

COMPUTERISED WASTE SYSTEM IN THE NIGERIAN COMMERCIAL BANKS

A CASE STUDY OF
(UNION BANK OF NIGERIA PLC)

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CERTIFICATION

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assistance both morally and financially before, during and after the course.

Kudos for all his effort to better my lots.

I have to place on record the efforts of the entire staff of the Computer Department of Union Bank of Nigeria PLC, United Bank for Africa PLC (UBA), First Bank of Nigeria PLC, etc for their co-operation and useful information gathered from their respective department to put together this project work. The same appreciation is extended to **Mrs. Osuji and Mr. Emmanuel Ifere** both of the Library and Research Department, Central Bank of Nigeria, Abuja, for the relevant materials provided at my disposal that aided the smooth completion of this piece of work.

To all my course mates who are too numerous to mention, I say congratulations for your dedications, courage and perseverance.

Lastly, but surely not the least, I wish to register my sincere appreciation to the Chief Executive and the entire members of staff of Datatek Computer Consultants, Bosso Road, Minna for the beautiful, neat and excellent work done in the typing of the project.

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DEDICATION

This project work is dedicated to my beloved mother (Madam Hadisat Garba) of blessed memory. Mum you are no more, but your spirit and memory leaves on among your children. We shall always continue to remember you for what you are to us, love, care, tenderness and your believe in education for all of us. May your blessed soul continue to leave in perfect peace (Amen).

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ABSTRACT

The invention of computer has brought about remarkable changes in every human endeavours.

This project work is aimed at improving the method of wasting items of data in Commercial Banks with the use of computer.

WASTE – As used in the banking sector is a pool or collection of items of data together. That is, all the items of transactions that a Bank had in a day such as cheques, deposit and withdrawal Vouchers, tellers, draft etc are collated together in one place and later put in batches of 50 or more vouchers each before they are inputted into the computer by the computer operators or tellers.

The need to computerize all banking operations in the modern day of computer age cannot be over emphasized. This will make the keeping of accurate banking records and customer's accounts possible, improve banking services and have a great impact on the over all profit of the bank. Therefore, the pointer to this piece of work is to produce a system where the pooling of items of data or various vouchers together before they are inputted is discarded for direct inputation by various operators or tellers as transactions are taking place. This will reduce time wasting of the old system where a single operator or teller does the inputation of data at the end of the banking hours; hence the man-hour loss to the bank will be eliminated.

Though Union Bank of Nigeria Plc is used as a case study, other banks were also visited to gather information for comparisons purpose in order for the system to be universally accepted /adapted by other commercial banks.

A measure of control, checks and balances were introduced in the design of the system to check the activities of each teller against fraudulent practices.

The system has also been designed in a way that as soon as the last customer leaves the bank, the tellers will equally have the last item inputted and there after the processing of the days work commences after which, the various reports or output are produced within a limited time.

I therefore recommend the system to all commercial banks operating in Nigeria including Union Bank of Nigeria Plc as the benefits derivable from its use is quite enormous.

CHAPTER ONE

1.1 INTRODUCTION

Most banks operating in Nigeria before the deregulations of the Nigerian economy by the Babangida administration have a very poor service delivery. Bank customers were subjected to rigorous procedures and were made to spend several hours in the congested banking hall in the process of either depositing cash, encashing their cheques or other transactions.

The liberalization and deregulation of the Nigerian economy beginning from 1986 when the Structural Adjustment Programme (SAP) was introduced, affected the nation's banking industry more than any other sector of the economy. The liberalization and deregulation brought about stiff competition among the banks which put the customers at an advantage position to converse or agitate for speedy, convenience, courteous and efficient banking services, thereby making banking business a buyers market rather than a sellers market. Therefore the era of armchair banking has to give way for a more aggressive banking operations to meet the ever-changing needs of the banks numerous customers.

Many banks in quest to meet their customers demand and remain afloat in the highly competitive market introduces various product and computerize some of their operation for effective delivery to their teaming customers. However up to 90% of the computerized banks in Nigeria focus attention on deposit taking, lending and provision of payment facilities in banking halls

while other vital operations are yet to be effectively computerized. So the present computerization programmes of the banks have failed to transform routine clerical and middle management tasks, not to talk of top-level management tasks. The mechanical, laborious banking routine and procedures coupled with poor service delivery is still very much prevalent in our banking systems.

More worrisome is the fact that with the absence of performance evaluation tools, it is difficult to access the overall impact the computer has on banking business in Nigeria in general. As a result, it is difficult to justify the huge investment bank and their shareholders have made on the computerization of their operations. It is pertinent to mention that the waste system in the bank is one of those areas yet to be effectively computerized. Therefore the need for this research work is to design a waste system that will reduce time wasting by the computer operators, improve and fasten management decisions making process and enhance customers easy access to information on their account.

1.2 REVIEW OF GENERAL BANKING OPERATIONS

The operations of Nigeria Commercial banks can be illustrated their in their resource profile. There are two aspects of this profile. One is the source of fund and the other is the use to which these funds have been put. In other words an analyses of their balance sheet structure is essential in the study of the operation of these banks. Nigerian Commercial Bank, like their

counterparts elsewhere in the world, obtains their fund from two main sources. One is capital and reserves and the other is deposit.

Bank capital traditionally is a confidence booster. The bigger the capital, the greater the public confidence in the stability of the bank and its ability to discharge its obligations. Besides, bank capital provides a cushion against risks and invariably determines the size of loans that can statutorily and prudently be made to a single client without risking all the eggs being in one basket. Bank capitals equally provide fixed assets for bank operations and contingencies and for future expansion plans. It is not therefore surprising that many banks in the country out of their own volition increased their capitals at time in multiples of the minimum statutory requirements.

