

**A COMPUTERISED CENTRAL REFERENCE
LIBRARY (CRL):
A CASE STUDY OF FEDERAL MINISTRY
OF AGRICULTURE, ABUJA.**

BY

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PGD/MCS/038/96**

**DEPARTMENT OF MATHS/COMPUTER SCIENCE
FEDERAL UNIVERSITY OF TECHNOLOGY
MINNA, NIGER STATE - NIGERIA.**

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**A PROJECT SUBMITTED TO THE DEPARTMENT OF
MATHS/COMPUTER SCIENCE
FEDERAL UNIVERSITY OF TECHNOLOGY
MINNA, NIGER STATE - NIGERIA.**

**IN PARTIAL FULFILMENT OF THE
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APPROVAL PAGE

This project has been certified for the award of Post Graduate Diploma in Computer Science of the Federal University of Technology, Minna, Niger State, Nigeria.

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DEDICATION

This project is dedicated to the Almighty God who gave me the foresight to go for this course and courage to finish the program. It is also dedicated to my mother Mrs. J.O. Akingbaso and my brothers and sisters for their supports.

ABSTRACT

Library is a collection of books and journals. Building up that collection is therefore of pre-eminent importance. Library reflects dual role - teaching and the other research. However, there are different types of libraries - University libraries, Prison libraries, special libraries. Central Reference Library is a special type of library serving as information centre for its parent institution and because of its dynamic approach, the planning of layout is less easily predictable.

A Central Reference Library housekeeping routines take up the greatest part of the staff's time, since such operations are by their very nature repetitive, clerical and by and large fairly simple, they often ideally suited for computerization. Libraries are therefore turning increasingly to automated systems as a means of coping with the heavy loadwork, often with fewer staff.

This project is designed to provide librarians and other academic personnel with a current technological treatment of the more important issues in the administration of a Central Reference Library. It is written with the view that details of operation of an acquisitions department and other operational departments are considered. The issues and problems dealt with are those which in substantial degree affect the economy of the library operation, its service to its clientele, the securing of adequate financial support, the impact of various matters on the staff and external relations both on and off the Ministry. It is hoped that it will be found useful.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND OF STUDY

Agriculture has traditionally been characterized as the "main stay" of the Nigerian economy with many assigned roles to perform in the course of the country's economic development. Among the roles conventionally ascribed to the agricultural sector in a growing economy are those of :-

- (I) providing adequate food for an increasing population
- (ii) supplying adequate raw materials to a growing industrial sector: and
- (iii) constituting the major source of employment
- (iv) constituting a major source of foreign exchange earnings
- (v) providing a market for the products of the industrial sector.

The ultimate of Nigerian's agricultural policy is the attainment of self-sustaining growth in all the sub-sectors of agriculture as well as the realization of the structural transformation necessary for the overall socio-economic development of the rural areas. The evaluation of the performance of the Nigerian Agricultural Sector should, therefore be based on the extent to which these above-named roles have been satisfactorily performed.

1.2 HISTORICAL DEVELOPMENT OF THE CENTRAL REFERENCE LIBRARY

The Federal Ministry of Agriculture is a body established by the Federal Government to implement the above policies and therefore operates through the following departments:-

- (I) Department of Personnel Management
- (ii) Department of Finance and Supplies
- (iii) Department of Planning, Research and Statistics
- (iv) Department of Agriculture
- (v) Department of Livestock and Pest Control Services
- (vi) Department of Fisheries
- (vii) Department of Agricultural Sciences
- (viii) Department of Agricultural Land resources ; and
- (ix) Department of Forestry

Earlier on in the Ministry, it was agreed upon by the departments to form a mini-library or a

unit for individual collections of books, journals, publications and magazines which later developed into the main library. The department of Planning, Research and Statistics formally the Central Planning Unit was given the mandate to house all the departmental collections for a central purpose. This, however, moved the plan to establish the Central Reference Library in 1980, under the auspices of the Records branch in the Research and Statistics division.

The objectives of the Central Reference Library are as follows:-

- (I) To provide a continuous, accurate and timely data on agricultural output, prices, incomes, inputs, production costs and so on
- (ii) To support all the activities of all the departments in the Federal Ministry of Agriculture by keeping record of their activities and achievements.
- (iii) To provide lending, reference and research services by providing books for a variety of reference needs, catalogues of major libraries and collections, subject and national bibliographies, list of books in print, union lists of periodicals, abstracts, indexes and also the standard types of reference work - encyclopedias, atlases, gazettes, biographical dictionaries, language dictionaries, yearbooks, statistical digests, journals etc.
- (iv) To provide relevant specialized academic and educational guides; Ministry Calendars, list of research in progress, list of research organizations, yearbook of learned societies, newspapers and magazines, maps, sheet music, microfilms, recorded sound on tapes or records, cinefilms and other visual aids, cards and tapes for computers, dissertations and thesis, archives and printed materials in an unusual forms (broadside, playbill and the likes). Hence it is required to serve as an information centre for the Federal ministry of Agriculture and also its collections are usually limited in subject range but must have a great depth of coverage of its particular interest. For instance, it is expected to provide books and journals on any agricultural related subject such as animals, plants, hydrology, engineering, diseases and controls, water resources etc.

1.3 LIMITATIONS

1.3.1 ACCOMMODATION

The re-organization of the Central Reference Library started in 1986 in which all operations were carried out manually. progress was temporarily halted by the decision to move the Ministry to Abuja but in 1988, the Ministry finally moved to Abuja and was practically faced with accommodation problem. The plan to have a reference room for serious reading/research work is now impossible unless the situation improves. At the same time the operations of the Central Reference Library ceased whereby the acquired books were packed up until a space was available to display them. In 1991, the books were partially displayed in a very small room which did not in any form portray a good library.

1.3.2 LIBRARY COLLECTIONS

In 1993, a relatively bigger room was allocated for the use of the Central Reference Library after which new items were purchased to help in the re-organization. Such items included carrels, chairs, shelves, Library of Congress Classification Scheme. The publications with the most current literature can be found mostly in the collections of the department of Water Resources now known as the Federal Ministry of Water Resources which had once indicated its wish to withdraw its library collection. These old books were duly processed and shelved as archival collections.

1.3.3 STAFFING

The Central Reference Library also experiences personnel problems. The major problem is the lack of qualified librarians and experienced professionals and of specialists in various fields. Presently, the library is headed by a Chief Librarian Whose mandate is to co-ordinate the activities in the library. All the collections in the library are being re-accessioned, re-catalogued and re-classified using the Library of Congress Classification Scheme as opposed to the Universal Decimal Classification Scheme (UDCS) that was formally used on books in this particular library. The change in the classification scheme coupled with the non-professional hands delayed all other activities in the library. Since library management is a technical job and due to its dynamic approach, professionals and trained personnel should be available else the objectives of managing a library is jeopardised.

1.3.4 FINANCE

The problem of finance has today become the most crucial problem facing the librarian.

Traditionally, the librarian is expected to prepare a budget every year, and when this has been approved, he is to administer it. He draws money from each vote as the need arises, and keeps a clear record of commitments and actual expenditures. But today, the situation is very different, even so the librarian has no guarantee that the small sums of money approved on paper will be made available when needed. The situation is so bad that suppliers will not accept Local Purchase Order (L.P.O.) because of the existing uncleared debts.

1.3.5 **OTHER PROBLEMS**

Other problems faced by the Central Reference Library are;

- lack of mobility. No vehicle is assigned to this unit to assist in moving around for official duties.
- lack of equipments such as computer systems, shelves, carrels, chairs, office furniture and no new acquisition of books, accessioned register.
- Non-availability of complete set of Library of Congress Classification Scheme, special software for library services.
- lack of adequate on-the-job training to encourage the available hands.

