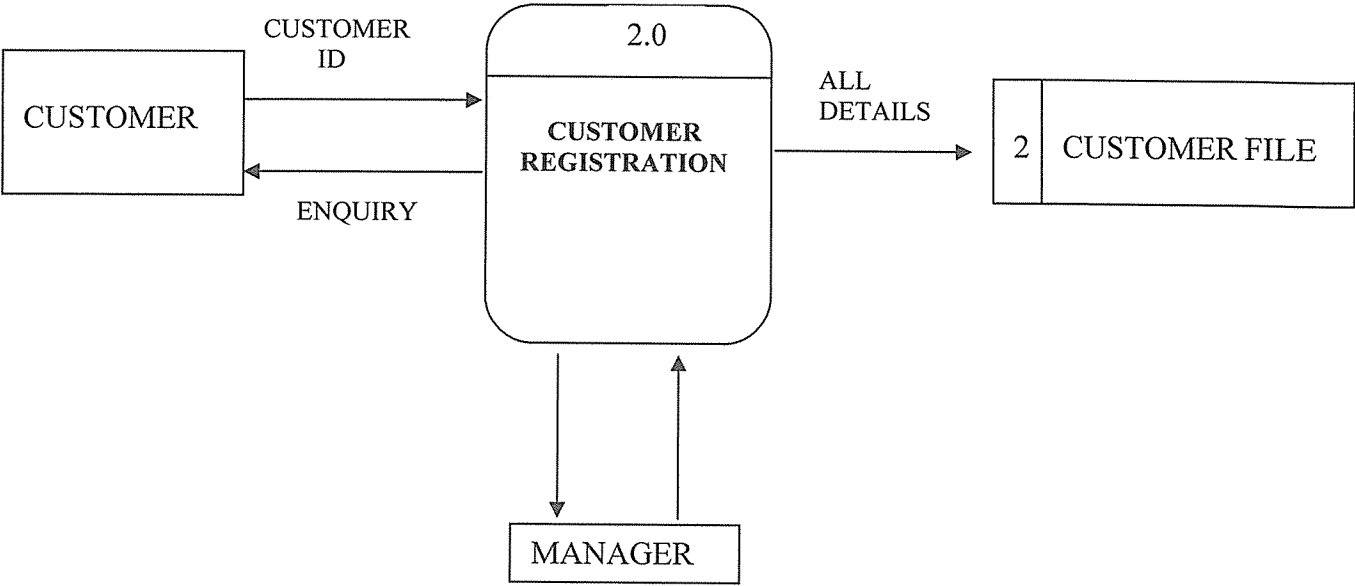


Figure 4.3

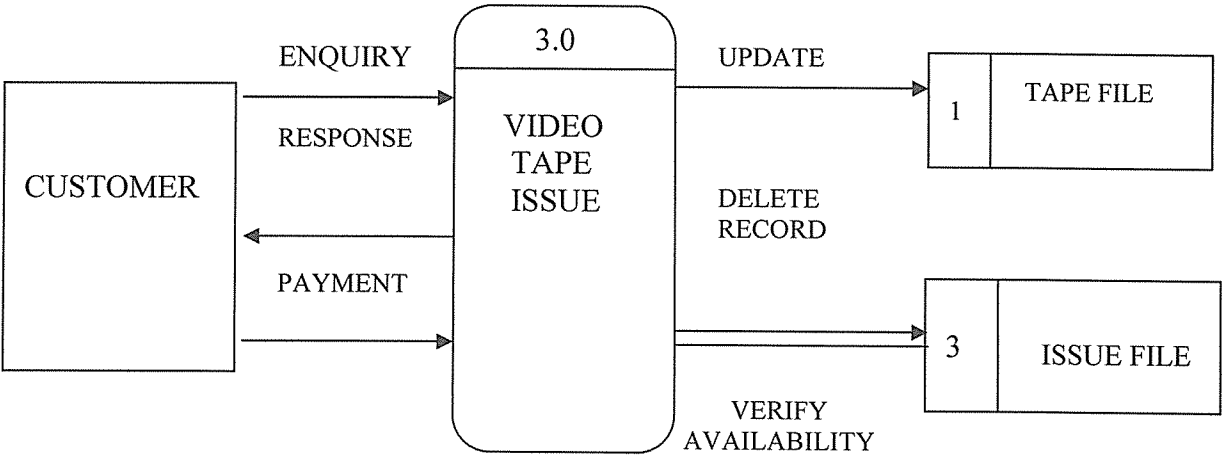


Figure 4.4

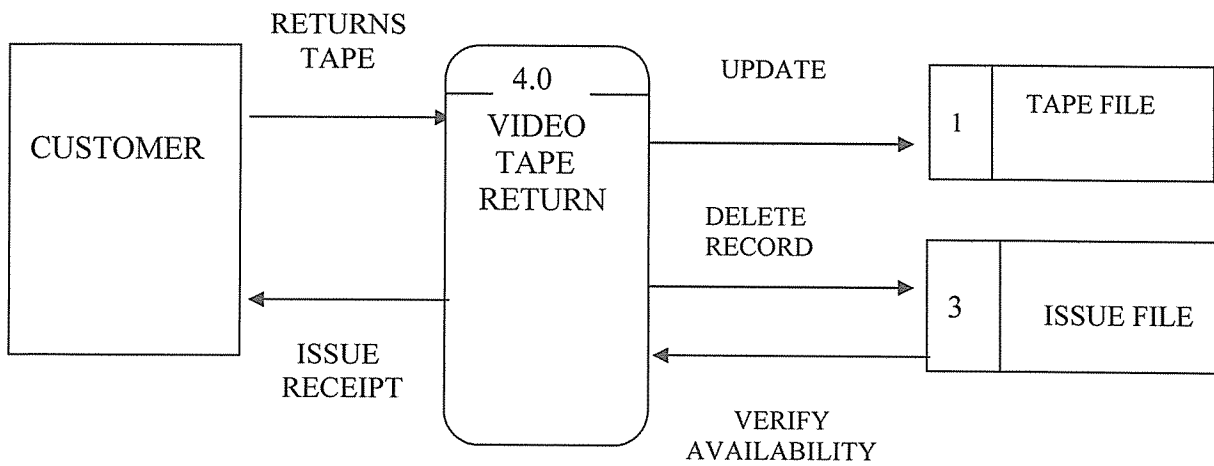
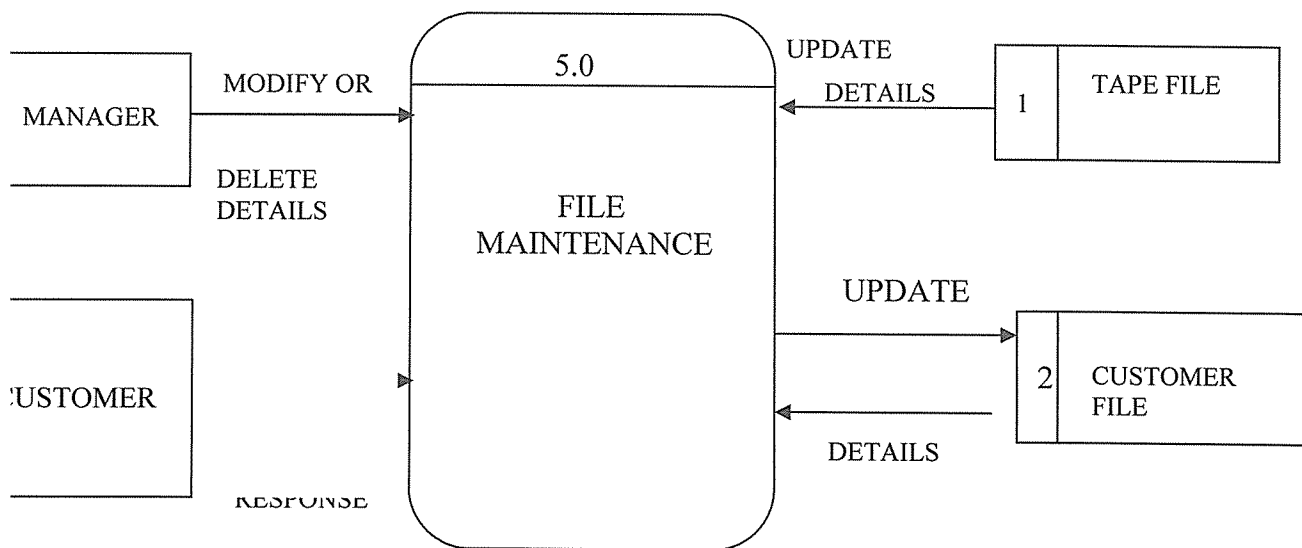


Figure 4.5



4.2 Entity Relationship Diagram

An entity relationship model is part of system development methodology that provides an understanding