TABLE OF CONTENTS

THE AN AUTOMATED LIBRARY FUND MANAGEMENT SYSTEM FOR NIGERIAN UNIVERSITIES

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ABSTRACT

In realization of the strategic role of the library in the academic programme of tertiary institutions, particularly the universities, the Federal Government of Nigeria in 1992 reached an agreement with the Academic Staff Union of Universities to make libraries enjoy a separate fund allocation of 10% of overall vote to each university from the Federal Government. This development engendered the need for the institutions to develop a system of managing and monitoring the allocations. This paper reports the design of an the automated library accounting system (ALAS) for use by the Accounting Section of Libraries. Trial implementation was with the Hezekiah Oluwasanmi Library, Obafemi Awolowo University, Ile-Ife.

The developed computer package uses the VISUAL BASIC programming language working in a WINDOWS environment. The system consists of a menu-driven program to perform the task of vote allocation, expenditure monitoring, report generation and file backup, amongst others. The simple design presented here records transactions against accounts, and provides a picture of the relevant income and expenditure profiles. It disregards accounting for physical assets (including infrastructure) and standard services, on the real assumption that the parent organization still retains control of these. The developed system would enable libraries to improve their financial and indeed client-centered operational efficiency by generating up-to-date financial reports promptly.

INTRODUCTION

The general statutory roles of libraries, which make them central to the development of a university, include:

(a)   Provision of materials, including textbooks, reference sources, audio-visual materials, journals, these, manuscripts, dissertations, government documents, etc, in support of the learning processes.

(b)   Assisting the library user in her/his own personal self-development, by providing light-reading materials, e.g. newspapers, magazines, etc.

(c)   Co-operating with other libraries to develop a network of university library resource.

(d)   Serving the specialized information needs of the University's catchments.

The Federal Government of Nigeria obviously recognizes these important roles, and in 1992 reached an agreement with the Academic Staff Union of Universities that 10% (ten percent) of each Federal University's recurrent budget be allocated for the development of their respective libraries. This was called the Library Development Fund, the instrument of which stipulates as follows (Omorege, 1998):

(1)   Sixty-percent (60%) of the allocation be committed to the purchase of books and journals, while forty-percent (40%) is for personal emoluments and purchase of goods and services in the library.
(2)   The fund should be paid into separate bank account from the normal university funds.
(3)   The fund should not lapse from one year to another.
(4)   Quarterly returns on the fund utilization should be submitted to the National Universities Commission on a standard format.

This agreement in the beginning received full implementation by the Federal Government of Nigeria. However, it is obvious that the disbursement and utilization of the fund have faced some problems. The monitoring of the library's account by the library itself is essential because its fund had traditionally been controlled by the larger body, and in this case by the university Bursar. The role of the library therefore should be to monitor and keep proper record of its revenue and expenditure, so as to be able to provide a quarterly report to the National Universities Commission (NUC) of its separate allocation though the university bursar in still in charge. This problem is what this project sets out to solve, through the development of a package that could be used by the university library to monitor the disbursement of its vote.

A report of the NUC study on the fund allocation for the first year of implementation (NUC, 1995) showed that "the performance of most universities in the utilization of the library funds was far from satisfactory". Osemeikhian (1994) also posed some of the problems of the fund, as follows:

- Can this agreement be sustained?
- How should it be administered?
- Should there be a separate accounts section within the library or should the host university bursar administer the library vote?
- What should be the relationship between the university Bursar and the Librarian?
- How can be settlement of suppliers' invoices be more speedily made?

These questions and more are pertinent because if university libraries do not assert themselves, the old order where votes meant for the library were always diverted to service other sections to the university would continue. University libraries are facing varied situations and are concerned about how this fund, which is coming after a long period of neglect, could be monitored, especially its disbursement. The importance of this exercise cannot be over-emphasized as quarterly reports are to be made and also the fact that the fund cannot be lapse from one year to another. This paper presents a package

that can be used by any university library in the country to monitor the disbursement of the Library Development Fund.

