

**COMPUTERISATION OF LIBRARY BOOK LENDING SYSTEM**  
**A CASE STUDY OF KATSINA POLYTECHNIC LIBRARY**

**BY**

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**POST-GRADUATE DIPLOMA IN COMPUTER SCIENCE**

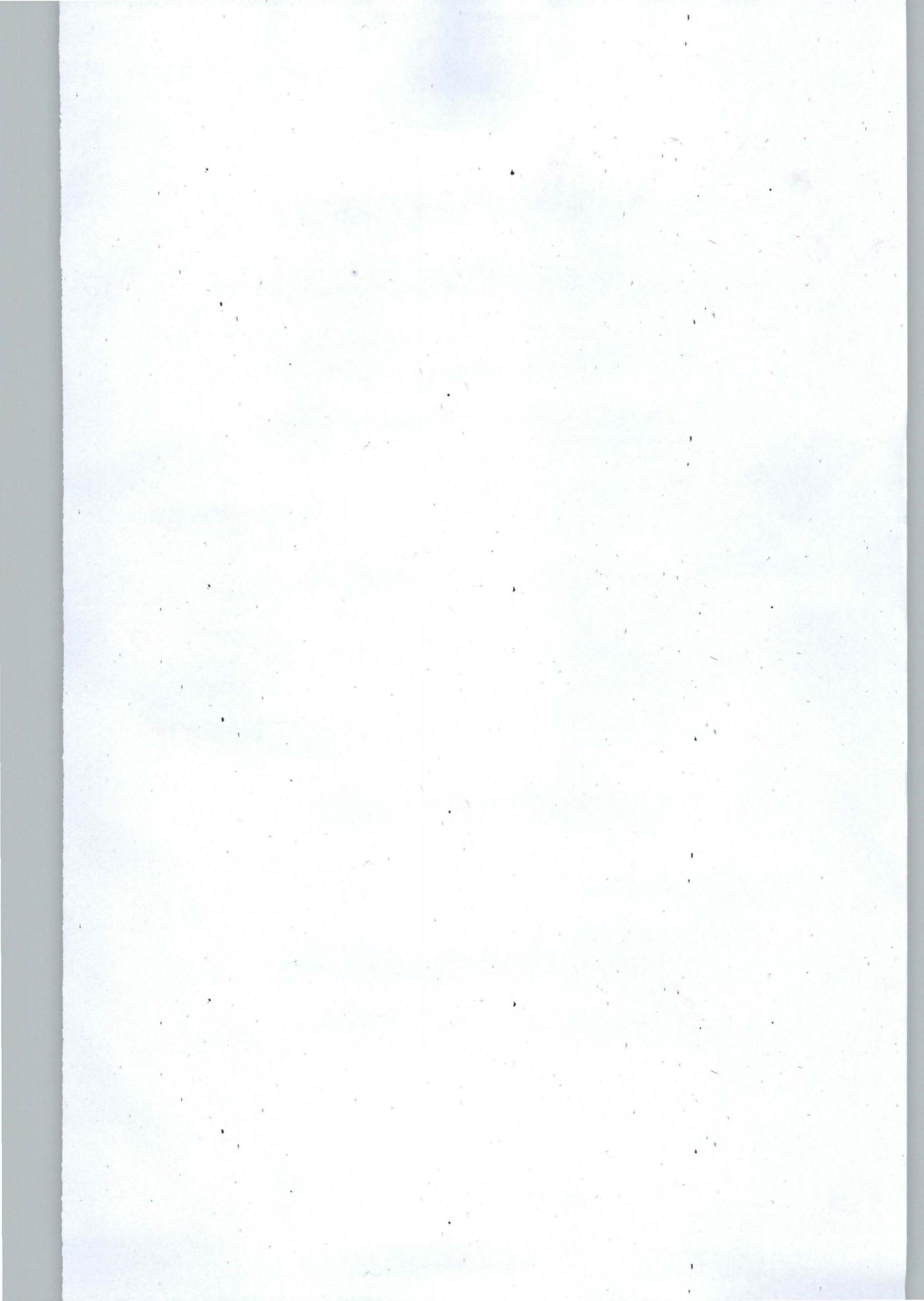
**BEING A PROJECT**

**AS**

**PARTIAL FULFILMENT FOR THE AWARD OF POST GRADUATE  
DIPLOMA IN COMPUTER SCIENCE**

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NIGERIA**

**1998**



### STUDENT ATTESTATION

I, Salisu Amadu , have declared that no part of this project has been copied, the whole of this project has been written by me under the supervision of my teachers as a partial fulfilment for the award of Post graduate diploma in computer Science, Federal University of Technology, Minna

SALISU AMADU

Name



Signature

## APPROVAL

The project has been supervised, read and approved as meeting the requirement for the award of the Post-graduate Diploma in Computer Science of the department of Mathematics and Computer Science, Federal University of Technology, Minna

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Project Supervisor

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Date

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Programme Coordinator

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Date

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Head of Department

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Date

## **DEDICATION**

This Project has been dedicated to my parents Alhaji Amadu B.K and Haj Aishatu, who contributed to the success of my studies through out my educational career, from primary to secondary and up to the university without being tired.

## **ACKNOWLEDGEMENT**

My utmost gratitude goes to Allah, Almighty Allah, the one and the only one who has given me the wisdom, knowledge and strength to start and successfully complete this project as the partial fulfilment for the award of PGD computer science.

My thanks goes to the HOD Department Maths and Computer Science ,The coordinator PGD computer Science, Mr Badmus, My project supervisor Mr Yomi Aiyesimi, Mr Nzeako and the entire lecturers of the department for making my dream a reality. May Almighty Allah reward them and make their dreams a reality as well.

## **ABSTRACT**

The presence of computer has affected almost all aspect of human life. This is due to its usefulness and widespread which provides great forum for record keeping, retrieval and processing to aid individuals, government and private organisation. In this present day much value is now placed on record keeping as lack of good record results in disorganised activities. This project considers computerisation of library lending system of Katsina polytechnic.

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## **CHAPTER ONE**

### **1.0 INTRODUCTION**

Technological changes have always affected the society bringing about changes in the way we do everything. The industrial revolution ushered our society into the Age of technology. Series of inventions made it possible for people to “mass produce / process” using machines.

With the rapid growth of the industrialized nations came the need for handling ever increasing amounts of information concerning objects, parts and people. The computer revolution ushered society into the information age. When computers were introduced in to organization, because of the benefits they can provide, they usually affect the work of such staff within the organization. Some jobs are changed, some may be created and some may be lost. This creates a demand of training and retraining.

There is the increase in the use of computer-based equipments to store large amount of data about individuals and other objects.

Computer is defined as an electronic device operating under the control of instruction stored in its memory unit that can accept data (input) process such data automatically and logically to produce output and store the result for further use.

### **1.1 STATEMENT OF THE PROBLEMS**

Library is the custodian of knowledge. It is a place where book and other educative materials are kept with strong professionalism. This requires a lot of care and proper management in order to prevent damage, lost or dormancy that could lead to books idleness on shelves without being noticed by users.

These problems and many others lead to design of this project so as to find ways of using the computer in improving the function of our libraries by way of computerisation.

This computerization is an attempt to analyse the impact of the manual system in the college of Science and Technology Library. Therefore, the problem under study is to show how the librarian is conducting the lending policies, controlling and decision-making with regards to malpractices in the library.

## **1.2 SIGNIFICANCE OF THE STUDY**

It is hoped that the project would give an insight about the operation of the library activities and comply with the approved policies of the management of **Katsina Polytechnic** in general.

It is further hoped that other libraries in the whole country will make use of this project so that it would be a guide on to any computerization of there library system system.

This project is hoped, no doubt, to serve as an information and reference for an individual organizations, or even student wishing to undertake researches in the future.

The project will also reduce the manual processing of library lending services by highly skilled librarian to simple computer operations that could be done by even a Clark with little amount of computer training.

### **1.3 SCOPE AND LIMITATION OF THE STUDY**

This computerized library system intends to cover as far as possible all the lending policies of the library, so as to benefit the librarians and the management on the lending process. But is not intended or designed to serve as a tool for searching or books control system of the library. It is not a data base for books or other library materials.

I have restricted this project to Katsina polytechnic Library at collage of science and technology because of the limitation on resources and due to time factor that militates against post graduate studies in finishing their project within one year.

### **1.4 JUSTIFICATION OF THE STUDY**

The topic has been chosen to identify how library formulates its lending and what methods or ways are being followed in dissipating its function properly. In other word, I have chosen this topic to know the likely difficulties in the implementation of any computerized system with respect to the library services. And also the ways of dealing with the theoretical aspect by practically providing everlasting solutions.

Therefore, due to these benefits that computer provides, I decided to write this project about library lending system in order to provide immediate access to borrower's information without using manual method that the staff used to do.