of the logical data requirements of a system independently of the systems' organization and process. It reflects a static view of the relationship between different entities.

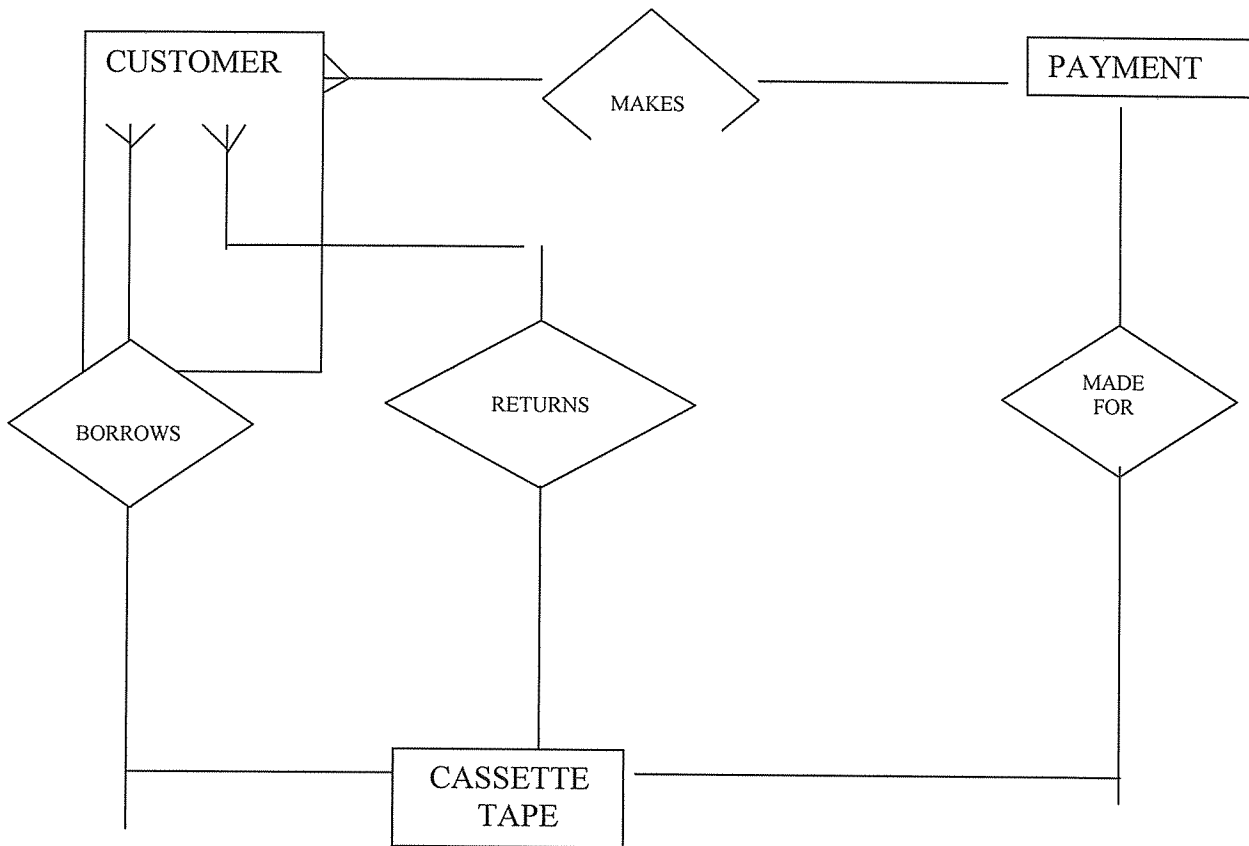
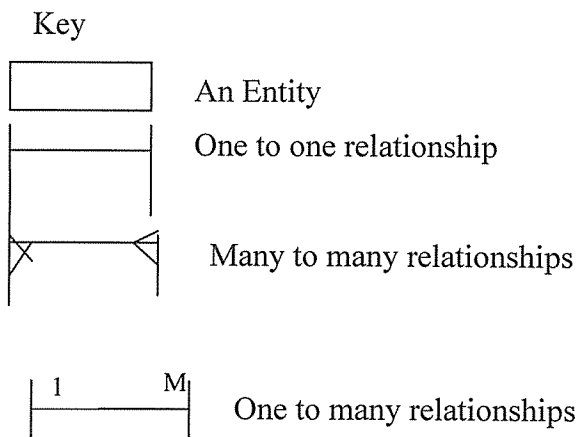


Figure 4.6



An Entity; is an object whose data is required towards the database.