CONCEPTUAL FRAMEWORK FOR A LIBRARY FUND MANAGEMENT MODEL

Automation is not entirely new to libraries. Many libraries have had a high degree of computerization of their services. However, the traditional concept of automation in the library had always been concerned with its academic role. Hence these have been geared towards meeting the needs of its clientele (acquisition, organization and dissemination of information) and also for the security of its resources. Libraries generally had always operated their accounting system within the context of a larger body. The larger body usually does the majority of its accounting services, such as managing payroll processes, taking the responsibility for issuing cheques to vendors upon instruction from the library is often left in a secondary role, relying on the accounting system of the parent body for records of its monetary transactions. Cooper (1996) observed that the most common form of interface between the library and the parent organization is paper, since the library only prepares a paper request that a cheque be issued. That piece of paper is delivered to the parent organization's accounting office where the transaction is completed. Rosenberg (1997) puts the old order more succinctly; "those of us who have worked in libraries for many years can remember the days when financial management and all that it entailed was not considered of key importance". She also quoted Roberts as noting, "the practice of costing library and information services as one of the weakest areas in the repertoire of library management".

It is under the new dispensation that an independent accounting system has become mandatory. However, the transition from the library's erstwhile secondary accounting role to the new 'accounting independence' has been problematic for libraries. Indeed, managing the Library Development Fund has posed some problems, since the fund is allocated separately to the library and the library has to give its account. But the university bursar remains in-charge of the day-to-day financial control of the whole university. Omoregie (1998) challenged university libraries to act as self-accounting department with all the necessary equipment and infrastructure that make an accounting department work. It was suggested that university librarians should, as chief accounting officers, control their resources and have individual authority to commit the university financially, because they now know the fund's position and the level of commitment and should be held accountable for the funds of the university library. With the constantly changing circumstances of libraries, the successful librarian will be the one who has been equipped to respond appropriately to changes as they come. However, in the view of Ifidon (1998), a separate Accounts Section in the library, headed by a professionally trained accountant is the preferred approach. Whatever system is adopted, the use of Information Technology in generating financial reports should be an essential feature.

The main goal of the proposed package therefore, is to support as well as monitor the university authority by designing an accounting system that provides on-line information to managers and library staff about the disbursement of the Library Development Fund. The developed packaged code-named "Automated Library Accounting System (ALAS)" would essentially accomplish the following:

    (a)   Accept the library's quarterly allocation

(b)   Allocate into individual vote heads as approved by the University Librarian
(c)   Keep records of the expenditure and return the balance of each vote after each operation.
(d)   Prepare reports or documents concerning each vote at the end of each quarter.

The overall system overview is presented in Fig. 1.

THE AUTOMATED LIBRARY ACCOUNTING SYSTEM

SYSTEMS DESIGN

In carrying out this work, the top-down design approach was used. This involved the concept of solving problems in which the system is taken as a whole and then exploded into smaller parts as sub-systems. The top-down design allows the systems analyst to ascertain overall systems objectives first, along with ascertaining how they are best met in an overall environment, before being narrowed down into subsystems and their requirements. The advantage of using the approach of system design includes avoiding the chaos of attempting to design a system all at once. Attempting to get all subsystems in place and running at once is prone to failure. In order to further simplify the work, the design employs the modular approach to programming. This involves breaking the programming into logical, manageable portions or modules. Programs in this approach are easier to write and maintain, because they are virtually self-contained.

Choice of programming language

To a great extent, the implementation of any application system that will support on-line transactions has some dependence on the choice of the programming language used. For this study, the Visual Basic programming language was chosen because of the following factors:

(1)   Availability of software support
(2)   Visual Basic Supports modularity extensive
(3)   Possibility to link several Visual Basic programs
(4)   Great flexibility and excellent Windows interface.

Choice of hardware and software
The following hardware and software configurations were used. Compatible or high-grade configurations can be used for implementation:

(1)   **Software environment**
       Windows 98 or higher

(2)   **Hardware environment**
       Pentium 111, 128 MB SDRAM, 10.2 GB hard drive, 3.5" Floppy Drive, with 14" monitor.

Input design
The quality of system input determines the quality of system output. It is vital that input

forms and screens be designed with this critical relationship in mind by insisting on well-designed input. In this system, the input contains the following data elements:
- Amount of money transacted/allocated
- Account code
- Particulars of transaction

Processing of Input
The inputs to the system are subjected to different processing to generate the desired output. The program flowcharts (Figs 1, 2a, b & c) summarize the processing procedures for the input.