While capital and reserves provide funds for fixed asset and discharge the above functions of lending, deposits provide the working capital and the stock-in-trade of banking. In the same way that no business can flourish successfully, if at all without working capital, no commercial bank can really operate effectively and successfully without adequate deposits. But the importance of deposits goes much deeper and further than just being mere working capital. It is, infact, the origin of banking because the early bankers started by taking deposits from the public, which they undertook to return or to repay on demand or as agreed. It has continued like that till today with an important innovation. That innovation is the realization, from the early days of banking, that only a very small proportion of depositors' made by customers were demanded or claimed from the bank at any point in time. Provided

therefore that a small proportion was kept to satisfy the depositors' withdrawal requirements and provided the banks continue to enjoy the depositors' confidence in their ability to honour their obligations, the banker feels free to lend the balance.

Realizing how important and profitable this "innovation" proved the present day bankers change the culture of "armchair" banking and went all out to attract deposits because the more deposits they attracted, the more business (lending) they would make and the more profits would result. Banking operations/ businesses are basically service-oriented activities designed to satisfy customers' needs both locally and internationally. These operations as reviewed above can further be narrowed down to the following services provided by banks.

The traditional function of banks is the provision of deposit facilities for their customers. In the early days of banking, people deposit their money or valuables with the bank in return for receipts against which the deposits were eventually repaid. Banks accept deposits on two principal types of account. One is the current account and the other is the deposit account. Deposit account is further divided into Time deposit and Savings deposit.

1.4 CURRENT ACCOUNT

This is an account in to which deposits made are repayable on demand, that is, without any notice. This is why current account deposits are called demand deposits. Banks usually pay interest on the deposit, which they

accept from their customers into deposit account, but they do not pay interest on a current account. Rather the depositors on current account pay the banks some commission. This is because current accounts have attractions and offer facilities to the customers that are not available on other types of deposit. The advantages of current account are:-

- A. Current account deposits are repayable on demand
- B. Cheques can be drawn on current account but not other types of account.

Since deposits can be withdrawn without notice they are regarded as pure money because they are as liquid as cash.

A current account offers access to overdraft and loan facilities. Those who maintain current accounts can issue standing instructions or orders to their banks to pay bills regularly every month or week as the case may be, and debit their accounts accordingly. Such standing order are usually convenient for the payment of premiums on life policies, house mortgage, hire purchase repayment and regular charges such as rent, telephone electricity bills.

Against the above, advantages must be set the fact that no interest is paid on current accounts, though in computing commission charges some allowance may be made for those who have maintained substantial credit balances over prolonged period.

The growth of demand deposit in Nigeria has been hampered by two main factors:- One is the limited extent to which cheques are or can be used for

which customer will not be allowed to withdraw unless he want his account closed.

1.6 DEPOSIT ACCOUNT

Deposit account is closely related to savings deposit account. Withdrawals on the account are usually subjected to some period of notice. This is why it is also called time deposits in contrast to demand deposits. The time required for notice before withdrawal can be made depends on what was agreed when the deposit was made. Most time deposits are withdrawable after seven day notice, but some require up to three or six months.

The advantage of time deposits is that they earn interest for the depositor. But they do not offer the facilities of the current accounts. In particular they cannot be withdrawn on demand, though banks rarely insist on notice being given if small amounts are involved. Cheques cannot be drawn on them and they do not give access to overdraft facilities and loans.

1.7 LOANS AND ADVANCES

Another important services provided by banks to their customer is lending. When bankers realized that only a small proportion of the total deposits made by their customers was demanded at any one time, they decided to lend the balance after keeping that small proportion that would be demanded. This service is very profitable to the banks, hence they always went out of their way to attract deposits by offering inducement in the form of

interest payments so that they could lend as much as possible. Banks lend to customers in a number of ways, by overdraft and by loan account.

- A. **By Overdraft-** When banks lend by way of an overdraft, the customer or borrower is simply allowed to “overdraw” his account. This means that he withdraws or draws cheques for an amount bigger than the credit balance he has in his current account. The account will then be “in the red” or in debit for as long as the overdraft last.
- B. **By Loan Account-** Banks also lend by way of loan account. When this happen, a loan account is created in the books of the bank, called the ledger. The amount of the agreed loan is debited to this account and credited to the customer’s current account. Unlike the overdraft, the current account will continue to be in credit but repayments and interest on the loan will be debited into it and credited to the loan account and the profit and loss account of the bank respectively.

The overdraft method of lending has advantages over the loan account method. Firstly, the customer does not use the full overdraft facilities, this makes him to pay interest only on the amount he has overdrawn, but for loan account, interest is payable on the full amount of the loan once the customer’s account has been credited and his loan account debited. This makes overdraft cheaper than a loan account.

Secondly, an overdraft is a more convenient method of borrowing. It requires less formality and is more easily negotiable especially if small amounts are involved. Loan accounts on the other hand, require more documentation and stamping.

Thirdly, payments into the current account reduce the overdraft and therefore the interest burden.

1.5 FOREIGN EXCHANGE TRANSACTION

Foreign exchange transaction takes place between countries. It involves all the transaction that has to do with other countries currency. There is no individual or country of the world that is self-sufficient, the need to exchange goods and services between nations and individuals from different nation therefore arises. The sales or purchases of goods and services or capital movements between nations involve exchange of national currency for foreign currency. For the simple fact that different nations of the world have their currency different from others create a barrier for the smooth operation of trade between nations. The bank therefore serves as an intermediary between nations in international trade to settle accounts by exchanging one country's currency for another thus making it easy for people, goods and services to move from one country to another and for the free flow of international trade.