One to one relationship; This means an entity in table A is associated with utmost one entity in B and an entity in B is associated with one in A.

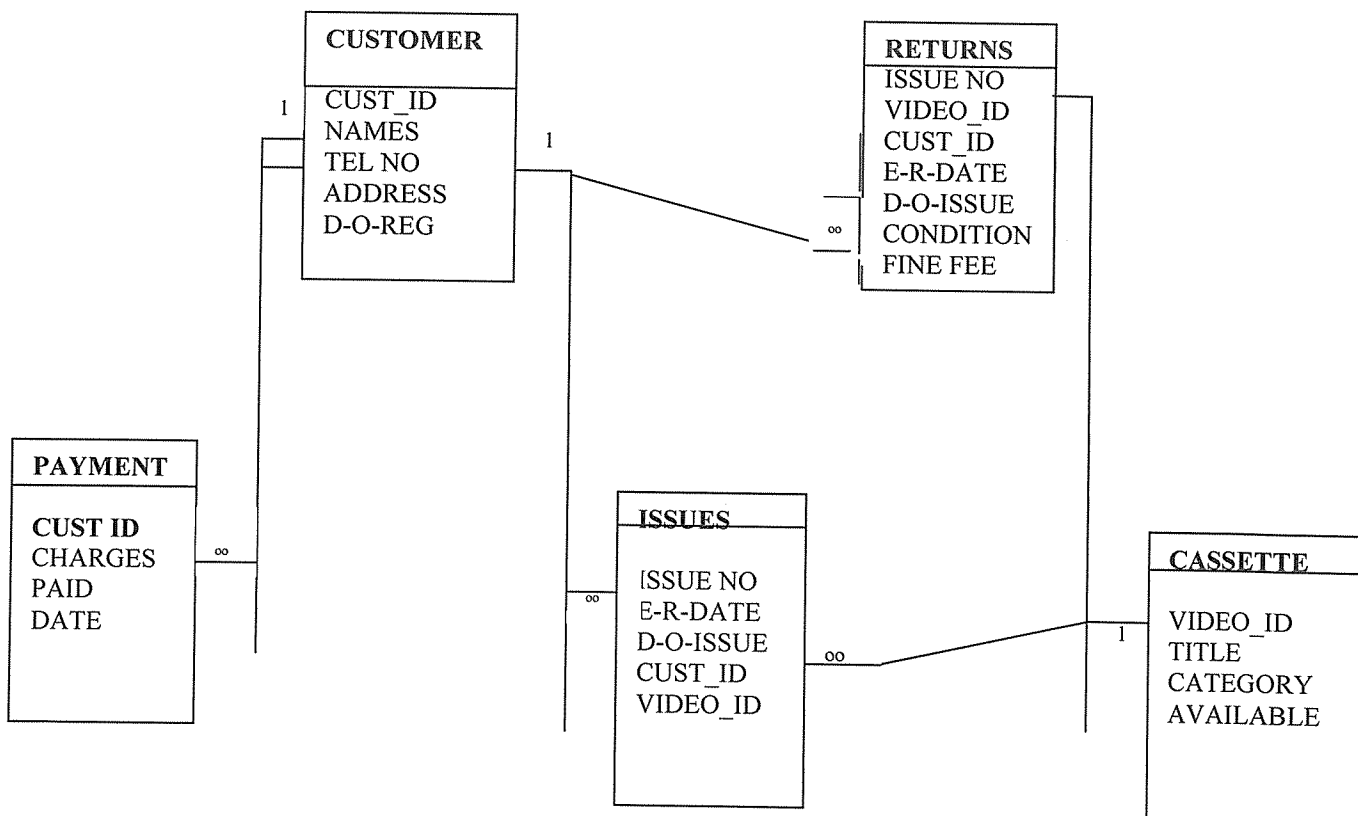
Many to many relationship; This means an entity in table A is associated with any number of entities in table B and vice versa

One to many relationship; This means an entity in table A is associated with any number of entities in table B. However, an entity in table B can be associated with utmost one entity in A.

Relationship

Entity type	Relationship	Entity type
Customer	Borrows	Cassette
Payments	Are Made By	Customer
Customer	Returns	Cassette