Security
Security of computer facilities, stored data and information generation is part of successful systems development. It is useful to think of security of systems, data, and information as an imaginary continuum from totally secure (assuming this is attainable) to totally open systems. The actions that analysis and users take are meant to move systems toward the secure end of the continuum by lessening the system's vulnerability. It should be noted that as more people in an organization gain greater computer power/access, security becomes an increasingly difficult and complex issue. For the system designed here, the following security concepts underlined our concern and approach;
- Restricted access to the computer system, using a password
- Password to the software
- Dedicated computer system
- Caged System Unit

3.7 Design of Output
Outputs are information delivered to users through the information system. Outputs can take many forms, viz, the traditional hardcopy of printed reports and the soft copy such as VDU screens and diskettes. In this work, two forms of output were intended:
(1) Hard Copy from printers
(2) Soft copy on the screen
The two available output results are:
(1)' Balance of the different accounts
(2) Transactions of different accounts.
The formats are as shown in the appendix.

SYSTEM IMPLEMENTATION

Program design
The program is made up of eighteen sub-programs or functions in Visual Basic. The major functions are discussed below.

Main menu
This function displays on the screen the various options available to the user with an assigned number. The user selects his choice of option/number from the displayed list.

Create new account

This function accepts the name of an account after which the user enters the account code for it. Subsequently, the account is referred to by its code of two characters.

Allocate Vote

This function accepts Amount (as votes) from the user and allocates them to different accounts as prompted by the program.

Expenditure

In this function, all expenditures are recorded into the system. The system prompts the user for the Account Code, the type of Account Expenditure and the Amount involved. The program updates the Transaction File and the Account Status File.

View balance

With this function, the user has the opportunity of viewing the balance in each respective account.

View transaction

This function gives the user the opportunity to view all transactions carried out with their respective particulars.

Output

Several trial runs were made using live samples from the Hezekiah Oluwasanmi Library to ascertain the integrity and operational accuracy of the system. The sample output is in the appendix featuring the following dialogue and result frames:

- Creating a new account
- Allocating a new vote
- Making transactions
- Viewing transactions
- Viewing expenditure record

5.0. Conclusion

An automated library accounting system, whose function is to accept allocations into various accounts, keep records of expenditure of those accounts, and generate necessary reports, has been developed. It has a modular design. Its performance indicates that its implementation in the library will help library administration to keep track of financial transactions and thus be able to prepare financial reports as at when due.