1.4 **OBJECTIVES OF A COMPUTERIZED CENTRAL REFERENCE LIBRARY**

Computerizing a library is one of the most challenging and exciting experience a Librarian can have and can assist in a variety of functions. All libraries have much in common in equipment, procedure, planning, remodeling or moving. Conversely, there is much that is different in a special library or between one type of special library or another. It is however because of these parallels and differences that the objectives below are produced to propel the operations of the Central Reference Library.

It is important especially in these times of dwindling resources to distinguish between core and desirable objectives. Core objectives are those which the Librarian has an absolute obligation to try to achieve and desirable objectives on the other hand are objectives which may be pursued because they are considered good in themselves or because they complement the core objectives. Therefore the objectives of computerizing a Central Reference Library are as follows;

- (I) To maintain and provide access to the catalogue of items in the collection
- (ii) To manage the issuing and returning of items from the collection

- (iii) To acquire new items for the collection
- (iv) To control serial publication and allow the retrieval of information from local files
- (v) To provide extremely flexible way of sorting factual data, indexes and cataloguing entries
- (vi) To provide a necessary and easier administrative operations such as circulation and acquisition systems
- (vii) To analyze the whole operational system and to provide the basis for optimization of library services and for better decision making at various levels
- (viii) To increase speed, accuracy and ease of maintaining all routine work
- (ix) To store hard copies of old and current documents and data/information
- (x) To organize fund raising activities such as photocopying and training facilities
- (xi) To provide recreational reading materials such as newspapers, general magazines, texts in fields related to specific subjects .

CHAPTER TWO

2.0 THE LIBRARY BACKGROUND

It is generally claimed that Britain has the finest and most extensive library system in the world both in its variety and coverage. Although such a thesis might be argued against in view of the rapid developments in other countries notably Scandinavia. In contrast to the newer libraries of many other countries, library habit was established centuries ago and the richness of its collections is thereby considerably enhanced.

Local authorities are responsible for the support of schools' libraries and other institutions with some support from the States and Federal Government in equalizing opportunities and improving standards. This has led to the National Commission on Libraries and Information Science with a view to exploring ways of improving information services on national basis and improved methods of cooperation.

2.1 TYPES OF LIBRARIES

The libraries of our Universities and Colleges also originated several centuries ago. The University Library of Oxford, dates from the bequest of Bishop Cobham in 1327, Merton and Balhol Libraries established in 2nd half of the 13th century, University of Ibadan Library in Nigeria was established in 1937 and several other academic libraries emerged e.g Polytechnic and Colleges.

In addition local authority libraries are provided in voluntary colleges and special colleges such as those of Librarianship or Law, the Police College or the Administrative Staff College. Then the most large State Schools have their libraries, many of them in charge of qualified librarian or tutor librarian. The independent schools too have their libraries although staffing seems to be more in the hands of the teacher rather than a professional librarian.

There are also hospital libraries where the services vary from collections of recreational reading to first-class stock of well selected fiction and non-fiction. In some cases the hospital library includes a library for both medical and nursing staff. Sometimes the service is organized by the hospital authorities or administered wholly or in part by the public library or free and also financed by public funds. Other institutions such as prisons, detention centres and approved homes also have their libraries, again usually run by the public library in return for a government grant. Locally the public library will provide a library service to its old people's homes and to handicapped persons.

There are thousands of so-called "special libraries" which promote state or industry within firms or associations. Their collections are usually limited in subject range and have great depth of coverage of their particular interest. They not only acquire materials but also produce it by scanning and abstracting to the exact requirements of the users. Under this, we have the libraries for government bodies, nationalized industries, learned institutions and research associations. They serve as information centres for their parent institutions and because of their dynamic approach the planning layout is less easily predictable.

To complete brief survey of the kinds of library, we come to the National Libraries e.g National Library of Nigeria, Abuja. It is only national in the sense of being a repository of the Nation's library heritage, no lending service and a last resort for research workers. The library in all these is an essential part of the academic framework.

2.2 FUNCTIONS OF THE LIBRARY

In the case of library of government departments, these have a function of serving the needs of the Minister and his staff. They provide a public reference service but no access to confidential materials and also help through various interlending schemes.

General functions of the library may be catering for the educational such as research study, references etc and recreational needs of the public or members of the organization.

Library services of different kinds provide for every conceivable type of reader through a multiplicity of agencies. It should be added that through the most extensive systems of cooperation, few demands for serious literature go unsatisfied.

2.3 COMPUTER AS IT RELATES TO THE LIBRARY

The life of almost everyone who lives in a modern industrial society is affected in some way, often quite visibly, by computers. Departmental store, telephone and utility bills, income tax records are commonly prepared by computers. Industrial uses range from inventory monitoring through automated machine control to sales forecasting. Space exploration is meticulously controlled by computers and in fact, would be impossible without computers. Computers are beginning to be used in the storage and manipulation of huge amounts of alphabetic data and text.

The advent of computers in libraries on a large scale in the 1970s provided the necessary impetus for centralized cataloguing to become the norm rather than the exception by the time the

decade was finished. Computer technology has now become generally well established in libraries and singled out for primary attention because of the exceptional complexity. It is this newer phase that holds great promise for the humanistic world of which libraries are a significant part.

The intellectual problem of adapting computers to storing, keeping in order and updating prodigious files of alphabetic data and producing a desired selection from such a store is now regarded in more realistic terms. The expense of designing systems, of programming and of operations is currently so great that any library should be cautious about moving into this activity.

It is clear that the storage capacity of computers is increasing sharply. The cost of computer storage and of central processing time is being reduced, terminal devices became better suited to library needs, buffer stores and direct access devices are permitting greater flexibility in systems and time-sharing has eventually brought computer applications to every library unit where communication line costs can be justified. In contrast to other mechanical information handling, they can be on-line from any point in the Ministry as a public utility service.

Library in computing is

- (a) a collection of subroutines and program written for a particular computer and available to a programmer for insertion into his own coding
- (b) a repository for demountable recorded media such as magnetic disk packs and magnetic tapes
- © any collection of related files.

The library's provision of books for a variety of reference needs is an important additional component. The printed book has been so solidly and substantially the context of academic library that any change in the technology of scholarly communication would radically alter them. Already there are signs of change brought about by the potent combination of computers in which information can be stored and processed.

CHAPTER THREE

3.0 SYSTEM ANALYSIS AND DESIGN

3.1 SYSTEM ANALYSIS

A system is a set of elements or components which are connected by a network of relationships or actions with defined purpose. The elements themselves and the relationships between them determines how a system works. Systems have inputs, processing mechanism and output. The three relational factors that determines this system are;

- (a) System components:- involves the people, activities and events, and objects.
- (b) System boundary:- involves the agreement on internal and external goals. Since it is a government library, resources to maintain this system is to be controlled by the Head of the library in a way to affect the environment positively.
- © System approach:- provides a useful framework and body of techniques for accomplishing change as the existing system is deformed.

3.2 SYSTEM INVESTIGATION STAGES

The classical approach uses a framework called the system or project life cycle. It is commonly described as having five (5) consecutive stages, listed below:

- (a) Feasibility Study - problem recognition, technical survey and economic justification.
- (b) Analysis - determination of detailed requirements
- © Design - development of design based on the analysis
- (d) Software development/Implementation - construction, installation and full testing; staff training
- (e) Operation - normal working; review of performance

3.3 FEASIBILITY STUDY

3.3.1 PROBLEM IDENTIFICATION

This study is to identify and define the problems encountered in the Central Reference Library. The following problems were identified by interviewing the library staff and close observations of the activities in the library.

