

**COMPUTERIZATION OF
CASH LODGEMENT AND WITHDRAWALS
IN MODERN BANKING**
(A CASE STUDY OF DIAMOND BANK LIMITED, MARINA BRANCH LAGOS)

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DEDICATION

I dedicate this project to the ALMIGHTY GOD for granting me success, prosperity, protection and blessing, thanking GOD for giving me the wisdom, strength and good health to see this work through to the end. In all I also dedicate this work to my most beloved parents Mr. and Mrs. S.M.G. Pogah. My loving brothers and sister's for their unforgettable love. To my husband to be and unborn children.

CERTIFICATION

This is to certify that this project was carried out in the department of mathematics and Computer Science Federal University of Technology Minna, Niger State.

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ABSTRACT

Dynamism is a perpetual phenomenon permeating the entire facets of human endeavours. Right from the creation of man the heir of the earth, CHANGES have one time or the other been noticed in his engagements.

BANKING, one of the numerous functional activities of man is thus no exception, to the dynamic world. from its Inception, to the recent, it has metamorphosed from the use of crude, naive implementation to the adoption of a well sophisticated technology, the consequence of which is the minimization. If not total annihilation of miniature banking paving way for large scale BANKING AUTOMATION. The focus of this project which leads us to close look at the automation in Diamond Bank Limited Marina branch Lagos.

How technology has change life's for so many people in this facets.

I wish to extend my appreciation to the following friends, Omon, Ronke, Tina, Grace, Tylor, Akan and Abubakar, to all my friends even those whose names are not here, may God bless them.

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CHAPTER ONE

INTRODUCTION

1.1 PREAMBLE

At the inception, when Computer technology was becoming realistic, little was it thought that the onslaught could dominate the entire facets of human activities much in particular the business endeavours. It is not surprising that soon after the great potentials of the machine, it became obviously useful in business ventures.

Over the years, Computers are used to control stocks of raw materials and finished products bill customers, calculate employee pay and taxes, analysis who is buying the company products and perform hundreds other administrative functions. This of course has been able to reduce the administrative paper work and cost.

However, banks are among the largest users of Computers. Loan accounting customer account updating, deposits and withdrawals, check processing are but a few of the Computer applications in banking system. This institution banks and other financial institutions have developed different means of improving the efficiency and serving time of their operations. The zeal to reduce time while at the same time improve efficiency and better services to customers have led to the introduction of Computers for the various banking processes with Computers come automation. of course every business and other human organisations is concerned with processing facts or data about its services, product making or other ventures. Useful information is produced by processing such facts for efficient management decision making and to stimulate greater customers services satisfaction. The effective use of Computer with its diverse power of automation coupled with high

speed and accuracy, when used for processing data to generate facts, has greatly enhance the efficiency of decision making process while at the same time ensuring a well balanced customized services.

It is therefore not surprising that depositors, loan beneficiaries and the bank users these days besiege en-masse banks that have been Computerized, simply as a result of fast customer services.

In this project work attempt shall be made to study fast and efficient customerized services as regards CASH LODGEMENTS AND WITHDRAWALS. In modern banking system as a result of Computerization. As such, an appraisal of Computer in Bank relative to manual banking with a view to deposits and withdrawals shall be our focus.

It should quickly be pointed out here that in recent time, several banking automation products have been introduced into the industry.

These includes:-

- i. Electronic Funds Transfer (EFT):- This is a means of transferring funds electronically from one location to another.
- ii. Automated Teller Machine (ATM):- This is a system where some traditional banking services are provided without coming in contact with bank personnel. Request by customer are attended at once because it is electronically operated.

The variety of functions that the system can be programmed to handle include withdrawals provision of transfer of funds, payment of bills and display of promotional messages.

- iii. SQL/Image Machine:- This system is used to verify signature. It is very useful for handling cheques transaction.

Others include automated cheques sorter using magnetic ink character recognition facility and electronic card and products.

Unfortunately, most of these facilities are at infant stage in Nigeria or in some cases not in existence at all.

1.2 STATEMENT OF THE PROBLEM

Like aforementioned, the need to improve on banking services led to the introduction of automation in banks using Computers with particular emphasis on deposits and withdrawals of cash. Major questions on integrity, accuracy, timeliness and security of the Computer come to mind.

How easy is it for a Computer personnel or user in banking system to satisfy all depositors and customers withdrawing without keeping them waiting unnecessarily without being attended to. How has management been able to solve its problems as regards ledger cards production which takes a number of days before it can be ready for use. The promptness time lapse between the request for statement of accounts and promptness in granting such request. All these and many more from the core to which this project shall appropriately dwell and come out with useful findings.

1.3 JUSTIFICATION FOR THE STUDY

Manual approach to Cash lodgements and withdrawals in banks are labourious time consuming and in particular prone to inaccuracies. There is this wide spread prejudice that banks support and favour deposits but view cash withdrawals with scorn and displeasure. However, this runs contrary to the ethics of the industry.

What transpires virtually in all manually operated banking system is a carefull operation of entries and additions coupled with adequate security in terms of customer signatures and physical upkeeps of records. As such, where these are undertaken by human beings. Greater attention and time must be exercised. Hence stereotype adopted by the public.

As a result of this, and to avoid other unnecessary complications, there arose the need for Computerization of banks, with special emphasis on deposits and withdrawals. It must be pointed out that with Computers handling such onerous tasks as described above. Customers as well as bank officials are able to heave a sigh since these machines are able to automate the processes and thus relieve them part of their responsibilities.

Consequently upon this, all efforts are made day in day out to improve on the existing processing systems in banks, they have been Computerized. Thus a justified appraisal of the study will be to further research into the existing system with a view to ameliorating the more, the problems of deposits of cash and it's withdrawals in the banking sector.

1.4 **PURPOSE OF STUDY**

Much as special focus is placed on improving the manual traditional banking deposits and withdrawals - getting accounts Computerized - the purpose of this project is to design a Computer program suitably workable in any bank, taking full cognizance of cash deposits and withdrawals with minimal interaction with the bank personnel. The design is such that it can be implemented in a network where several customers can access individually their accounts using their account number in form of passwords which are known to them only. The purpose of this study in a nutshell can be broken down as follows.

- > Improve productivity by ensuring efficient deposit system and prompt cash Withdrawals if and when desired .
- > handle greater volumes without any unnecessary delays.
- > Control transaction at its sources
- > Replace repetitive manual entries with full Computerized documentation.
- > Reduce clerical and paper based jobs.

---> produce more accurate and timely reports.

---> Lower overall cost of labour.

1.5 **LIMITATION OF THE STUDY**

The paramount attention of the project work is only restricted to cash transactions like deposits, withdrawals, printing the statement of account at the periodic intervals and or when required by customers. In other words activities like opening of new accounts, closing of account, crediting and debiting relevant accounts are the primary aim on which the research is centered.

The work does not consider taking a records of the number of people that come to bank on daily, weekly, monthly or yearly basis. It also excludes balancing of ledgers at the end of the day. Moreover, other transactions like Foreign exchange transaction , loan and advances administration transaction and a cost of other miscellaneous transactions in banking are not within the framework.

1.6 **A PREVIEW OF OTHER CHAPTER**

Chapter two gives a brief description of literature review while chapters three and four relay information about the present manual system and the proposed system to be designed respectively.

Chapter five discusses the documentation needed to effectively operate the software.

CHAPTER TWO

LITERATURE REVIEW

The goal of this chapter is to provide the necessary theoretical framework or foundation for the work of this research study. Attempts shall be made to have an overview as regards the basic concept of Computers, the Computer and banking industry, a case study of some avoidable banking software and finally, advantages and disadvantages of Computerization.

2.1 BASIC CONCEPT OF COMPUTERS

When people first began to use numbers, they knew only one way to work with them - counting. Man counted the numbers of sheep in the flock, the numbers of animals he saw during a hunt, or the number of spears he owned. He at that time used stones, sticks, shell knots or marks in the sand to represent numbers. The absence or rarity of suitable writing materials led to the use of fingers as a way of representing numbers from fingers notation there developed an extensive use of finger Computation. As society became more complicated, men had to develop fairly elaborated calculations involving subtraction, multiplications and divisions that could not be done but finger computation only. And by not too far distance the present era of electronic Computer technology came into existence.

Perhaps are basic question we need to proffer solutions to novice in this field is WHAT ARE COMPUTER'S?. By any standard, A Computer is a tool for performing diverse complex operations, characteristically, it accepts data in a prepared form (i.e. "machine sensible form") processes the data and output the result there from the processing, in a specified format or output same, as signals for automatically controlling some other machines.

Having gotten this basic description of the machine, we now proceed to identify and analyze the various component make up of the system.

Generally, all Computers are Segmented into:-

- i. INPUT UNIT
- ii. CENTRAL PROCESSING UNIT (CPU)
- iii. OUTPUT UNIT

A thorough analysis of each of them will portray a sharp reflection of what they look like.

2.1.1 INPUT UNIT

This accepts the necessary input data and instructions. These media are machines that can read previously recorded data from certain form of external sources such as punched cards, punched paper tape, magnetic disk alongside with magnetic characters, printed characters and other forms of coding. Those aforementioned media are themselves input units, the importance of which can not be under-rated in the Computer world.

2.1.2 CENTRAL PROCESSING UNIT (CPU)

This consists of three sectors namely the ARITHMETIC/LOGIC UNIT, CONTROL UNIT AND THE STORAGE UNIT.

- i. ARITHMETIC/LOGIC UNIT:- This reflects where numbers can be added, subtracted, multiplied, divided and compared. These operations are performed at very high speed. The unit usually includes a small amount of storage to hold both operand (numbers to be added, subtracted etc.) and the practical answers that are generated during calculation. As said it compares two numbers and determines if numbers are equal or not. It can also compare alphabetic information such as names, or determines whether one name is the same as or different from others.
- ii. THE CONTROL UNIT:- This section performs the most vital function of the CPU. all program steps are interpreted here and instructions are issued out to carry out

the required operations. The unit directs the overall functioning of the other units of the Computer and controls the data flow between them during the process of solving the problem. When the Computer is operating under program control, the control unit brings in data, as required from the input devices, and controls the routine of results to the required output device. This section is composed of many miles wires. In summary, it directs the operation of other units of the machine.

iii. **THE STORAGE UNIT:-** The storage unit or internal storage of the CPU is its memory. This is where instructions and data are located while they are being used or processed. The internal storage of most Computers is magnetic core which is limited in supply and highly expensive to build. Hence, the need for auxiliary storage media. Essentially, these are external, but they help in storing information that may not reside in the Computer memory. A vivid example of this is magnetic diskette.

2.1.3. **OUTPUT UNIT**

An output unit provides the Computer result in a useable form .It consists of machines that report information from Computer processing in a form that can be understood by human beings or in a form suitable for use as input for another Computer system. Common output devices are printers and Visual Display Units (VDU).

Input and output units are integral part of a Computer system and operate under the control of the CPU as directed by Computer Program.

After much deliberation on the concept of Computer, it would do much good to relate a little on Banking and its activities.

A bank in its simplicity can be described as A FINANCIAL INSTITUTION.

However, further explanation on this would analyze to us that banks are organizations set out among other aims.

To make loans and extend credit

To facilitate the transmission of funds by cheque and bill of exchange or other forms of commercial papers.

To receive and hold money on deposit and to disburse it.

To exchange the currency of one country for that of another and to issue money.

The history of banking in Nigeria dated back to nineteenth century when a shipping industry - ELDER

DAMPSTER LINES: started some form of banking operations in the country, then, to facilitate its non business transaction. Then, there followed a growing impetus of banking companies among the indigenes as well as expatriates.

It must be noted that banks then operated manual data processing system. Among functions performed by banks are lending, accepting deposits. The use of cheques and some other miscellaneous functions.

2.2 THE COMPUTER AND THE BANKING INDUSTRY

Computer usage in banking industry was first experimented in 1955 by two banks, one in San Francisco and the other in New York at the introduction of IBM 650 models soon by 1960. The American Bankers Association issued its standard cheques under the common machine independent research into any system. Thus, deposits were being processed uniformly by all Computerized banks across the country. The method of magnetic ink character, then going through perfection, advanced the process of cheque reading and sorting. Thus, helping to deal with the difficulty in paper work.

Computer application in banks, and the sundry complex programs related to them now cover virtually every phase of banking operation from the routine operation such as processing of cheques with ELECTRONIC DATA PROCESS (EDP) to

the very sophisticated investment and management information analysis.

With the capability to perform millions of consecutive operations without error, EDP, can now provide any bank with a workable, reasonable, correct, useful data facts for the business financial and industrial capital market of the world. As such, decision accountability is braced with more facts and fewer psychic visions and today bankers are able to manage corporate investment more wisely and with more assurance of profitability. For distributed Computer based banking process, several branches of a bank within the country are inter-connected by teleprocessing lines in a network of terminals. The connectors, multiplexors demultiplexors and other similar units represent network control functions for message routine circuit selection and other activities necessary for efficient use of long distance communication facilities banks operating this scheme would have duplication of processing virtually in all outlying branches such that entries in a branch affects other branches. A typical example of bank under this implementation is DIAMOND BANK.

Another area of application of Computers in the banking industry is the area of fund transfer. This means transferring funds electronically from one location to another. A vivid example of this is the ESCAR where money can be withdrawn or transferred with the use of transfer cards. Another is the FIRST CASH CARD operated by First Bank of Nigeria PLC.

One should not forget to mention the Automated Teller Machine which is another useful Computer instrument in banking sector. This we have already discussed in the introductory section of this research work.

Although, Computers in Nigeria banks is recent and still at the innovation stage notwithstanding, the trend is uprising and the traditional manual and physical processes will soon become a thing of the past.

2.3 A CASE STUDY OF SOME AVAILABLE BANKING SOFTWARES

Computer softwares with reference to banking are as old as application of Computer in banking system. Generally, softwares are usually developed by software houses offer times quite independent of hardware engineers. These (Software) after having been developed and tested fully are thereafter made available to customers or prospective users among which bankers are one. It is pertinent to note here that some banks are able to employ and finance competent programmers such that a unique package is made available only to the bank in question.

Nigeria, however, still in the wake of Computerization has a few number of such experienced programmers such that majority of software packages are largely imported from advanced overseas countries. For simplicity and because of the limitation by this project, topic, we shall restrict ourselves to softwares meant only for savings and withdrawals in AUTOMATED SAVING MACHINES.

- (1) AUTOMATED TELLER MACHINES
- (2) CASH DISPENSER

2.3.1 THE AUTOMATED TELLER MACHINE (ATM)

These machines are in effect on line Computer terminals operated by the customers, they can perform about 80 percent of the services normally available from human tellers. These machines could be used to deposit funds, withdraw cash by debiting saving, checking, or credit card accounts, and transfer funds from one account to another. Some can be used by customers to pay bills normally handled by the financial institution, although this service usually is not highly automated because bills, stubs and enclosures containing customer identification numbers must be deposited in a slot in the machine and later handled by the bank.

To gain access to the services required, customers insert their ATM cards and key in their PERSONAL IDENTIFICATION NUMBERS (PIN). At the end of the transaction, the card will be returned by the machine. These machines are completely unattended . The information is transmitted to the bank Computer system which updates the account being accessed and allow the terminal to release cash for withdrawal transaction.

The ATM also provides cash dispensing facilities these are the most Important services offered, and the customer may select the amount required. Some banks restrict the maximum amount to be withdrawn a day. More importantly, before cash is paid out, the customer's balance is vetted, taking account of any overdraft limit marked on the account; the transaction will be refused if the account contains insufficient funds. At the banks discretion. The ATM cards themselves may be enclosed with a small overdraft to permit unforeseen contingency resulting in emergency withdrawals.