1.9 CLEARING OF CHEQUES

Cheques are sometimes used to settle debts, but as we all know, cheque in itself is not money but a means or an instrument used to collect/withdraw money from a current account. When a customer of a bank draws a cheque payable to another customer of another bank, the person to whom the cheque is drawn payable can lodge the cheque into his account. His bankers then takes the responsibility of sending the cheque to the drawer's bankers or drawee bank for payment to be obtained for the credit of the payee's account. This process is know as cheque clearing.

1.10 FUND TRANSFER

Transfer of founds involves the movement of money from one account, bank and location to anther without physically carrying cash in the process. The system involves paper work done through various means and medium such as:-

- Bankers payment /Bank Draft
- Mail Transfer
- Telegraphic Transfer etc.

A. **BANKERS PAYMENT/BANK DRAFT-** This is a specialized cheques used by the bank to transfer fund from one location to another whereby the payee of the draft is paid cash or his account credited with the face value of the draft or bankers payment on presentation at the drawee branch/bank.

There are foreign drafts as well as local draft. Local draft is used to transfer money from one place to another within the country while foreign draft is used to transfer money from one country to another. The process involved in the issuance of the two drafts is the same, but the foreign draft is always denominated in foreign currency while the local draft is denominated in local currency.

- B. **MAIL TRANSFER-** As the name implies, is a method of transferring fund from one branch of a bank to another by surface mail. The amount to be transferred is carefully worded in a special form designed by the banks and the message is then sent by post to the payee's/ beneficiary's banker for his account to be credited accordingly. The mail transfer could also be done locally or internationally, using the correspondent bank overseas.
- C. **TELEGRAPHIC TRANSFER-** This involves the use of phone and telex to transfer fund from one bank to another. The message will be prepared in cable form and relayed to the beneficiary's bank by the use of telephone or telex. This method is much faster than any of the mode of transfer mentioned above.

Whatever transaction that takes place in a particular day in the area of all these banking operations enumerated above, are collated / pooled together in a specially designed place such as a box and then put in batches before they are finally punched/ inputted into the computer for processing.

This collation/pooling together of all the transactions in a place before processing is what is called/known as "WASTE".

1.11 BRIEF HISTORY OF UNION BANK OF NIGERIA PLC

Union Bank of Nigeria Plc, which was formerly known as Barclays Bank (DCO) Dominion, Colonial and Oversea, was established in 1917 as a branch of the Barclays Groups of London with a foreign ownership of 60% and 40% Nigerian.

As a result of Nigerian indigenisation policy of 1971/1978, the name Barclay Bank (DCO) was changed to Union Bank of Nigeria limited with a reversal of ownership structure that made Nigerians to acquire 60% ownership while 40% went to the Barclays Group. The leadership in the management of the bank equally changed hand from that of an expatriate, Managing Director to an indigenous Managing Director/Chief Executive.

The bank maintains a wide network of branches and the highest employer of labour in the Nigerian banking sector.

In 1986, the bank drops its status as a Limited Liability Company (LTD) for a Public Limited Company (PLC) as a result of the federal Government deregulation of the economy and the Barclays Group in the following year relinquish its 40% shareholding in the bank to the Nigerians. So the bank is now wholly owned by Nigerians.

The bank has since inception grown from strength to strength posing an after tax profit of ₦1.7 billion in 1998 financial year with a capital and asset base of ₦5.8 billion and ₦102 billion respectively as compared to an after tax profit of ₦1.2 billion, capital and asset base of ₦3.2 billion and ₦81 billion respectively in 1997 financial year. The bank still maintains its wide network of braches which is presently put at over 270 branches and a staff strength of 8911. The bank has equally invested heavily on computerization programme as most of its branches and operations are fully computerized.

CHAPTER TWO

2.0 LITERATURE REVIEW

To say that the use of computer is being applied to all aspects of human endeavour is no longer news. The banks, hospitals, educational institutions, aviation industry, telecommunication, entertainment industry and what have you, all have embraced computer usage to simplify their operations. No wonder, that computer is now the toast of every business organization, government and a lot of individuals. The urge by the Nigerian populace and indeed the world at large to become computer literate can therefore be understood, but, if one may ask, "what is this computer"? And what is so special about it?

Different authors have described and defined computer in various ways. Nelvin Berger in his book, "Data Processing – A Computer Awareness", defined computer as an electronic device that process raw data. Yet, amazing as they are, some people call computer high-speed idiots. Surely they are high speed, he said, but idiots? He asked.

Computers are considered "stupid" because if you give to it jargons, it will give to you jargons, hence the popular saying that computers are garbage in, garbage out. Computers can calculate, that is, they can add, subtract, multiply and divide. They can also compare numbers or letters and perform logical operations. That is to say, they can compare two numbers and determine if these two numbers are the same or, if not, which one is higher.

When given long lists of names or words, they can put them in alphabetical order, or arrange them in any way desired. Computers can hold huge amounts of information and can locate this information quickly when instructed to do so. Through input devices they can take in data that are fed to them, and through the output devices they can give out information in the form that people can understand.

R. G. Anderson in his own book – Data Processing, Principles and Practice, describes computer as consisting of not one machine but a series of related machines. He said the generic term 'computer' is widely used to describe the central processing unit and the peripheral devices used for electronic data processing. He therefore defines computer as a machine, which accepts data from an input device, performs arithmetical and logical operations in accordance with a pre-defined program and finally transfers the processed data to an output device either for further processing or in final printed form, such as business documents, schedules and management control reports.

BENEFITS OF COMPUTER IN ORGANIZATIONS

As a result of increasing volume of paper work that has to be processed and the increasing cost of administrative staff, the need to have or involve the use of computer for efficiency and cost reduction does arise. The following are the benefits derivable from the use of computers in an organization.