- (a) Lack of adequate space
- (b) Lack of materials such as shelves, reading carrels, stationeries, classification scheme etc.

to work with

- © Non-availability of current books, journals, reference materials, audiovisuals, gazettes, newspapers etc
- (d) Ineffective cataloguing and classification of available collections
- (e) Inadequacies in arrangement of available collections on the shelves which makes tracing of books and information retrieval very difficult.
- (f) Lack of record maintenance over the collections
- (g) Lack of control over issuing and retrieval of items
- (h) Operations are delayed and ineffective due to limited professional hands and assistants
- (I) On-the-job training is not encouraged due to the stagnancy of the library activities
- (j) Problem of funds to cater for the library activities

3.3.2 **TECHNICAL SURVEY**

- First of all, an ideal space must be provided before one thinks of furnishing a library.
- A Personal Computer (PC) to be used will definitely take care of majority of the problems encountered in this library. At this level, the software necessary for computerization is the DBASE IV which is universally available. Library staff must be computer literate and vast in library operations, and updating must be done from time to time.
- A complete set of the Library of Congress classification Scheme is ideal for classification of collections.
- Other physical materials needed are book trucks, book pockets, date due slips, rubber stamps, catalogue cards 3" x 5" etc.

3.3.3 **ECONOMIC JUSTIFICATION**

The operations of this library are performed manually and the speed of response has been so poor for readers and for staff. The best alternative method for improved efficiency in this library is its computerization. This changeover is essential to

- (a) eliminate unnecessary and duplication of operations
- (b) increase speed of operations, ease and accuracy of operations
- © increase user's response, ease and accuracy of use
- (d) provide dependable record for decision making

- (e) reduce cost of maintenance
- (f) monitor acquisition, issuing and returning of items

The cost of all necessary materials will be high at first, but the benefits will later outweigh the costs. This new system will certainly improve on availability of information at any given time for individual and governmental use either for further analysis or in decision making especially as it relates to agriculture which is the main objective of this library.

3.4 **THE PROPOSED COMPUTERIZED LIBRARY SYSTEM**

3.4.1 **CHARACTERISTICS FOR LIBRARY DEVELOPMENT**

More is demanded of the libraries and information system by society. This complexity and pressure to satisfy needs in an efficient manner has increased the challenge of library and information management. Meeting this challenge calls for certain key qualities.

- (a) **Technical Understanding:-** A knowledge of how resources and processes are utilized to complete task is of importance. Some attention must be given to the following questions;
 - Why do we need these resources?
 - Do we still need them?
 - What other alternatives could be derived from them?
- (b) Understanding of basic ideas and principles of management. These form part of the core of professional studies of librarianship and information science. Training is a vital adjunct to professional education and an essential part of the training is the inculcation of the belief that every professional is a manager of resources, shares a collective responsibility for the success of the service and is accountable for resource usage.
- © There must be an interpersonal style which enables a librarian to get things done through other people.
- (d) A librarian must possess the ability to plan in the long and medium terms as well as being able to react to short term and urgent matters.

3.4.2 **SYSTEM DESIGN/METHODOLOGY**

For the benefit of this special kind of library, the vertical dimension will be considered. This emphasizes the need to consider planning at policy, strategic and operational levels.

- (I) **Policies:-** Policy may be defined as statements of basic decisions intended to guide and relate

current actions and to provide a framework for current thinking leading to a future decisions and actions. In this case the library will depend on the Ministry policies which states that the library should work within the computational support. The Agricultural Data Bank is an electronic bank meant to store data/information in tapes and diskettes while the Central Reference Library is to store data/information physically (text). It should have selected policies as follows;

- **Organizational structure:-** The new structural pattern is composed of 3 units viz ; Acquisition, Cataloguing and Lending, and Reference Units. Each unit must be headed by a Librarian with an Assistant Director presiding atop. A relatively bigger room (double the present room) is recommended for effective operations. The library will be opened only during working hours to both staff and outsiders.
 - **Stock of the library:-** includes books currently published, texts, series, currently published periodicals and journals, rare books and manuscripts, gazettes, ministry's calendar, lists of research in progress, ministry's objectives and achievements, departmental/sectional schedule of duties, maps, dictionaries, encyclopedias, dissertation and thesis, tapes for computers, ministries activities in audiovisuals, archives and other materials. Preservation of stocks:- The room must be air-conditioned to avoid infestation of mould on valuable library stock and machine breakdown.
 - **Personnel:-** A right mix of professionally qualified and non-professionals (computer literate) all endowed with maximum intelligence and enthusiasm for their work will be useful. They will be given opportunity for further education and on-the-job training. Officers needed are as follows;
One Assistant Director, One Chief Librarian, Three Senior Librarian, Three Librarian I, Three Librarian Assistants, A driver and Two Clerical Assistants.
- (ii) **Strategies:-** A fuller analysis of the computerization system is to have a reference, curricular, research and general functions. This is essentially important to increase storage volume load, input and output needs and users' interaction, requirements and access time to different files. This is will however, facilitate the achievement of the Ministry's objectives through provision and dissemination of such resources as well as meet information or research needs.
- (iii) **Operations:-** Operations which hold promise for computerization are; filing, book purchasing,

serial checking and claiming, invoice processing, card duplication, file consultation for book selection, storage and consultation of bibliographic citations, book charging and discharging, supply control.

The best way to follow this sequence is to trace the route of a book through the library from its initial recommendation for purchase to its eventual appearance in the shelves.

First, it must be ordered, accessioned, catalogued, classified, prepared (book-plated, class-marked,) and shelved.

(a) **Ordering:-** A title recommended has first to be checked against library's catalogue to make sure it is not in stock already and then in acquisition unit's on "order file" to establish that it has not already been ordered. An immediate saving of time and effort results if "on order" records are filed in the library's catalogue unit so that these two operations can be combined into one.

(b) **Accessioning:-** This is the procedure by which **every book** or any other publication to be catalogued is given a sequential number, the number is **stamped** or written in the book on the top right hand verso of the title page and is used in **cataloguing** and **circulation records**.

Numbering is done in a sequential form by using the year the material is acquired and specific figures for the book e.g the first material should be 96-0000001. The numbers are never reused, even if a book that is lost is replaced. Copy identification **numbering** is done as soon as the book comes into the library. Information contained in accession are;

- Author
- Title
- Publisher
- Source
- Date of acquisition
- Price - the amount paid

© **Cataloguing:-** The card catalogue is a reference tool useful to the user in locating materials and placement of materials by the librarian. Information that to be obtained from card catalogue are

- What the library has
- Where desired books can be found
- Allows shelving of books
- What does the library have on a specific subject

- What titles by a given author does the library has
- What book in a specific series does the library has

For each book a set of card is prepared usually an **author card**, other cards could be subject card and/or title card with added entries.

Shelf list - is a file of cards - one entry for each title in the catalogued cabinet, arranged in the same order as the books on the shelves that is according to **CLASSIFICATION**.

(d) **Classification:-** For this purpose Library of Congress Classification Scheme is used. It has 33 volumes in all and a wide range of subjects. Each subject with its volume and index. Under each subject, there are several divisions and sub-headings, to differentiate between these, Library of Congress provides indexes for each unit.