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                    ┌─────────────────────────────────────────┐
                    │  Automated Library Accounting System     │
                    └─────────────────────────────────────────┘
                                      │
                                      ▼
                          ┌───────────────────────┐
                          │   Validate Password    │
                          └───────────────────────┘
                                      │
                                      ▼
                          ┌───────────────────────┐
                          │     Validate files     │
                          └───────────────────────┘
                                      │
                                      ▼
                          ┌───────────────────────┐
                          │      Main Menu         │
                          └───────────────────────┘
```

Allocation of votes | House cleaning | View balance | View transaction | Print report

Record of expenditure | Create new account | Stop

Backup files | Resture files | Quit | Clean up | Change password
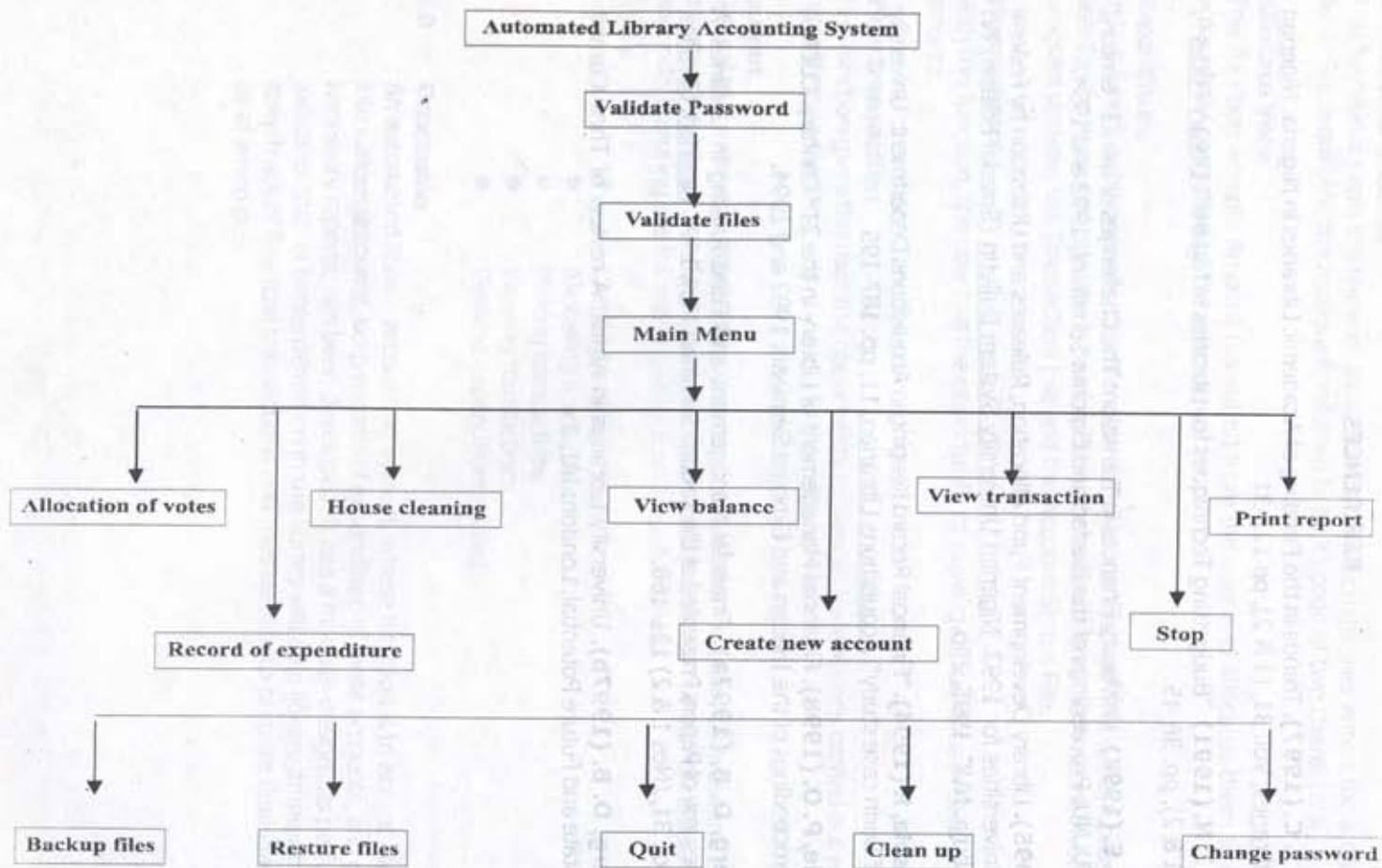
Figure 1: System Overview for the Automation of the Library Accounting System.

```
                          Main menu

                    Display main menu

                      Select option

         Switch to appropriate function
                 Code_gen ( )
                 Expenditure ( )
                 Trans_report ( )
                 Print_report ( )
                 Allocate_vote ( )
                 View_balance ( )
                 House_cleaning ( )