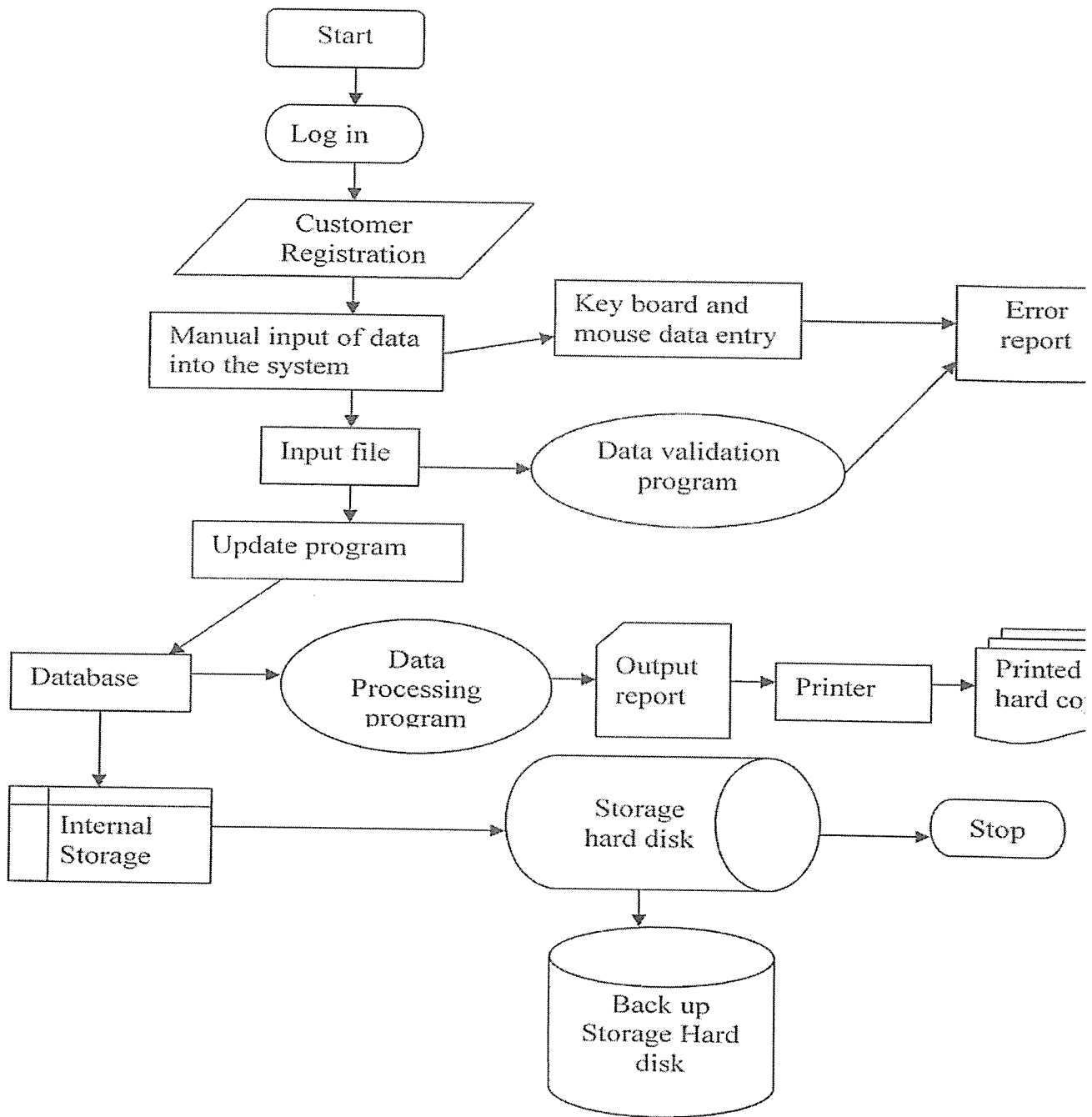
Figure 4. 7 Entity Relationship Model



4.3 System Chart Flow

The researcher analyzed the data using the system flow chart. The system flow charts are modeling symbols and diagrams to indicate the input and output of data in a system as well as the interaction of all the parts of the system.

Figure 4.8 The flowchart of the proposed system

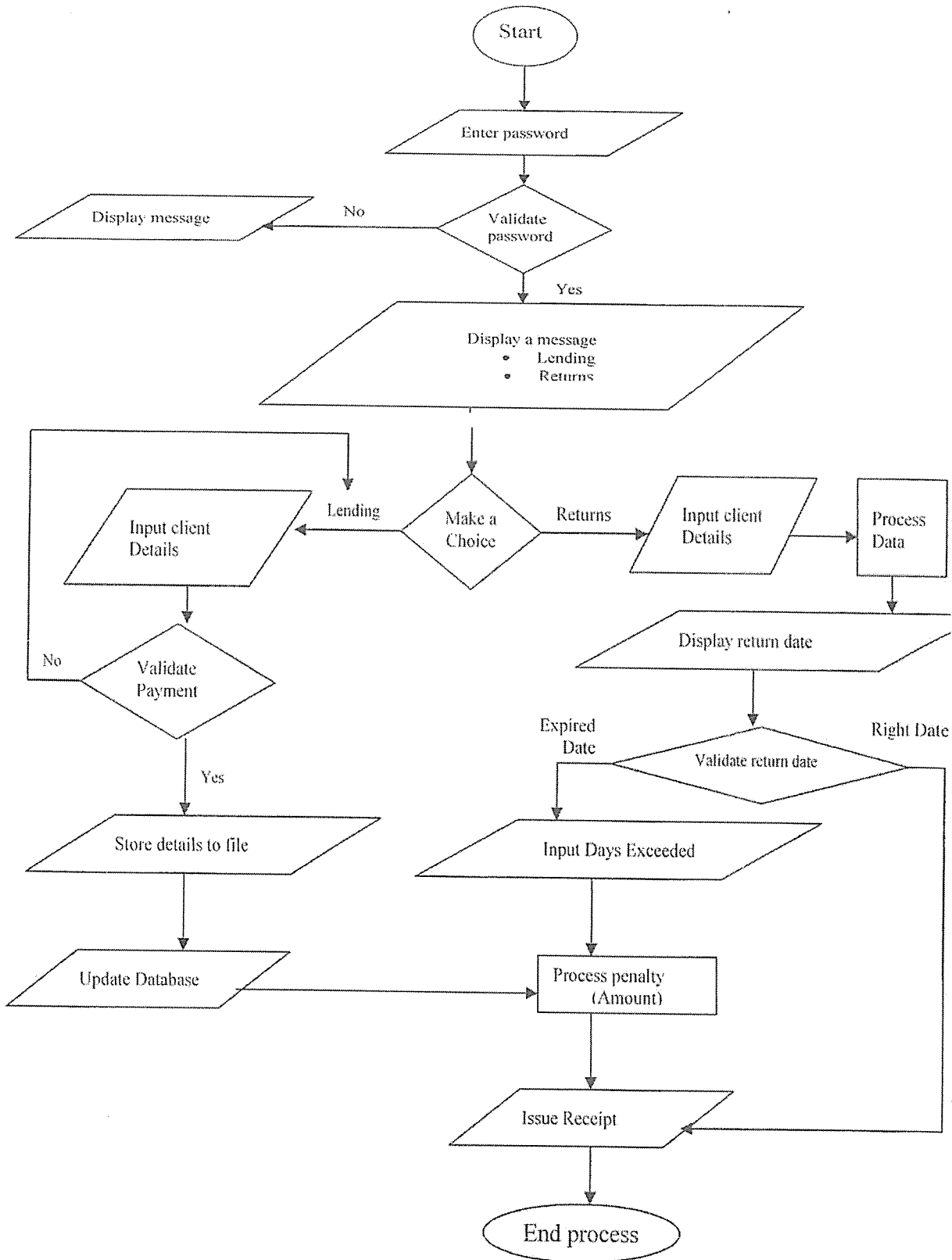


4.4 Data Flow Diagram

It is a tool that depicts the flow of data through a system and the work of processing performed by the system, Jaffrey L. Whitten. Lonnie D. Bentley. Kevin C. Dittman. System Analysis and Design (5th edition, p 307).