## CHAPTER TWO

### 2.0 LITERATURE REVIEW

Contractor, M. (1987) defined library as an organized collection of books in the sense that it requires careful recording and systematic arrangement to be useful to the various clients.

Kumar, K. (1981) also, defined library as a collection of books and non-books materials, housed, organized, interpreted and disseminated to meet the broad and varying needs of people for information, knowledge, recreation and intellectual enjoyment. He further stated that it is not enough to acquire books and related materials and store them away in a physical structure such materials need the expert hand on library profession to be property organized made accessible to meet the information needs of the users and preserved for future use.

Nowadays, certain libraries have to lend their books and other materials to the students and staff, because of the lending procedure, there is a great need for computerization of library lending system, looking at the lending procedures are done manually.

Computers on the other hand may be defined as an electronic or electromechanical device that is capable of accepting data or information, hold a list of sequential instructions, process these data using the given instruction without human intervention and at the end supply results of processing in the form of information. Basically a computer does four things: Accepts data , Stores data and instructions , Process data according to the given instructions and Issues out the result.

The United States Government was one of the first computer customers. In the late 1800's it took almost ten years to collect and organize the census data. By then, the information was out dated! Hollerith sold to the government an electro-mechanical tabulating machine, which enabled the census department to tabulate census results in much less time (three years).

Without computers, the U.S Census Bureau could never efficiently sort the billions of answers to census questions collected in 1980. Computers did in less than an hour what is used to take thousands of federal employees over ten years to do.

During World War II, the US military used computers to break the secret of its enemies. After the war, computer technology advanced so its military could use computers for tasks such as detecting enemy aircraft and missiles, guiding air craft and tanks, and monitoring national defence posts. Computers are used in the military for routine tasks such as maintaining personnel files and other important information. Many aspects in the handling of nuclear energy would be impossible without computers.

Businesses are the single largest group of computer users. The volume of records to be handled is enormous and the computer's specialty is the rapid storing, processing and retrieving of information. This too is rapidly becoming the case over here. Over half of the computers now in use were installed by businesses to control and reduce administrative paperwork and cost. Some of the ways this is accomplished are enumerated below:

## 2.2 ANALYSIS OF THE EXISTING MANUAL SYSTEM

The existing system of the library lending used by the liberation is the manual system where each borrower has recording book in the library and a library card which each borrower can hold, the plants for the required performance is design in the book. If the borrower wants borrow a book or books, he/she must shows the library card, and the name, the department, the identification number, the title and account number of the book, the date borrowed the book and the date expected return the book are all recorded in the book as bellow.

### FORMAT OF RECORDING BOOKS

<b>ID NO.</b>	<b>NAME</b>	<b>DEPT</b>	<b>TITLE/ ACCT NO</b>	<b>DATE BR</b>	<b>DATE RT</b>

If the borrower, borrowed a book his/her library card is kept together with the recording book, so that to avoid doubling of borrowing books until you return the ones borrowed, when the borrower returned the books the librarian would have to search through the box where all the recording books are kept until he/she finds the one liking for, the librarian will took at the date borrowed the exceeds the date supposed to return and if the borrower have exceed the date, the librarian may warn him/her for disobeying the rules and regulations about the library, but no over this charged as of now. If the borrower has returned the book in the right time supposed to return the librarian will ask him/her that do you want to review or change them or you have finished using with them.

If the borrower wants changes them, then the title, account number, date borrow and date return will be counselled and then write the new ones, but if the borrower wants renew them, then the date borrowed and date return will only be counselled.. and if the borrower has finished using the books then everything is counselled and issue and his/her library card.

### **2.3 PROBLEMS OF THE MANUAL SYSTEM**

There are lots of problem associated with the manual system, as listed below:

Delay of borrowing books: This is where the librarian will look at the whole box and then finds each borrowers book before giving or accepting the books.

Lost of recording books: This is a situations where one or more recording books lost and the borrower returned the books to collect his/her library card and there is no recording book to cross check, t is a great problem to the librarian..

Mix of recorded books and card: This is a situation where the box may fall down, must of the card will be revealed fro their corresponding recording books and mix with another, this lead the librarian to spend much time before finding all the corresponding books and fix together to its card.

This system requires lots of recording books and counselling of records at all the time.

### **2.4 ADVANTAGE OF COMPUTERIZED SYSTEM**

The computerized library lending system is done to achieve a very great improvement in books lending system, since it provides immediate access to borrower records and stores relevant information that can be used for decision

making when the borrower returned the books, it also simplify the process of delaying and intensive when using the manual system, with great speed and accuracy.

This system does not allow lost or mixed for borrowers recording books and their card when they borrow books, as in the case of the existing system.

This system no any recording book is used, therefore the issue of counselling or keeping recording books in the box does not even arise.

This system provides efficient storage or borrowers' record and quick retrieval of information and relief the library staff of too much work load associated with manual system.

## **2.5 POLICIES OF THE LENDING SYSTEM**

The lending policies of this library are stated below

- i) The borrower must posses the library card. The card should contain the borrower's identification number, name and department of the borrow.
- ii) Each student is allowed to borrow a maximum of two books for a period of two weeks while a lecturer is allowed to borrow a maximum of four books for a period of four weeks.
- iii) Each borrower must return the book(s) at the expected date. If the date exceeded the right date, the librarian may worn him/her to always abide with the rules and regulation of the library. But as from that time, the librarian charges an overdue fee.

- iv) The name, the identification number, the department of the borrower, the title and the account number of the books, the date borrow and return the books are all recorded in the recording books of the library and kept in a box by the librarian.
- v) Reference books are not allowed to borrow while reserved books are allowed to borrow for only one day or within the weekend

## CHAPTER THREE

### 3.0 SYSTEM DESIGN AND SOFTWARE DEVELOPMENT

The system design attempt to explain the stages and processes involved in the achievement of the requirement objectives of the computerized system. This calls for the creativity, so as to produce a design that virtual work in line with the software to the users' satisfaction. Normally in designing a system, two methods are used, i.e. the prototype and top-down modelling called structured design. In this project, the top-down modelling is used to achieve the required objectives.

The tot-down design is a process that begins with the input and output models being broken into smaller units. In this way, the desired output from the system is generally defined, the files necessary to support the system are designed, each processing task is broken into smaller task resulting in a series program module, which will be run within one main program with the respect to the system designing and planning.

The design consist of six (6) paths./the creating path which allows the user to create a particular input data into the master file which can be done once, the access path that will allow the user to enquire a created record in the master file and be able to make decision about the borrower. Thirdly, the deleting path which allow the user to delete a created record of the borrower when he/she returned the Book, the adding path which provides way for the user to add more records in the master file, the next path is the renewing or changing path, which allows the user to change the date and Books if the output listening path which provides the list of all the records in the master file.

### 3.1 INPUT SPECIFICATION

The design of the input layout has to take into consideration, the borrows response to inquiries such as identification number, name of the borrower, Department of the borrower, title and accounts number of the Book(s), date borrow and return. These inquiries are designed to the following characters that each inquiring should not exceed.

- |    |                            |                 |
|----|----------------------------|-----------------|
| 1. | Identification number      | 1-5 Characters  |
| 2. | Name of the borrower       | 1-18 Characters |
| 3. | Department of the borrower | 1-10 Characters |
| 4. | Title/Account number       | 1-30 Characters |
| 5. | Date borrow                | 1-8 Characters  |
| 6. | Date return                | 1-8 Characters  |

In the case of the name of the borrow which does not exceed 18 characters in length, in this case, the user will abbreviate the name like this Ahmed Babangida should be A. Badangida and for the name Kabir Isah Sani should be K..I Sani and so on. But for the Department where the minimum of 8 characters are required, here also the user should do it this way, for example department of Maths and Computer should be written like MTH/COMP and the Electrical Engineering should be written like ELE/EG. Etc. in the case of title and account number of Book, the field is design to take up to four books with their account numbers, so each title of the Book should be one to three Characters then follow by its account number and a space before the next title,

e.g. Computer Science with account number 00124 should be written like this, CS/00124. The data should be input like 12/12/00 or 1/10/01 and so on.

When all the information are input in to the computer the output can be displayed on the Visual Display Unit of the computer at any time the user wishes to see it, when the identification number of the borrower is entered. Any borrowed record can be changed or renewed or even deleted if the user needs to do so.

### **3.2 OUTPUT SPECIFICATION**

The basic consideration of the output design is to meet the requirement of the system and the objectives of the system as a whole. The output design conveys all information of the system, so as to know what the design system will be made or modify to produce, at the same time to know that type of data is to be input. The design system through the aid of software development is expected to perform the following operations.