                      RETURN
```
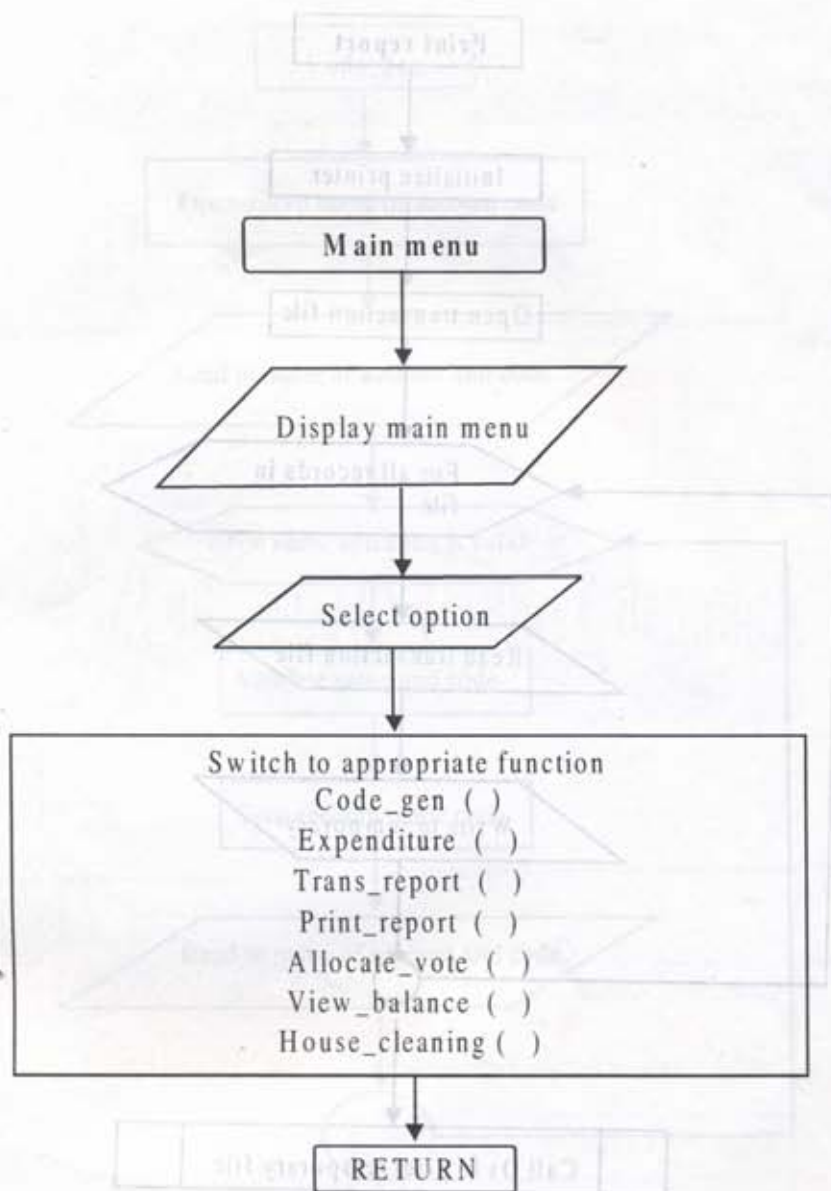
Figure 2a Flow chart for the Main Menu
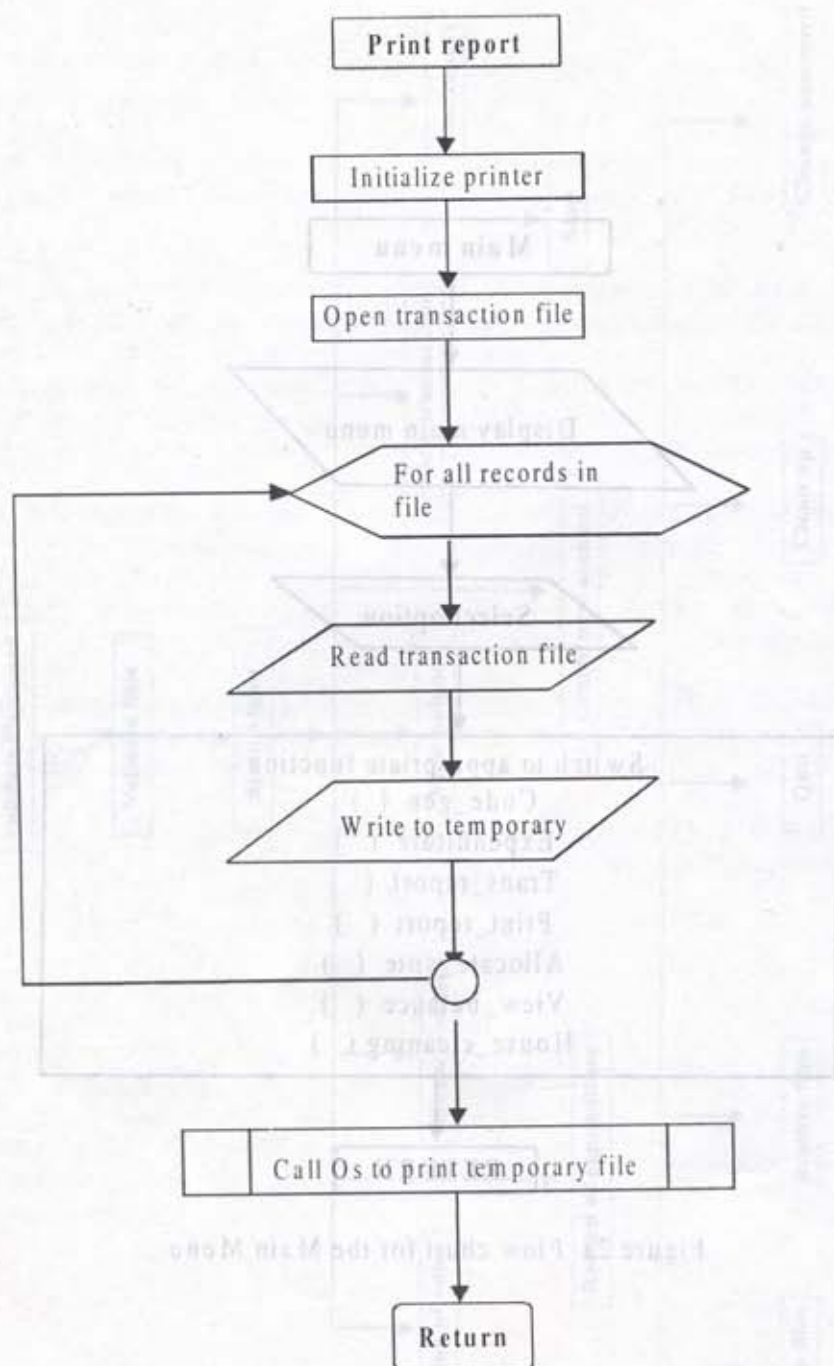
Figure 2b Flow Chart for Printing Reports

Code_gen

Open-filesb name of account code

Read in name of account and code

when name and code is valid

Validate name and code

Save account name code

Read in name of account and code

Return
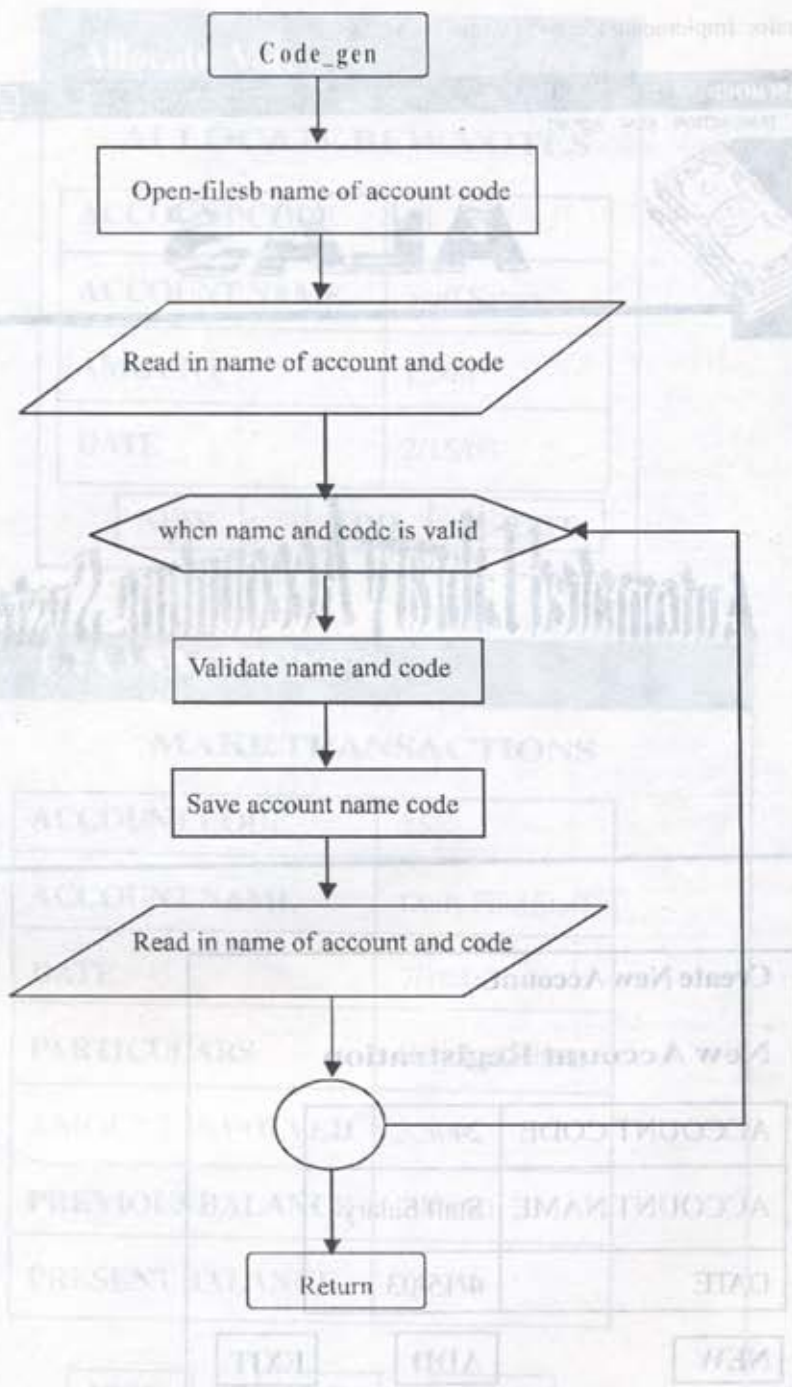
Figure 2c Flow chart for creating a new account

MAIN MENU

SETUP   TRANSACTION   VIEW   REPORT

ALAS

Automated Library Accounting System
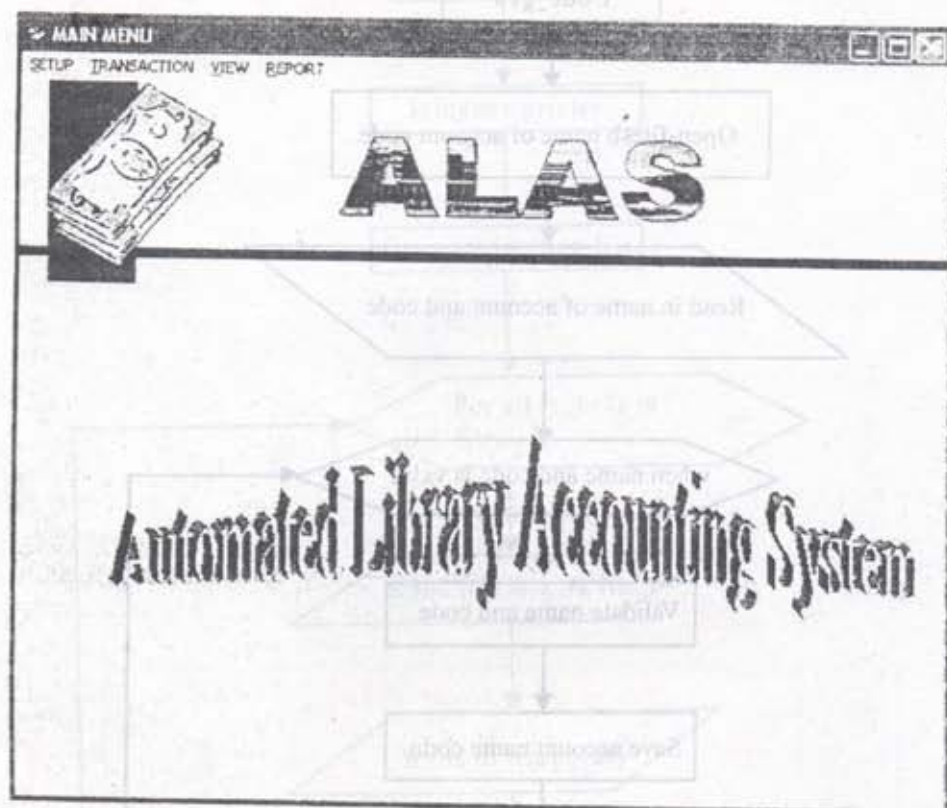
Create New Account

New Account Registration

ACCOUNT CODE	24
ACCOUNT NAME	Staff Salary
DATE	4/15/03
NEW	ADD	EXIT

Allocate Vote

ALLOCATE BEW VOTES

ACCOUNT CODE	24
ACCOUNT NAME	Staff Salary
AMOUNT	1,200
DATE	2/15/03

NEW	ADD	EXIT

TRANSACTIONS

MAKE TRANSACTIONS

ACCOUNT CODE	25
ACCOUNT NAME	Daily Paid Staff
DATE	7/19/02
PARTICULARS	Regular Labour
AMOUNT INVOLVED	3,500
PREVIOUS BALANCE	38,450
PRESENT BALANCE	34,950

NEW	ADD	EXIT

RECORD EXPENDITURE

RECORD NEW EXPENDITURE