Other facilities available, capitalise on the connection between this machine and the bank's central computers, although not all the services mentioned have been introduced by all the banks which operate ATM.

Customers will usually be able to request the machine to display their balance and may even be able to obtain a mini- statement showing the last few entries to their account.

This often is inform of statement of account. The machine is also capable of allowing customers to make transfer between accounts to make payment to third parties through the credit transfer system, and even to get up standing orders.

An addition to the features aforementioned is the function of interbank reciprocity. This is the latest stage in broadening pre use of ATM, unit recently bank customers could use only the activities which are installed and restricted to

their respective bankers. But now, interbank cash withdrawal network are being set up. This was first realised by the midland and National Westminster bank in U.K.

A great advantage of the ATM is that it gives customers excessive access to basic banking facilities with ease without any particular credit risk for the banks. It opens doors to completely new types of account such as the first banks "CASHLINE ACCOUNT" designed specifically to be operated through the use of "FIRST CASH" This type of account is intended predominantly for those workers who require a safe home for their wages pending expenditure and regular cash withdrawals but only need limited money transfer facilities.

2.3.2 THE CASH DISPENSERS (CD) Cash Dispensers give out CASH, to a limit, and debit the customer's account. It makes use of the cash cards to perform efficient functions. Some example are BURROUGHS CASH DISPENSERS, CHUBB cash dispenser and METIOR BANKOMAT. A brief description of these will sharpen out reflection.

i. **BURROUGHS CASH DISPENSER:-** This cash dispenser is of an advanced, electronic based design which incorporates a number of every distinct features. Unlike other machines of this kind, the Burroughs system has been designed so that with future models "On-Line" operation to a banks Computer will be possible. This allows the amount of a withdrawal to be decided by the customers as the dispenser will make a prior check on his balance and automatically updates his account.

For multiple dispenses, the machine will dispense a given sum of money on receipt and verification of a cash card and after correct indexing of the customer's code number. The card which is of standard international credit card size, has a life of twenty transactions and is returned by the machine after each withdrawal. To prevent customers from leaving the card in the machines cash is dispensed only

when the card is withdrawn from the customers record. The card is embossed with a dot, at each dispense. On the twentieth occasion, the card is returned by the machine and a new card is posted to the customer.

The dispenser provides a numeric print-out of every transaction from information read from a small magnetic surface on the cash card. The card is also embossed with account details from which a separate record of each transaction is obtained. The very advanced security system incorporated in this new cash dispenser affords both banks and the customers unique protection against forgery.

ii. **CHUBB CASH DISPENSER**:- The Chubb cash dispensers provide cash at any time of the day or night it is fed with correct information by the user. The Chubb cash dispenser accepts cards and personalised codes so that clients of a particular bank can obtain cash from any dispenser at any branch of that bank where dispensers are installed, Diamond Bank Lagos for example movement of Cash is made easy for customers with this type of system.

The automatic services of the machine relieves pressure at bank counters and in cashier's offices at peak periods. The machine, also provides cash-on-account in large organisation, so eliminating a time consuming chore for cashiers department.

For security, externally, the dispenser's appears to be little more than a sophisticated stamp machines attractively designed in a stainless steel. But behind this facade, there is sound physical protection surrounding sophisticated electronic circuitry.

The dispenser will not operate in the first instance, unless the card is of correct size, substance ,Thickness coded to the system and inserted the right way up.

The personal identification numbers (PIN) will only be accepted by the machine after the card has been accepted. If this number has been too soon or incorrect, a panel lights up requesting that the number be repeated. If the wrong number is inserted three times in succession, the dispenser retains the card but does not deliver any money. Thus, the obtaining of money by inserting a selection of identification number is thwarted. Should a customer, through either failure of memory or mischance, insert an incorrect identification number three times, the dispenser marks the card so that no debit is made to the account.

The electronics of the dispenser are capable of recognising many millions of personal identification numbers. The method of encoding cards with these numbers is sufficiently complex to eliminate the chance of a number relationship being discovered. The club cash dispenser is a unique blend of security experience and advance electronic thinking, offering a service which has long been lacking in cash handling. It not only supplies a long felt want, it has considerable prestige.

iii. **MENTIOP BANKOMAT:-** The bankomat is operated with a bankomat card of international credit card size (CR 80) and guarantees the identify of the holder of the bankomat is load with loose bank notes. They need not be new one. The bankomat then "swallows" blocked bankomat cards and prevent withdrawals being made too frequently with the same bankomat card. The blocking system is easy to operate and has a high capacity. After three wrong attempts to withdraw money, the Bankomat "Swallows" the card.

In accordance with a programmed pattern in the terminal unit, a personal four figure code must agree with the input information read from bankomat card. A correct voucher received in this way states the recording equipment and the issue of a designed number of banknotes.

2.4 MERITS AND DEMERITS OF BANKING COMPUTERISATION

With the introduction of Computer system into banking operations, the following benefits are derived:-

- i. **OPTIMUM USE OF RESOURCES:-** Computer gives the industry the opportunity to use its resources to a maximum level since the work done manually, for a couple of weeks can now be done, error free, in a day, hence makes the use of clerical staff services in other crucial sections of the industry very possible.
- ii. **COST REDUCTION:-** More money is spend on producing the storage facilities of large volumes of paper and other stationery items that are manually used. At the introduction of Computer, this cost gets minimized because Computers have facilities for storing a very large amount of information with the adequate provision for secondary storage which required very little spaces and at the same time reduces the labour force cost due to its accuracy which disallows extra pay on overtime, as a result of which occur because of the inaccuracies in the conventional mode of operation found imperative.
- iii. **FILE SECURITY:-** During the process of information which requires the transfer of files from desk to desk, some processing accessories like files are mal-handled resulting in disfigure or oftentimes outright loss sometimes, these accessories are defaced by rodents or other pest locked up in the cabinets. All these are what Computers have strong protection against and make adequate provision for.
- iv. **TIME SAVING:-** As the pace at which information processing about customers is conventionally time consuming, the customers get bored and spend much time in the banking hall awaiting their transactions done. In the light of the above, the new technology system, the Computer, with the pace at which it processes information makes the customer be more lively, confident and

interested in banking operations. And moreover, the Computer enhances the bank a great deal of reputation for the fastness and accuracy qualities it possesses.

v. **FRAUDULENCE RESTRICTION:-** Computer limits the access to customers accounts by the clerks and some other unscrupulous elements to a minimum level, which was the aid to fraudulent practice in the manual model of the operation because only a few eyes and hands will have the opportunity and therefore makes the detection of such odd practice, if any simpler.

The above listed points can be summarised thus:-

- Increased system performance by increased through put; enhance response time and increase capacity.
- Improved resources sharing capacity
- Improved reliability and availability
- Graceful degradation/growth
- Ease of expansion/enhancement.

It should however be imperatively said that Computer renders a lot of laudable benefits for the management, employees and the customers as effective as in decision making, reduction in repetitive operations and quantity services respectively.

DEMERITS

The followings disadvantages can be identified:-

- (i) Computerization reduces human labour, hence it increase unemployment.
- (ii) The cost of initial system design and implementation may be too expensive for some bankers.
- (iii) In a time sharing environment where users can be many, the terminal response times would be relatively slow for the users. This is due to query delays at controllers and the low priority of remote users and the cashiers/staffs.

The next chapter analysis the present system in term of types of account of the manual system and the need for Computerisation.

CHAPTER THREE

SYSTEM DESIGN AND ANALYSIS

Banks generally are perceived as an inevitable organ of growth in an economy simply because of diverse functions of resource allocation which they perform. They help in stimulating the level of economic activities in various sectors of the economy by mobilizing and channelling resources (funds) from saving - surplus economy unit to saving deficit units. This helps increase or rather maximize the level of utility and wants of individuals. It should be noted that banks are much more involved in the development of the economy more than other financial Institutions. thus, they occupy strategic position and are known to hold the economic main stay of the economy.

In this chapter, a detailed analysis of the system design and analysis is discussed. The present manual operational method as regards cash lodgments and withdrawals would be studied. We thus start by looking at types of Accounting System.

3.1 TYPES OF ACCOUNT

In as much as we are concerned with deposits and withdrawals and for the purpose of this study, we shall limit ourselves to two types of account Viz.:

- i. The Current Accounts
- ii. The Deposit Accounts

Let us now describe each in details.

3.1.2 THE CURRENT ACCOUNT:- The Current Account is an archetypal bank account, and with a look at Diamond Bank Lagos branch as an example, it is opened to enable payment to be made by cheque and avoid the dangers involved in keeping large sum of money in the office. The balance of a current account is withdrawable either by way of cash withdrawals or through the use of cheques,

which are the principal identifying feature of the current account, when this type of account is opened, the bank provides a cheque book, a paying in-SLIP book and a wallet to hold the bank statements which provide a copy of the customers account as it appears in the books of the bank. These are used for reconciliation purposes.

A paying-in-SLIP completed either in duplicate or triplicate is filled each time money is deposited into the bank vault. These are slips initialled at payment by bank cashiers itemize notes and coins of different denominations, cheques and postal orders filing it is however, for safety and conveniences reasons, common among all the banks to ask their client to fill cheques and cash on separate sheets of the slip as appropriate.

Since banks provide services for their customers by CLEARING drawn cheque and other NEGOTIABLE INSTRUMENTS, they are entitled to levy some charges against their customers. Generally, the arrangement is for a charge to be levied on each different instrument processing of cheques, for instance involves more work than processing automated standing orders, and therefore, the charge is higher. no credit interest as such is paid on current account balances (except for interest bearing accounts)

Moreover, part of current account system includes OVERDRAFT. An overdraft by definition means granting customers authority to draw cheques or other for the payment of funds in excess of the balance standing to the account. Interest is charged on this facility provided by the bank. Also, at regular intervals or at the request of the clients. The bank issue statement of Account, reflecting the financial stands of their customers.

As said earlier, a recent development in current account banking strategies is the interest bearing current account. This combines the facility of using a

checkbook (and other money transmission services) with the payment of interest on credit balances. This account is something of a hybrid between traditional current and normal deposit accounts.

3.1.3 **DEPOSIT ACCOUNTS**

Deposit Accounts in its entirety can be refined to two account V.2:

- i Saving account
- ii Time Deposit otherwise known as fixed Deposit

i **SAVING ACCOUNT:-** The saving account is one of the most popular account - type systems in banks. It is characterized by personal withdrawal of funds if desired. That is, it does not employ the use of surrogates or checkbook when there is withdrawal even though deposit in favour of the account can be received from persons other than the account holder.

Credit interest, unlike Current account, is paid on savings account by the bank. Some banks saving account schemes provide for regular savings. Through schemes such as the provision of money boxes (home safe) for the accumulation of deposits. This account is something of an anachronism in the modern world and they are now actively promoted, Diamond banks, they however make up a very small proportion of total bank deposit.

All in all, savings account transactions are recorded manually in passbook which the account holder must produce at every deposit or withdrawal. This account has however now been transferred on to the more modern statement system. Under which Statements of account are produced periodically through the banks Computer system and forwarded to the account holder as a record of all transactions since the last statement. Even then, the use of passbooks still permanent.

ii **THE DEPOSITS (FIXED DEPOSIT):-** While Current accounts are designed to facilitate the processing of a short - term fund flows, time deposits accounts are for the holding of medium - term and long term surplus of funds cheque are not available for use with this deposit account, which therefore provides banks with a much less volatile source of funds for use in lending payment into a deposit may be made in cash, by credit transfer, by transfer from current or savings account or by cheques.

Credit interest is paid on the balances standing to the credit of a deposit account. Deposit rate generally follows the fluctuations of base rate. In theory, the bank compete for deposits through advertisement on their interest rates, but in practice, they tend to conform very closely to one another.

Withdrawals from deposit account are subject to prior notice, although it is usual to permit, withdrawals on demand in consideration of the depositor losing some accrued interest on the amount overdrawn credit interest is paid net of tax, tax at the composite rate being deducted by the bank from the amount due to all personal accounts. There are other types of accounts like loan accounts, budget accounts and the rest, all of which are outside the scope of this project.

3.2 ANALYSIS OF MANUAL SYSTEM AND IT'S PROBLEMS

Manual banking transaction system is prone to inadequacies. Attempts shall be made here to study the operational method of Diamond Bank. The customers deposits and withdrawal are controlled in the general ledger accounts. Individual customers accounts are recorded in the branch customers saving/current ledger account. This ledger is maintained for each customer and 1-250 customers ledger cards or pages from a central ledger in the general ledger. The aggregate of the customers deposits/withdrawal recorded must agree with balance of the general ledger account monthly.

For the savings account department, cashiers accept deposit from the customers and allows customers to make withdrawals, cash are deposited or withdrawn by the use of the standard forms. Designated officer known as saving officer is responsible to ensure that there are sufficient funds in the customer account before allowing the customer to withdraw and pass relative entries. Interest are calculated and applied monthly on the outstanding credit balance. The calculated interest must be duly checked for correctness and necessary vouchers raised for it before it is applied to individual customers ledger cards.

Account balances are obtained at the close of each working day and compared with the general ledger balance. At the end of every month, balance on the Individual customer saving Ledger card will be addressed and compare with balances in the General Ledger. Returns are prepared at periodic time intervals. A number of forms and cards manually used can be analysed thus:-

- i. **SAVING LEDGER/INTEREST CARD:-** This card contains particulars of the customers and the transactions made. Among items entered into this card include Name, Account Numbers, Address, Occupation, Date, Deposit and Withdrawal etc.
- ii. **DEPOSIT/WITHDRAWAL SLIPS:-** These slips are used to deposit and withdraw from the customer. Savings account information in these slips include Name, Account Number, Amount to be deposited or withdrawn.
- iii. **MANDATE /SIGNATORY CARD:-** This card is used to open a new account for a customer. The Card contains the particulars of the customers The signatory part of the card is used to verify the customers signature before withdrawal is made. This serves to check against fraud.
- iv. **DEBIT AND CREDIT VOUCHERS:** These sums are used to pass debit and credit entries to the general ledger through the waste sheet.

THE WASTE SHEET:- This sum is used to capture daily all the transactions made, and from there, entries are made into general ledger.

GENERAL LEDGER SYSTEM:- This is the centre of various accounts in the bank. It contains balances of all personal and impersonal accounts in the branch including current accounts and saving accounts. At regular interval, the balances of all accounts in the branch are compared with balances in the appropriate account and this serves as a control to all the accounts in the branch from which saving is one.

For current account section, the services or activities performed are much more similar to those outlined above. The only difference being in forms and document used in processing the information. The few available different forms are discussed below.

i. **CHEQUES:-** Cheques to some extent are a form of legal tender. It is a convenient means of handling cash without physical existence of the cash. It bears the name of the payee, date, the amount to be paid and the signature of the payer. Specifically, it instructs the bank to pay the bearer a stated sum of money on demand or at a determinable future date. The amount stated there-in is debited to the account of the payer.

ii. **PAY - IN TELLERS:-** These are in form of credit vouchers in saving account except that they are in more details and initialled and stamped by the receiving cashiers. They are used to lodge in money in favour of the account holder and are always completed either in duplicate or triplicate.

Other necessary forms share the same functions as described under savings account above.

Having discussed in details, the manual banking protocols, the poser question then is, what are the problems encountered using this manual banking system. These could be listed as below:-

- i. **Shortage of qualified and competent personnel to handle this high volume of transaction. And where they are available, the banks cannot afford to pay their salaries.**
- ii. **Ledgers maintained are not usually posted up to date as a timely and reliable ledger balances is difficult to produce and guaranteed. Hence, they can not be easily come by.**
- iii. **The inadequacies and inaccuracies resulting from fatigue and boredom is inherent in human processing.**
- iv **Returns needed by management for prompt decision making are not always available on schedule.**
- v **Customers dissatisfaction as a result of slow response time from human processors.**

3.3 NEED FOR COMPUTERIZATION

One area of commercial banking that could benefit a great deal from the covered personnel requirement and costs associated with increased automation of routine and repetitive operations would be the processing of multiple standard verification before payment.