- i. To produce a message on the VDU confirming that the borrower has returned the book(s) in the right date or not.
- ii. To make sure that one's record has been deleted.
- iii. To make sure that one's record has been changed or renewed by the borrower.
- iv. To list all the borrower's records either on the Virtual Display unit or on the printer.

### **3.3 FILE ORGANIZATION**

This part of the system design involves handling of file in this lending process. The first file is the master file which can hold all information about the

borrowers. If the borrow identification number keyed is on-lined with the one in the master file. The master file would have to give all the information about the borrow. There is another temporary file which can be used to store undeleted record in the master file which can be renamed by new master file after the master file has been killed. The third file is also a temporary file that is used to store modified and unmodified records of the master has been killed this file can be renewed by new master file.

Finally, the new master file which contains all the new information, about the borrowers and can be used to add records and then send to the printer to obtain the hard copy of the report. The purpose of the file processing is to ensure that the operation is performing accurately and correctly and also to ensure the completeness of data during the various processing stage.

### **3.4 SYSTEM PSEUDO CODE**

- *create master file*
- *accessing master file*
- *deleting record in the master file*
- *adding record in the master file*
- *changing or renewing record in the master file*
- *outputting records in the master file*

#### **3.4.1 ACCESSING MASTER FILE**

- *input id. no of the borrower from the keyboard*
- *input the record to the borrower from the hard disk*
- *match id. no keyed and the id. no from the hard disk*
- *print the record on the screen*
- *close the file*

#### **3.4.2 DELETING RECORD IN THE MASTER FILE**

- *input id. no.: of the borrower from the keyboard*
- *input all the records of the borrower from the hard disk*
- *compare id. no keyed and id. no from hard disk*
- *display the records on the screen*
- *write underplayed records on another new master file*
- *close old master file*
- *name new master file as old master file*

#### **3.4.3 ADDING RECORDS IN THE MASTER FILE**

- *input all borrower's enquiries*
- *write all borrower's enquiries in the master file*
- *close the master file*

#### **3.4.4 CHANGING OR RENEWING RECORDS**

- *input the id. no of the borrower from the hard disk*
- *input all records from the hard disk*
- *compare id. no keyed and id. no. disk*
- *display relevant information ot be change or renewed*
- *write new records and unchanged or unrenewed records*
- *in to the master file*
- *close the files*
- *name new master file as old master file*

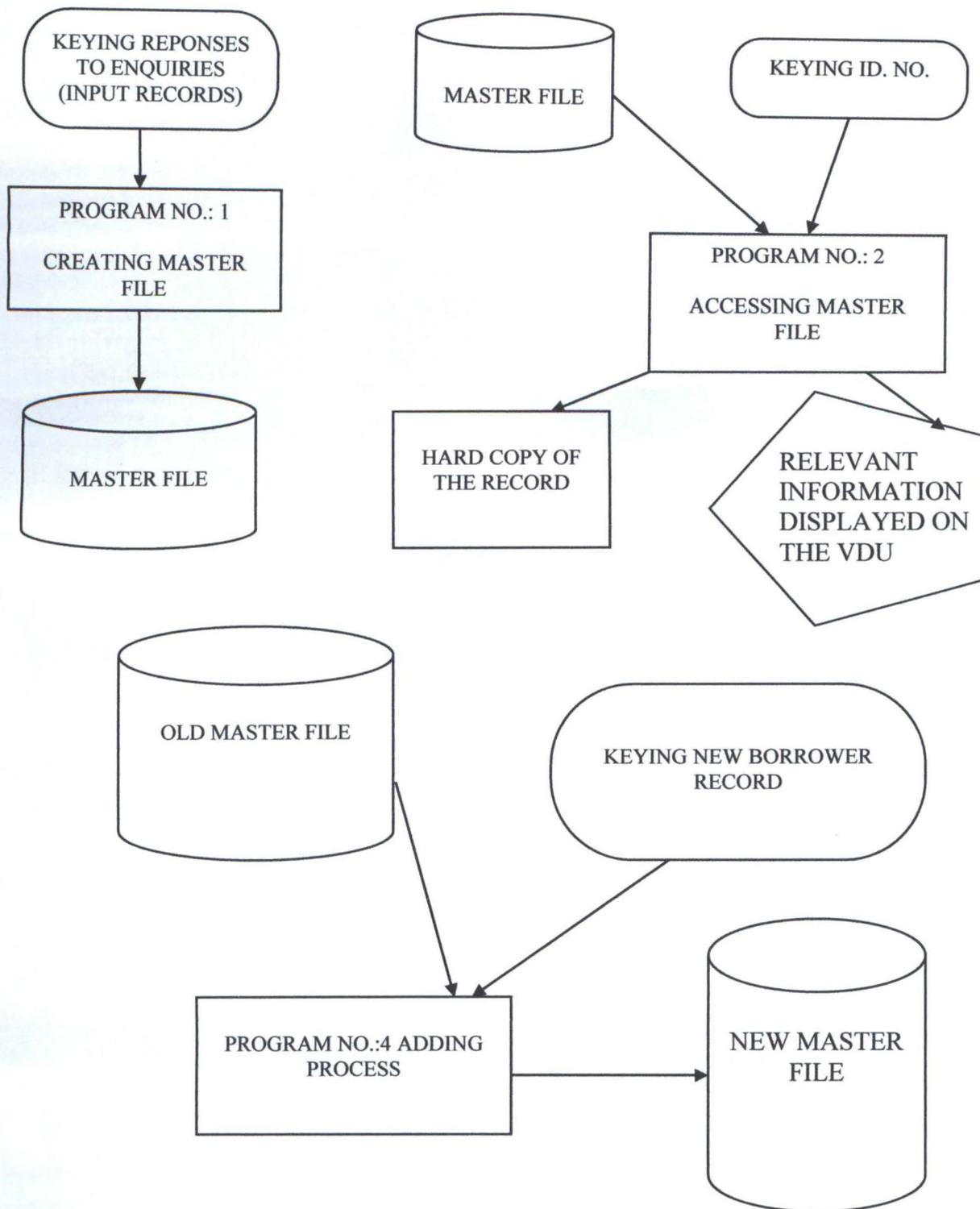
#### **3.4.5 OUTPUTING RECORDS IN THE MASTER FILE**

- *input all recods from the master file*
- *display all records on the screen*
- *print all records on the printer*

#### **3.5 PROGRAM PSEUDO CODE**

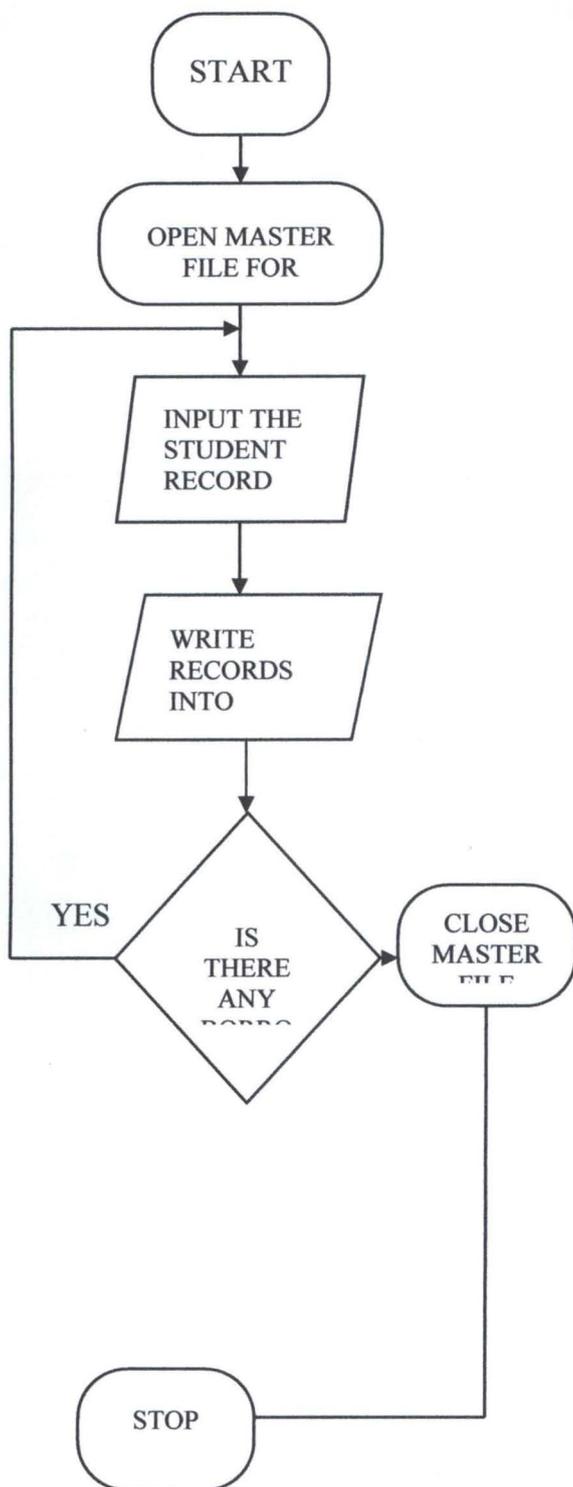
- *creating master file*
- *input all borrower's enquiries*
- *write all borrower's enquiries*
- *close the file*