ACCOUNT CODE	26
AMOUNT EXPENDED	2,000
DATE	4/6/03

NEW	ADD	EXIT

VIEW ALL ACCOUNT BALANCE

Account Code	Account Name	Amount	Vote-Amount	Expended
21	Office Supplies	2000	42	1958
24	Staff Salary	10000	9480	520
25	Daily Paid Staff	40000	38450	1500
26	Student Labour	70000	66100	3900
45	Others	4500	550	3950
56	Total	5000	800	4200

TRANSACTION VIEW

Account Code	Account Name	Date	Particulars	Amount involved	Previous Balance	Present Balance
21	Office Supplies	7/31/02	Stationery	100	2000	1900
24	Staff Salary	7/19/02	General	120	10000	9880
24	Staff Salary	7/31/02	General	100	9660	9480
24	Staff Salary	7/19/02	Miscellenou	300	9780	39000
25	Daily Paid	8/16/02	Miscellenou	1000	40000	68800
26	Student	8/16/02	General	1200	70000	66300
26	Student	7/19/02	Routine	2500	66800	38500
25	Daily Paid	7/31/02	General	500	1250	742
21	Office Supllied	7/23/02	Stencils	508	5000	3600
56	Total	8/21/02	Maintenance	1200	3800	3100
56	Total	8/21/02	Refurbishing	700	4500	4000
45	Others	9/7/02	Purchase of	500	4000	3400
45	Others	9/7/02	Purchase of	600	3400	3100
45	Others	9/7/02	Deliveries	300	3100	2800