- Improved customers relations due to fewer computational errors, more timely invoices and statement and speedier response to enquiries regarding the status of accounts and the availability of products.
- Increased flow of information and information retrieval by means of on-line direct access enquiry systems.
- Greater degree of systems integration on the basis that the output of one part of a system or sub-system provides the input to a related sub-system which has the effect of eliminating duplication and delay.
- More effective control procedures including production control, sales control, cost control, budgetary control and credit control.
- Simplification of problem solving by the use of problem solving software.
- Improved cash flows due to improved sales accounting systems particularly those relating to credit control, invoicing and statement preparation.
- Supply of information for improving managerial decisions.

2.1 GLOSSARY/DEFINITION OF TERMS

WASTE

In its literal meaning, waste could be said to be anything that is useless, worthless or garbage, but waste as used in the banking industry means a different thing entirely. In the banking context, waste can be described as a collection and gathering together of vouchers or data generated in a given days business transaction in a

special container which could be a box, and the batching of the vouchers in a number of batches before processing them by the computer operators.

VOUCHER

This is a source document used as a means of payment or receipt in a business transaction. It is an evidence or acknowledgment for an exchange of goods and services. It can equally be regarded as a piece of paper showing the details of how money has been paid and received for goods and services.

TRANSACTION

The units of data for processing such as individual customers orders and time sheets are called transactions. They could either be processed singly or in batches.

BATCH

A batch is just a number of transactions, that is, in the form of source documents accumulated together and processed as a single unit. For example, checking that a batch contains the required number of vouchers helps to detect and correct voucher loss.

DATA

This is the term used to describe basic facts about the activities of a business, for example, the number of engine parts in storage at an auto factory, the sales figure of a large corporation, a student's grades in school, the number of savings account customers a bank maintains, the number of customers that have borrowed money from

the bank, the number of transactions recorded by a bank in a day, week, month, year and so on and so forth are called data. It could also be described as unprocessed information consisting of details relating to business transactions, which are collected into homogenous groups for input to a data or information processing system to produce a specific output.

PROCESSING

Processing of data is often a specialist activity performed by the administrative organization for the business and is concerned with the systematic recording, arranging, filing, processing and dissemination of facts relating to the physical events occurring in the business. Data are changed into useful information using these processes, for example, considering a savings account customer of bank who opened an account with a balance of ₦400.00. During the month, he made a deposit of ₦150.00 and a withdrawal of ₦100.00. He also earned an interest of ₦70.0.

The computer will process these information by first accepting all the data listed above via an input device. That is, the amount of money with which the account was opened, will be considered or fed into the computer first, then the sum deposited, the sum withdrawn, and the

amount of interest earned. The computer will then go through the necessary calculations by adding the opening balance and the deposit ($\text{N}400 + \text{N}150 = \text{N}550$), then subtracts the amount withdrawn ($\text{N}550 - \text{N}100 = \text{N}450$). Finally, it adds the interest earned ($\text{N}450 + \text{N}70 = \text{N}520$). The computer then prints the information on the bank statement and in the bank's records. This shows at a glance to both the customer and the bank the balance in the account. From this, it can be seen that data processing systems provide information and the information provides the basis for managerial control of business operations to achieve corporate objectives as effectively as possible, which means making the most suitable decision based on the information provided.

INPUT

Input is the act of passing or introducing data to the computer via an input device such as the keyboard for processing. A computer, however, cannot accept data in a form of human communication. Therefore, data are presented to the computer in a way, which provides easy conversion into its own electrical pulse-based forms. This is done by typing the data using the keyboard device into the computer and these are converted into the machine

sensible/language forms before the computer can accept them.

OUTPUT

This is the production of the end product or result. The result are taken from the main storage after processing and fed to an output device such as the printer so that the needed result or end product like customers' balances, account turnover, statement of accounts etc can be obtained in printed form.

2.2 OPERATION OF THE EXISTING WASTE SYSTEM

The mode of operation of the existing waste system involves a centralized placement of container such as box, basket etc put under lock and key where all the vouchers arising from the days transaction are dropped constantly within the working period or hours. These vouchers having been collated/pooled together in the box, are then batched into a sizeable number, for instance 50 vouchers in a batch to obtain some reasonable number of batches.

The vouchers in each batch are made up of debit and credit vouchers which are balanced manually with the use of adding machines, electronic calculators so that the total amount of debit vouchers agrees with the total amount of credit vouchers taken into account the double entry principle of accounting. The task of batching and balancing of waste vouchers is vested on a waste clerk while the computer operators idles away when the batching

and balancing is being done. The batched and balanced waste vouchers are itemized on a specially designed form to show debit and credit figures separately and the number of batches obtained. The vouchers are then stamped at the back with a pre-numbered rubber stamp to differentiate the batches from each other.

The key-in, or data entry, input and processing of the voucher is done by operators only when the batching must have been completed. This account for why the computer staff or department in general are always the last to close, leave the office or complete their job.

2.3 PROBLEMS WITH THE EXISTING SYSTEM

The following problems are identifiable with the existing waste system.

LOSS OF MAN-HOUR:- During the business transaction hours when the waste vouchers are being collated, many members of the computer staff with the exception of the waste clerk, idle away as they have nothing to do until the collation, batching and balancing of the vouchers have been completed before they could start their own job; that is, the punching or recording of the vouchers, processing and production of reports. The bank in the process suffers a great loss of man-hour during the day when the computer staff idles away.

REDUNDANCY/LAZINESS:- The system encourages redundancy and laziness among the computer staff or operators. This is so, because computer department is classified as a special department and the members

when the operators are working under pressure, especially on busy days when they have large volumes of transactions to process.

THE SYSTEM IS NOT COST EFFECTIVE:- The system increases the overhead cost of the banks. Since the system encourages late commencement of processing the day's job, it gives room for unnecessary overtime, thus, increasing personnel cost through increase in wages.

Another cost brought about by the system to the bank, is the high rate of electricity consumption because the late processing of the day's business transaction causes more hours to be spent using the computers and other appliances like air conditioners. This automatically translates to high payment of NEPA bills.