### 3.6 SYSTEM FLOWCHARTS

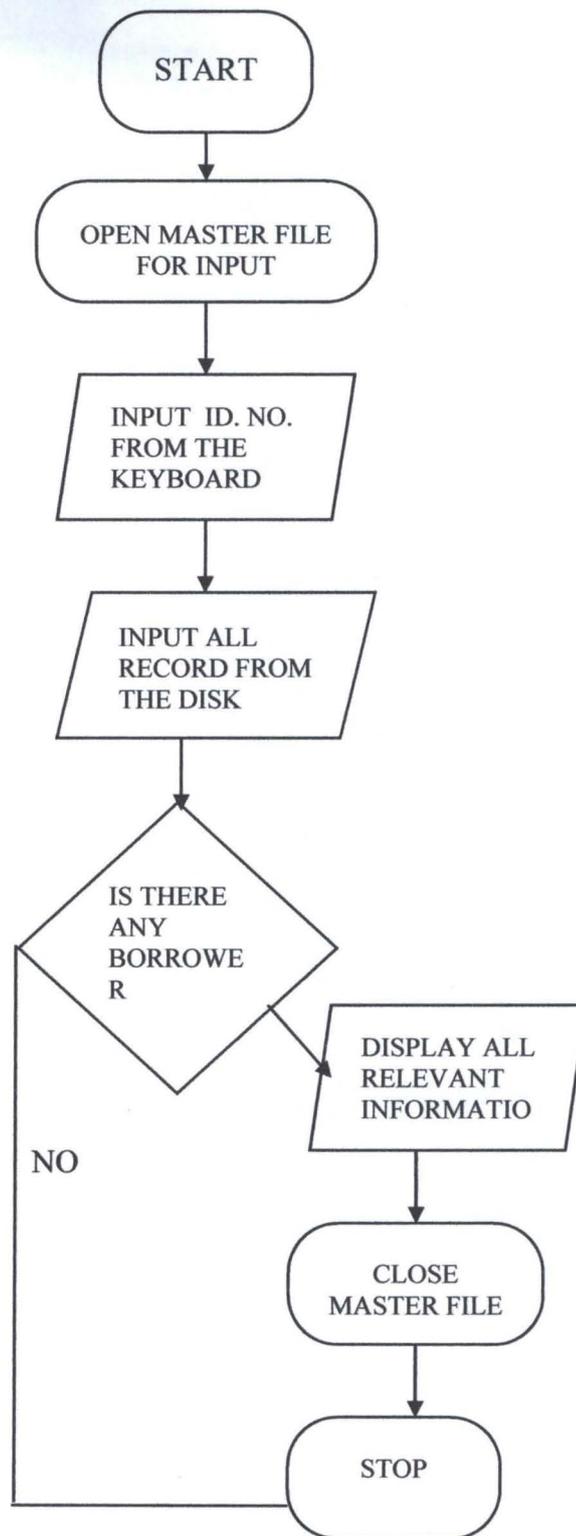


### 3.7 PROGRAMME FLOWCHART

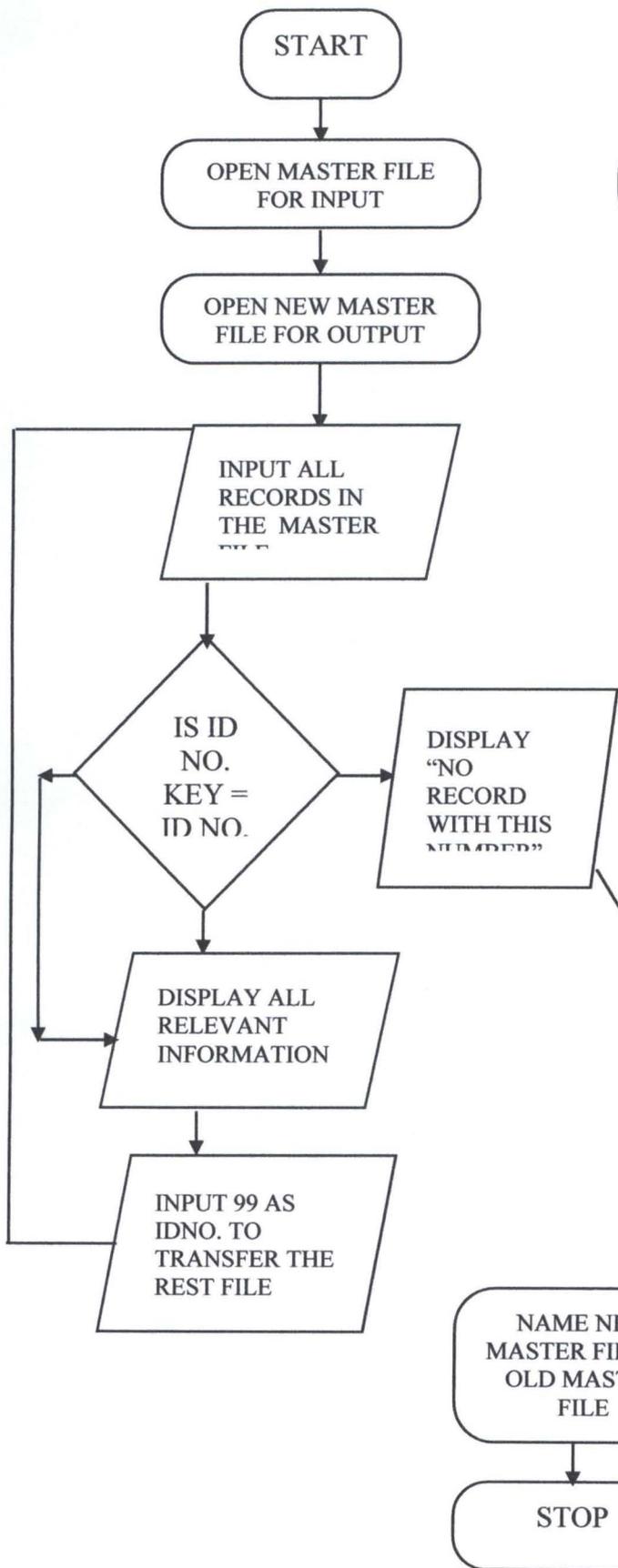
#### 1. CREATING MASTER FILE



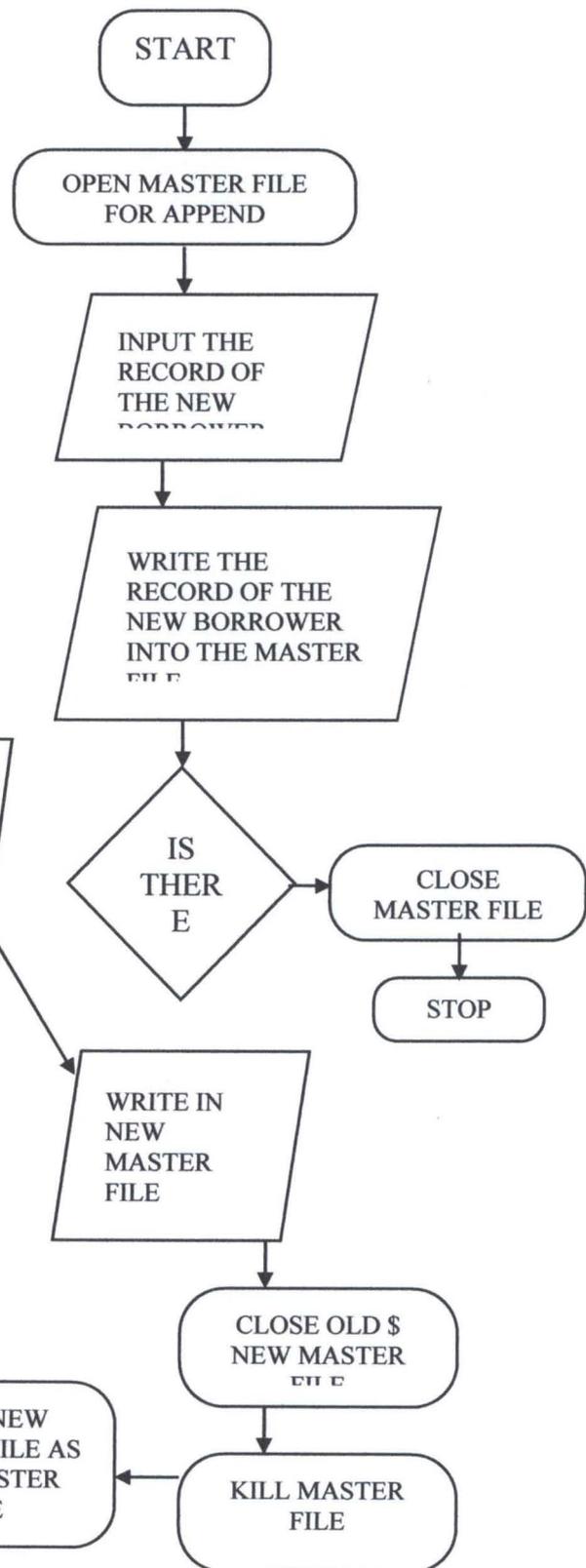
#### 2. ACCESSING MASTER FILE



### 3. DELETING RECORD

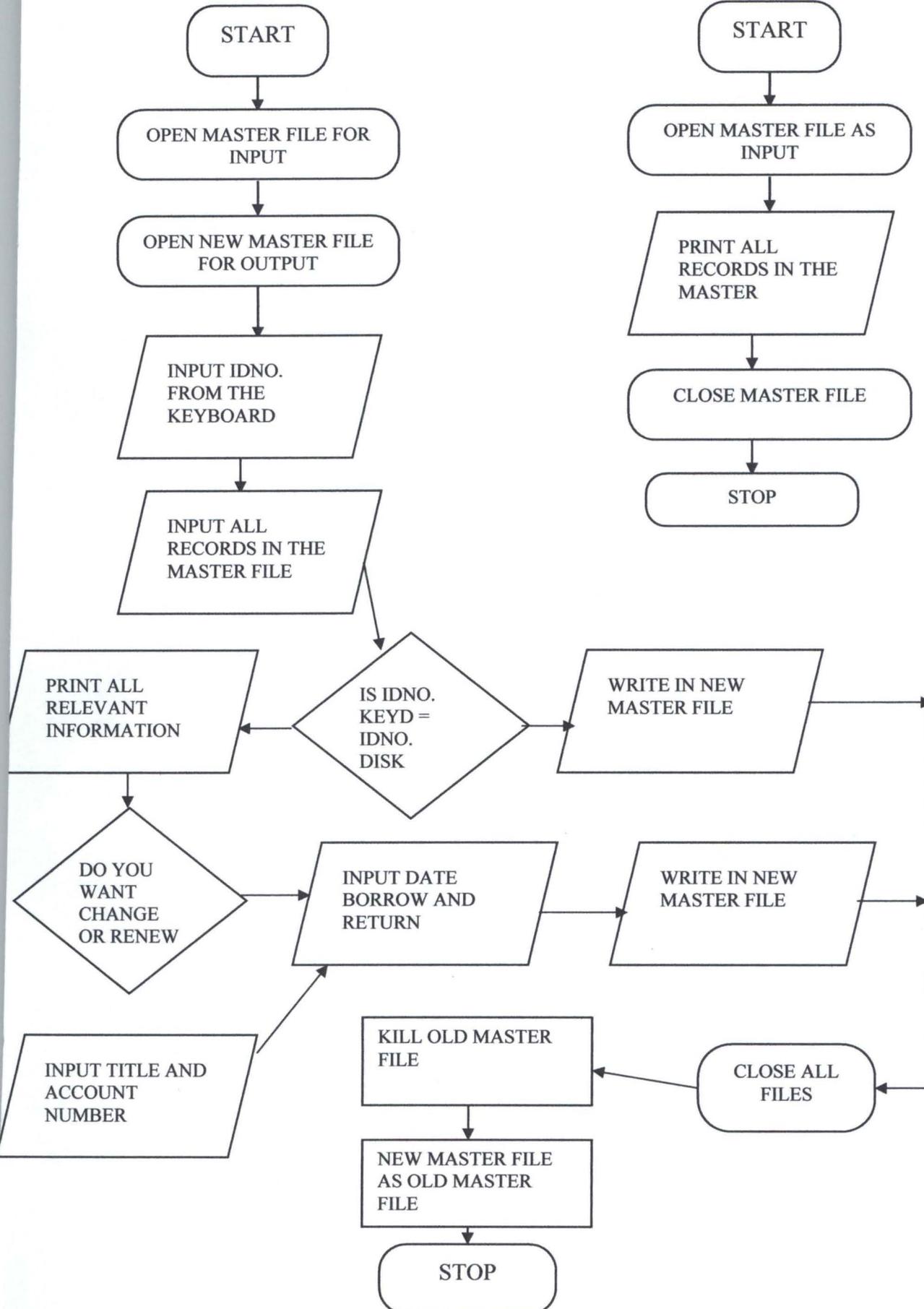


### 4. ADDING RECORD



### 5. CHANGING OR RENEWING

### 6. OUTPUT LISTING



## **CHAPTER FOUR**

### **4.0 SYSTEM IMPLEMENTATION**

#### **4.1 PROGRAMMING LANGUAGE**

Being aware of library lending system into consideration, the programming language used in the coding and implementing the system is MICROSOFT QBASIC Programming language-one of the most interesting aspect of the QBASIC is the debugging tool which could be used to track errors and correct flows on the codes logic of the program.

Instant help is explained in detail about how any key word could be obtained when enter key is pressed. User is the QBASIC environment could carry-out validity check on each statement code entered and at the same time translate to computer executable form. It also specifies statement codes containing errors and give a guide for correction. One of its advantage over GWBASIC is help facility.

#### **4.2 COMPUTER CONFIGURATION**

The term configuration is the collection of hardware which form a complete computer system, consisting of its processor and its peripheral devices. Peripheral devices consist of input, backing storage and output devices which are normally connected to, and controlled by the processor. Hence, there is need of stating the type of installation, which depend on the mode of processing, before stating the configuration of the computer.

#### **4.2.1 MEMORY/STORAGE**

There are two major memories in computer namely-main memory and auxiliary memory. The main memory is (RAM) Random Access Memory. For the system to work effectively 2MB or more is required for very fast retrieval of information. The auxiliary memories which the system required are hard disk and floppy disk drives.

#### **4.2.2 HARD DISK**

This system may need hard disk of about 2.1MB as the number of borrower will not exceed thousands. Hence lots of spaces for keeping their information. Disk storage is widely used a means of backing storage because of its ability of records and retrieval date both serially and by direct access.

#### **4.2.3 FLOPPY DRIVES**

Diskettes are used for storing master file, operating system and application program in smaller computer system. Diskettes are housed in eight inch square covers and may be single or double sided, single or double density. The single density has a capacity in region of 243 bytes and the density double has capacity in the region of 486 bytes. In this system Dual Floppy disk drives are required. One should be 3.5 high density double sided (HDDS) drive and the other one should be 5 1/4(HDDD) DRIVE.