For instance; S403 -- S reps. General Agriculture

403 reps. Agricultural Missions and Voyages

SD119 -- SD reps. Forestry

119 reps. Forestry Voyages

(e) **Processing of library materials:-** Books and other materials to be prepared for shelves and circulation must require the following;

- Mark of ownership; this involves stamping of the materials
- Circulation devices (book cards, book pockets, date due slip); to be printed by printers/machine if computerized. The information to be printed are;
 - Accession Number
 - Call Number
 - Author's Name

The book pocket is pasted on the book and date due slip is also pasted on the fly leaf.

- SPINE labels; carry the CALL NO. (classification No.) glued to the book, placement of the spine label must be consistent for aesthetic on the shelves and for easy assessment by users.

(f) **Shelving:-** This is done according to the classification numbers e.g

620 comes before

621 "

621.24 "

621.48 comes before

622

CHAPTER FOUR

4.0 SOFTWARE DEVELOPMENT/IMPLEMENTATION

4.1 CHOICE OF LANGUAGE FOR SOFTWARE DEVELOPMENT

In the development of this application software, a number of computer languages are available which includes BASIC, FORTRAN, PASCAL, COBOL AND DBASE. While it is possible to use any of these languages in developing this software, the dBASE IV is selected because of the following features;

- DBASE handles storage, retrieval and organization of information in an efficient manner. It can accept up to 256 fields 155 columns and 99 files.
- DBASE IV is easy to learn and use. It has the ability to construct, improved indexing, sort and maintain database.
- DBASE IV commands are embrace in a pop-up menu that can be easily accessed and there is a faster execution.
- It is actually easy to track errors and debug with DBASE IV.
- It allows for customization of reports.
- Programming mode of the DBASE IV is relatively wide and allows for coordination.

4.2 WORKSTATION REQUIREMENTS

- [A] Hardware Requirements
- [B] Software Requirements
- [C] Implementation
- [D] Maintenance
- [E] Training

4.3 COST AND BENEFIT ANALYSIS

Personal Computer System (colour monitor, central processing unit, keyboard, mouse with pad) with 486 micro-processor,

4MB RAM, 540MB hard disk,	₦ 100,000.00
A Line Printer (Epson 1170)	₦ 30,000.00
Uninterrupted Power Supply (UPS) 1200VA	₦ 50,000.00
10 packs of 1.44MB HD DS 3.5" floppy disk	₦ 20,000.00

	Disk Bank	
	A roll of (11"x 9.5") computer papers	
	A roll of (11" X 14.5") computer papers	₦ 30,000.00
	Other stationeries	
[B]	Software Requirements;	
	Microsoft Disk Operating System	
	(MS-DOS) VERSION 6.22	₦ 10,000.00
	DBMS - DBASE IV	₦ 10,000.00
[C]	Implementation	₦ 80,000.00
[D]	Maintenance	₦ 30,000.00
[E]	Training	₦ <u>50,000.00</u>
	TOTAL	₦ <u>410,000.00</u>

The **benefits** accrued to this system are as follows;

- (I) Ability to insert, amend and delete records easily
- (ii) Ability to reproduce records conveniently, cheaply and quickly so that copies may be held in branches
- (iii) Speed, ease and accuracy of use
- (iv) Ability to be accessed immediately
- (v) Cost of maintenance
- (vi) On-line access to a potentially needed bibliographic records. A high percentage and consistently high quality of the required records to be available in the dBASE so that original cataloguing is minimized.
- (vii) Ability to access records in a variety of ways and in an appropriate physical form
- (vii) Direct control over issuing and returning of items, acquisition of books and training needs.

4.4 SOFTWARE DEVELOPMENT AND DOCUMENTATION

4.4.1 PROGRAM DEVELOPMENT

See the Appendix for the **APPLICATION SOFTWARE**.

The specification of this application software is as follows;

Programmer: **Akingbaso O.O**

Program: **Computerized Central Reference Library, FMA., Abuja.**

Environment: **Database Management System (DBASE IV)**

Remarks: **The program is written to solve the problem of information storage, retrieval and updating in FMA library.**

4.4.2 DOCUMENTATION

4.4.2.1 Starting the system:-

After successful installation of the MS-DOS and the DBASE IV packages, the software can be invoked with the following processes;

Step 1 At the DOS prompt, C:>
type: CD dBASE and press enter key.

Step 2 At the prompt, C:\dBASE>
type: dBASE and press enter key, again.

Immediately after the screen of information about the package manufacturer, the **CONTROL CENTER** is displayed (new user's interface) with series of six **PANELS**.

Step 3 Steps to create a Database file:-

- (a) Select CREATE in the DATA panel
(a screen to design database structures appear)
- (b) Enter as appropriate for each field that would be contained in the file, after all entries press ENTER key
- © Type the filename, press ENTER key
The screen displays - Input data records now (Y/N)?
- (d) Press Y to enter data immediately

DATABASE STRUCTURE

S/NO	FIELD DESCRIPTION	FIELD NAME	FIELD TYPE	FIELD WIDTH
1.	AUTHOR'S LASTNAME	LASTNAME	CHARACTER	20
2.	AUTHOR'S OTHERNAME	OTHERNAMES	CHARACTER	12
3.	TITLE OF BOOK	BOOKTITLE	CHARACTER	30
4.	SUBJECT OF BOOK	SUBJECT	CHARACTER	20
5.	NUMBER OF PAGES	PAGENO	CHARACTER	5
6.	BOOK WIDTH	BKWIDTH	CHARACTER	4
7.	ISSUING DATE	RTDATE	DATE	8
8.	RETURNING DATE	RTDATE	DATE	8

Step 4 Press ESC key and choose 'Yes' and press Enter key to get you to dBASE DOT prompt.

Step 5 At the DOT prompt, insert a working diskette in drive A and set default to A. Press Enter key.

Step 6 Type: **DO LIBMAIN** and press Enter key.

The user is welcomed to the Computerized Central Reference library of the Federal Ministry of Agriculture. The application package will display on the screen a number of tasks to be performed and then prompt you to make a choice of the subroutine to be executed.

The main menu enables the user to select within the message listed below:-

- A Add Record
- V View/Print Record
- S Search/Edit Record
- E Exit Record

On successful typing of this first letter of the option a screen is opened and this will allow the user to perform any of the tasks listed above or return to the DOS prompt.

The programs for the various modules are attached in the appendix.

4.5 SYSTEM IMPLEMENTATION

The implementation phase has to do with the actual execution of the design. This is to allow for a test of the effectiveness or otherwise of the input and output data items used in the system.

Under the system implementation, the needs for training, hardware and software supports and the changeover plans are discussed.

4.5.1 **Training**

This involves the training needs to be provided to some personnel who will operate the new system. Such personnel include Library Assistants, Librarians, Desk Officers, Clerks and others. This training will include the storage, retrieval, editing and probing of data. During the training, some days will be set aside to make sure that all the people concerned are taught some basic commands of the package.

4.5.2 **Hardware Support**

These are the physical components found in the computer environment. Their support is important for the execution of this application program. These include:-

- I. Micro-Computer P.C, configuration of IBM compatible.
- ii. 3.5" and 5.25" floppy drive and floppy diskettes are also required to process the job.
- iii. Computer stationery such as computer papers for processing hardcopy of the processed data.
- iv. An uninterrupted power supply (UPS) stabilizer for regulating power supply.
- v. The laser printer or a dot matrix printer for print out.

4.5.3 **Software Support**

Software is a collection of programmes that are made to work together for a specific purpose. Without the software, a computer system cannot function. The software support required for the execution of the program are Operating System and Database Management System Software.