2.4 BENEFITS DERIVABLE FROM THE PROPOSED SYSTEM

Improves the Effectiveness of Computer Staff:- Using the proposed system, the computer staff/operators shall be engaged from the commencement of the day's business as they will now start punching/inputting vouchers simultaneously into the computer as the transactions are taking place, instead of waiting until the vouchers are pooled together and batched before they start processing. This reduces the idleness and redundancy of computer staff during the business hours and daytime.

Avoidance of Man-Hour Loss:- There would hardly be any hour wasted by the computer staff as they will be completely and fully engaged like other staff from morning till the closing time when they are expected to complete their work immediately on conclusion of the last transaction for the day.

It Saves Time:- The new system will save a lot of time on the part of the customers and the bank. This is because the processing of the day's transaction shall now commence very early thereby facilitating the production of various reports that will be needed by the customers and the bank. The time wasting by the customers will therefore be eliminated which is a sign of efficiency in service delivery.

Is Cost Effective:- The proposed system is cost effective because unnecessary overtime hitherto earned by the computer staff will be reduced. The rate of power consumption shall equally reduce drastically as there will now be a reduction in the length of time or number of hours for which electricity is consumed due to shortened hours of work by the computer staff.

Errors are Minimized:- For the simple fact that the computer staff / operators now have ample time to do their work, the rate at which they commit errors and mistakes is reduced because their mental alertness will be high as they will not work under pressure.

Information is Readily Available to Customers:- The various report are now to be produced promptly with little delay, hence customers are expected to now have easy access to their balances, statement of account and other important information they require from time to time. This will reduce the rate of congestion in our banking halls.

It Facilitates Management Decision Making Process:- With the timely production of the various reports of the day's transaction, management shall now have ample opportunity and time to evaluate the decisions already taken by them on various issues and accounts on the previous day as revealed by the reports. This will enable them review their action in the areas where they feel they have taken wrong decisions or otherwise.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 SYSTEM ANALYSIS

System analysis may be defined as the methods of determining how best to use computers, with other resources. It could also be said to be design of a systems to perform tasks, which meet the information needs of an organization.

The start of a new system is normally the result of some perceived changes, such as the perception of a business need, failures or limitations of the existing system causing dissatisfaction or heightened awareness of modern developments.

From the preliminary survey, conducted on this study, reveals that there is need for this research work to be carried out in order to remove the inefficient and the numerous problems associated with the existing waste system in the banks. These problems have already been highlighted in chapter two.

A detail study of the proposed system shows that the new system is feasible and going to be at a minimal cost to the organization. There is only going to be a slight adjustment and restructuring to be carried out on the existing system in terms of programming,

In terms of hardware facilities, the ones at the possession of each bank at the moment may sufficiently serve the new system, so there will be no extra cost to be incurred on hardware with the introduction of the new system.

The system is equally going to reduce the running of the bank because of reduction in errors, mistakes and time wasting which is common with the existing system.

Access to information is going to be made easier to both customers and the bank management who base their decision making on the available information.

3.2 FACT FINDING TECHNIQUES

The following methods of fact-finding techniques were adopted in the course of gathering data. We used a combination of techniques to gather the data so as to enable us compare their accurateness, reliance or otherwise.

3.3 INTERVIEW

This is by far the most widely used technique and perhaps the most effective and productive of all the methods used in gathering data for research purpose. During interviews, facts about what is happening and also the opinions of those being interviewed regarding the weakness and strengths of the existing system do come to light.

The personal contacts are important in getting the co-operation of the people involved, this gives them the feelings of having made a substantial

contribution towards the design and writing of the new system. To gain the confidence of the interviewers is equally important in order for all the facts to be gathered.

We have been able to use this method effectively while gathering the facts and data. A cross section of the computer staff from the three big banks were interviewed, and they all bear their minds in detail as regards the merits and demerits of the existing waste system and the proposed one. They did this, without hiding their feelings or reservation and about 90% of the respondent were equivocal and unanimous in their decision to change or restructure the existing system.

3.4 RECORD REVIEW

In using this method to gather our facts and data, we have to delve into the close study of each bank's procedure manuals and some vital statistics, which reveals much useful information about the current practice of each bank's waste system. The facts are studied in department by department for easy comparison.

Data flow diagrams, decision table and systems flowcharts were used to present, analyze the information and data collected.

We adopt this method in conjunction with other methods because facts and data collected through this method could be said to be near 100% correct and accurate because they are data collected from source document, which

can hardly be misleading. Access to these document are not hindered, and hence the much reliance placed on the method.

CHAPTER FOUR

SYSTEM/DATA PRESENTATION ANALYSIS

4.1 SYSTEM DESIGN

The design of the new system takes the following format.

The data generated from the day's transaction in form of cheques issued and deposit made by customers and all internally generated vouchers/data in respect of draft, telegraphic transfer, mail transfer, foreign exchange sales and purchases, commission, loans and overdraft, standing orders shall be inputted via various computer terminal simultaneously as the transactions are taking place. All the terminals shall be linked up to the host computer in an on-line network system.

The input device to be used is the keyboard. For easy traceability of errors, the system is designed to accept input in batches whether such entries are debit or credit entries, so that it will be easy to run through the entries to detect any error with minimum delay when displayed on the monitor. The batches shall be numbered seriously according to how the data or transaction have been inputted or key in. After the data entry is completed, all the batches are expected to be displayed by each operator on their monitor and the system is designed to pose to the operators at this stage, the following- "Update Files" Y/N. The operators are then expected to press the relevant key, that is "Y" for "Yes" ascertaining the correctness of the entries and "N" for "No" where error exist or detected. The operators (tellers then

makes the necessary corrections and go ahead to press the "Y" key so that the computer can update the relevant files.