#### **4.2.4 DISPLAY UNIT**

There are two types of display units – namely Monochrome monitor and coloured monitor with sixteen coloured, so in this system any one of them is preferable.

#### **4.2.5 INPUT UNIT**

There are so many different kinds of input devices, but the most common one of this system is 02/101 enhance keyboard configured for the use in English speaking countries, since, the system is written in English words.

#### **4.2.6 OUTPUT UNIT**

A printer is needed to produce the hardcopy of the list of borrowed books. Any type of printer is preferable for this system, because in this system hardcopy is produced time by time, normally at the end of each semester.

#### **4.3 OPERATING SYSTEM REQUIREMENT**

Since files were created in this system and a lot of devices were needed for the smooth running of this system, the operating system required is MICROSOFT DISK OPERATING SYSTEM (MS-DOS). The MS-DOSS is designed to make any system easy for the users to create and manage files, run programs and use the system devices attached to computer.

#### **4.4 TRANSLATOR NEEDED**

Translators is a software designed to translate program written in one language to another such as compiler, interpreter, assembler etc into low level language called machine language. For this system the translator needed is MS – QBASIC INTERPRETER.

#### **4.5 PROGRAM IMPLEMENTATION**

This system being written in QBASIC version of micro-soft disk operating system can be automatically loaded into the computer main-memory from the

ms-doss diskette, in order to automatically install or load this program into the computer. After the system finished loading DOS into the main memory, before inserting the diskette that contain the program into a: drive of the computer, at the Dos Prompt (c:/>). The user should type A: to take the current drive back to the diskette drive then type Q-basic to load it into the memory, then select the program name "labsystem" and enter key.

Due to the sensitivity of the software and for security purpose, access to the application system can only be authorized by entering the correct password as "Ibk", inputting the correct password gives access to the system. It will display the opening screen, which is an introduction and a welcome message for the user with some little sound for entertaining the user. This will be followed by the **menu** of the programs, where the user can select ay options. The system is designed in modules, thus, each option can take the user to the desired modules and work with.