Electronic Computers are found to be suitable in solving banking and financial institutions problems because of the nature of the operations of these institutions. Computers are suitable in handling well defined procedures with clear and attainable objectives which every bank/financial institution has, Computers are also suitable where the operations involves defined steps that are performed over and over again. Most routine jobs that consume a lot of manpower hours can conveniently by handled using Computers.

Another characterisation of operation suitable for Computer application is the ability to handle large volume of data efficiently. This involves provision of large memories capable of storing powerful operating systems, database accounting package etc. and high capability direct access banking storage for storing both the software and other files which can be accessed on demand at high speed.

This will enable response speedily to enquires in on-line or real-time system. It is also desirable to justify Computerization by considering the cost, time and accuracy of the end result. Infact, Computer application in banking system has led to reduction in cost, improved efficiency and accuracy.

3.4 COST - BENEFIT ANALYSIS

3.4.1 COST AND BENEFIT OF THE PROPOSED SYSTEM

The proposed system will need hardware and software and human ware to accomplish it task or purpose. The project cost of developing the system are as follows:-

3.4.2 COST OF DEVELOPING SYSTEM

System analysis and requirement determination (10 weeks) for 12 staff at

$$=N=6,000 = \quad =N=720,000$$

System Design:-

$$(10 weeks) for 15 staff at =N=8,000 = \quad =N=1,200,000$$

Development and Implementation:-

$$(16 weeks) for 13 staff at = =N=7,500 = \quad =N=1,560,000$$

$$=N=3,480,000$$

=====

INDIRECT COST FOR STAFF PERSONNEL

Equipment purchase

10 IBM PC's model 4122, 150MHZ at =N=40,000 each	400,000
5 display terminal at =N=20,000 each	100,000
6 line printers at =N=60,000	360,000
Computer furniture	120,000
Installation	45,000
Training of Staff	75,000
UPS (Uninterruptable Power Supply)	<u>30,000</u>
	=N=1,130,000
	=====

COST OF OPERATING THE SYSTEM

Stationery i.e.

Ribbon, Paper, Diskette	45,000
Equipment maintenance	35,000
Miscellaneous Expenses	<u>50,000</u>
Total	130,000
	=====

Over all Cost **=N=4,740,000**

THE BENEFIT OF THE SYSTEM

It is very desirable to justify Computerization by considering the cost, time and accuracy of the and result. Infact, Computer application in banking system has led to reduction in cost and it improved efficiency and speed. Merit of the new system might not be easy to identify or quantify immediately.

However, it saves time and cost, it will eliminate duplication of paper work and frequent omission of some vital transaction in the bank.

And also, it will reduce generation of high volume of prepare work and Computer is equally synonymous to time and since computers work at a phenomenal speed coupled with its ability to access records. This will reduce delay in receipts and payment preparation and concerning the withdrawals and deposits in banking sectors or industries.

The next chapter now considers the proposed system and software design and Implementation with a view to software specification, software design, implementation and testing.

CHAPTER FOUR

PROPOSED SYSTEM AND SOFTWARE DESIGN AND IMPLEMENTATION

Having exhaustively viewing the banking industries, and a close look at Diamond Bank, with emphasis on relevance of one to another, we now turn our attention towards using the machine (Computer) to design a system which will be of help in solving some of the bottleneck hindrances plaguing the banking industry with focus on cash lodgements and withdrawals.

This chapter deals with the design of the software. The design defines the software pieces that meet the requirements and the framework into which these pieces fit to act as a system working as whole. The emphasis on software design is to develop a new system that helps to achieve the goals of the organization and to overcome some of the shortcomings and limitation of the existing system.

4.1 SYSTEM SPECIFICATION

Bearing in mind the objectives of the system, it would be pertinent to now have a broad analysis of how these aims can be realised. In this section, some detailed requirements of the new software about to be built are specified and consequently designed.

Since the software specification also serves to document, the proposed new system, to be designed, it serves as a means of communicating all that is required to be known to all interested parties in the system. The users (customers and cashiers) who will ultimately be responsible for running the new system need to be kept fully aware of the specification. The programming stage whenever the suite of programs would be written needs be conversant with the specification. Also, the specification will serve as a consulting record of the system so as to make easy for evaluation, modification and training purposes.

The design specification for this software will be presented concisely under following subheadings:-

- i. OPEN A NEW ACCOUNT
- II. WITHDRAWALS
- III. BANK STATEMENT
- V. EXIT

i. **OPEN A NEW ACCOUNT:-**

The software to be designed should be able to accommodate customers who are operating with the bank for the first time. In other words, clients who want to transact business with the bank should be given special focus.

To this their biodata is requested to be supplied at the inception of the transaction. Information supplied would then be added to the existing database, from which the software can make queries for future references.

ii **DEPOSIT**

Customers transacting business for the first time as well as already existing Customers have this item mode as one of their principle activities with the bank. Deposits are lodged by customers in order to swell their accounts with the bank. Additionally, at any point in time, deposits are accepted by banks authorised cashiers via counter/cages excepts otherwise directed by the bank management. Standard form (DEPOSIT VOUCHER) specifying the account number, the name of account holder, the amount deposited and other parametric information would be conspicuously shown on the deposit voucher.

The cashier at the reception of the lodgements thereafter makes system entry and further adjustment as regards balance takes place within the system.

iii. **WITHDRAWALS:-**

Just as there is deposit, there should also be withdrawals. One point that should be noted however is that withdrawal does not apply to clients transacting business with the bank for the first time. It is only relevant to already existing customers. From such customers would be requested such information as account number, signature, account holder's name, amount to withdraw and others deemed necessary. The system then makes a brief entry and comparison of the above stated data with the existing one in database. Any discrepancies is then flagged and the account holder notified for respecification and a subsequent denial of access if the holder still fails to remedy the data supplied. If on the other hand the entries and the database correlate, further adjustments are made as to the amount to be withdrawn and the customer is paid.

iv. **BANKING STATEMENT:-**

The bank statement in effect is to print at specified time interval the transaction between the bank and clients, showing such elements as deposit, withdrawals, dates and the balance to the credit of the customer. starting from the day the last bank statement was issued.

v. **EXIT:-**

From the main menu section, when the EXIT command is highlighted system should be able to return the customer back to the "PAGE INFORMATION" section from where he would be asked if he wants to operate the software or not.

SYSTEM FLOWCHART

It shows the overall logic of the systems processing including the input and files and the segmentation of processes into programs. It gives a picture of what the system does (as opposed to how it is done) its logical complexity is low. This is shown overleaf.

4.2 SOFTWARE DESIGN

The objectives and specification describes above now come into play during the software design. With regards to design, the following would be analyzed:-

- i. Input design
- ii. Output design
- iii. File definition
- iv. Procedures or processes specification.

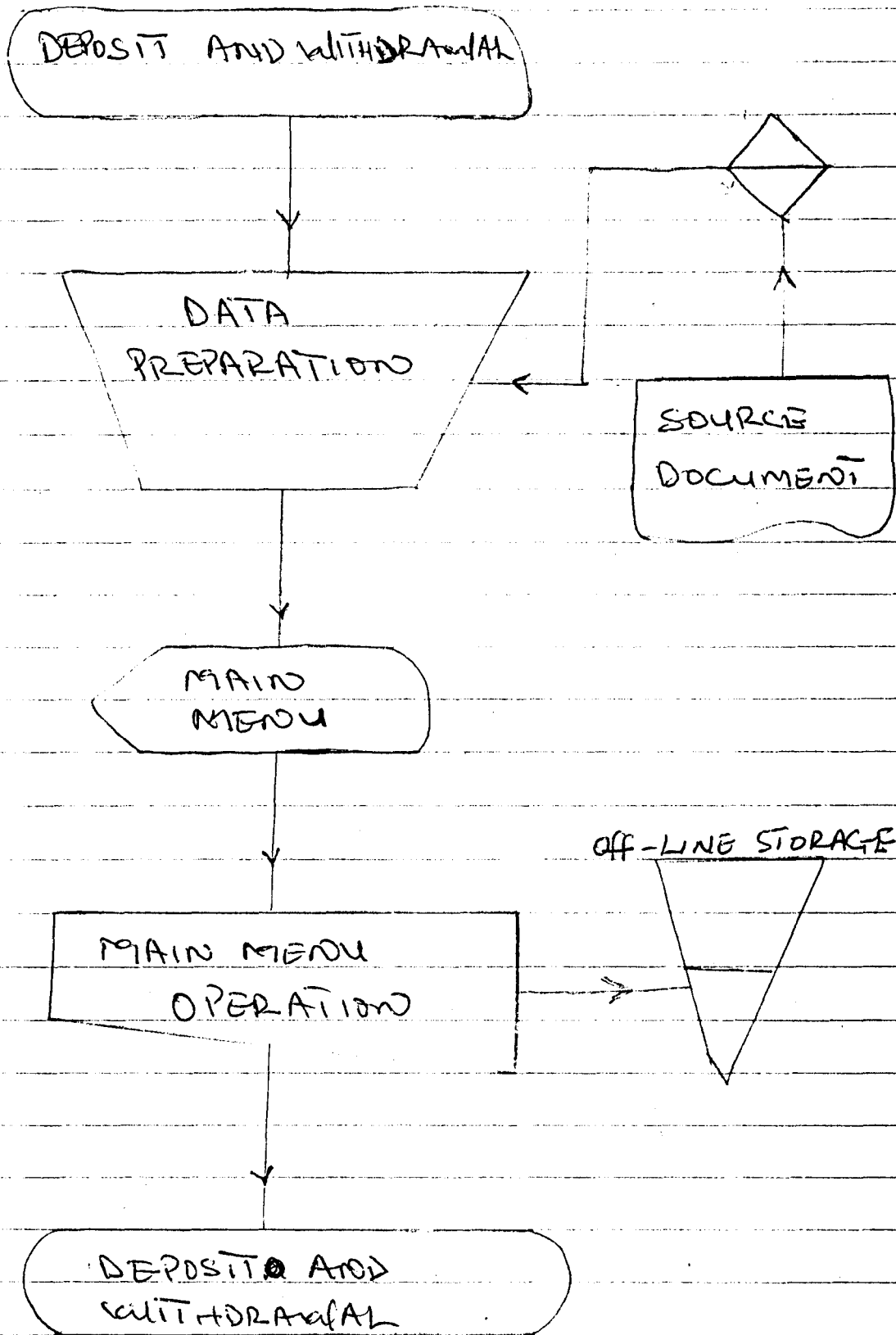
INPUT DESIGN:-

Consideration of the input will be greatly influenced by the need of output for instance, the necessity for quick response from the system would determine the need for an on-line, interactive type of input. One major concern at this stage is the data collection methods and validation. Since the major data for the system come in the form of "ACCOUNT OPENING FORM" and "SAVING DEPOSIT VOUCHER" it is hoped that the user of the system would pick out the input data easily.

a. ACCOUNT OPENING FORM

This is used for opening a new account as specified in the system design specification. From here, the initial data of the new customer are recorded and entered into the system. These include the account numbers: names of customers, date of opening account, initial amount and the address of customer as shown in table 4.1. Before these are entered permanently into the system, verifications are made so that correct information is entered. This is achieved by the series of data entry correction subroutine available.