The Disk Operating System (DOS) uses program and procedure written to run a computer system. It is a series of programmes such that when executed controls the operating of the computer.

The functions of the Disk Operating System include:-

- I. Communicates with computer operators by means of the keyboard.
- ii. Supervises multi-programming operations such as running of each program, protecting each program's working store from overwriting.
- iii. Allocates peripherals to programs and checks for availability

A database is a collection of data usually in files, arranged in such a way that it is independent

of any particular program or application. The arrangement eliminates data redundancy. Access to files is provided by Database Management System (DBMS). A Database Management System is an organised collection of inter-related data and set of programs to access that data. The aim of a database management system is to create an environment that is efficient and convenient for retrieving information from stored database.

4.5.4 System Changeover

This entails changing from the old system to the newly developed one and is usually a very expensive stage in the whole project. However there are different methods of changeover which are Direct changeover, Parallel running, Pilot running and Staged changeover. Direct changeover is the complete replacement of the old system by the new one in one move while pilot running is when data from one or more previous periods for the whole or part of the system is run on the new system after which results have been obtained from the old system and the new results are compared with the old. Parallel running means processing current data with both the old and the new systems to cross-check the results while staged changeover involves a series of limited-size direct changeovers, the new system being introduced piece-by-piece .

Due to the similarity between the manual and the computerized system, it is suggested that both systems should be run side by side for a period of time i.e the PARALLEL RUNNING, by this, the old system is phased out slowly. This method of conversion also offers the opportunity of comparing the result of the old manual system and the new computerized system thereby promoting users' confidence.

5.1 SUMMARY

The study is aimed at improving the operations of a Central Reference Library (CRL) , therefore not all library information is contained in this study. It was streamlined to handle Reference Library operations particularly with reference to Agriculture. The objectives of the Central Reference Library in Federal Ministry of Agriculture will be achieved if this system is adhered to.

5.2 CONCLUSION

The principal goal of this project is to effectively design and develop a computerized database for agricultural sub-sectors that would grossly reduce inefficiency. The system is designed, developed and tested with some of the books in the library stock and was found to be working effectively.

A database management system is used as the language in the software development. Various files are created, based on the database structure and programs are written in modules to carry out different functions in the data storage and retrieval.

The software system has the facility to add record, edit record, delete record, view record, search record as well as generate report and finally an option to get quit or return to the DOS prompt.

5.3 RECOMMENDATIONS

Though this method of computerization of the Central Reference Library of Federal Ministry of Agriculture may look expensive but it is worthwhile. I hereby recommend that the newly developed system of computerization of the Central Reference Library be implemented by the Federal Ministry of Agriculture without delay. This is because its implementation will provide the management with

- * Speed and ease of data/information retrieval and accuracy of use
- * accurate, reliable and timely data for agricultural planning
- * effective coordination of agricultural policies and programmes
- * agricultural planners will imbibe the culture of planning with data

- * immediate and on-line evaluation of performance operations
- * Cost of maintenance
- * On-line access to a potentially needed bibliographic records.
- * Direct control over issuing and returning of items, acquisition of books .

REFERENCES

1. Allan K. (1986); Libraries. Architectural Press Ltd., 9 Queen Anne's Gate London SW1H9BY.
2. Chester M. L. (1963); Special Libraries - How to plan and equip them. Special Libraries Association, London.
3. Edmund V. C. (1978); Fundamentals of Library Organisation and Administration. Mechanick Exercises, London.
4. Godfrey T. (1980); Planning and Designing of Library Building. Butterworths & Co. (Publishers) Ltd., London.
5. Rogers & Webers (1971); University Library Administration - Phases of system design. The H.W. Wilson Company, New York.
6. Thompson J. and Reg C. (1976); Introduction to University Library Administration. The H.W. Wilson Company, New York.
7. Underwood P. G. (1990); Managing Change in Libraries and Information. Library Association Publishing Company Ltd., 7 Ridgmount Street, London WC1E7 AE.

JOURNALS

1. Federal Government of Nigeria (1988); Civil Service Reforms and Regulations. Federal Government Press Ltd., Lagos.
2. Federal Ministry of Agriculture (1990); Agricultural Policy in Nigeria. Federal Government Press Ltd., Lagos.