The selection of any option on the menu could be done in one way that is by selecting the number across each program. Selecting a wrong option can give the user information about the correct options. By selecting the correct option like option number one (1) and enter key is press, will take the user creating master file program, 2 for access, 3 for deleting, 4 for adding, 5 for changing or renewing, that, user will get the required result after performing the steps involved in the program.

## **CHAPTER FIVE**

### **5.0 CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 LIMITATIONS**

The implementer intended to undertake all the policies of the lending process in the library due to time factor to execute and depend the project work before the panel at a given date, and due to electrical power failure for coding and testing the package made it impossible to cover all. Therefore, the implementer was forced to limit himself to only areas of the books that are suppose to borrow, while reserved books and reference materials are not included within the system.

Also, due to time factor, this system does not give any comment about the borrower when he/she did not return the book at the expected time.

#### **5.2 CONCLUSION**

Processing application on computer involves a number of various steps to be carried at a various levels of organization by many different people. In this project work that is “library lending system” is read – write project, it does not process any data rather then to store and retrieve.

This project is designed in this case of study can affect changes to make the total cover of the whole library to be computerized, by designing other part of library, make it on-line to this project.

#### **5.3 RECOMMENDATION**

I am recommending Katsina polytechnic to establish reliable, effective and efficient computerization of its library in the school.

It is also recommend to those organizations not using computerized lending system to start. This is because of its tremendous importance.

I also recommend this institution to supply adequate ups and stand-by generator in the laboratory to enable students to code, debug, test and run their program.

I recommend that project committees/ supervisors in every university and tertiary institutions to give adequate time for researcher on order to cover a lot in the project by giving them the proposed topic of their project during their third semester.

This project has been limited; it is therefore recommend to those capable of widening the system to cover issues that are not included in the present system.