SYSTEM FLOWCHART



1

OPEN NEW ACCOUNT



CUSTOMERS
PARTICULAR



CUSTOMER
MASTER
FILE

VALIDATE CUSTOMER
ACCOUNT



OPEN NEW ACCOUNT

SAVINGS AND CURRENT
ACCOUNT DEPOSIT

CUSTOMERS
DEPOSIT

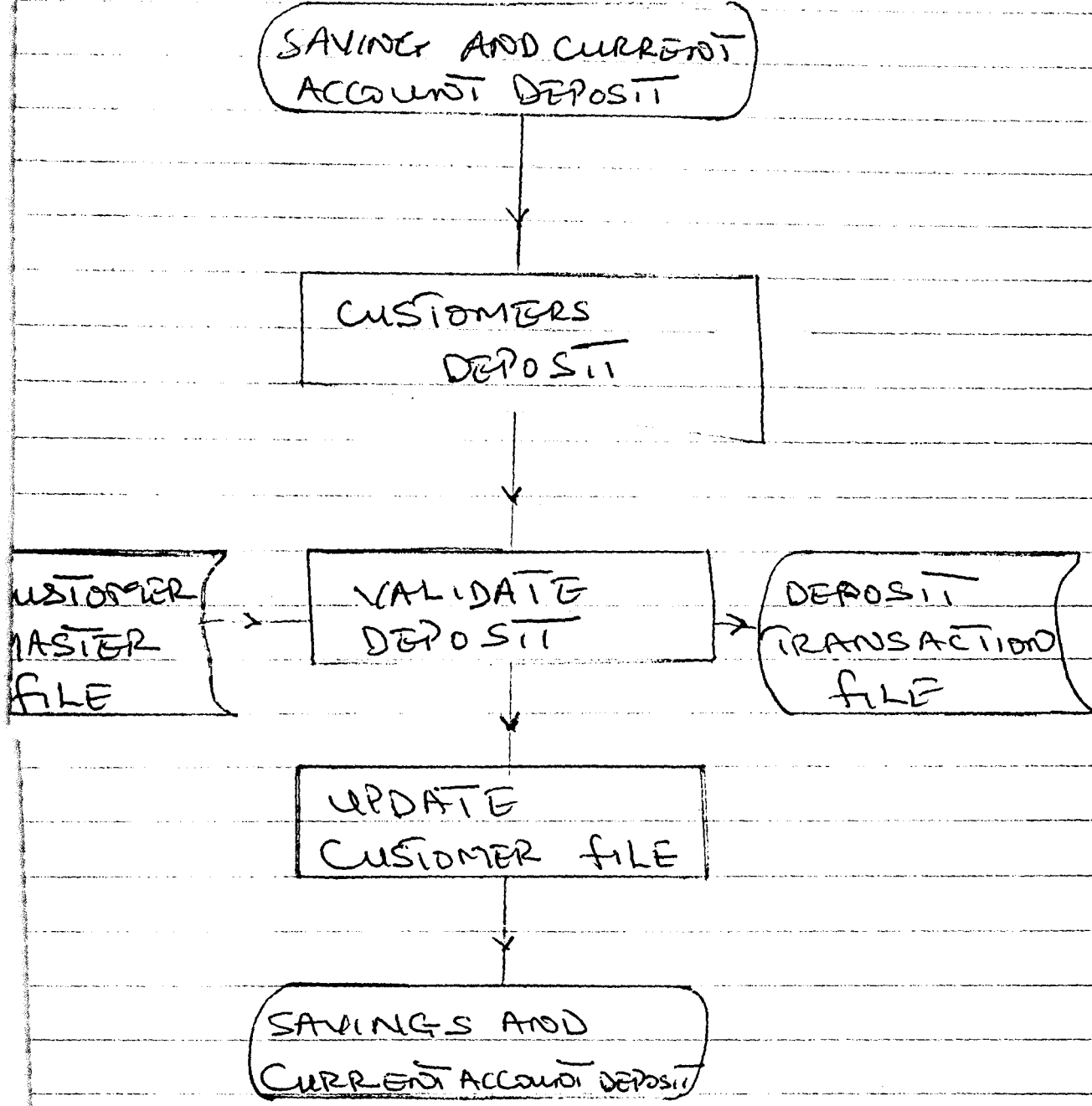
CUSTOMER
MASTER
FILE

VALIDATE
DEPOSIT

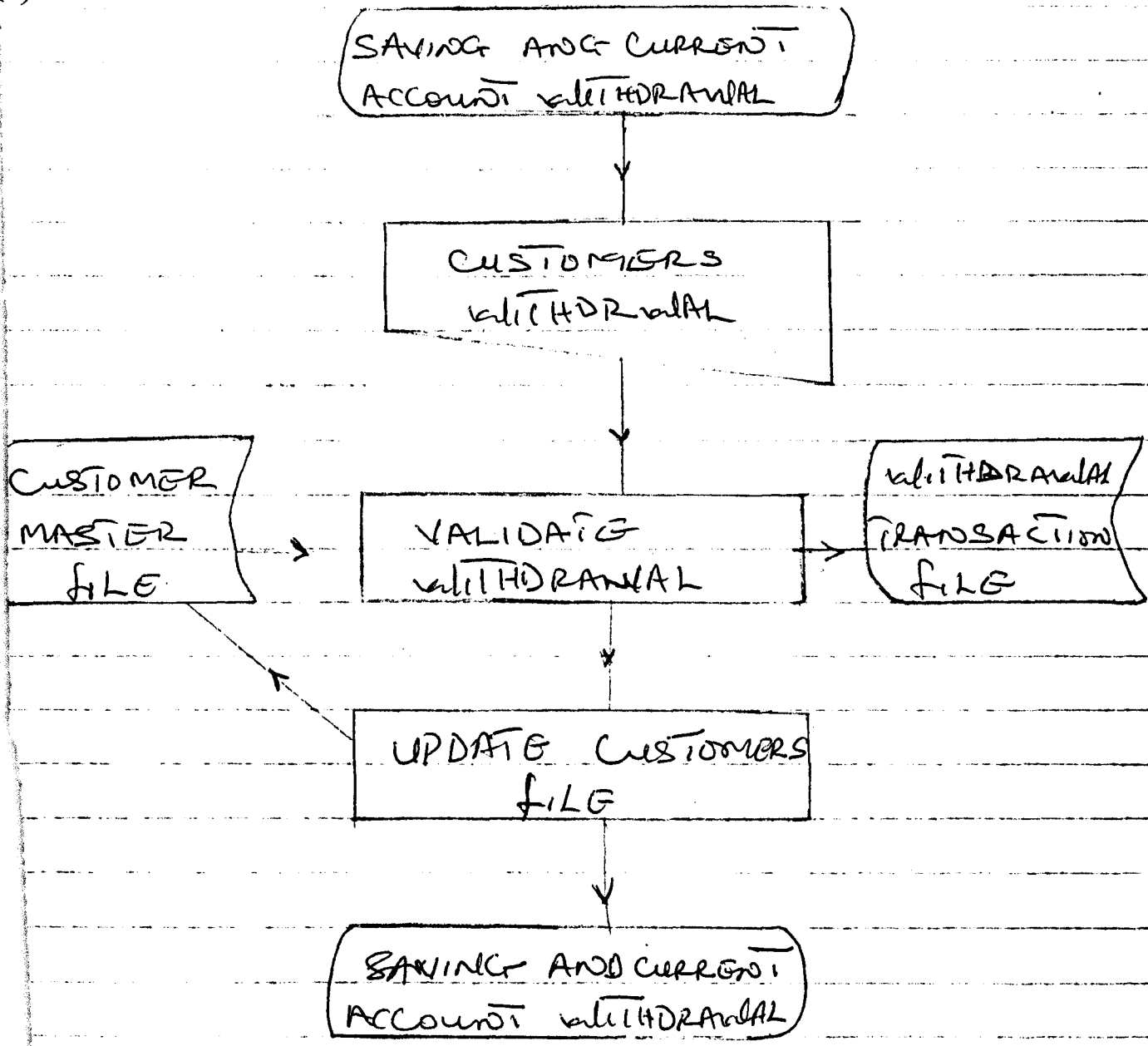
DEPOSIT
TRANSACTION
FILE

UPDATE
CUSTOMER FILE

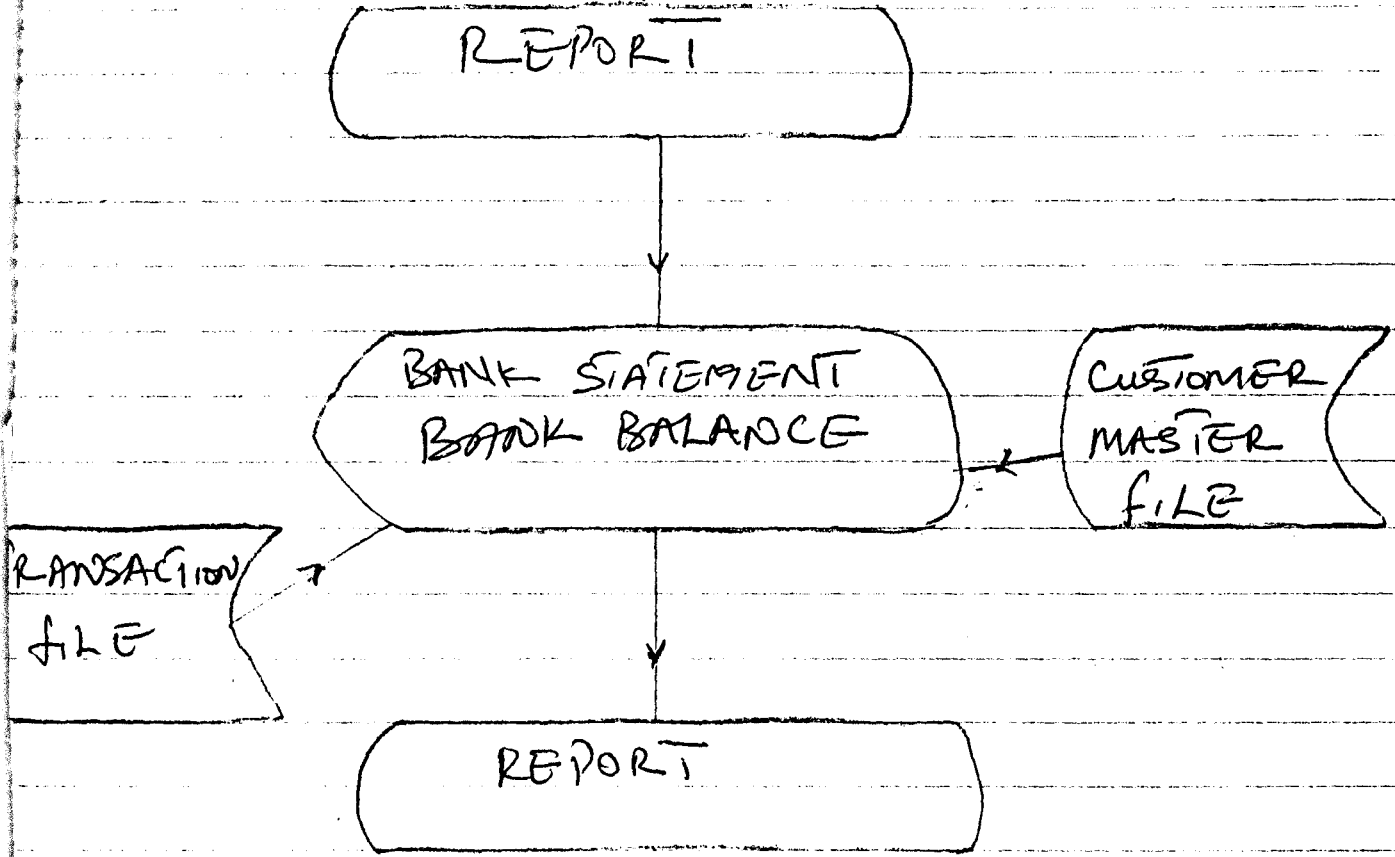
SAVINGS AND
CURRENT ACCOUNT DEPOSIT



4)



✓



ACCOUNT	CUSTOMER	DATE	AMOUNT	ADDRESS
NUM	LENGTH	LENGTH	LENGTH	LENGTH
LENGTH	40 CHAR	8 CHAR	10 DIGITS	40 CHAR
8 CHAR.				

Table 4.0

b. **SAVING DEPOSIT VOUCHER:-** The input data obtained from this form are account numbers, customers names, amount to deposit and present date.

c. The Format is as shown

	CUSTOMER	DATE	AMOUNT
ACCOUNT	LENGTH	LENGTH	LENGTH
NUM	40 CHAR	8 CHAR	10 DIGITS
LENGTH			
8 CHAR			

Table 4.1

For each of the fields specified for the two data input modes above, if the length is longer than necessary messages are displayed to the user so as to correct the error such that the data entered into the system conform with the design.

OUTPUT DESIGN

It is necessary to consider what is required from the system before deciding how to get about producing it within certain clients. It is necessary to develop the best and most useful output possible without worrying about how we produce it.

The major consideration in the design of the output are:-

- i. Recipient of the output
- ii. Media i.e. whether the output is on the screen or files

- iii. Contents; information to be conveyed to the user.
- iv. Layout-way in which data and information are spread out on an input document or screen.

The above factors have been blended together to determine the categories of output from this system. In what follows, we present the component fields and formats of each of the desired output from the system.

a. **WITHDRAWALS:-** The output will be on the screen and contain such fields as name of customer, address, date, old balance, amount withdrawn and new balance displayed using the format below:-

CUSTOMER	ADDRESS	DATE	AMOUNT	OLD	NEW
NAME	LENGTH	LENGTH	WITHDRAW	BALANCE	BALANCE
LENGTH	40 CHAR		N	€	€
40 CHAR		8 CHAR	LENGTH	LENGTH	LENGTH
			10 DIGITS	10	10
				DIGITS	DIGITS

Table 4.2

The bank makes use of standard withdrawal voucher/cheque to effect withdrawal. This can be presented as shown overleaf.

b. **BANK STATEMENT:-** The output of the "bank statement option is on the line printer or the screen. The output contains such fields as deposits, withdrawals, customers name, address, balance, last date of interaction with the system as well as the present date. The format of the field is shown below:-

CUSTOMER	ADDRESS	DATE	WITHDRAW	BAL.	NEW	LAST	PRESS
ER	SS	LENGTH	LENGTH	CE	BAL	DATE	NT
NAME	LENGTH	H 10	T	LENGTH	CE	LENGT	DATE
LENGTH	H	DIGITS	10	H	LENGTH		H
LENGTH							
40CHAR	40		DIGITS	10	H	8	H
	CHAR			DIGITS	10	CHAR	8
					DIGITS		CHAR

TABLE 4.3

FILE DEFINITION

A file is a collection of related records. The volume of any file is the size of that file. This is determined by calculating the number of characters in a record and multiplying it by then number of records in the file. For this software designed, two files have been used. These are the data base file accessed randomly and the bank statement file for each customer.

The file is declared to have a dimension of one thousand customers. The account numbers is used to access each record as the account number is unique for each customer i.e. no two customer have the same account number. The output file - bank statement file contains such fields as customer names, address, deposits withdrawals, balance - all from the last data of the last bank statement.

PROCESSING SPECIFICATION:-

The input and output have been presented in previous section. The file to achieve these have also been presented. There is however a need to link the outputs, files and inputs together. This is realised using flowcharts of the five major modules described in section 4.3 all these are shown in overleaf.

4.3 **IMPLEMENTATION AND TESTING**

Implementation concerns the most efficient way by which the system can be put effective usage. Having designed the software as analysed above, we now schedule ourselves to transforming the various designs to Computer level using of its languages as our medium.

Because of the current trend and for its simplicity, we have chosen the DATABASE APPLICATION LANGUAGE as our medium mode by which our design above can be implemented. DATABASE for short, is a language generator with case of screen design and powerful graphic structure for programming. Besides, the language supports and make for exclusive distinction in each broad functions which it can handle. In other words, the language is divided into six broad functions. Each function refined towards sub-divisions which are further redefined, thus, making the language modular in nature. The broad functions are notably called panels and are:-

- i. Data Panel
- ii. Queries Panel
- iii. Forms Panel
- iv. Label Panel
- v. Reports Panel
- vi. Application Panel

Modularity in programming refers to breaking down of the main task into sub tasks. Each sub-tasks, regarded as an independent logical entity, having it's entity and exit point, being coded as units such that the integration of all the units achieve the overall objective for which the main task is instituted. Because of this intrinsic appeal of modular structured programming we devise to implement the design using the modular approach.

The software consists of the executive module - THE MAIN MENU five sub-modules, each of which is divided by the executive which acts as a supervisor module.

The five modules are

- a. OPEN A NEW ACCOUNT module
- b. DEPOSIT module
- c. WITHDRAWAL module
- d. BANK STATEMENT module
- e. EXIT module

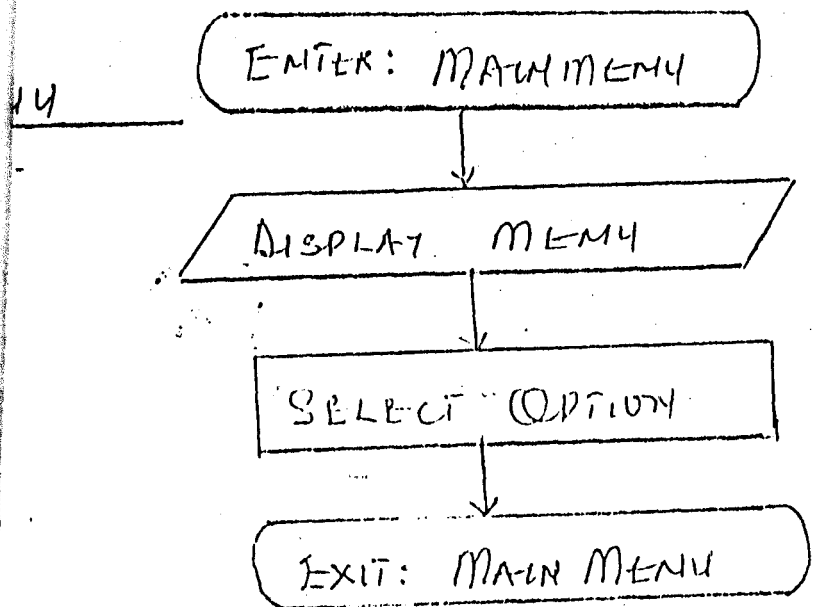
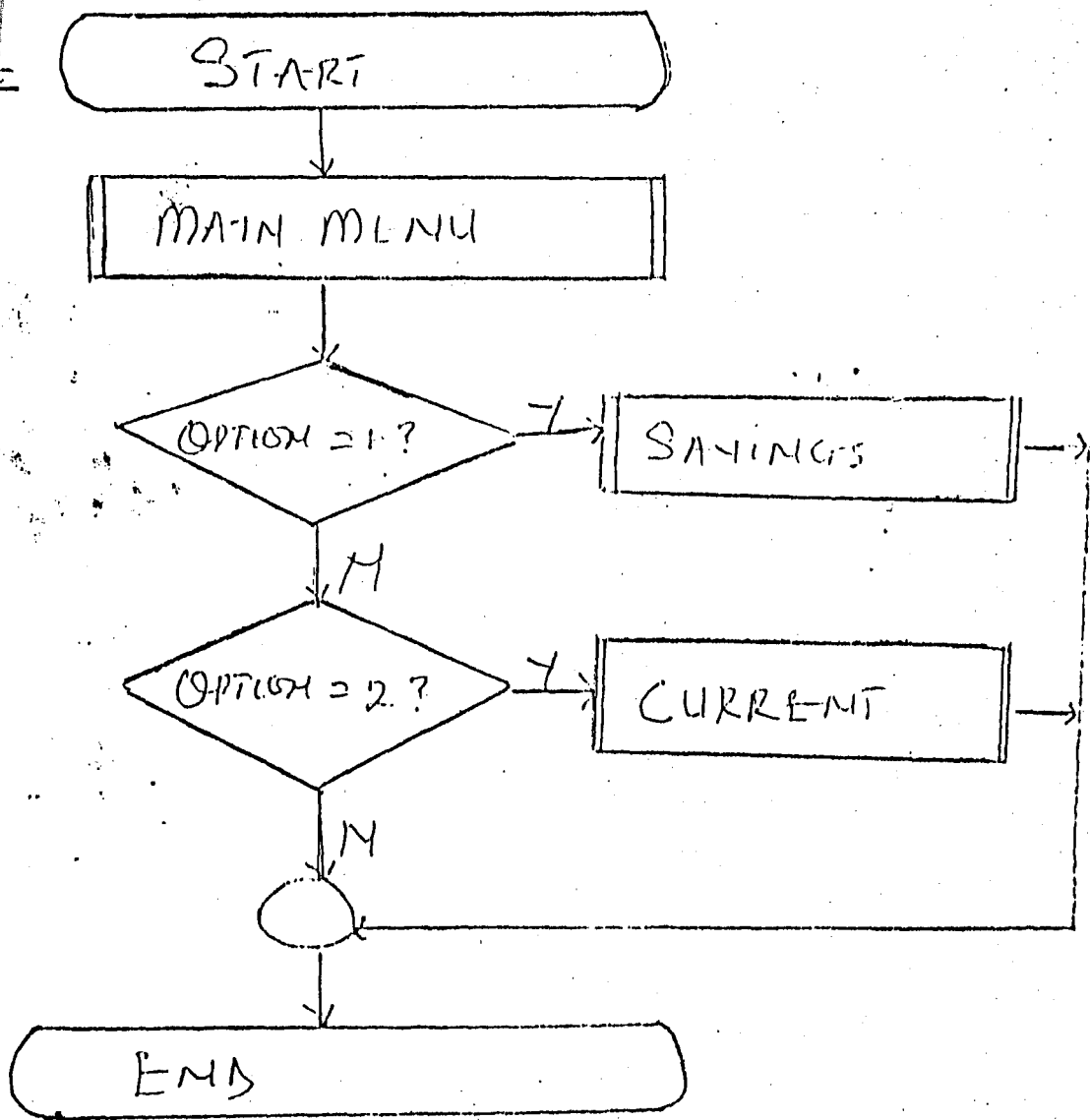
Each of the above listed module performs a specific function at the end of which control is transferred back to the supervisor module.