APPENDIX

```
SET TALK OFF
SET STATUS ON
DO WHILE .T.
DO WHILE .T.
* *****LIBRARY MAIN PROGRAM*****
CLEAR
SET COLO TO G/B+
@3,1 TO 8,79 DOUBLE
@8,1 TO 13,79 DOUBLE
@4,25 SAY "WELCOME TO THE"
@5,2 SAY "COMPUTERIZED CENTRAL REFERENCE LIBRARY"
@6,10 SAY "FEDERAL MINISTRY OF AGRICULTURE"
@7,25 SAY "F. C. T., A B U J A."
SET COLO TO BG*
@8,18 SAY "SOFTWARE DEVELOPED BY:- AKINGBASO O.O (MISS)"
SET COLO TO G/B+
@9,15 SAY "      DEPT. OF MATHS/COMPUTER SCIENCE"
@10,15 SAY "      FEDERAL UNIVERSITY OF TECHNOLOGY"
@11,15 SAY "      MINNA, NIGER STATE."
@12,23 SAY "REGISTRATION NUMBER:- PGD/MCS/038/96"
@13,28 TO 15,50
@14,30 SAY "COPYRIGHT 1997"
* *****MAIN MENU *****
WAIT
CLEAR
@2,0 TO 14,79 DOUBLE
@4,10 SAY " YOU ARE MOST WELCOME TO THE CENTRAL REFERENCE LIBRARY DEPARTMENTS"
@6,0 SAY "THERE ARE THREE DEPARTMENTS VIZ ; ACQUISITION, CATALOGUING AND
LENDING/RETRIEVAL"
@8,14 SAY " DO YOU WANT TO ORDER? "
@10,15 SAY "ADD      VIEW/PRINT      SEARCH/EDIT      EXIT "
SET COLO TO R/B+
@10,15 SAY "A"
@10,26 SAY "V"
@10,44 SAY "S"
@10,61 SAY "E"
CH = ''
@12,25 SAY " ENTER OPTION" GET CH PICT '!'
READ
SET COLO TO G/B+
DO CASE
CASE CH = "A"
DO ADDORD
CLEAR
CASE CH = "V"
DO VIEWORD
CLEAR
CASE CH = "E"
CLEAR
EXIT
```

```
ENDCASE
ENDDO
DO WHILE .T.
* *****ACCESSIONING REGISTER *****
@7,10 TO 15,70 DOUBLE
@9,14 SAY " DO YOU WANT THE ACCESSION REGISTER?"
@11,15 SAY "ADD VIEW/PRINT SEARCH/EDIT EXIT"
SET COLO TO R/B+
@11,15 SAY "A"
@11,26 SAY "V"
@11,44 SAY "S"
@11,61 SAY "E"
CH = ''
@13,25 SAY " ENTER OPTION" GET CH PICT '!
READ
SET COLO TO G/B+
DO CASE
CASE CH = "A"
DO ADDACC
CLEAR
CASE CH = "V"
DO VIEWACC
CLEAR
CASE CH = "S"
DO EDITACC
CLEAR
CASE CH = "E"
CLEAR
EXIT
ENDCASE
ENDDO
DO WHILE .T.
* ***** CATALOGUING*****
@6,10 TO 14,70 DOUBLE
@8,14 SAY " DO YOU WANT THE CATALOGUE (AUTHOR, SUBJECT AND TITLE)"
@10,15 SAY "ADD VIEW/PRINT SEARCH/EDIT EXIT"
SET COLO TO R/B+
@10,15 SAY "A"
@10,26 SAY "V"
@10,44 SAY "S"
@10,61 SAY "E"
CH = ''
@12,25 SAY " ENTER OPTION" GET CH PICT '!
READ
SET COLO TO G/B+
DO CASE
CASE CH = "A"
DO ADDCAT
CLEAR
CASE CH = "V"
DO VIEWCAT
CLEAR
```

```
CASE CH = "S"  
  DO EDITCAT  
  CLEAR  
CASE CH = "E"  
  CLEAR  
  EXIT  
ENDCASE  
ENDDO  
DO WHILE .T.
```

```
* *****LENDING AND RETRIEVING OF ITEMS *****
```

```
@8,10 TO 16,70 DOUBLE  
@10,14 SAY " DO YOU WANT TO LEND OR RETRIEVE ITEMS"  
@12,15 SAY "ADD    VIEW/PRINT    SEARCH/EDIT    EXIT "  
SET COLO TO R/B+  
@12,15 SAY "A"  
@12,26 SAY "V"  
@12,44 SAY "S"  
@12,61 SAY "E"  
CH = ''  
@14,25 SAY " ENTER OPTION" GET CH PICT '!'  
READ  
SET COLO TO G/B+  
DO CASE  
  CASE CH = "A"  
    DO ADDISS  
    CLEAR  
  CASE CH = "V"  
    DO VIEWISS  
    CLEAR  
  CASE CH = "S"  
    DO EDITISS  
    CLEAR  
  CASE CH = "E"  
    EXIT  
ENDCASE  
ENDDO  
ANS = ''  
@18,25 SAY " ARE YOU SATISFIED (Y/N)?" GET ANS PICT '!'  
READ  
IF ANS = 'N'  
  LOOP  
ELSE  
@20,25 SAY "THANK YOU, PLEASE CALL AGAIN."  
  WAIT  
  EXIT  
ENDIF  
ENDDO  
CLOSE ALL  
RETURN
```



```
SET TALK OFF
SET STATUS ON
CLEAR
USE ORDBKS
* *** ADDORD.PRG *****
DO WHILE .T.
APPEND BLANK
@1,1 TO 16,75 DOUBLE
@2,20 SAY "ORDERED BOOKS"
@3,20 TO 3,34 DOUBLE
@4,2 SAY "S/NO.:- " GET ORDNO
@4,18 SAY "BOOK TITLE:-" GET BKTITLE
@4,45 SAY "SUBJECT:- " GET SUBJ
@6,2 SAY "AUTHOR'S NAME:-" GET ATHNAME
@6,34 SAY "OTHER AUTHOR'S (IF ANY):-" GET OAUTHOR
@8,2 SAY "EDITION:- " GET EDITION
@8,40 SAY "PLACE OF ORDER:- " GET PORDER
@10,2 SAY "ORDERED DATE:- " GET DORDER
@10,40 SAY "NO. OF COPIES:- " GET COPIES
READ
CH=' '
@14,8 SAY "DO YOU WANT TO CONTINUE (Y/N)?" GET CH PICT '!'
READ
IF CH = 'Y'
LOOP
ELSE
EXIT
ENDIF
ENDDO
RETURN
```

```
SET TALK OFF
SET STATUS ON
CLEAR
* *** VIEWORD.PRG *****
USE ORDBKS
SORT ON BKTITLE TO ORDBKS1
USE ORDBKS1
@0,15 SAY "ORDERED BOOKS"
@1,15 TO 1,28 DOUBLE
@2,0 SAY "S/NO"
@2,5 SAY "SUBJECT"
@2,16 SAY " TITLE"
@2,27 SAY "AUTHOR"
@2,38 SAY "OTHERS"
@2,49 SAY "EDT."
@2,54 SAY "PLACE"
```

```
@2,62 SAY "DATE"  
@2,72 SAY "COPIES"  
@3,1 TO 3,79  
R = 4  
K = 0  
DO WHILE .T.  
DO WHILE .NOT. EOF()  
R = R + 1  
K = K + 1  
@R,0 SAY ORDNO  
@R,5 SAY SUBJ  
@R,16 SAY BKTITLE  
@R,27 SAY ATHNAME PICT "!!!!!!!!!!!"  
@R,38 SAY OAUTHOR PICT "!!!!!!!!!!!"  
@R,49 SAY EDITION  
@R,54 SAY PORDER PICT "!!!!!!!!!"  
@R,62 SAY DORDER  
@R,72 SAY COPIES  
IF K = 18  
WAIT  
@4,1 CLEAR TO 23,79  
R = 4  
ENDIF  
SKIP  
ENDDO  
CH = ''  
@15,10 SAY " DO YOU WANT TO PRINT" GET CH PICT "!"  
READ  
IF CH = 'Y'  
SET DEVICE TO PRINTER  
ELSE  
EXIT  
ENDIF  
ENDDO  
CLOSE DATABASE  
RETURN
```

```
SET TALK OFF
SET STATUS ON
CLEAR
* *** ADDACC.PRG *****
USE LIBACC
DO WHILE .T.
APPEND BLANK
@1,1 TO 16,75 DOUBLE
@2,20 SAY "ACCESSION REGISTER"
@3,20 TO 3,38 DOUBLE
@4,2 SAY "ACCESSION NO.:- " GET ACCNO
@4,38 SAY "SUBJECT:- " GET SUBJ
@6,2 SAY "BOOK TITLE:- " GET BKTITLE
@6,38 SAY "AUTHOR'S NAME:-" GET ATHNAME
@8,2 SAY "OTHER AUTHOR'S (IF ANY):- " GET OAUTHOR
@8,52 SAY "PUBLISHER:- " GET PUB
@10,2 SAY "EDITION:- " GET EDITION
@10,20 SAY "BOOK PRICE:- " GET BKPRICE
@10,46 SAY "PROCUREMENT DATE:- " GET DPRO
READ
CH=' '
@14,8 SAY "DO YOU WANT TO CONTINUE (Y/N)?" GET CH PICT '!'
READ
IF CH='Y'
LOOP
ELSE
EXIT
ENDIF
ENDDO
RETURN
```

```
SET TALK OFF
SET STATUS ON
SET SCOREBOARD ON
CLEAR
* *** VIEWACC.PRG *****
USE LIBACC.DBF
SORT ON ACCNO TO LIBACCS.DBF
USE LIBACCS
@0,15 SAY "ACCESSION REGISTER"
@1,15 TO 1,33 DOUBLE
@2,0 SAY "A/NO"
@2,5 SAY "SUBJECT"
@2,16 SAY " TITLE"
@2,27 SAY "AUTHOR"
@2,38 SAY "OTHERS"
@2,49 SAY "EDT."
@2,54 SAY "PUB"
@2,62 SAY "PRICE"
@2,71 SAY "DATE"
@3,1 TO 3,79
R = 4
K = 0
DO WHILE .T.
DO WHILE .NOT. EOF()
R = R + 1
K = K + 1
@R,0 SAY ACCNO
@R,5 SAY SUBJ
@R,16 SAY BKTITLE
@R,27 SAY ATHNAME PICT "!!!!!!!!!!!"
@R,38 SAY OAUTHOR PICT "!!!!!!!!!!!"
@R,49 SAY EDITION
@R,54 SAY PUB PICT "!!!!!!!!!"
@R,62 SAY BKPRICE PICT "99999.99"
@R,71 SAY DPRO
IF K = 18
WAIT
@4,1 CLEAR TO 23,79
R = 4
ENDIF
SKIP
ENDDO
CH = ''
@15,10 SAY " DO YOU WANT TO PRINT" GET CH PICT "!"
READ
IF CH = 'Y'
SET DEVICE TO PRINTER
ELSE
EXIT
ENDIF
ENDDO
CLOSE DATABASE
```

```
SET TALK OFF
SET STATUS ON
CLEAR
**** EDITACC ****
USE LIBACC
DO WHILE .T.
CLEA
GO TOP
MATHNAME = SPACE (15)
MEDITION = SPACE (3)
STORE SPACE (10) TO MSUBJ, MBKTITLE
STORE SPACE (15) TO MATHNAME, MOAUTHOR
STORE SPACE (8) TO MBKPRICE, MDPRO, MPUB
@1,2 TO 16,79 DOUBLE
@2,6 SAY "ENTER AUTHOR'S NAME:- " GET MATHNAME
READ
LOCATE FOR ATHNAME = MATHNAME
IF FOUND ()
    @4,2 SAY " ACCESSION NO.:- " GET MACCNO
    @4,32 SAY " SUBJECT:- " GET MSUBJ
    @6,2 SAY " BOOK TITLE:- " GET MBKTITLE
    @6,44 SAY " PUBLISHER:- " GET MPUB
    @8,2 SAY " AUTHOR'S NAME:- " GET MATHNAME
    @8,44 SAY " EDITION:- " GET MEDITION
    @10,2 SAY " OTHER AUTHORS (IF ANY):- " GET MOAUTHOR
    @10,50 SAY " BOOK PRICE:- " GET MBKPRICE
    @12,2 SAY " PROCUREMENT DATE:- " GET MDPRO
READ
REPLACE ACCNO WITH MACCNO, SUBJ WITH MSUBJ, BKTITLE WITH MBKTITLE, PUB WITH MPUB,
ATHNAME WITH MATHNAME
REPLACE OAUTHOR WITH MOAUTHOR, BKPRICE WITH MBKPRICE, DPRO WITH MDPRO, EDITION WITH
MEDITION
ELSE
@4,5 SAY "RECORD NOT FOUND"
ENDIF
CH = ' '
@14,8 SAY "DO YOU WANT TO CONTINUE (Y/N)?" GET CH PICT '!'
READ
IF CH = 'Y'
    LOOP
ELSE
    EXIT
ENDIF
ENDDO
CLOSE DATABASE
RETURN
```

```
SET TALK OFF
SET STATUS ON
CLEAR
* *** ADDCAT.PRG *****
USE CATALIST
DO WHILE .T.
APPEND BLANK
@1,1 TO 16,75 DOUBLE
@2,20 SAY "AUTHOR'S CATALOGUE"
@3,20 TO 3,38 DOUBLE
@4,2 SAY " AUTHOR'S NAME:- " GET ATHNAME
@4,38 SAY " OTHER AUTHORS:- " GET OAUTHOR
@6,2 SAY " BOOK TITLE:- " GET BKTITLE
@6,38 SAY " PUBLISHER:- " GET PUB
@8,2 SAY " YEAR OF PUBLICATION:- " GET YRPUBR
@8,32 SAY " CLASSIFICATION NO.:- " GET CLASSNO
@10,2 SAY " EDITION:- " GET EDITION
@10,30 SAY " NUMBER OF PAGES:- " GET PAGES
@12,2 SAY " BOOK SIZE:- " GET BKSIZE
@12,30 SAY " NO. OF VOLUMES:- " GET VOL
READ
CH=' '
@14,8 SAY "DO YOU WANT TO CONTINUE (Y/N)?" GET CH PICT "I"
READ
IF CH = 'Y'
LOOP
ELSE
EXIT
ENDIF
ENDDO
RETURN
```

```
SET TALK OFF
SET STATUS ON
SET SCOREBOARD ON
CLEAR
* *** VIEWCAT.PRG *****
USE CATALIST.DBF
SORT ON ATHNAME TO CATALOGUE.DBF
USE CATALOGUE
@0,15 SAY "AUTHOR CATALOGUE"
@1,15 TO 1,30 DOUBLE
@2,2 SAY " AUTHOR"
```

```
@2,19 SAY "OTHER AUTHORS"  
@2,36 SAY " BOOK TITLE"  
@2,47 SAY "SUBJECT"  
@2,58 SAY "CLASS. NO."  
@2,69 SAY "PGS."  
@2,73 SAY "PUB"  
@3,1 TO 3,79  
R = 4  
K = 0  
DO WHILE .T.  
DO WHILE .NOT. EOF)  
R = R + 1  
K = K + 1  
@R,2 SAY ATHNAME  
@R,19 SAY OAUTHOR  
@R,36 SAY BKTITLE  
@R,47 SAY SUBJ  
@R,58 SAY CLASSNO  
@R,69 SAY PAGES  
@R,73 SAY PUB  
IF K = 18  
WAIT  
@4,1 CLEAR TO 23,79  
R = 4  
ENDIF  
SKIP  
ENDDO  
CH = ''  
@15,10 SAY " DO YOU WANT TO PRINT" GET CH PICT "!"  
READ  
IF CH = 'Y'  
SET DEVICE TO PRINTER  
ELSE  
EXIT  
ENDIF  
ENDDO  
CLOSE DATABASE  
RETURN
```

```

SET TALK OFF
SET STATUS ON
CLEAR
**** EDITCAT.PRG ****
USE CATALIST
DO WHILE .T.
CLEA
GO TOP
MATHNAME = SPACE (15)
@1,2 TO 16,79 DOUBLE
@2,6 SAY "ENTER AUTHOR'S NAME:- " GET MATHNAME
READ
LOCATE FOR ATHNAME = MATHNAME
IF FOUND ()
    @4,2 SAY "ACCESSION NO.:- " GET MACCNO
    @4,32 SAY "SUBJECT:- " GET MSUBJ
    @6,2 SAY "BOOK TITLE:- " GET MBKTITLE
    @6,44 SAY "PUBLISHER:- " GET MPUB
    @8,2 SAY "AUTHOR'S NAME:- " GET MATHNAME
    @8,44 SAY "EDITION:- " GET MEDITION
    @10,2 SAY "OTHER AUTHORS (IF ANY):- " GET MOAUTHOR
    @10,50 SAY "PUB. YEAR:- " GET MYRPUBR
    @12,2 SAY "NO. OF PAGES:- " GET MPAGES
    @12,30 SAY "BOOK SIZE:- " GET MBKSIZE
READ
REPLACE ACCNO WITH MACCNO, SUBJ WITH MSUBJ, BKTITLE WITH MBKTITLE, PUB WITH MPUB,
ATHNAME WITH MATHNAME
REPLACE OAUTHOR WITH MOAUTHOR, BKPRICE WITH MBKPRICE, DPRO WITH MDPRO, EDITION WITH
MEDITION
REPLACE YRPUBR WITH MYRPUBR, PAGES WITH MPAGES, BKSIZE WITH MBKSIZE
ELSE
@4,5 SAY "RECORD NOT FOUND"
ENDIF
CH = ' '
@14,8 SAY "DO YOU WANT TO CONTINUE (Y/N)?" GET CH PICT '!'
READ
IF CH = 'Y'
    LOOP
ELSE
    EXIT
ENDIF
ENDDO
CLOSE DATABASE
RETURN