## APPENDIX "A"

```
P = 0
1 CLS
  REM COMPUTERIZATION OF A LIBRARY SYSTEM
  REM A CASE STUDY OF KATSINA POLYTECHNIC LIBRARY
  LOCATE 5, 10: PRINT STRING$(50, "*")
  For I = I TO 5
  PRINT TAB (10); " * "; TAB (60); " * "
  NEXT I
  LOCATE 6, 15: PRINT "TO OPERATE THIS PACKAGE YOU MUST ENTER"
  LOCATE 7, 20: PRINT "THE CORRECT PASSWORD"
  LOCATE 8, 15: PRINT "TO INDICATE THAT YOU ARE AUTHORIZED USER"
  LOCATE 9, 13: PRINT "IF NOT THE PACKAGE CAN NOT BE OPERATED BY YOU"
  LOCATE 10, 10: PRINT STRING$(50, " * ")
  LOCATE 22, 10: PRINT "Press any key to continue"
  A$ = INPUT$(1)
4 CLS
  PRINT TAB (15); STRIG$(35, CHR$(186))
  FOR K = 1 TO 7
  PRINT TA (15); CHR$(186); TAB (49); CHR$(186)
  NEXT K
  LOCATE 8, 15: PRINT STRING$(35, CHR$(186))
  LOCATE 4, 18: INPUT "ENTER THE "P A S S W O R D"; B$
  GOTO 3
2 P = P + 1
  LOCATE 12, 12: PRINT "WRONG PASSWORD"
  LOCATE 13, 10: PRINT "YOU ARE UNAUTHORISED USER"
  LOCATE 14, 15: PRINT "TRY AGAIN"
  IF P = 3 THEN PRINT "UNTHOURISED USER, ASK FOR PERMISSION": GOTO 260
  LOCATE 16, 10: PRINT "press any key to return"
  AS = INPUT$(1)
  GOTO 4
3 IF B$ = "LBK" OR B$ = "IbI" THEN 7 ELSE GOTO 2
7 CLS
  PRINT TAB (10); STRING$(50, CHR$(205))
  FOR I = 1 TO 21
  PRINT TAB (10); CHR$(186); TAB (56); CHR$(186)
  NEXT I
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LOCATE 2, 15: PRINT "WELLCOME TO LIBRARY LENDING SYSTEM"
LOCATE 4, 25: PRINT "DESIGNED"
LOCATE 6, 27: PRINT "BY"
LOCATE 8, 23: PRINT "SALISU AMADU"
LOCATE 9, 20: PRINT " (PGD 459) "
LOCATE 12, 15: PRINT "AS A PARTIAL FULFILMENT OF THE AWARD"
LOCATE 13, 20: PRINT "OF POST GRADUATEDIPLOMA IN COMPUTER SCIENCE"
LOCATE 14, 18: PRINT "DEPARTMENT OF MATHEMATICAL SCIENCES"
LOCATE 15, 20: PRINT "FACULTY OF SCIENCE"
LOCATE 16, 20: PRINT "FED UNIV OF TECHNOLOGY"
LOCATE 17, 25: PRINT "MINNA"
LOCATE 19, 20: PRINT "DR. NZEYOKO"
LOCATE 20, 40: PRINT "1996/1997 SESSION"
LOCATE 22, 10: PRINT STRING$ (50, CHR$ (205) )
LOCATE 23, 10: PRINT "press any key to continue"
FOR I = 1 TO 10
SOUND 5000, P + 2
NEXT I
A$ = INPUT$ (1)
CLS
PRINT TAB (14) ; "THIS IS THE MENU OF THE PROGRAM"
PRINT TAB (14) ; STRING$ (33, CHR$ (205) )
PRINT TAB (14) ; STRING$ (40, CHR$ (186) )
FOR I = 1 TO 9
PRINT TAB (12) ; CHR$ (186) ; TAB (51) ; CHR$ (186)
NEXT I
LOCATE 5, 15: PRINT " CREATE FILE ..... 1"
LOCATE 6, 15: PRINT " ACCESS FILE ..... 2"
LOCATE 7, 15: PRINT " UPDATE (DELETE) ..... 3"
LOCATE 8, 15: PRINT " UPDATE (ADD) ..... 4"
LOCATE 9, 15: PRINT " RENEWING OR CHANGING..... 5"
LOCATE 10, 15: PRINT " OUTPUT LISTING ..... 6"
LOCATE 11, 15: PRINT " END OF PROGRAM ..... 7"
PRINT TAB (12) ; STRING$ (40, CHR$ (186) )
LOCATE 13, 15: INPUT "ENTER YOUR OPTION ..... 1 TO 7" ; OPT
IF (OPT < 1) OR (OPT > 7) THEN 15 ELSE 20
LOCATE 14, 15: PRINT "THIS IS A WRONG OPTION"

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LOCATE 15, 15: PRINT "THE CORRECT OPTIONS ARE 1 7"
LOCATE 19 15: PRINT "PRESS ANY KEY TO CONTIUE"
A$ = INPUT$ (1)
GOTO 1
20 CLS
ON OPT GOTO 30, 40, 0, 120, 130, 180, 240
30 CLS
REM CREATING SEQUENTIAL FILE
OPEN "LAB. REC" FOR OUTPUT AS #1
N = 0
N = N
32 N = N + 1
LOCATE 2, 15: PRINT "CREATING FILE" ; TAB (45) ; "RECORD NO....." ; N
LOCATE 5, 10: INPUT "ENTER THE IDNO. OF THE BORROWER....." ; R
LOCATE 6, 10: INPUT "NAME OF THE BORROWER ....." ; N$
LOCATE 7, 10: INPUT "DEPARTMENT OF THE BORROWER ..... ; D$
LOCATE 8, 10: INPUT "TITLE/ACCOUNT NO. OF THE BOOK (S)....." ; T$
LOCATE 9, 10: INPUT "DATE BORROWED ....." ; B$
LOCATE 10, 10: INPUT "DATE HE/SHE RETURN....." ; R$
WRITE #1, R, N$, D$, T$, B$, R$
33 LOCATE 12, 12: INPUT "IS THERE ANY BORROWER (Y/N" ; A$
IF A$ = "Y" OR A$ = "y" THEN CLS: GOTO 32
IF A$ = "N" OR A$ = "n" THEN CLOSE #1 : GOTO 10
GOTO 33
40 CLS
REM TO ACCESS A FILE
OPEN "LAB. REC" FOR INPUT AS #1
43 PRINT TAB (20) ; "A C C E S S I N G   F I L E"
LOCATE 4, 10: INPUT "ENTER THE ID. NO. OF THE BORROWER" ; RK
45 IF EOF (1) THEN GOTO 50
INPUT #1, R, N$, D$, T$, B$, R$
IF RK <> R THEN GOTO 45
CLS
LOCATE 1, 20: PRINT "KATSINA POLYTECHNIC"
LOCATE 2, 18: PRINT "COLLEGE OF SCIENCE AND TECHNOLOGY"
LOCATE 3, 25: PRINT "LIBRARY BORROWER'S RECORD" ;
LOCATE 4, 11: PRINT STRING$ (62, " * " )

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FOR I = 1 TO 8
PRINT TAB (8); " * "; TB (73); " * "
NEXT I
LOCATE 5, 10: PRINT "REGISTRATION NUMBER....."; R
LOCATE 6, 10: PRINT "NAME OF THE BORROWER....."; N$
LOCATE 7, 10: PRINT "DEPARTMENT OF THE BORROWER....."; D$
LOCATE 8, 10: PRINT "TITLE/ACC. NO OF THE BOOK ....."; T$
LOCATE 9, 10: PRINT "DATE BORROWED....."; B$
LOCATE 10, 10: PRINT "DATE HE/SHE WILL RETURN....."; R$
LOCATE 12, 11: PRINT STRING$ (62, " * ")
LOCATE 15, 10: PRINT "DO YOU WANT PRINT ON PAPER"
55 LOCATE 18, 10: INPUT "ANSWER (Y/N) "; ANSW$
IF ANSW$ = "Y" OR ANSW$ = "y" THEN GOTO 70
IF ANSW$ = "N" OR ANSW$ = "n" THEN 56
GOTO 55
56 LOCATE 20, 10: INPUT "DO YOU WANT ACCESS ANOTHER RECORD (Y/N)"; ASS$
IF ASS$ = "Y" OR ASS$ = "y" THEN CLS : GOTO 43
IF ASS$ = "N" OR ASS$ = "n" THEN CLOSE #1: GOTO 10
GOTO 56
50 LOCATE 7, 10: PRINT "NO RECORD WITH THIS NUMBER".
53 LOCATE 10, 10: INPUT "DO YOU WANT TRY AGAIN (Y/N)"; AN$
IF AN$ = "Y" OR AN$ = "y" THEN CLS : FOTO 43
IF AN$ = "N" OR AS$ = "n" THEN CLOSE #1 : GOTO 10
GOTO 53
70 CLS
LOCATE 1, 20: LPRINT TAB (20); "KATSINA POLYTECHNIC"
LOCATE 2, 18: LPRINT TAB (18); "COLLEGE OF SCIENCE AND TECHNOLOGY"
LOCATE 3, 25: LPRINT TAB (25); "LIBRARY BORROWER'S RECORD";
LOCATE 4, 11: LPRINT TAB (11); STRING$ (65, " * ")
LOCATE 7, 12: LPRINT TAB (12); "ID. NO. OF THE BORROWER ....."; R
LOCATE 8, 12: LPRINT TAB (12); "NAME OF THE BORROWER ....."; N$
LOCATE 9, 12: LPRINT TAB (12); "DEPARTMENT OF THE BORROWER ....."; D$
LOCATE 10, 12: LPRINT TAB (12); "TITLE/ACC. NO OF THE BOOK (S) ....."; T$
LOCATE 11, 12: LPRINT TAB (12); "DATE BORROWED....."; B$
LOCATE 12, 12: LPRINT TAB (12); "DATE HE/SHE WILL RETURN ....."; R$
LOCATE 14, 11: LPRINT TAB (12); STRING$ (65, " * ")
75 LOCATE 20, 10: INPUT "DO YOU WANT ACCESS ANOTHER RECORD (Y/N) "; AS$

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IF A$ = "Y" OR A$ = "y" THEN CLS : GOTO 43
IF A$ = "N" OR A$ = "n" THEN CLOSE #1, #2: GOTO 10
GOTO 75
80  REM TO DELETE RECORD
    CLS
83  OPEN "LAB. REC" FOR INPUT AS #1
    OPEN "EXT. REC" FOR OUTPUT AS #2
85  LOCATE 2, 20: PRINT "DELETING RECORD"
    LOCATE 5, 15: INPUT "ID. NO OF THE BORROWER" ; RK
87  IF EOF (1) THEN 112
88  INPUT #1, R, N$, D$, T$, B$, R$
    IF RK <> R THEN WRITE #2, R, N$, D$, T$, B$, R$: GOTO 87
90  CLS
    LOCATE 2, 15: PRINT "CST. L DELETION OF RECORD"
    LOCATE 5, 10: PRINT "REGISTRATION NUMBER....." ; R
    LOCATE 6, 10: PRINT "NAME OF THE BORROWER ....." ; N$
    LOCATE 7, 10: PRINT "DEPARTMENT OF THE BORROWER ....." ; D$
    LOCATE 8, 10: PRINT "TITLE/ACCOUNT NO. OF THE BOOK(S)....." ; T$
    LOCATE 9, 10: PRINT "DATE BORROWED ....." ; B$
    LOCATE 10, 10: PRINT "DATE HE/SHE WILL RETURN ....." ; R$
    LOCATE 14, 10: INPUT 'ARE YOU SURE YOU WANT DELETE THIS RECORD (Y/N) ' ; A$
    IF A$ = "Y" OR A$ = "y" THEN PRINT "THIS RECORD HAS BEEN DELETED" : GOTO 97
    IF A$ = "N" OR A$ = "n" THEN WRITE #2, R, N$, D$, T$, B$, R$
97  LOCATE 20, 10: INPUT "TYPE 99 TO CLOSE THIS MODULE" ; RK
    IF RK = 99 THEN GOTO 87
    IF RK <> 99 THEN GOTO 97
    GOTO 97
112 LOCATE 22, 10: PRINT "THIS IS THE END OF FILE"
    FOR I = 1 TO 1000: NEXT I
115 CLOSE #1, #2