It can also be described as a graphical modeling technique that models the sources and destination of data inputs and outputs and the data maintained by the information system. It's a graphic design that shows both how data flows to, from and within an information system and the various process that transforms the data.

Figure 4.9 Data Flow diagram of the proposed system



4.5 Conceptual Database Design

This is the process of constructing a model of the information used in an enterprise independent of all physical considerations. This includes identification of the important entities, relationship and attributes.

4.6 Logical Design

Logical design describes the general functional capacity of the proposed system. It reviews the system requirements and considers major components of the system. It is concerned with conversion of logical records structures to a data model supported by a database management system, identifying the entities and their matching attributes and the relationship types determining the attributes domain.

At this stage the following are to be accomplished:

- ✓ Deriving relations for local logical data model
- ✓ Validate relations against user transaction
- ✓ Validate relations using normalization
- ✓ Defining integrity constraints
- ✓ Review local logical data model with users
- ✓ Merge local logical data model into global model
- ✓ Check for future growth

4.6.1 Entities (tables)

These are objects that can be distinguished from another. The database has five entities. They include the following:

Cassette

This is where the information about the movie collection which are available in the video library will be stored.

Payments

This is where information regarding the payments made by the customer will be stored.

Issues

This stores information that will help in tracking the video tapes borrowed: by who, when and the expected date of return.

Returns

This table facilitates data *storage* regarding the return of videotapes to the library.

Customer

This table stores all information pertaining to a given member of the video library.

Table 4.1 Cassette Table

Field Name	Data Type	Data Size	Required	Description
Video Id	Text	5	Yes	Video identification number
Title	Text	20	Yes	Title of the video.
Category	Text	20	Yes	Video category.
Available	Yes/No		Yes	For checking if the video is available or not.

Table 4.2 Customer Table

Field Name	Data Type	Data Size	Required	Description
Cust_id	Text	5	Yes	Customer's Identification
Names	Text	20	Yes	Customer's names.
Tel No	Text	15	No	Customer's telephone number
Address	Text	20	No	Customer's address.
D-O-Reg	Date/Time		Yes	Customer's registration date.

Table 4.3 Issues Table

Field Name	Date type	Data size	Required	Description
E-R-DATE	Date / time		Yes	Expected date of return of the video tape
D-O-Issue	Date/ Time		Yes	Date the video tape was issued
Cust_ID	Text	5	Yes	Customer's identification
Video_Id	Text	5	Yes	Video identification number
Issue_No	Text	5	Yes	Cassette's issue number

Table 4.4 Payments table

Field Name	Data type	Data size	Required	Description
Cust_Id	Text	5	Yes	Customer's identification
Charges	Currency		Yes	Charges for borrowing a Video tape
Paid	Yes / No		Yes	Describes if the customer has paid or not.
Date	Date / Time		Yes	Date of payment.

Table 4.5 Returns Table

Field Name	Data type	Data size	Required	Description
Video Id	Text	5	Yes	Video identification number.
Cust-id	Text	5	Yes	Customer's identification number.
E-R-Date	Date/Time			Expected date of video return.
D-O-Issue	Date/Time		Yes	Date the video tape was issued.
Condition	Text	10	No	Condition of the video tape.
Fine Fee	Currency		No	Fine charged for damaged video tape.
Issue No	text	5	Yes	Cassette's issue number

4.7 Physical Design

Physical design considers output requirements, input requirements, storage, processing requirements, system control and backup. It transforms the logical design material into real computer work by designing the inputs, outputs and processes and also decides how the 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 or tables.
- Designing representation of derived data
- Designing enterprise constraints
- Analyzing transactions

- Choosing file organization and indexes
- Estimating disk-space requirements
- Designing user views
- Designing security mechanism

4.7.1 Output Requirement

The researcher determined that the media of the output is both softcopy and hardcopy. These are devices that translate information processed by the computer into a form that humans can understand.

Hardcopy

This is a printout stored in a computer. It is considered hard because it exists physically on paper. The hardcopy will be printed by use of a printer, which will be connected to the computer. They will be in a report form.

Softcopy

This is the GUI. This provides the way to interact with people. Its advantages include the following:

- Easy to learn and use.
- It is multitasking.