```



```
SET TALK OFF
SET STATUS ON
CLEAR
* *** ADDISS.PRG ***
USE ISSUING
DO WHILE .T.
APPEND BLANK
@1,1 TO 16,75 DOUBLE
@2,20 SAY "ISSUING/RETRIEVAL LIST"
@3,20 TO 3,42 DOUBLE
@4,2 SAY "S/NO.:- " GET ISSNO
@4,15 SAY "ISSUING DATE:- " GET ISSDATE
@4,45 SAY "REG. NO.:- " GET CARDNO
@6,2 SAY "BORROWER'S NAME:-" GET SFNAME
@6,38 SAY "DEPT.:- " GET DEPT
@6,58 SAY "RANK" GET RANK
@8,2 SAY "BOOK TITLE:-" GET BKTITLE
@8,30 SAY "SUBJECT:- " GET SUBJ
@8,45 SAY "AUTHOR'S NAME:-" GET ATHNAME
@8,2 SAY "OTHER AUTHOR'S (IF ANY):-" GET OAUTHOR
@8,40 SAY "CLASS. NO.:- " GET CLASSNO
@10,2 SAY "EXPECTED DATE TO RETURN:- " GET EXPDATE
@10,38 SAY "ACTUAL DATE RETURNED:- " GET ACTDATE
@12,15 SAY "STATE OF BOOK:- " GET BKSTATE
READ
CH=' '
@14,8 SAY "DO YOU WANT TO CONTINUE (Y/N)?" GET CH PICT '!'
READ
IF CH = 'Y'
LOOP
ELSE
EXIT
ENDIF
ENDDO
RETURN
```

```
SET TALK OF 7
SET STATUS ON
SET SCOREBOARD ON
CLEAR
* *** VIEWISS.PRG *****
USE ISSUING
SORT ON SFNAME TO ISSUED
USE ISSUED
@0,15 SAY "ISSUING/RETRIEVAL LIST"
@1,15 TO 1,37 DOUBLE
@3,0 SAY "S/NO"
@2,5 SAY "ISSUING"
@3,6 SAY "DATE"
@2,14 SAY "BORROWER'S"
@3,16 SAY "NAME"
@3,29 SAY "DEPT."
@3,34 SAY "RANK"
@3,43 SAY "REG. NO."
@3,54 SAY "TITLE"
@3,65 SAY "DATE RTN"
@3,75 SAY "STATE"
@4,1 TO 4,79
R = 5
K = 0
DO WHILE .T.
DO WHILE .NOT. EOF()
R = R + 1
K = K + 1
@R,0 SAY ISSNO
@R,5 SAY ISSDATE
@R,14 SAY SFNAME
@R,29 SAY DEPT
@R,34 SAY RANK
@R,43 SAY CARDNO
@R,54 SAY BKTITLE
@R,65 SAY ACTDATE
@R,76 SAY BKSTATE
IF K = 18
WAIT
@5,1 CLEAR TO 23,79
R = 5
ENDIF
SKIP
ENDDO
CH = ''
@15,10 SAY " DO YOU WANT TO PRINT" GET CH PICT "!"
READ
IF CH = 'Y'
SET DEVICE TO PRINTER
ELSE
EXIT
ENDIF
```

```
ENDDO
CLOSE DATABASE
RETURN
```

```
SET TALK OFF
SET STATUS ON
CLEAR
**** EDITISS.PRG ****
USE ISSUING
DO WHILE .T.
CLEA
GO TOP
MSFNAME = SPACE (15)
@1,2 TO 16,79 DOUBLE
@2,6 SAY "ENTER BORROWER'S NAME:- " GET MSFNAME
READ
LOCATE FOR SFNAME = MSFNAME
IF FOUND ()
    @4,2 SAY "ISSUING NO.:- " GET MISSNO
    @4,22 SAY "ISSUING DATE:- " GET MISSDATE
    @4,48 SAY "BOOK TITLE:- " GET MBKTITLE
    @6,2 SAY "BORROWER'S NAME:- " GET MSFNAME
    @6,34 SAY "DEPT.:- " GET MDEPT
    @6,48 SAY "RANK:-" GET MRANK
    @8,2 SAY "REG. NO.:-" GET MCARDNO
    @8,22 SAY "ROOM NO.:-" GET MROOMNO
    @8,37 SAY "AUTHOR'S NAME:-" GET MATHNAME
    @10,2 SAY "OTHER AUTHORS (IF ANY):- " GET MOAUTHOR
    @10,48 SAY "EXPECTED DATE:-" GET MEXPDATE
    @12,2 SAY "ACTUAL DATE:-" GET MACTDATE
    @12,30 SAY "BOOK STATE:-" GET MBKSTATE
READ
REPLACE ISSNO WITH MISSNO, ISSDATE WITH MISSDATE, BKTITLE WITH MBKTITLE, SFNAME WITH
MSFNAME, DEPT WITH MDEPT
REPLACE RANK WITH MRANK, CARDNO WITH MCARDNO, ROOMNO WITH MROOMNO, ATHNAME WITH
MATHNAME
REPLACE OAUTHOR WITH MOAUTHOR, EXPDATE WITH MEXPDATE, ACTDATE WITH MACTDATE,
BKSTATE WITH MBKSTATE
ELSE
@4,5 SAY "RECORD NOT FOUND"
```

```
ENDIF  
CH = '  
@14,8 SAY "DO YOU WANT TO CONTINUE (Y/N)?" GET CH PICT '!  
READ  
IF CH = 'Y'  
  LOOP  
ELSE  
  EXIT  
ENDIF  
ENDDO  
CLOSE DATABASE  
RETURN
```