    KILL "LAB. REC"
    NAME "EXT. REC" AS "LAB. REC"
    LOCATE 24, 12: PRINT "Press any key to continue" ;
    INT$ = INPUT$ (1)
    GOTO 10.
120 CLS
    REM TO ADD RECORD

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OPEN "LAB. REC" FOR APPEND AS #1
N = N + 1
LOCATE 2, 15: PRINT "APPENDING RECORD"; TAB (45); "PAGE NO. "; N
LOCATE 3, 15: PRINT STRING$(40, CHR$(205))
LOCATE 6, 10: INPUT "ID. NO. OF THE BORROWER ....."; R
LOCATE 7, 10: INPUT "NAME OF THE BORROWER ....."; N$
LOCATE 8, 10: INPUT "DEPARTMENT OF THE BORROWER ....."; D$
LOCATE 9, 10: INPUT "TITLE/ACCOUNT NO. OF THE BOOK (S) ....."; T$
LOCATE 10, 10: INPUT "DATE BORROWED ....."; BS
LOCATE 11, 10: INPUT "DATE HE/SHE WILL RETURN ....."; RS
WRITE #1, R, NS, DS, TS, BS, RS
LOCATE 19, 10: INPUT "DO YOU WANT AND ANOTHER RECORD (Y/N)"; ASS
CLOSE #1
GOTO 10
CLS
OPEN "LAB. REC" FOR INPUT AS #1
OPEN "REN. REC" FOR OUTPUT AS #3
LOCATE 2, 15: PRINT "RENEWING OR CHANGING BOOK(S)"
LOCATE 3, 15: PRINT STRINGS(45, CHR$(205))
LOCATE 5, 10: INPUT "INPUT THE ID. NO. OF THE BORROWER"; RK
IF EOF (1) THEN GOTO 170
INPUT #1, R, NS, DS, TS, BS, RS
IF RK <> R THEN WRITE #3, R, NS, DS, TS, BS, RS: GOTO 140
CLS
LOCATE 2, 15: PRINT "RENEWING OR CHANGING BOOKS(S)"
LOCATE 3, 15: PRINT STRINGS(45, CHR$(205))
LOCATE 6, 10: PRINT "IDENTIFICATION NUMBER ....."; R
LOCATE 7, 10: PRINT "NAME OF THE BORROWER ....."; NS
LOCATE 8, 10: PRINT "DEPARTMENT OF THE BORROWER ....."; DS
LOCATE 9, 10: PRINT "TITLE OF THE BOOK (S) ....."; TS
LOCATE 10, 10: PRINT "DATE BORROWED ....."; BS
LOCATE 11' 10: PRINT "DATE HE/SHE WILL RETURN ....."; RS
INPUT "DO YOU WANT RENEW, CHANGE OR NO ANY (R/C/N)"; ANS
IF ANS = "R" OR ANS = "r" THEN GOTO 150
IF ANS = "C" OR ANS = "c" THEN 146
IF ANS = "N" OR ANS = "n" THEN 152
GOTO 145

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LOCATE 9, 10: INPUT "TITLE OF THE BOOK (S) ....."; TS: GOTO 150
LOCATE 10, 10: INPUT "DATE BORROWED ....."; BS
LOCATE 11, 10: INPUT "DATE HE/SHE WILL RETURN ....."; RS
WRITE #3, R, NS, DS, TS, BS, RS
LOCATE 18, 10: INPUT "DO YOU WANT UPDATE ANOTHER RECORD (Y/N) "; RS
IF RS = "Y" OR RS = "y" THEN CLS : GOTO 135
IF RS = "N" OR RS = "n" THEN 155
GOTO 153
LOCATE 20, 10: INPUT "TYPE 99 TO CLOSE THIS MODULE AND RETURN"; RK
IF RK = 99 GOTO 140
IF RK <> 99 THEN 155
LOCATE 22, 20: PRINT "THIS IS THE END OF THE FILE"
LOCATE 24, 20: PRINT "RECORD (S) SELECTED HAS BEEN RENEWED OR CHANGE
LOCATE 25, 20: PRINT "Press any key to return"
DS = INPUT (1)
CLOSE #1, #3
KILL "LAB. REC "
NAME "REN. REC" AS "LAB. REC"
GOTO 10
CLS
REM OUTPUT LISTING
OPEN "LAB. REC" FOR INPUT AS #1
LOCATE 2, 15: PRINT "COLLEGE OF SCIENCE AND TECHNOLOGY LIBRARY"
LOCATE 3, 20: PRINT "KATSINA POLYTECHNIC"
LOCATE 4, 30: PRINT "P.M.B 2025"
LOCATE 5, 30: PRINT "KATSINA"
LOCATE 7, 20: PRINT "B O R R O W E R S L I S T "
LOCATE 8, 20: PRINT STRINGS (27, CHRS (196) )
PRINT CHRS (218) ; STRINGS (5, CHRS (196) ) ; CHRS (194) ; TAB (8) ;
STRINGS (7 CHRS (196) ) ; STRINGS (10, CHRS (196) ) ; STRINGS (18, CHRS (196) ) ;
TAB (34) ; CHRS (194) ; STRINGS (10, CHRS (196) ) ; TAB (45) ; CHRS (194) ;
STRINGS (33, CHRS (196) ) ; TAB (79) ; CHRS (191)
PRINT CHRS (179) ; "S/N" ; TAB (7) ; CHRS (179) ; "IDNO" ; TAB (15) ;
CHRS (179) ; "NAME" ; TAB (34) ; CHRS (179) ; "DEPARTMENT" ; TAB (45) ;
CHRS (179) ; "TITLE/ACCOUNTNO. " ; TAB (79) ; CHRS (179)
PRINT CHRS (195) ; STRINGS (5, CHRS (196) ) ; CHRS (179) ; TAB (8) ;
STRINGS (7, CHRS (196) ) ; TAB (15) ; CHRS (197) ; STRINGS (18, CHRS (196) ) ;

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TAB (34) ; CHRS (197) ) ; STRINGS (10, CHRS (196) ) ; TAB (45) ; CHRS (196) ) ;
STRINGS (33, CHRS (196) ) ; TAB (79) ; CHRS (180)
L = 0
L = L + 0
L = L + 1
IF EOF (1) THEN GOTO 195
INPUT #1, R, NS, DS, TS, BS, RS
PRINT CHRS (179) ; L ; TAB (7) ; CHRS (179) ; R ; TAB (15) ; CHRS (179) ;
NS ; TAB (34) ; CHRS (179) ; DS ; TAB (45) ; CHRS (179) ; TS ; TAB (79) ;
CHRS (179)
GOTO 190
PRINT CHRS (192) ; STRINGS (5, CHRS (196) ) ; CHRS (193) ; TAB (8) ;
STRINGS (7, CHRS (196) ) ; TAB (15) ; CHRS (193) ; STRING (18, CHRS (196) ) ;
TAB (34) ; CHRS (193) ; STRING (10, CHRS (196) ) ; TAB (45) ; CHRS (193) ; STRIN
CHRS (196) ; TAB (79) ; CHRS (217)
PRINT : PRINT : PRINT : INPUT "DO YOU WANT OUTPUT IT ON PAPER (Y/N) " ;
IF AS = "Y" OR AS = "y" THEN CLOSE #1 : GOTO 210
IF AS = "N" OR AS = "n" THEN 200
GOTO 198
CLOSE #1 : PRINT : PRINT "Press any key to return to main menu"
MS = INPUT (1)
GOTO 10
PRINT TAB (7) ; "IF PRINTER IS READY PRESS ANY KEY TO PRINT"
PS = INPUTS (1)
OPEN "LAB. REC" FOR INPUT AS #1
LPRINT TAB (15) ; "COLLEGE OF SCIENCE AND TECHNOLOGY LIBRARY"
LPRINT TAB (20) ; "KATSINA POLYTECHNIC"
LPRINT TAB (30) ; "P.M.B 2052"
LPRINT TAB (30) ; "KATSINA"
LPRINT TBA (25) ; " B O R R O W E R S L I S T "
LPRINT TAB (24) ; "STRINGS (27, CHRS (196) )
LPRINT CHRS (218) ; STRINGS (5, CHRS (196) ) ; CHRS (194) ; TAB (8) ;
STRINGS (7, CHRS (196) ) ; CHRS (194) ; TAB (16) ; STRINGS (18, CHRS (196) ) ;
TAB (34) ; CHRS (194) ; STRINGS (10, CHRS (196) ) ; TAB (45) ; CHRS (194) ;
STRINGS (33, CHRS (196) ) ; TAB (79) ; CHRS (191)
LPRINT CHRS (179) ; "S/N" ; TAB (7) ; CHRS (179) ; "IDNO" ; TAB (15) ;
CHRS (179) ; "NAME" ; TAB (34) ; CHRS (179) ; " DEPARTMENT" ; TAB (45);

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CHRS (179) ; "TITLE/ACCOUNTNO. " ; TAB (79) ; CHRS (179)
LPRING CHRS (195) ; STRINGS (5, CHRS (196) ) : CHRS (197) ; TAB (8) ;
STRINGS ( 7, CHRS (196) ) ; TAB (15) ; CHRS (197) ; STRINGS (18,
CHRS (196) ) ; TAB (34) ; CHRS (197) ; STRINGS (10, CHRS (196) ) ;
TAB (45) ; CHRS (197) ; STRINGS (33, CHRS (196) ) ; TAB ( 79 ) ; CHRS (180)
L = 0
L = L + 0
L = L + 1
IF EOF (1) THEN GOTO 230
INPUT #1, R, NS, DS, TS, BS, RS,
LPRINT CHRS (179) ; L; TAB (7) ; CHRS (179) ; R; TAB (15) ; CHRS (179) ;
NS ; TAB (34) ; CHRS (179) ; DS ; TAB (45) ; CHRS (179) ; TS ; TAB (79) ;
CHRS (179)
GOTO 220
LRPINT CHRS (192) ; STRINGS (5, CHRS (196) ) ; CHRS (193) ; TAB ( 8 ) ;
STRING (7, CHRS (196) ) ; TAB (15) ; CHRS (193) ; STRINGS (18, CHRS (196) ) ;
TAB (34) ; CHRS (193) ; STRINGS (10, CHRS (196) ) ; TAB (45) ; CHRS (193) ;
STRINGS (33, CHRS (196) ) ) ; TAB (79) ; CHRS (217)
CLOSE #1 : PRINT : PRINT "PRESS ANY KEY TO RETURN TO MAIN MENU" ; MS
MS = INPUTS (1)
GOTO 10
LOCATE 5, 10: PRINT STRINGS (50, "*" )
FOR I = 1 TO 5
PRINT TAB (10) ; "*" ; TAB (60) ; "*"
NEXT I
LOCATE 7, 15: PRING " ARE YOU SURE YOU WANT "
LOCATE 9, 30: PRINT " E X I T "
LOCATE 10, 10: PRINT STRINGS (50, "*" )
LOCATE 11, 15: INPUT "ANSWER (Y/N) " ; AS
IF AS = "Y" OR AS = "y" THEN GOTO 260
IF AS = "N" OR AS = "n" THEN GOTO 10
GOTO 240
FOR J = 1 TO 5
SOUND 500, A + 10: SOUND 400, B + 15
NEXT J
END

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## REFERENCES

1. Anderson, R.G. (1984) **Data Processing** 5<sup>th</sup> ed; The M&E Handbook Series; London;
2. Contractor, M. (1987) **Computer and Library Services**; Anmol Publications PVT Ltd;
3. French, C.S. (1983) **Data Processing and Information Technology** ; Letts Educational Aldine Place, London
4. French, C.S. (1986) **Computer Studies**; 2<sup>nd</sup> ed; D.B Publications Ltd;
5. Kumar, K. (1981) **An Introduction to Cataloguing Practice**; Vikas Publishing House PVT Ltd; India
6. Stokes, A.V. (1985) **Concise Encyclopaedia of Information Technology**; Gower Publishing Company Ltd; England