The waste clerk is expected to add up all the batches to obtain debit and credit control totals to enable the computer operators make comparison with their own computerized batch totals before updating the various files. After the necessary files have been updated, the relevant output or reports such as:

- (i) Waste statement of Account
- (ii) Large items Report
- (iii) Full update Report
- (iv) Waste summary report etc shall be produced vide an output device such as the printer to obtain the hardcopies of the various reports. These report as listed above are not exhaustive as the system is design to accommodate more reports as the need arises.

4.2 DESIGN OF INPUT

In designing the input for the proposed system consideration has been given to the various transaction that will need to be inputed as the transactions forms the bulk of the data input. As input is a mode of data entry into a system, the design has been simplified in such a way that the users will easily understand it.

The overall objective of writing the research work was paramount in the design of the input. Such objectives as direct data entry, maximization of the limited time, cost reduction minimization of errors and efficient and prompt service delivery to customers were all considered while putting in place the input design.

In view of the above listed objectives, a coding system of data entry, that is, codes instead of the use of long letters shall be used for the data entry in order to avoid delay, and reduce errors, because the system will reject any entry, which a wrong code has been applied.

The input data, as it has been stated earlier will be the various transactions that occurred in any given business day collated together vide the waste system which is now to be redesigned. The details to be inputted from each voucher or transaction data such as, deposit/tellers cheques/withdrawals, draft, telegraphic transfer, mail transfer, foreign exchange transaction, loans/overdraft entries, standing orders etc shall be the account numbers, amount, cheque numbers and the transaction codes depicting debit or credit and the format is in tabular form.

4.3 DESIGN OF OUTPUT

The most important thing about computer or data processing is the result, outcome or the output produced at the end of the processing.

Output refers to the information gathered generated or produced at the end of each process. The importance placed on the various information produced

or arrived at, in a given process cannot be over emphasized, because they serve as a decision tools, check and control to organizations those whom the organization is responsible or answerable to, employees, the Government, policy maker and the public at large.

Therefore, in designing the output of the proposed system, adequate consideration have been given to the would be users like the customers, the bank management, the shareholders, government and all other interest groups who will be interested in the reports.

Specifically, the output of the proposed system is designed to produce various reports as discussed below:

Waste statement of account:- This shows the comprehensive record of transaction of each customer's account, impersonal and office accounts each day. It is quite different from the normal statement of account, which contains information of several days' transactions. The waste statement of account only gives account of all the transactions that pass through an account on a particular day indicating also the other accounts where the respective contra entries or transaction went to. This assist the bank ascertain the true position and correctness or otherwise of the entries made into various account each day so that prompt action or measure could be taken to correct any anomalies discovered in any account before it is too late. This report will assist the bank detect fraudulent act on time. In essence, the report is more of the bank's use than the customers.

Large items report:- This report shows the list of accounts that have heavy lodgment or larger amount deposited to it or withdrawn from it. The report normally serve as a caution notice to the management to investigate the source and genuineness of such large deposit so that they do not turn out to be fraud entries. How much constitute large amount depends on the policy of each bank, as ₦100,000.00 may constitute large amount in some banks and others may consider ₦500,000.00 and above as large amount, but the essence or the whole idea of this report is to investigate those accounts that seldom witness heavy lodgment or withdrawals and all of a sudden have a huge amount deposited and withdrawn from them. For the purpose of this research work, the system has been designed to report items of ₦100,000.00 and above as large items.

Full update report:- This report shows up-to-date position of the various account maintained by the bank. That is, the comprehensive list of all the savings, current, deposit, office and impersonal accounts with their current positions or balances shown. The report will assist the bank carry on with its normal operations temporarily, that is for about 24 hours when the computer system breaks down or power failure occurs.

Waste summary report:- This report replaces the manual waste summary sheet usually produced using the old system. The report shows a comprehensive detail of all the transactions that took place in the bank in any given day business operation. The batch number to which each transaction

or input data was processed will be shown alongside the customer's names and account numbers where such transactions occurred. The amount of each transaction is also clearly stated according to the batches under which they were processed. The computer sorts out the debit and credit transactions and summarises their totals at the footnote of the report so that at a glance on viewing the report, one will know the total amount deposited or withdrawn in a day from the various accounts in the bank.

4.4 DESIGN OF FILES

The design of files refers to the descriptions of all the relevant files used in a given system. It includes the description of the detailed contents of the files used and their structures.

All the files that are used in the proposed system are fully discussed in this section. The proposed computerized waste system of banks shall consist of master file (MASTER.DBF), waste file (WASTE.DBF), transaction code or reference file (TCODE.DBF), Transaction file (TRAN.DBF) and float file (FLOAT.DBF). The description of the contents and structures of each of the above database files are as follows:-

Master. DBF

This file, is a master file that contains some details as it relates to each customer's account. These details include account numbers, customer's name, memo-post balance i.e. available balance and current balance.

The file contains three fields with each having field name, field type, field description and field width.

The structure of the file is given below:-

S/No.	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1	ANB	Account Number	Character	6
2.	ANM	Account Name	Character	30
3.	BAL	Current Balance	Numeric	16

Waste. DBF

This file contains all the detailed transaction that took place in a day as key in to the computer system through the waste management system. The order in which the transactions were key in also reflected in this file by way of batch numbers allocated to each set of fifteen (15) entries that are key in, in order in which the transaction took place.

The detailed description as follows:-

S/No.	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1	Date	Date	Date	8
2.	BN0	Batch Number	Character	6
3.	TCD	Transaction code	Character	2
4	TDSC	Transaction Type/Description	Character	30
5.	ANB	Account Number	Character	6
6.	ANM	Account Name	Character	30
7.	AMT	Amount	Numeric	16

Tcode. DBF

The details contained in this file is the list of the various transactions by entry type, that is, debit and credit entries as it relates to cheques/withdrawal, deposit/tellers, drafts, mail transfer, telegraphic transfer, loans and overdraft, standing orders, foreign exchange transaction etc that took place in a given day's business transaction.