4.7.2 Input Requirement

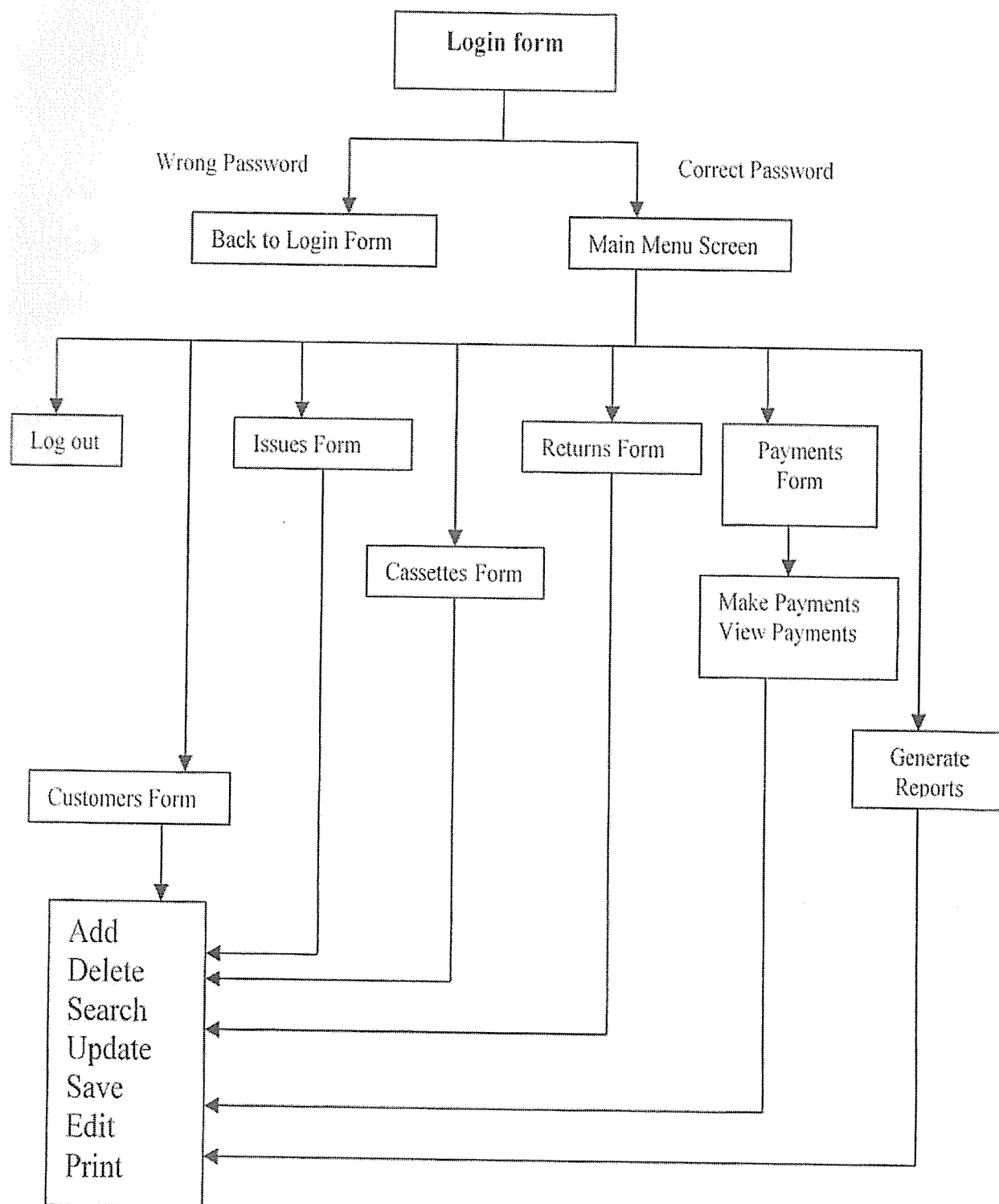
These are devices that translate data into a form the computer can process. Data shall be input and administered centrally by the systems administrator trained by the researcher. The keyboard and the mouse will be used as the input devices to input data into the system.

4.7.3 Processing Requirements.

The system required the following hardware and software to perform effectively

Hardware	Requirements
Computer	Compatible Intel Pentium III / Celeron- 1.1 GHz or higher processor speed

Figure 4.10 Interface design of the proposed system



4.8 Conclusion

System design requires imagination with due emphasis on ground realities. At this level the researcher looked at the conceptual, logical and physical aspects. In this phase, output design, input design, procedures and the database was specified in addition to the information on personnel and hardware facilities. The researcher developed the program to manage the system.

CHAPTER FIVE

SYSTEM IMPLEMENTATION

5.0 Introduction

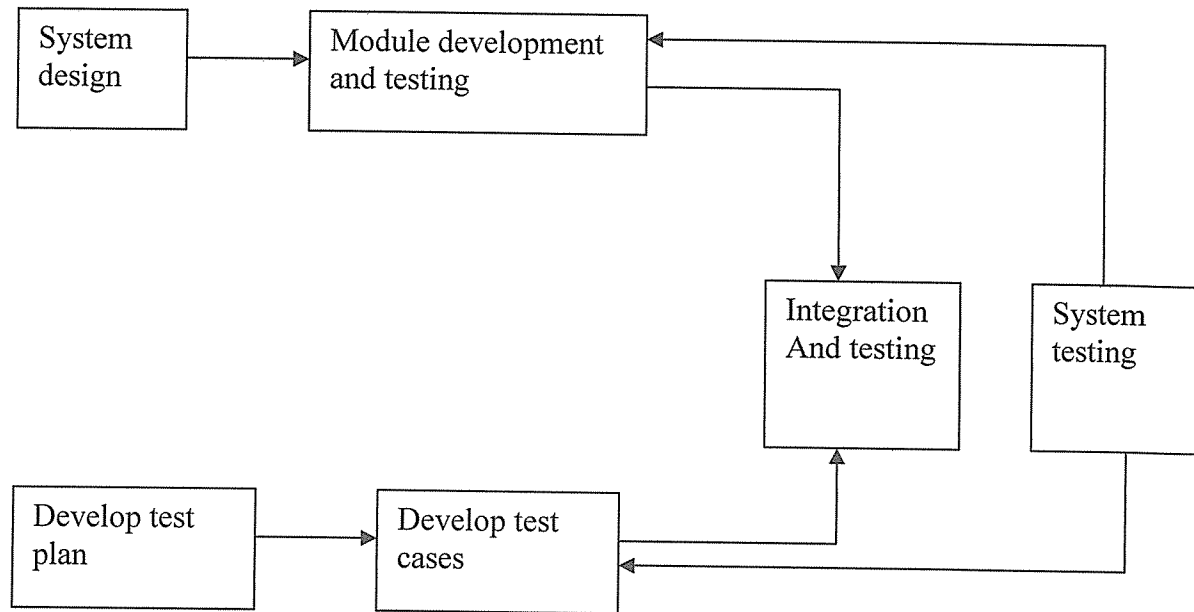
System implementation entails the construction of the new system and delivery of that system into production (day to day). Prior to system implementation, it is necessary to carry out training since it enables users to gain maximum benefits from the new system. Managers should learn that the system is capable of doing for the benefits of the organization. Operators need training in data entry and how to retrieve data stored in files. The goal is to convert the system model, specified as a structure chart, into a set of program modules.

5.1 Program testing

Program testing is recognized as an important part of quality assurance. Testing as shown below proceeds in parallel with system development. Here a test plan is developed in parallel with system design. The test plan is then used in system testing.

Testing proceeds through a number of steps

Figure 5.0 program testing illustration



First individual program modules are tested by their developers. Once individual modules are tested, the next step is to test whether they can be combined. This is known as integral testing; groups of modules are combined into test modules and tested together. The goal is to determine whether the interfaces between modules work. Then the entire system is tested. It is important to design test cases that test all the conditions that arise in system inputs, while at the same time ensuring that the tests do not take too long.

5.2 Project implementation

To implement the system the following shall be done:

- ✓ Acquire the installation of requirements e.g. hardware and software.
- ✓ Data collection.
- ✓ Planning analysis and project writing.
- ✓ System design and user training.
- ✓ System testing and review.
- ✓ System implementation and report writing.