ORDERED BOOKS
S/NO.: - 001 BOOK TITLE: - LIBRARIES SUBJECT: - LIB. SCI.
AUTHOR'S NAME: - ALLAN K. OTHER AUTHOR'S (IF ANY): - NIL
EDITION: - 3RD PLACE OF ORDER: - BRITAIN
ORDERED DATE: - 03/14/90 NO. OF COPIES: - 3

DO YOU WANT TO CONTINUE (Y/N)?

DO YOU WANT THE ACCESSION REGISTER?

ADD

VIEW/PRINT

SEARCH/EDIT

EXIT

ENTER OPTION

DO YOU WANT THE CATALOGUE (AUTHOR, SUBJECT AND TITLE)

ADD

VIEW/PRINT

SEARCH/EDIT

EXIT

ENTER OPTION

```

AUTHOR'S CATALOGUE
AUTHOR'S NAME:- ALLAN KONYA      OTHER AUTHORS:-  NIL
BOOK TITLE:-  LIBRARIES          PUBLISHER:-  ARCH.LTD
YEAR OF PUBLICATION:-  1986     CLASSIFICATION NO.:-  SD-23178
EDITION:-  3RD                   NUMBER OF PAGES:-  44
BOOK SIZE:-  56                   NO. OF VOLUMES:-  1
DO YOU WANT TO CONTINUE (Y/N)?

```

DCAT A:\CATALIST Rec 12/12 File Caps

ISSUING/RETRIEVAL LIST
S/NO.: - 005 ISSUING DATE: - 11/21/95 REG. NO.: - PLD/522
BORROWER'S NAME: - ADEWUYI OLAJIDE DEPT.: - PLD RANK RES.OFF
BOOK TITLE: - FISHING METHODSSUBJECT: - FISHERIES
AUTHOR'S NAME: - GREGORY STONE OTHER AUTHOR'S (IF ANY): - NIL
CLASS. NO.: - SP-32441 EXPECTED DATE TO RETURN: - 12/07/95
ACTUAL DATE RETURNED: - 12/10/95 STATE OF BOOK: - RTD
DO YOU WANT TO CONTINUE (Y/N)?

DISS QA:\ISSUING Rec 1/1 File Caps