The file is made up of four (4) fields with their structures as given below.

S/No.	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1.	TCD	Transaction code	Character	2
2.	TDSC	Transaction description	Character	25
3.	ANB	Account Number	Character	6
4.	Type	Transaction type (DR or CR)	Character	1

Tran. DBF

The list of the various ledger accounts that have operations on them in any given days business transaction are contained in this file. When we view this file, we will be able to see at a glance all the different transactions that took place in any ledger account for a particular day.

The file has four (4) fields ascertained in the table below.

S/No.	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1.	ANBI	Main Account Number	Character	6
2.	DR	Debit	Numeric	16
3.	CR	Credit	Numeric	16
4.	ANB ₂	Contra Account Number	Character	6

Float. DBF

This file is created to accommodate those transaction that carries no account numbers, incomplete account numbers and those transactions that relates to dormant accounts, frozen or attached accounts, that cannot immediately be posted to their respective accounts. Instead of such transactions to remain outstanding and constituting non-post items, they are temporarily suspended on this float file pending when their correct account numbers are identified or authority to lift dormancy or de-freeze is obtained. The transaction could then be reversed from the float account to the appropriate account. The file is made of four (4) fields as highlighted below.

S/No.	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1.	ANB ¹	Main Account Number	Character	6
2	DR	Debit	Numeric	16
3.	CR	Credit	Numeric	16
4.	ANB ₂	Contra Account Number	Character	6

4.5 DESIGN OF CONTROLS

The term "control" are various measures put in place by management in a data processing environment to ensure that data is in accessible to unauthorized personnel and the authorized personnel do not use their privilege position to perpetrate fraud. Since a large data processing department could be likened to a small business, which in effect it is, the need to provide a range of checks and controls readily comes to mind. A data processing department is a subsystem of a large system, which must be

co-ordinated within the framework of corporate strategy and company policy. It can then be seen that even more checks and controls must be applied as the activities of a data processing department have a bearing on the efficiency and effectiveness of all, or nearly all, functions of a business.

The control measures introduced in the design of this system are as follows:

- (1) Access to the computer room is to be restricted to authorized personal only.
- (2) The use of data keys is strongly recommended.
- (3) All data relating to the day's business transactions, which are to be wasted, must only be handle by the waste clerk in the computer or data processing department.
- (4) There is going to be segregation of duties among the different operators vested with the responsibilities of data entry. That is, an operator may be assign to input cheques and savings withdrawals only, while others could be assigned to input all deposit vouchers and internally generated vouchers in respect of sales of draft, telegraphic transfer, mail transfer, foreign exchange sales or purchases and loans and overdraft granted. This control measure is meant to always fish out fraudulent operators.
- (5) The manual waste preparations or machining of each batch to obtain control totals is to be done by the waste clerk only. On no account will the computer operators be allowed to handle this responsibility. This is to avoid manipulation of the manual balancing of the batches to suite

the computer inputted batches by the computer operators, especially where fraud is intended.

- (6) Use of password – Each computer operator is going to be allocated password. The use of password has many advantages.
 - (a) It prevents unauthorized persons access to operate the computer.
 - (b) It protect the operators against each others fraudulent act because there would be no argument as to who commits a fraud since all the operations on the computer will always reveal the name of the operators that carry them out through the use of password.
 - (c) It somehow protect the customers and the bank against losses from the hands of fraudulent operators.

Collusion to perpetrate fraudulent conversion of data and master files regarding the transfer of funds to fictitious accounts by computer operators, for instance, is discouraged because their password will definitely sell them out.

4.6 DOCUMENTATION

System documentation outlines the ways and forms which systems should be structured and documented. It specifies the manner in which documents should be compiled. That is, detailed design of computer input as obtained

from the source documents. It equally embraces the design of screen display or printed report.

The documentation of the proposed system is outlined in fig 1 – 13 below:-

- (i) **MAIN MENU:-** The main menu contains the records of waste management, that is, it gives a detail account of what waste is all about as it is used in the banking sector. The procedures of processing waste items, transaction update, that is, addition and deletion to and from the list of transactions available and the generation of the various reports for management and customer's use. The main menu has a sub-menu as shown in fig 2.

- (ii) **WASTE DETAIL MANAGEMENT MENU:-** This is a sub-menu to the main menu and it contain such records and information that narrowed down the information and records contained in the main menu. That is, the sub-menu simplify further the items or sub-topic contained in the main menu for ease of users use and understanding.

The records contained in the sub-menu are, add waste detail, update waste detail, check waste detail, delete waste detail and quit.

Add waste detail means the processing of the waste, that is, the key-in of the data entry in batches.

Update waste detail is a situation where an item has been omitted and when discovered, we now go back to update that item by key in the item concerned.

Check waste detail is just the viewing of all the waste items vide the monitor to see if errors have been made or not.

Delete waste detail is removing items which are not suppose to be key in during waste processing.

- (iii) **WASTE DATA ENTRY FORM:-** This outlines the procedures of data entry. That is, it gives the design by which the various transactions obtainable in a day are inputted into the computer system.
- (iv) **UPDATING WASTE FORM:-** This menu is used for correction purposes. For example, if a certain transaction is omitted during the key in or data input process, this menu could be activated so that the item omitted can be key in appropriately.
- (v) **CHECKING WASTE FORM:-** This menu is used to view the transactions or data key in to the system through the display monitor. This is done purposely to look out for any possible errors or omission.
- (vi) **DELETING WASTE FORM:-** This is used to delete incorrect data entry. It could also be used to remove data that have been key in wrongly, that is removal of inapplicable data that have already been inputted.
- (vii) **PROCESSING SCREEN:-** This menu or screen is activated on completion of data entry process. It indicate the completion or otherwise of waste processing. When this screen is activated, the

system is ready to process all the data that have been key in, that is, updating all the relevant accounts or files that have operations.