Memory (RAM)	128 MB recommended. Additional memory may Be required depending on the operating system requirements
Hard disk	40 GB recommended
Monitor	VGA of higher resolution 800*600 pixels Screen resolution
Input device	PS/2 mouse and a keyboard for data entry.
Backup device	CD-RW drive for making backups.

Software Requirements

The software to be used in developing the system includes:

- i) Operating system Windows XP/98/2000.
- ii) Application software VB (Visual basic) for running the system and Microsoft Office package which will be used as data base management system.
- iii) Anti-virus program to detect and remove viruses.

4.7.4 User Requirements

The users will use passwords and user name to log onto the system. They will perform insertion, retrieval, search, and update of data

4.7.5 Interface Design

The users will interact with the system through the interface. This has been implemented with a graphical user interface using Visual Basic.

5.2.1 System implementation

User training

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

5.3 User interface

The goal of interface design is to provide the best way for people to interact with the computers, or what is commonly known as Human Computer Interface (HCI). Provision of good interface is becoming more important because of its impact on most organizations.

This impact is increasing, because most people in organization are spending more time interacting with computers as part of their normal work like entering transactions, retrieving data, design artifacts, and do the other myriad things that need to be done in organizations.

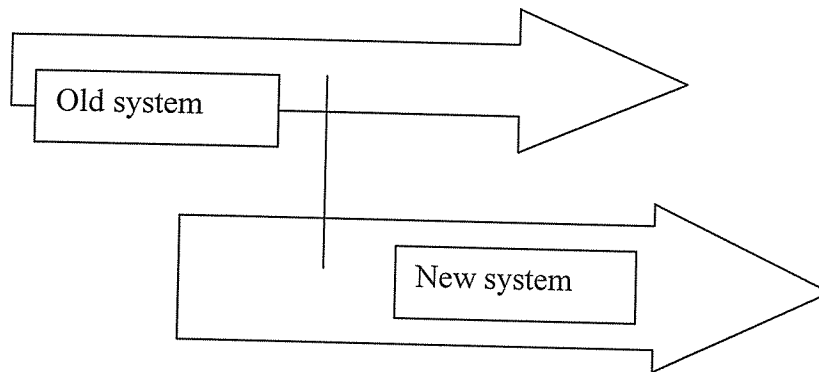
Their work and satisfaction are improved with better interfaces, leading to an improvement in their quality of work and the effectiveness of the organization.

Many people believe that improving interaction between people and the computers is one of the most important activities in system design. One reason for paying more attention to HCI is that, nowadays, computers are used by nearly everyone, not only people closely associated with computers to make their own work easier. A good interface certainly helps to satisfy this goal.

5.4 System conversion

System conversion also called change over takes place upon the system testing. The parallel method of conversion from the current system to the new system was selected as the most appropriate for the current scenario.

Figure 5.1 illustration



Parallel conversion

5.5 Conclusion

This chapter has shown how the old system has been converted to the new system. It has as well explained how it has been tested and it has been proved to meet the user requirements.

CHAPTER SIX

DISCUSSIONS, RECOMMENDATIONS, AND CONCLUSION

6.0 Discussions

It was earlier highlighted at the beginning of this project that the study came about as a result of the problems faced by video libraries in the country (Uganda). The problem was mainly due to lack of an efficient way of managing their data which often resulted to low processing speed.

The study was conducted by designing questionnaires, which were distributed to both staff and customers. Interview guides on the other hand were used to obtain data for study. The data collected was then analyzed to guide researcher in compiling the design phase of the system.

6.1 Challenges

Much as the system was a success, there were quite a number of challenges that were experienced. A few of these problems have been listed below:

- ✓ The major constraint was that of a very short period within which to have completed the project. System implementation was the most affected, to the extend that many desirable (though not specified) enhancements to the software product could not be realized.
- ✓ Power cutoffs, which would halt the progress of the software development and documentation as well.
- ✓ Insufficient knowledge of the software tools to be used, such that the developer had to teach herself first before using them.

6.2 Limitation of the study

A comprehensive computerized video library management system should be capable of doing all that the system has been designed to do.

The limitations of the system under discussion are as follows:

- ✓ There is no provision for capturing information regarding how frequently a particular cassette tape is borrowed. Such information would be useful in determining which

- ✓ movies to stock more copies of. This is attributed to the limited time that was available for the system implementation.
- ✓ The system does not allow for searching the videotape collection on the basis of actors and actresses. This limitation is due to the fact that the manual system that was found at KVL did not have actor/actress data compiled for the tapes in stock.

6.3 Evaluation of the new system

The new system if implemented will achieve the following

- ✓ The information system will control data redundancy in the library thus improving performance.
- ✓ The system will ensure data integrity within the organization since there will be only one single storage area of data.
- ✓ The system will improve on information flow and accessibility through incorporation of simplified modification and retrieval methods.
- ✓ Productivity within the organization will be increased.
- ✓ The library will increase efficiency and effectiveness in its operations, making it stand at the competitive environment.
- ✓ The system will permit new and valid entries into the database. To make sure this is accomplished; the system will validate the users' entries.
- ✓ The system will permit only authorized users to update the data in the database whenever it's necessary. This will be achieved by use of passwords.
- ✓ The system will permit instant data storage, fast retrieval, tracking of videotape movement and better financial management.

6.4 Recommendations

- ✓ Other video libraries to adopt this kind of information system.
- ✓ The staff at KVL should begin compiling actor\ actress data.
- ✓ A module for printing receipts should be developed and incorporated in the new system.
- ✓ A module that will keep track of the number of times a particular movie has been borrowed should be incorporated in the system.

6.5 Conclusion

This project can be considered to have achieved most of the set goals and objectives as where initially envisioned during the analysis phase. The objectives and achievements such as: - an improved efficiency of tracking customers' records and enhance organizational security.

The goal which was to develop an information system that keeps track of customers' records in KVL has been achieved. However as it has always been said that over 70% of work in database development cycle is in the maintenance phase, so is expected of this same system.

The system was not developed without experiencing drawbacks as earlier stated. As such, it is fair to acknowledge that the system has not been subjected to all kinds of tests that are necessary for the system to be implemented to all kinds of platforms. A thorough revision of the constraints to determine the appropriate data values for different fields in order to ensure data integrity is necessary. The system should therefore be monitored closely to make sure that it functions to its expectations during and deployment.