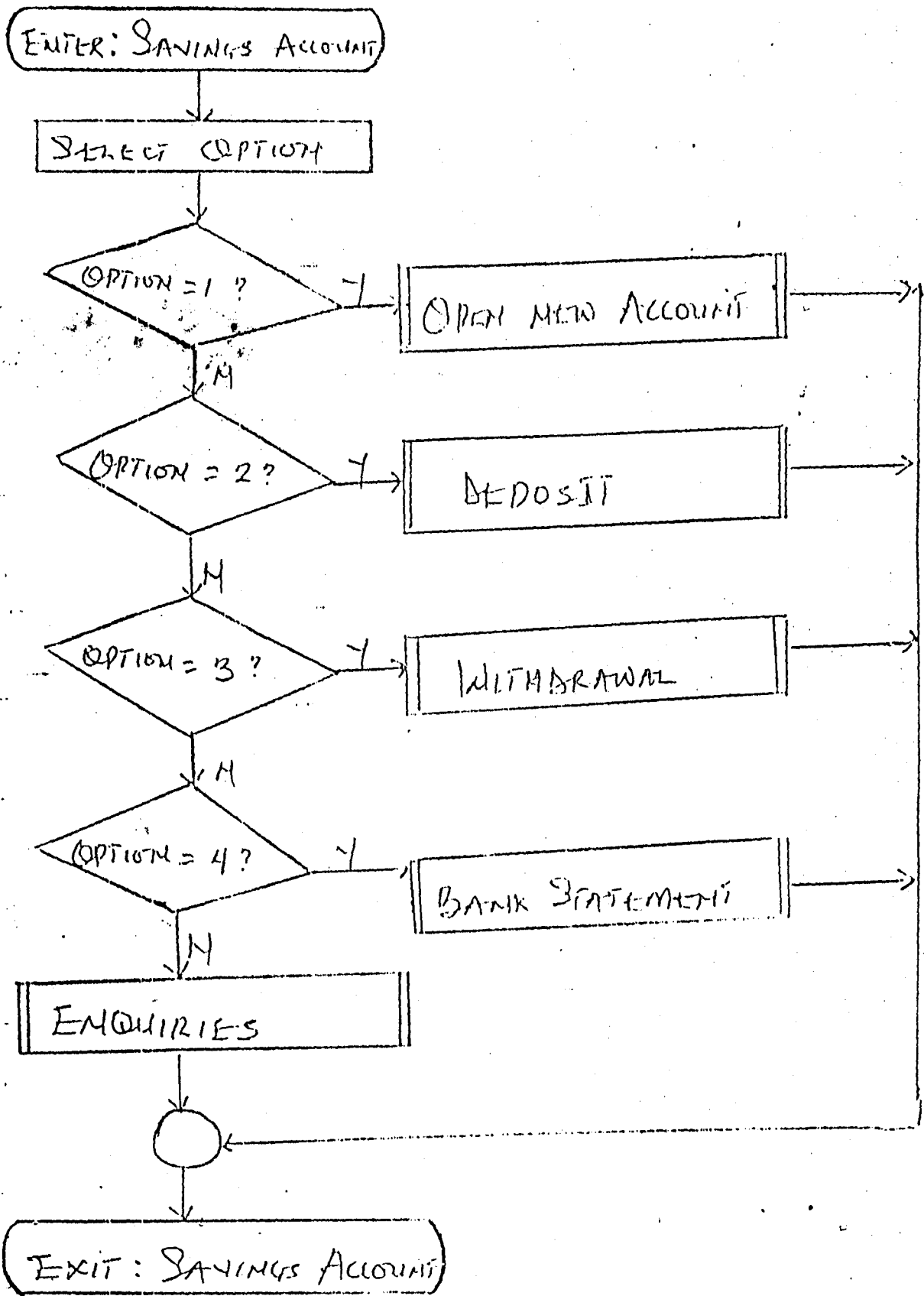
TESTING:- There are various method of software testing some of which are parallel testing, phase approach testing etc.

Using the phase approach testing, the module are tested separately for workability and thereafter integrated. After the integration, the whole unit is tested as a single units. Test data are chosen to test all the branches and conditions supported by the system.

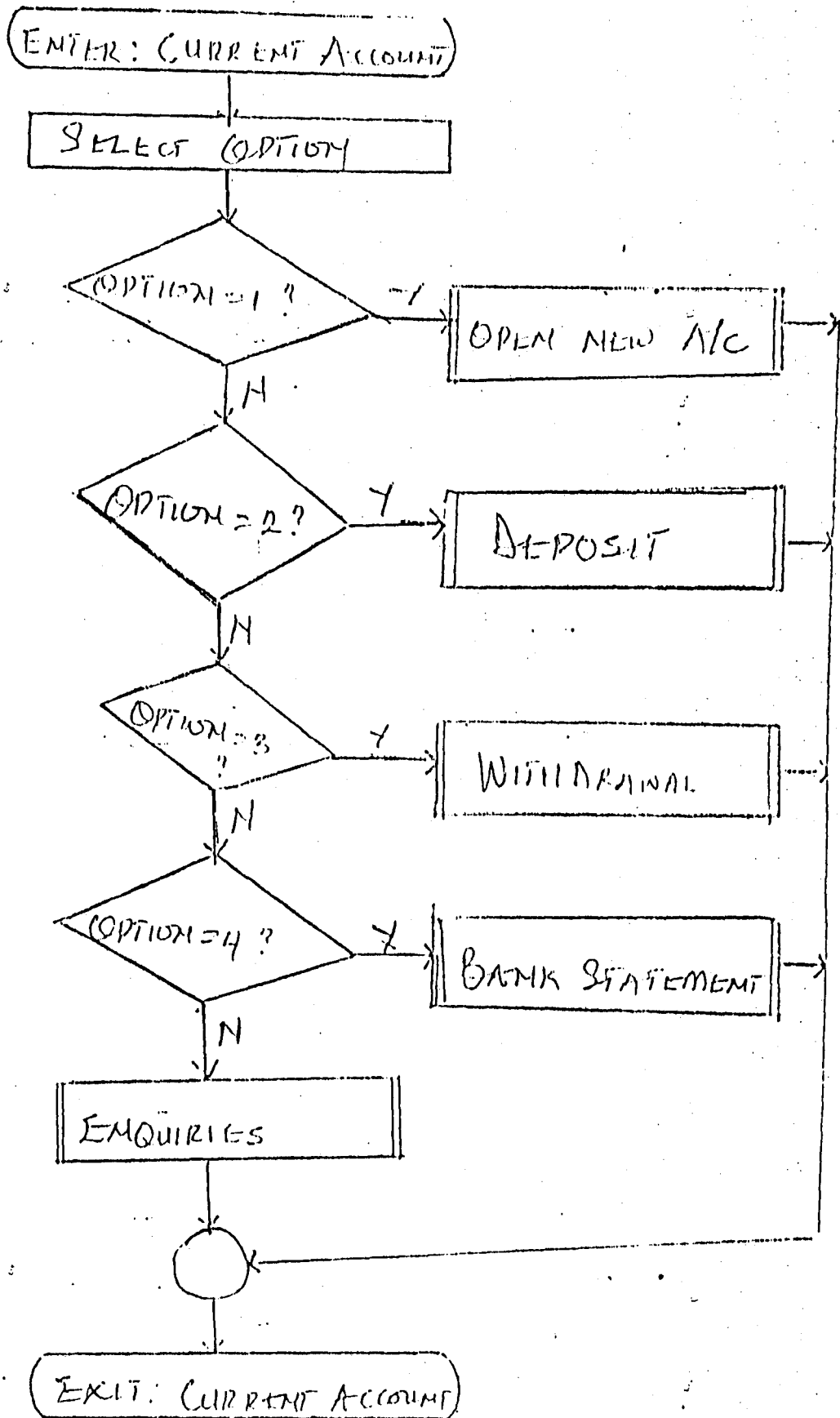
Even though testing cannot exhaustively reveal the efficiency of the system, not withstanding, some apparent deficiencies revealed are corrected to enhance further resuements. The tested program together with the output generated are displayed in appendix two of this project study.

Program flowcharts

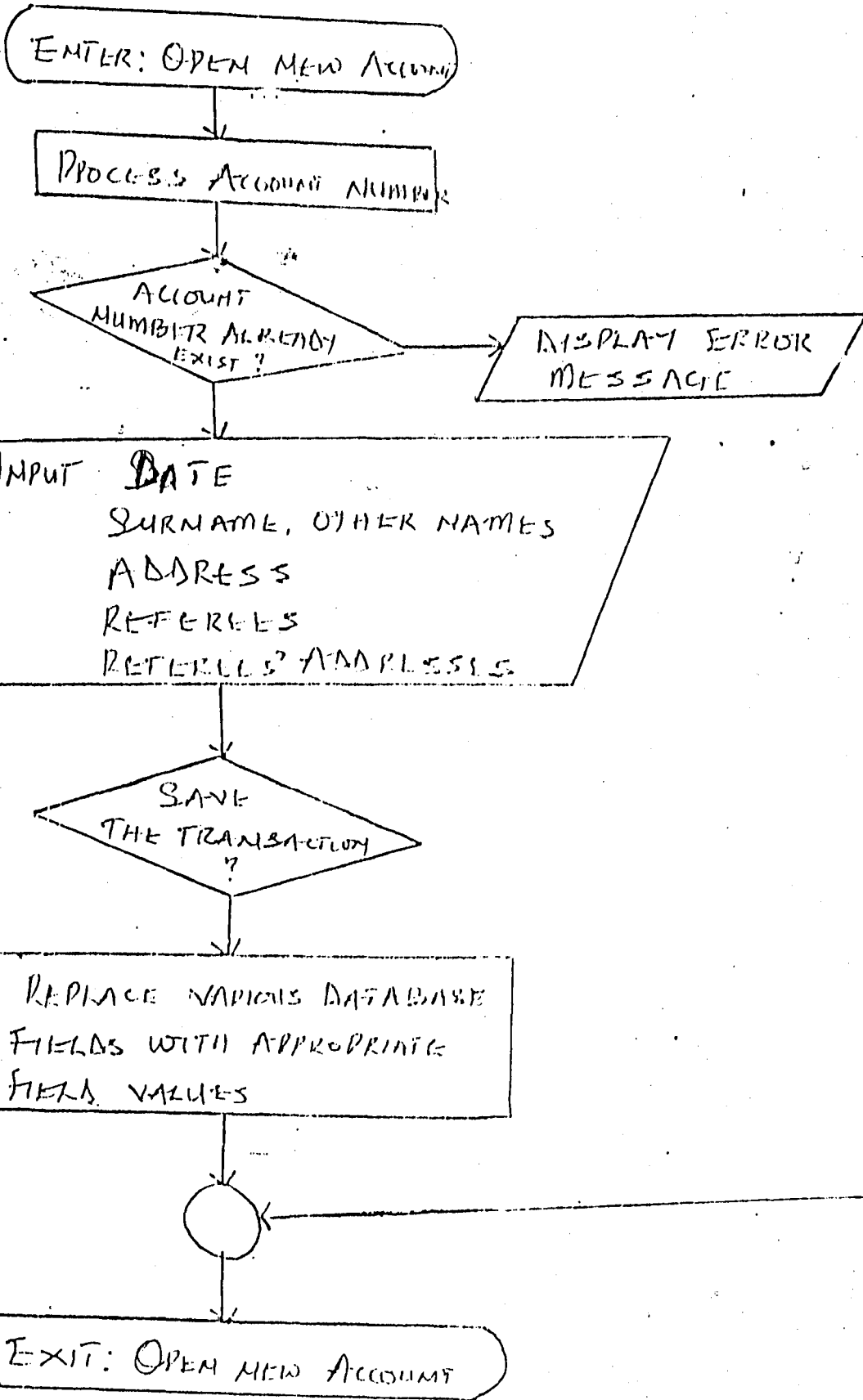




SAVINGS ACCOUNT STEPS



CURRENT ACCOUNT DEPT



4.

ENTER: DEPOSIT

INPUT ACCOUNT NUMBER

ACCOUNT NUMBER FOUND ?