45	Others	9/7/02	Printing	300	2800	1800
45	Others	9/7/02	Photocopy	1000	1800	1450
45	Others	9/7/02	Typing	350	1450	850
45	Others	9/7/02	Files	600	3100	1000
56	Total	9/7/02	Purchases	2100	2800	66100
26	Student	9/7/02	General	200	1800	442
21	Office Supplies	9/7/02	Files	300	1450	42
21	Office Supplies	9/7/02	Stencils	400	3100	42
56	Total	9/7/02	Cleaning	200	66300	800
46	Others	9/7/02	Printing	300	742	550
25	Daily Paid	4/6/03	Yemi	50	1000	38450
21	Office Supplies	7/31/02	Printer ink	150	850	1750

TRANSACTION OF DIFFERENT ACCOUNTS

Account Code	Name	Date	Particulars	Amount involved	Previous Balance	Present Balance
21	Office Supplies	7/31/02	Stationery	100	2000	1900
24	Staff Salary	7/19/02	General	120	10000	9880
24	Staff Salary	7/31/02	General	100	9680	9780
21	Office Supllies	7/23/02	Printer Ink	150	1900	1750
21	Office Supplies	9/7/02	Stationeries	500	1750	1250
24	Staff Salary	7/19/02	Miscellanous	300	9780	8460
25	Daily Paid Staff	8/18/02	Miscellanous	1000	40000	39000
26	Student Labour	8/16/02	General	1200	70000	58800
26	Student Labour	7/19/02	Routine	2500	68800	56300