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APPENDIX A

SOURCE CODE FOR THE SYSTEM

```
Private Sub adddelete_Click()
Dim del As Integer
del = MsgBox("are you sure you really want to delete?", vbYesNo, "please confirm delete")
If del = vbYes Then
Adodc1.Recordset.Delete
Else
MsgBox ("record not deleted")
End If
End Sub

Private Sub cmdadd_Click()
Adodc1.Recordset.AddNew
End Sub

Private Sub cmdsave_Click()
Adodc1.Recordset.Save
End Sub

Private Sub cmdsearch_Click()
Dim strsearch As String
strsearch = InputBox("what do you want to search?(use staff id)")
Adodc1.Recordset.MoveFirst
While Not Adodc1.Recordset.EOF
If LCase(strsearch) = LCase(Adodc1.Recordset.Fields(1)) Then
MsgBox ("search successful")
Exit Sub
Else
Adodc1.Recordset.MoveNext
End If
Wend
MsgBox ("record not found")
```

End Sub

Private Sub adddelete_Click()

Dim del As Integer

del = MsgBox("are you sure you really want to delete?", vbYesNo, "please confirm delete")

If del = vbYes Then

Adodc1.Recordset.Delete

Else

MsgBox ("record not deleted")

End If

End Sub

Private Sub cmdadd_Click()

Adodc1.Recordset.AddNew

End Sub

Private Sub cmdsave_Click()

Adodc1.Recordset.Save

End Sub

Private Sub cmdsearch_Click()

Dim strsearch As String

strsearch = InputBox("what do you want to search?(use staff id)")

Adodc1.Recordset.MoveFirst

While Not Adodc1.Recordset.EOF

If LCase(strsearch) = LCase(Adodc1.Recordset.Fields(1)) Then

MsgBox ("search successful")

Exit Sub

Else

Adodc1.Recordset.MoveNext

End If

Wend

MsgBox ("record not found")

End Sub

Private Sub cmdadd_Click()

Adodc1.Recordset.AddNew

End Sub

Private Sub cmddelete_Click()

Dim del As Integer

del = MsgBox("are you sure you really want to delete?", vbYesNo, "please confirm delete")

If del = vbYes Then

Adodc1.Recordset.Delete

Else

MsgBox ("record not deleted")

End If

End Sub

Private Sub cmdsave_Click()

Adodc1.Recordset.Save

End Sub

Private Sub cmdsearch_Click()

Dim strsearch As String

strsearch = InputBox("what do you want to search?(use staff id)")

Adodc1.Recordset.MoveFirst

While Not Adodc1.Recordset.EOF

If LCase(strsearch) = LCase(Adodc1.Recordset.Fields(1)) Then

MsgBox ("search successful")

Exit Sub

```
Else
Adodc1.Recordset.MoveNext
End If
Wend
MsgBox ("record not found")
End Sub
```

```
Private Sub cmdcancel_Click()
Unload Me
End Sub
```

```
Private Sub cmdok_Click()
Adodc1.Recordset.MoveFirst
While Not Adodc1.Recordset.EOF
If txtuser2.Text = Adodc1.Recordset.Fields(0) And (txtpass2 =
Adodc1.Recordset.Fields(1)) Then
mdimain.Show
Unload Me
Exit Sub
Else
Adodc1.Recordset.MoveNext
End If
Wend
MsgBox ("please enter the correct username and password access denied")
End Sub
Private Sub cmdadd_Click()
Adodc1.Recordset.AddNew
End Sub
```

```
Private Sub cmddelete_Click()
Dim del As Integer
del = MsgBox("are you sure you really want to delete?", vbYesNo, "please confirm
delete")
If del = vbYes Then
Adodc1.Recordset.Delete
Else
MsgBox ("record not deleted")
End If
End Sub
```

APPENDIX B

Topic: Modeling and implementing a stock automation

Case Study: Kansaga Video Library

Statement of Confidence

Dear esteemed respondent, we are students from Kampala International University pursuing a bachelor's degree in business computing. The questions have been designed in order to access your views on how best we can revise or improve data management that is, storage and retrieval in kansaga video library.

I hereby request for your cooperation and assistance in carrying out this study and wish to mention that whatever information you shall give will be treated with utmost confidentiality.

Please feel free to answer.

Thank you.

☐

Female

☐

Male

(Tick in the box)

A. Sample questionnaires for the workers

1. How long have you been working with kansaga video library?.....
.....
.....
.....

2. What kind of data record system is used in your company?.....
.....
.....
.....

3. Does your organization secure its data?.....
.....
.....

☐ Yes☐ No

4. If yes how?.....
.....
.....
.....

5. If no why.....
.....
.....
.....

6. Have you ever worked with computer systems?.....
.....
.....
.....
.....

7. If yes what challenges did you face?.....
.....
.....
.....
.....

8. If a computer is incorporated in your organization, what would you like to be automated?.....
.....
.....

9. Have you been satisfied by your job performance? (Tick)

Yes

No

10. If no why?
.....
.....
.....

11. What would you like change if you're in charge?.....
.....
.....
.....

APPENDIX C

Topic: Modeling and implementing a stock automation

Case Study: Kansaga Video Library

Statement of Confidence

Dear esteemed respondent, we are students from Kampala International University pursuing a bachelor's degree in business computing. The questions have been designed in order to access your views on how best we can revise or improve data management that is, storage and retrieval in kansaga video library.

I hereby request for your cooperation and assistance in carrying out this study and wish to mention that whatever information you shall give will be treated with utmost confidentiality.

Please feel free to answer.

Thank you.

☐

Female

☐

Male

(Tick in the box)

Sample questionnaires for customers

1. Are you satisfied with the services of kansaga library?.....
.....
.....
.....

2. Would you like the idea of a new system being implemented?
.....
.....
.....

3. How would you rate the current state of the system?

☐

Adequate

☐

Inadequate

☐

Average

☐

Poor

(Tick in the box)

4. What ideas would contribute as the new system is being designed?.....

.....

.....

.....

APPENDIX D

INTERVIEW GUIDES

- 1) As a customer how often do you visit the library?
- 2) Are the services of the current system efficient at kansaga library?
- 3) How do you rate the state of the available hardware?
- 4) What challenges do you encounter in your work place?
- 5) What methods are you currently using for storage of data?