DISPLAY ERROR MESSAGE

INPUT TRANSACTION DATE
SURNAME
FIRST NAME
OTHER NAME
ADDRESS

INPUT AMOUNT

BALANCE = BALANCE + AMOUNT

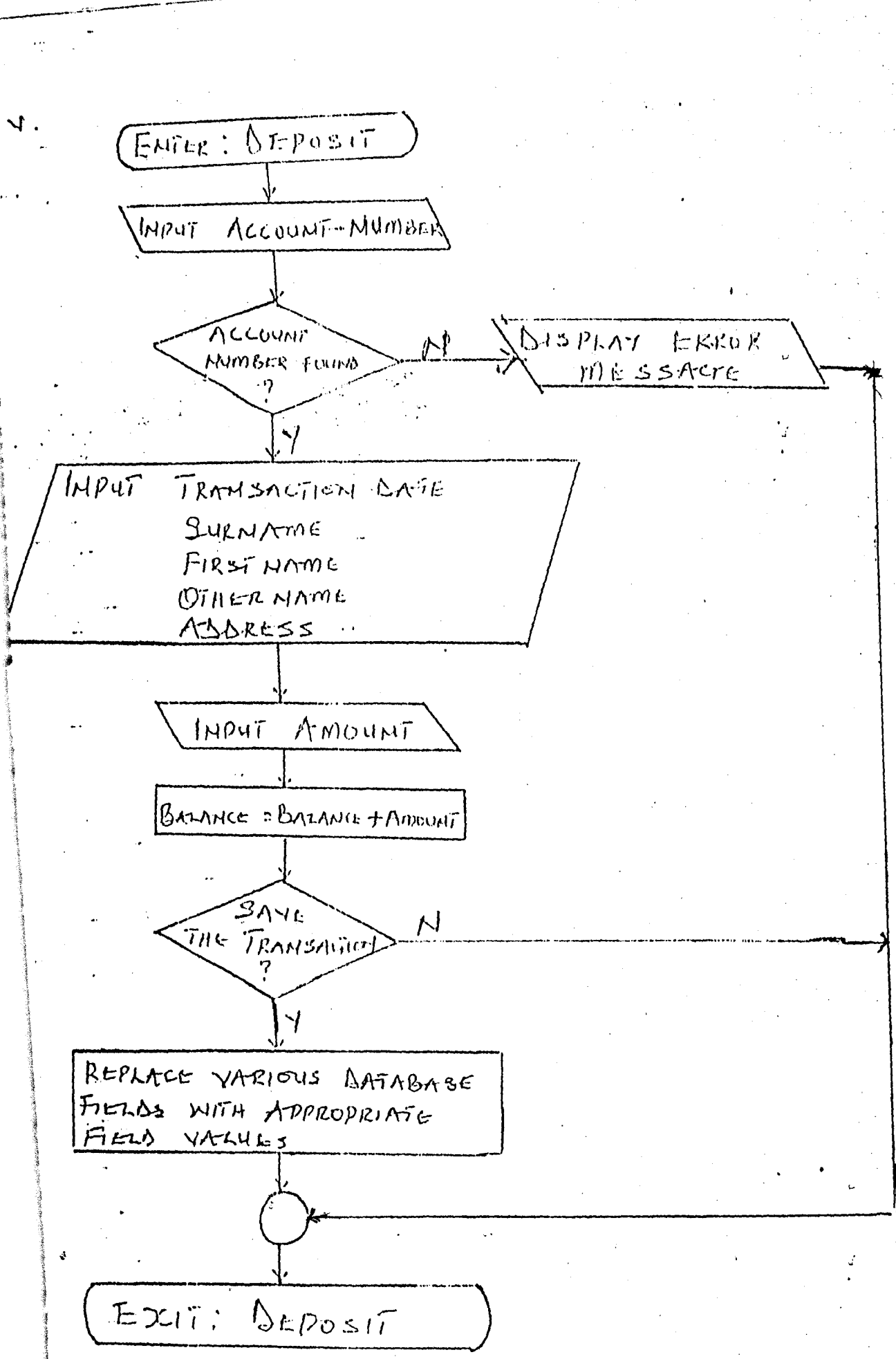
SAVE THE TRANSACTION ?

REPLACE VARIOUS DATABASE FIELDS WITH APPROPRIATE FIELD VALUES

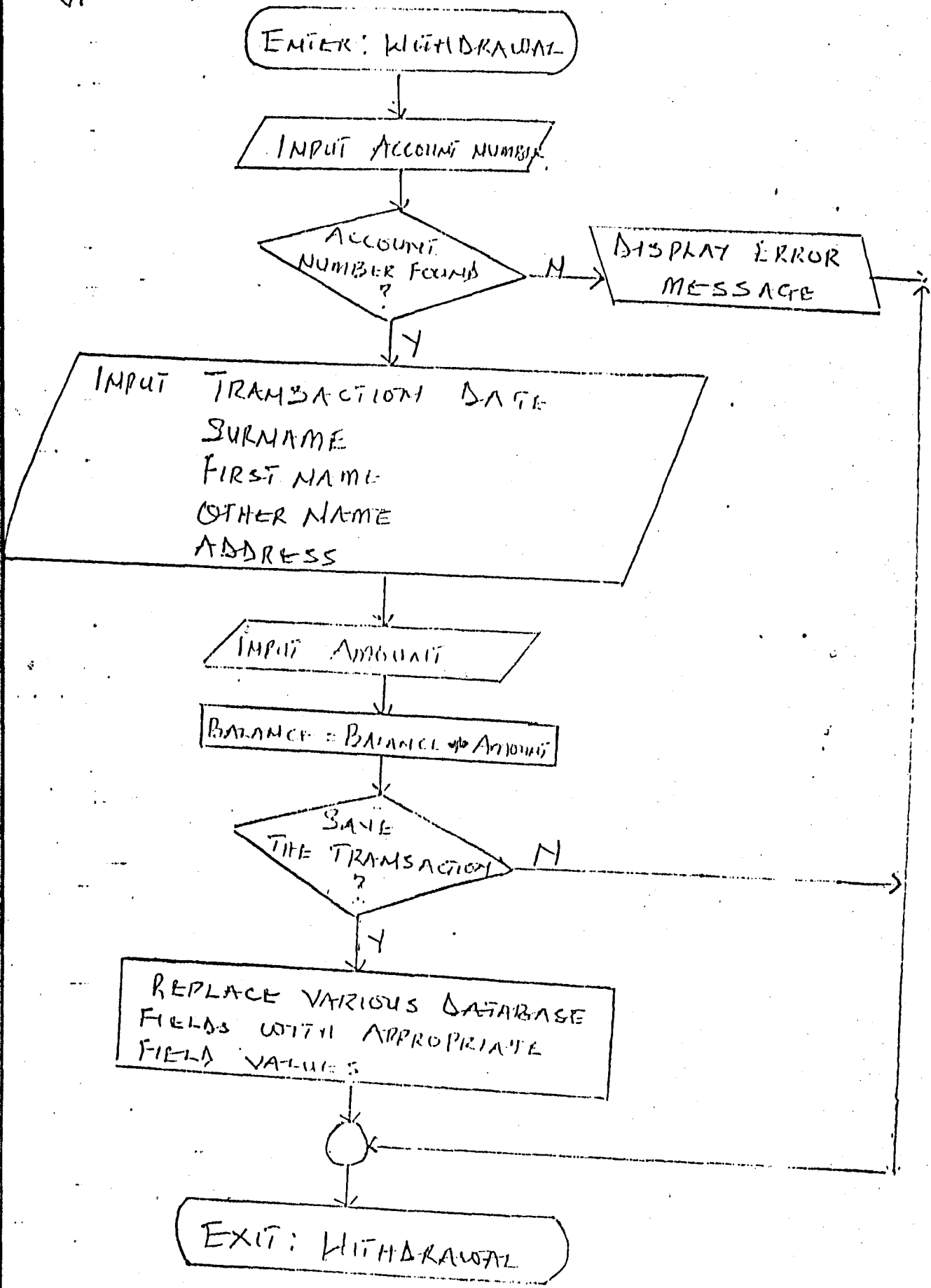


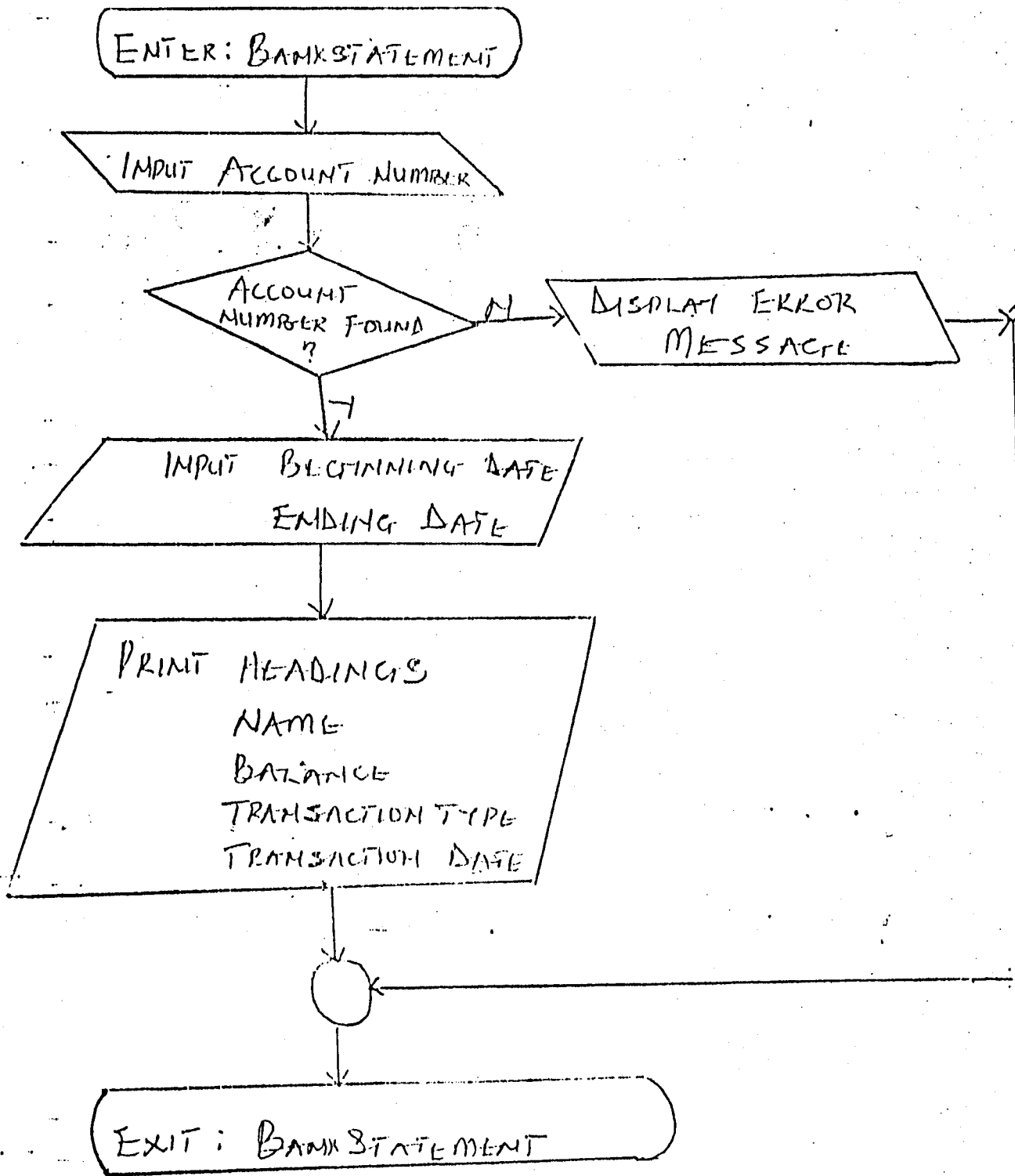
EXIT: DEPOSIT

ACCOUNT TYPE



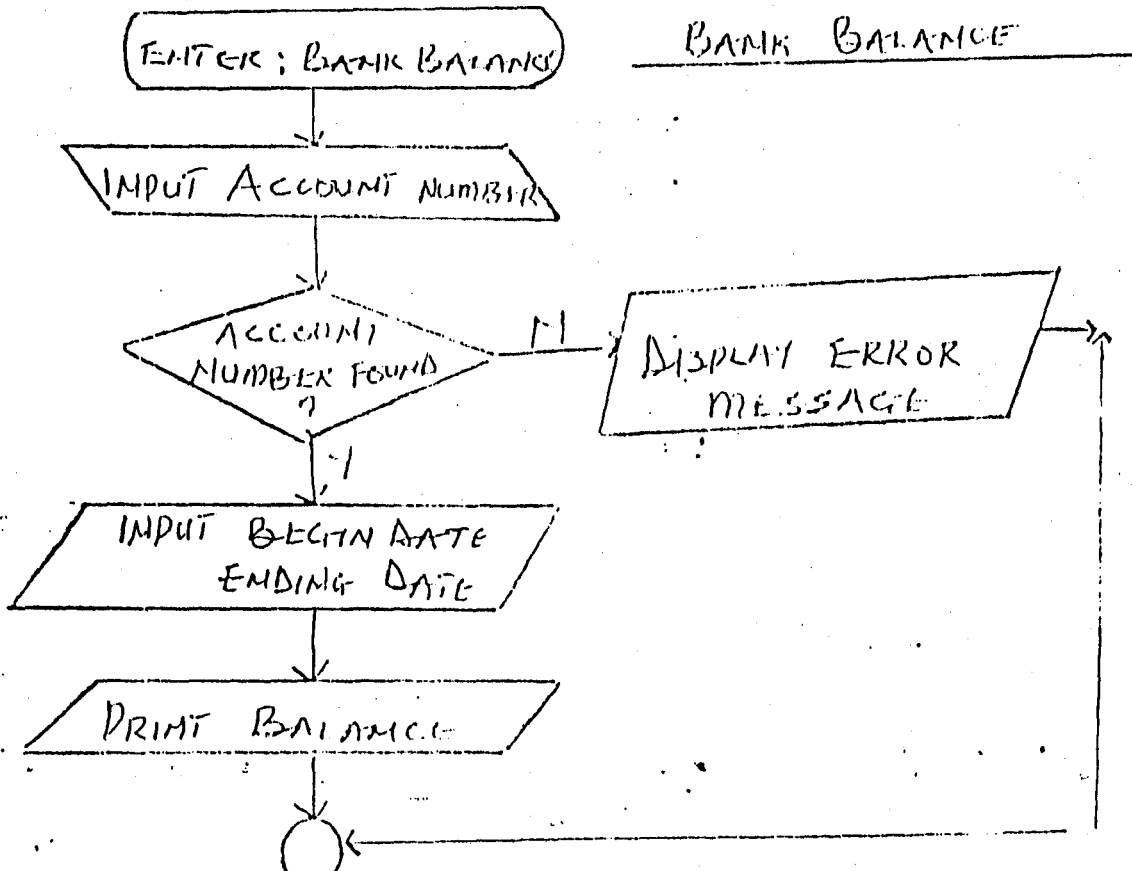
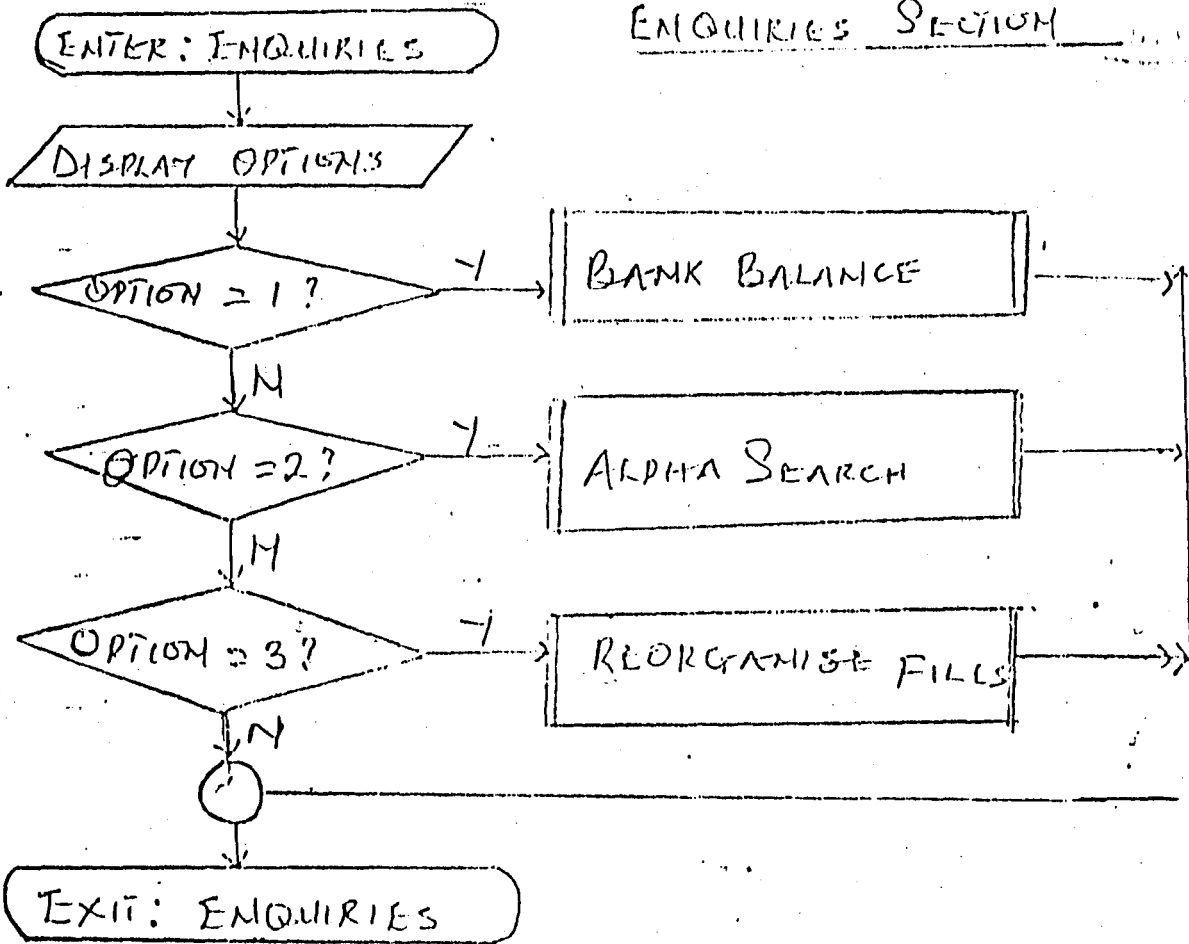
vi