25	Daily Paid Staff	7/31/02	General	500	33000	36500
21	Office Suspplies	7/23/02	Stencils	508	1250	742

TRANSACTION OF DIFFERENT ACCOUNTS

Account Code	Name	Date	Particulars	Amount involved	Previous Balance	Present Balance
21	Office Supplies	7/31/02	Stationeries	100	2000	1900
21	Office Supplies	7/31/02	Printer Ink	150	1900	1750
21	Office Supplies	7/31/02	Stationeries	500	1750	1250
21	Office Supplies	7/23/02	Stencils	508	1250	742
21	Office Supplies	9/7/02	Files	300	742	442
21	Office Supplies	9/7/02	Stencils	400	442	42
24	Staff Salary	7/19/02	General	120	10000	9880
24	Staff Salary	7/31/02	General	100	9880	9780
24	Staff Salary	7/19/02	Miscellanous	300	9780	8480
25	Daily Paid Staff	8/16/02	Miscellanous	1000	40000	39000
25	Daily Paid Staff	7/31/02	General	500	39000	38500

Balance of Different Account

Account Code	Name	Initial Vote	Amount Expended	Balance	Date
21	Office Supplies	2000	1958	42	7/31/02
24	Staff Salary	10000	520	9480	7/31/02
25	Daily Paid Staff	40000	1500	36450	6/16/02
26	Student Labour	70000	3900	66100	8/16/02
45	Others	45000	3950	550	9/7/02
56	Total	5000	4200	800	8/21/02