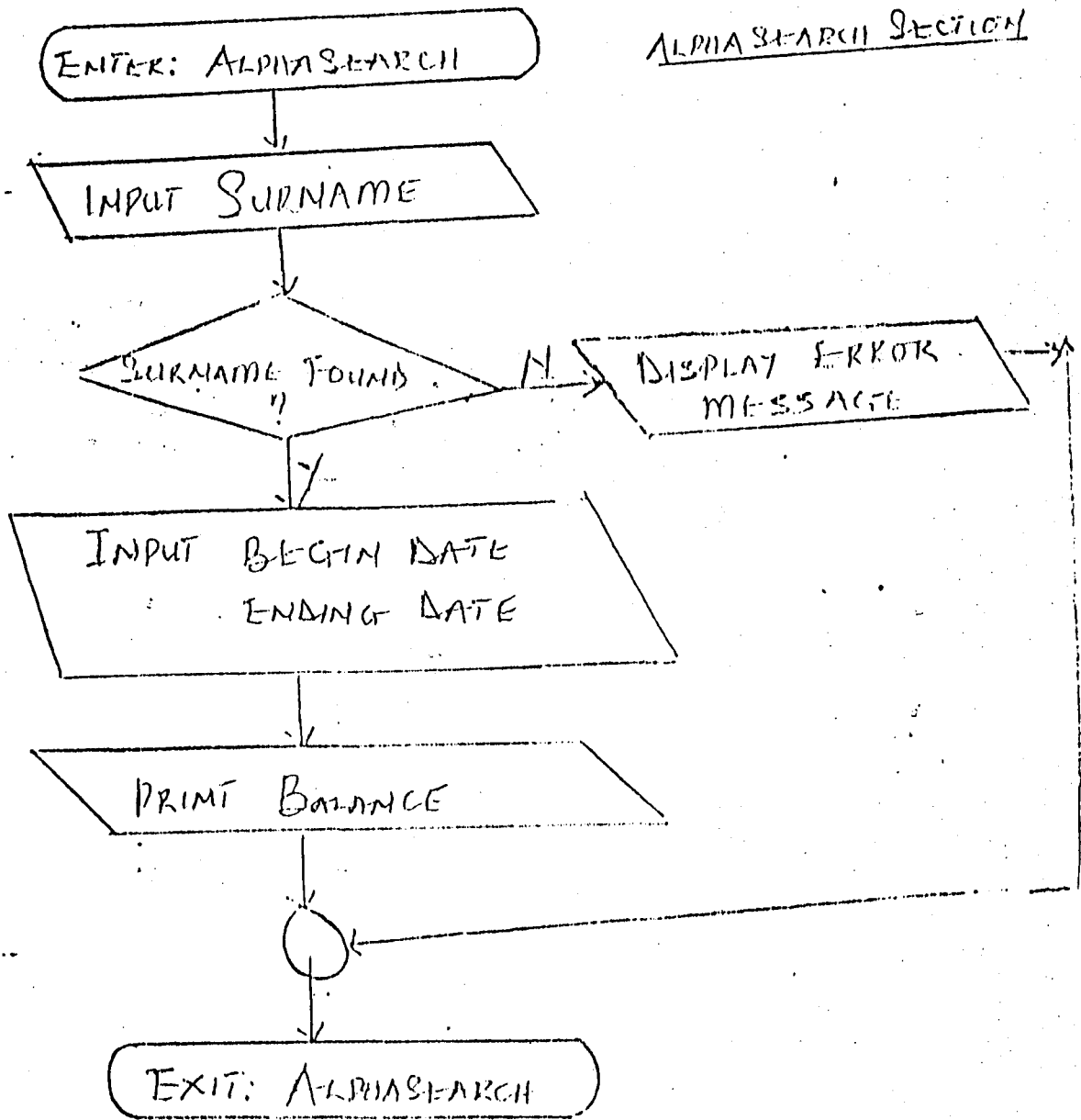


BANK STATEMENT GENERATION

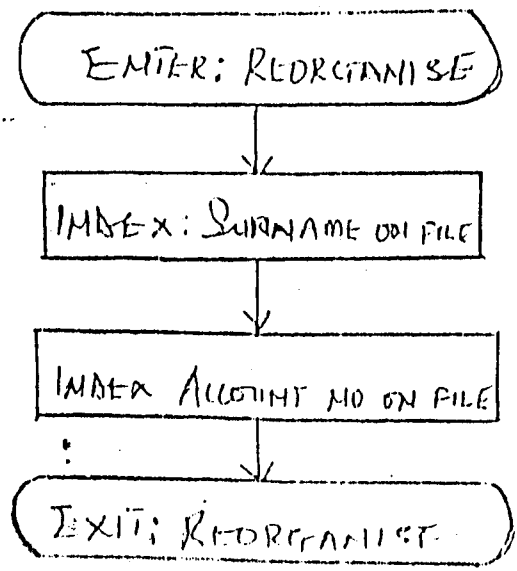
ENQUIRIES SECTION



ALPHA SEARCH SECTION



FILE REORGANISATION SECTION



CHAPTER FIVE

5.0 DOCUMENTATION, RECOMMENDATION AND CONCLUSION

Program documentation refers to putting in black and white guidelines to enable users and novice make effective use of the system. It usually involves all parameters and functions analysed and explained in the course of the software development. In other words, the body of documentation that accompanies a software is a thorough statement of how to use the software, why it was written, which techniques were used in its construction. It should be able to clarify obscurities in the software.

Modification or adjustment of the software after delivery can best be effected by contacting the documentation.

5.1 DOCUMENTATION

Documentation of this software shall be considered under the following three headings:-

- i. Intra-program Documentation
- ii. System Documentation
- iii. Use Documentation

We shall now discuss each of them in turn.

5.1.1 INTRA-PROGRAM DOCUMENTATION:- This refers to the body of explanatory notes in the form of comments in the main body of the software. These comments have been used in such a way that the functions of each module is made clear and readable. Specific and meaningful variable and procedure names have been chosen to reflect the meaning to which they clearly refer.

5.1.2 SYSTEM DOCUMENTATION:- Here all aspect of the software specification, system design objectives, software design, implementation and testing which from the base for chapter four have been described and analysed exhaustively.

5.1.3 USER DOCUMENTATION:- The aim of the section is to enable user run the program with little or no assistance. The software is installed both on the hard disk and in the floppy diskette.

While in drive C:> the user is to type

CD DBASE

Press enter key, then type

DBASE

while enter key is pressed, the DBASE language is loaded and the user is taken to the CONTROL TOWER of the DBASE ENVIRONMENT. Pressing the ESC and subsequent Y key take the user to the DOT (.) prompt. At the Dot Prompt, type

SET DEFA TO A

i. Press enter key thereafter

The software is structure into eleven independent program modules. Each unit acting in its independent fullest capacity. The module represents a simple logical program with embedded procedure and routines which themselves are PUBLIC to the entire software. The different logical independent units are:-

a. **EXECUTIVE MODULE:-** This module directs the sequence of the whole software operation. That is, it controls and activates the execution of the software as a whole specifically, it initiates the SET UP, SAVING ACCOUNT, CURRENT ACCOUNT and EXIT programmes, depending the option specified in user. At the DOT PROMPT, the user is expected to type.

DO MODI COMM MBANK.PRG

This serve to load the software into the computer memory, assuming it is already resident in Hard Disk memory.

DO NBANK.PRG

After successfully running without any error, the window shows:-

DIAMOND BANK LIMITED

MARINA BRANCH LAGOS

MAIN MENU

1. SAVINGS ACCOUNT
2. CURRENT ACCOUNT
3. EXIT

The user is then requested to select any option as desired upon selection control is transferred to the desired program unit of the software Viz.

a. SAVING ACCOUNT UNIT:- The savings account unit is a complex program unit comprising such program modules as:-

- i. OPEN NEW ACCOUNT
- ii. DEPOSIT
- iii. WITHDRAWAL
- iv. BANK STATEMENT
- v. ENQUIRIES

The user is again requested to close his desire option. IT must be noted that the program modules listed above are independent logical program each containing its respective entry and exit points.

As such they are global both to the SAVINGS and CURRENT ACCOUNTS, in other words, both the current and savings can access these set of programs.

Let us pause to describe what each of the above mentioned logical units stands to define.

i. OPEN NEW ACCOUNT:- The program name is MOPENAC.PRG. This segment concerns only new customers or client seeking to open a new account different from the existing one, if any. These customers would be required to specify such data as Name, with Surname first and other names, address, two referees and

their addresses. The customer is then asked whether the transaction should be saved or not. His response thereto decides the operation of the software.

ii. DEPOSIT:- The name is MDEPOSIT ,PRG. The main function of this segment is for cash lodgement here vital information is with reference to the account number which should be typed correctly. The account number is the key field used to access individual data record. As such, if it can not be sought from the existing database file, the customer is required to respecify or quit the system. Other Information requested would be the names and the amount to deposit.

iii. WITHDRAWAL:- The program name is MDRAW. PRG. This is a replica of the Deposit program segment with a minor change. Where as the amount deposited is added to the existing balance. The amount withdrawn is subtracted from the balance in database. All other functions and requests remain the same.

iv. BANK STATEMENT:- The program name is MBKSTMT. Then bank statement program segment is primarily an output program routine. It is an output medium directed towards a text file called MBKSTMT. TXT.

It relays such information as name, address, account number, the current balance and a list of transaction type (D for Deposit and W for Withdrawal) with appropriate paging mechanism where the list of balances run on more then one page.

v. ENQUIRIES:- The program name is MBKENQ. PRG. Suppose a customer wants to obtain its bank balance without going through bank statement, he only needs to go to the enquiries section where his requirement would be adequately met and treated. Again, suppose there is a customer coming from afar with (Large) deposit but unfortunately could not specify its account number such hypothetical case is treated in this section only with the specification of surname which is sought in the database file.

There is also another facility in the enquiries section which seeks to recognize the existing database file.

THE CURRENT ACCOUNT UNIT:- The current account program module is much similar to the savings account unit. It also has access to the existing program segments described above passing C as parameter, where as the saving account passes S as its parameter of operation.

There is also a program segment named MBANKOPD.PRG which displays the aforementioned options and allows the user to pass the account type parameter "S" or "C" depending whether if the user is operating on savings or current accounts respectively.

Summarily, the software is largely menu driven and highly interactive with users. At each successive operation or activities, the users are requested to specify their "POTENTIAL OPERATION" which subsequently guides the operation of the software.

The Documentation manual has been broken down into simplest constituents to enable even a novice in Computer world, operate the software without any hitch.

Below is a list of field names adopted in the database and a definition of other functions.

(a) DATABASE NAME:- NBANKMST.DBF - DATABASE master file.

FIELD	FIELD NAME	FIELD TYPE	FIELD W/DTH	DEC	INDEX	DESCRIPTION
1.	SURNAME	CHAR	10	--	Y	CUST. SURNAME
2.	F_NAME	CHAR	15	--	N	CUST. FIRST NAME
3.	O_NAME	CHAR	10	--	N	CUST. OTHER NAME
4.	ANCO	CHAR	10	--	Y	ACCOUNT NUMBER
5.	ADDRESS	CHAR	30	--	N	CUST. ADDRESS
6.	REFERE1	CHAR	30	--	N	REFEREE'S NAME
7.	REF1-ADD.	CHAR	30	--	N	REFEREE'S ADDRESS
8.	REFERE2	CHAR	30	--	N	2ND REFEREE'S NAME
9.	REF2-ADD	CHAR	30	--	N	2ND REFEREE'S ADD
10.	AMOUNT	NUMERIC	10	2	N	AMOUNT
11.	BALANCE	NUMERIC	10	2	N	TOTAL BALANCE
12.	ACTYPE	CHAR	1	--	N	ACCT TYPES OR C
13.	DATE-OPEN	DATE	10	--	N	SYSTEM DATE

MBKTRANS.DBF DATABASE TRANSACTION FILE

FIELD	FIELD NAME	FIELD TYPE	FIELD LW/DTH	DEC	INDEX	DESCRIPTION
1.	SURNAME	CHAR	10	--	Y	CUST. SURNAME
2.	F_NAME	CHAR	15	--	--	CUST. FIRST NAME
3.	O_NAME	CHAR	10	--	--	CUST. OTHER NAME
4.	ANCO	CHAR	10	--	Y	CUSTOMER ACCT. NUMBER
5.	AMOUNT	NUMERIC	10	--	--	
6.	ACTYPE	CHAR	1	--	--	ACCT TYPES S OR C
7.	TRANTYPE	CHAR	1	--	--	TRAN TYPE D OR W
8.	DATE-TRAN	DATE	10	--	--	DATE OF TRANS
9.	BALANCE	NUMERIC	10	--	--	TOTAL BALANCE

5.2 **RECOMMENDATION:-**

Generally, it is unusual to satisfy all the cash lodgements and withdrawals channel in a typical conventional bank, taking into cognisance the limited nature of this dissertation. Areas like FIXED DEPOSIT and LOAN ACCOUNT for this reason have been left out. As such, it would be a welcome assignment if these area left can be given out for study in other recent time.

More over, the language chosen as the medium for programming DBASE IV is known world wide. The language is flexible and very efficient. There are other equal programming language of the same effect. To this extent the program could be also, as an assignment, be Implemented on languages Like PASCAL and C + T which are of the same dynamism. The result and screen effect of the respective languages can then be analysed to determine the language with optimality.

5.3 **CONCLUSION**

Computer usage in banking industries is towards upward movements. Most complex software development, oriented towards banks services enhancement emerge always daily. As such the bottlenecks Involved in banking operations is fast become minimized if not completely eradicated. Account opening, lodgement withdrawals and other numerous banking services largely automated have ushered in a new dimension in banking efficiency and one of those banks is Diamond Bank Limited marina branch Lagos.

This dissertation, although narrowed towards lodgement and withdrawals, touches some vital application of Computer as regards banking. Even though its limited in scope, its effect can best be noticed when implemented. To this extent, we welcome open and constructive criticism such that the materials provided therein can be aligned towards upwards graduation.

Lastly, it should be noted that the detailed study is only relevant to the time at which the research is made. Upon the passage of time, it is possible that some of the stated ideas becomes outdated at the arrival of recent development in the Computing world. In Computer world technology is growing with time fast.

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```
***** program name : Mbank. prg
***** description : Banking system
SET TALK OFF
SET SAFE OFF
SET MENU OFF
SET STAT OFF
Public option
option =0
do msetup && set up the enviroment
do while .t.
do Mmamenu && display main menu
do case
  case option =1
    do Msaveac && saving account
  case option =2
    do mcurac && current account
  case option =3
    close all
    release all
    clear all
    quit
  endcase
enddo
RETURN
```

* program name : Msetup.prg
* description : set up routine
set status off
set echo off
set scoreboard off
set talk off
set confirm on
set exact on
set date British
set autosave on
return

```
* program name : Mmamenu.prg
* description : Main menu routine
SET COLO TO W+/B
CLEA
set color to W+/GR
@2,5 to 24,75 panel
@4,20 say " D I A M O N D   B A N K   L I M I T E D "
@5,20 SAY "                MARINA BRANCH, LAGOS                "
@6,20 SAY "*****"
SET COLO TO W+/RB
@8,34 SAY " MAIN MENU "
set color to W+/B
@10,30 say "1. SAVINGS ACCOUNT"
@12,30 say "2. CURRENT ACCOUNT"
@14,30 say "3. EXIT"
SET COLOR TO W+/G
@ 20,8 SAY " Written by:                "
@ 21,8 SAY " Miss Pogah A. Regina            "
@ 22,8 SAY " F.U.T. Computer Centre         "
@ 23,8 SAY " Minna                          "
SET COLO TO W+/BG
@17,30 say "ENTER OPTION (1-3)" get option pict "9" range 1,3
read
clea
return
```



```

*@program name : Mbankops.prg
* description :banking operations menu
parameter cActype
CLEA
define window bankop from 8,10 to 20,70 color b/w
if cActype = "s"
    cPrompt = " SAVINGS BANK ACCOUNT "
else
    if cActype = "c"
        cPrompt = " CURRENT BANK ACCOUNT "
    endif
endif
endif
@2,21 SAY "D I A M O N D   B A N K   L I M I T E D"
@3,21 SAY "                MARINA BRANCH, LAGOS                "
@4,21 SAY "*****"
@6,30 say cPrompt
activate window bankop
@2,20 say " 1. OPEN NEW ACCOUNT"
@3,20 say " 2. DEPOSIT"
@4,20 say " 3. WITHDRAWAL"
@5,20 say " 4. BANK STATEMENT"
@6,20 say " 5. ENQUIRIES"
@7,20 say " 6. EXIT"
@9,20 say " ENTER OPTION (1-6)" get option pict "9" range 1,6
read
deactivate window bankop
return

```

```
*program name : Msaveac.prg
*description : savings banking account
```

```
public option
DO MSETUP
Option = 0
do mbankops with "s" && Banking operation menu
Clear
do case
  case option = 1
    do mopenac with "s" && open savings account
  case option = 2
    do mdeposit with "s" && deposit savings account
  case option = 3
    do mdlaw with "s" && savings account withdrawal
  case option = 4
    do mbkstmt with "s" && savings statement of account
  case option = 5
    do mbkenq && enquiries
  case option = 6
    close all
    return
endcase
```

```
* program name : mcurac.prg
* description : current banking account
do mbankops with "c" && banking operation menu for current account
do case
  case option = 1
    do mopenac with "c" && open current account
  case option = 2
    do mdeposit with "c" && current deposit account
  case option = 3
    do mdraw with "c" && current withdrawal account
  case option = 4
    do mbkstmt with "c" && current statement of account
  case option = 5
    do mbkenq with "c" && enquiries
  case option = 6
    close all
    return
  endcase
```

```

* program name: Mopenac.prg
* function: open new account
* called by: 1. msaveac.prg
*           2. mcurac.prg
*****
parameter cActype
Clear
define window openac from 8,10 to 23,70 color b/w
define window errmsg from 10,13 to 16,55 color r/w
@7,30 say " OPEN NEW ACCOUNT ROUTINE"
use Mbankmst index Mbankmac
activate window openac
do while .t.
OK=" "
cAcno = space(10)
cSurname = space(10)
cO name = space(15)
cF name = space(20)
store space(20) to cRefere1,cRefere2,cRef1 add,cRef2 add,cAddress
dDate open = date()
@1,5 say "Account Number : : ?" get cAcno pict '@!'
read
if Lastkey() = 27 .or. cAcno = space(10) && ESC
  close all
  deactivate window openac
  clear
  return
endif
if seek(cAcno)
  activate window errmsg
  @1,2 say "DUPLICATE ACCOUNT NOT ALLOWED"
  @2,2 SAY "PRESS ANY KEY TO CONTINUE"
  read
  deactivate window errmsg
  loop
endif
do getfield && get/edit other fields
caddo
#
procedure getfield
!function : get other fields
  !save = .n. && set condition to false
  cMsg = space(1)
  @2,5 say "surname : : ?" get cSurname pict "@!"
  Valid NameChk(csurname, 10) Error cMsg
  @3,5 SAY "Other names : : ?" get cO name pict "@!"
  *; valid NameChk(cF name, 15) Error cMsg
  @4,5 say "Fullname : : ?" get cF name pict "@!"
  @5,5 say "Address : : ?" get cAddress pict "@!"
  @6,5 say "First referee : : ?" get cReferel pict "@!"
  @7,5 say "First referee address ?" get cRef1 add pict "@!"
  @8,5 say "Second referee : : ?" get cRefere2 pict "@!"
  @9,5 say "Second referee address ?"get cRef2 add pict "@!"
  @10,5 say "Date opened : : ?" get dDate open
  read
  @12,5 say "save this transaction ..... Y/N ?" get !save
  read
  if !save
    do replfield
  endif
  return
#
procedure replfield

```

```
repl acno with cacno
repl surname with csurname
repl othname with co name
repl fullname with cf name
repl address with caddress
repl frefname with crefere1
repl frefadd with cref1 add
repl srefname with crefere2
repl srefadd with cref2 add
repl dateop with dDate open
```

```
* @1,2 say "account number not in database file, respecify"
* @2,2 say "press any key to contiune"
* read
+ deactivate window errmsg
* loop
* endif
* @3,5 say "surname " + surname
* @3,5 say "first name " +f name
* @4,5 say "other name " +o name
* @5,5 say "address " + address
+ @6,5 say "balance " + str(balance)
+ amount = 0
+ dDate tran = date()
* ?save = in.
+ @7,5 say "amount ?" get nAmount pict "999,999.99"
+ @8,5 say "deposit date ?" get dDate tran
+ read
* @9,5 say "save this transaction....Y/N ?" get Isave
+ read
* if Isave
+ replace balance with balance + nAmount
+ nBalance = balance
+ select trans
+ append blank
+ replace acno with cacno
+ replace amount with nAmount
+ replace actype with cActype
+ replace trantype with 'D'
+ replace date tran with dDate tran
+ replace balance with nBalance
+ endif
+ endlo
+
+ procedure openfiles
+ select 1
+ use mbankms1 index mbankmac alias master
+ select 2
+ use mbktrans alias trans
+ return
```

```

iprogram name 1 Mdeposit.prg
*function 1 Deposit transactions routine
parameter cActype
define window deposit from 8,10 to 21,70 color b/w
define window errmsg from 14,15 to 19,65 color r/w
@7,20 say " DEPOSIT TRANSACTIONS ROUTINE"
do openfiles
activate window deposit
do while .t.
cAcno = space(10)
@1,7 say "Account Number: ?" get cAcno
read
if lastkey() = 27 .or. cAcno = space(10) && esc
close all
deactivate window deposit
return
endif
select master
if not seek(cAcno)
activate window errmsg
@1,7 say "account number not in database file, respecify"
@7,2 say "press any key to continue"
read
deactivate window errmsg
loop
endif
@2,5 say "Surname: "+ surname
@2,5 say "Other names: "+ othname
@4,5 say "Fullname: "+ fullname
@5,5 say "Address: "+ address
@6,5 say "Balance: "+ str(balance)
nAmount = 0
dDate tran = date()
lSave = .t.
@7,5 say "Deposit Amount: " get nAmount pict "999999999.99"
@2,5 say "Deposit Date ?:" get dDate tran
read
@2,5 say "Save this transaction....Y/N ?" GET lsave
read
if lsave
replace balance with balance+nAmount
aBalance =balance
select trans
append blank
replace acno with cAcno
replace amount with nAmount
replace actype with cActype
replace trantype with 'D'
replace date tran with dDate tran
replace balance with nBalance
endif
enddo

procedure openfiles
select 1
use mbank as index mbankmac alias master
select 2
use mbank as alias trans
return

```

```

Program name : Mdraw .prg
Function : withdrawal transaction routine
parameter cActype
define window draw from 8,10 to 21,70 color b/w
define window errmsg from 14,15 to 19,65 color r/w
@7,30 say " WITHDRAWAL TRANSACTION ROUTINE"
do openfiles
activate window draw
do while .t.
cAcno = space(10)
@1,7 say "Account Number: ?" get cAcno
read
if lastkey() = 27 .or. cAcno = space(10) && esc
    close all
    deactivate window draw
    return
endif
select master
if not seek(cAcno)
    activate window errmsg
    @ 1,7 say "account number not in database file, respecify"
    @0,0 say "press any key to continue"
    read
    deactivate window errmsg
loop
endif
@3,5 say "Surname:      "+ surname
@3,5 say "Other names:  "+ othname
@4,5 say "Fullname:     "+ fullname
@7,5 say "Address:      "+ address
@8,5 say "Balance:      "+ str(balance)
balance = 0
datetime - date()
time = 0
@7,5 say "Withdrawal Amount: " get nAmount pict "999999999.99"
@8,5 say "Withdrawal Date ?:" get dDate tran
read
@9,5 say "Save this transaction...Y/N ?" GET isave
read
if isave
    replace balance with balance-nAmount
    nBalance = balance
    select trans
    append blank
    replace acno with cAcno
    replace amount with nAmount
    replace actype with cActype
    replace trantype with 'W'
    replace date tran with dDate tran
    replace balance with nBalance
endif
endif
procedure openfiles
select *
use dbconnect index mbankmac alias master
select *
use mktians alias trans
return

```

```

* program name : Mbkstmt .prg
* description : periodic bank statement
* parameter cActype
* define window bkstmt from 8,10 to 21,70 color b/w
* define window errmsg from 10,15 to 16,65 color r/w
* * * * *
* define tran to mbktran
class all
do profiles
deactivate window bkstmt
set console off
set alternate to mbkstmt
set alternate on
do while .t.
  clear
  cAcno = space(10)
  Bdate = date()
  Edate = date()
  cAcno = space(20)
  cAddr = space(20)
  @1,5 say "ACCOUNT NUMBER ? : " get cAcno
  read
  if testkey() = 27 .or. cAcno = space(1)
    close all
  * deactivate Window bkstmt
  set form
  set if
  select master
  if .not. seek(cAcno)
    activate window errmsg
    @2,5 say "account number not in database file"
    read
    deactivate window errmsg
  loop
  set if
  @2,5 say "Beginning Date : " get Bdate
  @3,5 say "Ending Date : " get Edate
  read
  lproceed = .n.
  @4,5 say "proceed..... Y/N ?" get lproceed
  read
  if lproceed
    * * * * *
    loop
    set if
    set if
    set if
    * bkeolhdg
    cline=10
    select trans
    do top
    * while .not. eof()
    if cAcno = acno
    if date tran >= bdate .and. date tran <= edate
    @cline,5 say dtoc(date tran)+space(10)+trantype+
      space(10)+str(amount)+space(10)+str(balance)
    cline=cline+1
    set if
    set if
    set if
    set if
  else
  * * * * *

```



```
procedure bkeoindg
01,0 say space(10)+"DIAMOND BANK NIG.LTD., MARINA BRANCH, LAGOS"
02,0 say space(10)+"Account No: "+Acno+" "+"Account Name: "+
      fullname
03,0 say space(10)+"Address: "+address+" "+"Balance: "+
      str(balance)
04,0 say space(10)+"Account Statement From : "+DTC(Bdate)+
      " To "+DTC(Edate)
0 2,0 say space(7)+"Date"+space(9)+"Details"+space(10)+
      "Amount=N="+space(10)+"Balance=N="
0 8,0 say space(7)+"===="+space(9)+"====="+space(10)+
      "====="+space(10)+"====="
return
```

```
procedure Openfiles
```

```
select 1
Use Mbankmst index Mbankmac Alias Master
select 2
Use Mbktrans index mbktran Alias Trans
Return
```

```

program name : MbKeng.prg
Function : enquiries
1. Bank balance
2. Alpha search
3. reorganise file
Set Escape off
Do Msetup
Define window eng from 8,10 to 21,70 color b/w
define window errmsg from 10,15 to 16,65 color r/w
do while .t.
clear
@2,30 say "BANK ENQUIRIES/UTILITY ROUTINES"
option = 0
@4,35 say "1. BANK BALANCE"
@6,35 say "2. ALPHA SEARCH"
@8,35 say "3. REORGANISE FILES"
@10,35 say "4. EXIT"
@12,35 say "Choose option (1-4)? " get option Pict '9' rang 1,4
read
if option = 4
close all
clear
RETURN
endif
clear
*activate wind eng.
do case
case option = 1
do bkbai
case option = 2
do bkalpha
case option = 3
do bhrog
endcase
return
end

procedure bkbai && making enquiry on the balance
define window bai from 8,10 to 21,70 color b/w
define window errmsg from 15,15 to 20,65 color r/w
@7,30 say " ENQUIRY ON BALANCE ROUTINE"
use mbankmst
index on acno to mbankmac
use mbankmst index mbankmac
activate window bai
do while .t.
Acno = space(10)
@11,5 say "Account Number: ?" get cAcno
read
if lastkey() = 27 .or. cAcno = space(10) && esc
close all
deactivate window bai
return
endif
select master
if not. seek(cAcno)
activate window errmsg
@11,2 say "account number not in database file, respecify"
@11,2 say "press any key to continue"
read
deactivate window errmsg
clear
endif
end

```

```

@4,5 say "Fullname:      "+ fullname
@5,5 say "Address:       "+ address
@6,5 say "Balance:      "+ str(balance)
lsave = .n.
@9,5 say "Are you okay ?..... ? " GET lsave
read
enddo
return

```

```

procedure bkalpha && searchinf customer file using surname
define window bkalpha from 8,10 to 21,70 color b/w
define window errmsg from 15,15 to 20,65 color r/w
use mbankmst
index on surname to mbanksnm
use mbankmst index mbanksnm
@2,25 say "ENQULRY BY CUSTOMER'S SURNAME" Colo gr+/n
activate window Bkalpha
do while .t.
curname =space(10)
@3,5 say "SURNAME: "get cSurname pict '@!'
read
if lastkey() =27 .or. cSurname =space (10) && esc
close all
Deactivate window Bkalpha
return
endif
To Top
if .not. seek(curname)
activate window errmsg
@1,10 say "NAME NOT FOUND"
wait
deactivate window errmsg
loop
endif
set filter to surname = Ltrim(Rtrim(cSurname))
browse nomenu noedit nodelete noappend;
field Acno, surname, othname, fullname, Balance
window bkalpha
enddo

```

```

procedure bkrog
use mbankmst
@2,5 say "FILE REORGANISATION IN PROGRESS"
@3,5 say "WAIT PLEASE"
t del *.ndx
index on surname to mbanksnm
index on acno to mbankmac
return

```