- (viii) **TRANSACTION DETAIL MANAGEMENT MENU:-** This menu contains the comprehensive details of the different transaction that exist or obtainable in a bank. The menu is used to manipulate or manage all the various transaction in the system. Among the files contained in this menu are, Add transaction detail, update transaction detail, check transaction detail, delete transaction detail and quite files.
- (ix) **ADDING TRANSACTION DETAIL:-** This is a sub-menu to transaction detail management menu. It is used to update the transaction file. That is, where a new transaction is introduced in the bank, this file is used to add such new transaction to the existing ones in the system.
- (x) **UPDATING TRANSACTION DETAIL:-** This is equally a sub-menu to transaction detail management menu. It is used to correct errors made while adding a new transaction into the transaction file.
- (xi) **CHECKING TRANSACTION DETAIL:-** This file is activated to view all the transactions available in the system through the screen display/monitor. It is equally a sub-menu to the transaction detail management menu.

(xii) **DELETING TRANSACTION DETAIL:-** This is used to delete or remove any unuseful items or transaction that is no longer needed from the transaction detail management menu.

(xiii) **REPORT GENERATING MENU:-** This environment or menu contains the files of all the possible reports that could be generated or produced by the system. The choice of report to be produced in hardcopies will depend on the users need and requirement. The list of the various report as contained in this menu are highlighted in fig 13.

CHAPTER FIVE

SYSTEM TEST, VIABILITY AND EFFICIENCY

5.1 IMPLEMENTATION

Implementation implies the co-ordination of the efforts of the user department and the data processing department in getting the new system into operation. In doing this, "Pilot" runs of the proposed system have been done with test data to ensure that the system attains its defined aims and objectives. The programs have equally been subjected to trial runs with test data consisting of valid and invalid data so as to ensure that the programs can cope with unforeseen circumstances.

During this trial test, some weaknesses were observed in respect of the programs, these weaknesses were promptly corrected and modified following which further trial test were conducted and found effective and satisfactory, a parallel run of the new and existing systems were conducted and the two results compared with one another during which notable differences were verified and corrected. The purpose of conducting parallel run of both the new and the old systems is to avoid a situation where the old system is discarded before the new system is certified okay. This is to avoid some unpleasant consequences on the business, as it is a common future for "bugs" to appear after parallel running have been concluded with detailed trials.

5.2 TRAINING

In order to tap the full advantages and appreciate better the use of the new system, It is advisable that a training programme should be put in place for those who will be responsible for the operation of the new system. The training requirement may not be that intensive judging from the skills already acquired by the present existing computer personnel and the fact that the new system is not all that complex. However, organization of training on the new system could take the following format:-

- (a) Use of hand books
- (b) Courses
- (c) Organisation of lectures

Hand book:- Some vital information from this research book/work could be extracted to form an information manuals for those who will be making use of the system. The facts and information so extracted will be simplified to the understanding of everybody. In other words, it will be teach yourself manual.

Courses:- This could be arranged for those who have little or no knowledge of computer. The courses could be in-house or external courses organized by computer experts, so as to enable the beneficiaries or participant attain proficiency in the use of computer. In this case, the training may not be limited to the new system alone but a general computer training that will enable the trainees acquire skills necessary to grasp the understanding of any new system developed with relative ease.

Lectures:- This could be organized and delivered by the system designer to a cross-section of the computer personnel of each users bank. This makes it practicable or possible for the participant to have a question and answer session during which the system designer will be on hand to clear any areas of doubt or cloud about the new system.

5.3 POST IMPLEMENTATION REVIEW

Once the new system becomes operational, it will need to be examined to determine whether it has met its objectives. This could be done by comparing the cost with the benefit derivable from the introduction of the new system. This procedure is often termed "POST AUDIT". Post audit, review and maintenance of the proposed new system is important for the following reasons.

- * Deal with unforeseen problems
- * Confirm that the planned objectives are being met.
- * To ensure that the system is able to cope with the changing requirements of the business.

5.4 COSTS AND MAINTENANCE

The new system is just a modification or re-design of an existing operational or procedural aspect of the present waste computer system is the banks as it affect their waste system. The whole computer system currently in use is not in anyway going to be faced out completely, hence a minimal cost will be involved in the implementation and maintenance of the new changes to be

of computer, such organization must acquire the right choice of computer system.

Computer is such a device that can easily be modified to suit the need of its user especially the software aspect of it. This research work is a modification of the current "waste system" practiced in the bank, which is one characteristic/advantage of a computer system.

- The idea behind the research is that of customer satisfaction and cost reduction for the banks and this is what a computer system is meant to address.

5.6 CONCLUSION

Majority of banks operating in Nigeria today have acquired one type of compute technology or the other, but the adequacy and suitability of such computer system to their operations cannot be said to be satisfactory.

Most problems, which the computer is meant to address, are still prevalent in our banks today. This means that most Nigerian banks have not gone for the right choice of computer technology and the few ones that acquired the right and modern computer system/technology have not planned adequately for its implementation especially in the area of changeovers, staff training and customer orientation.

The challenges poses by stiff competitions among banks in the new millennium are enormous and for any bank to be able to weather the storm,

they must have a review of their present computer system and acquire where necessary an up to date computer technology or upgrade their present system to boost their operations while at the same time embark on staff training in line with the new system to be acquired or upgraded.

5.7 RECOMMENDATIONS

- * .Banks more than ever before should be more committed to the issue of computer technology as its use has become absolutely necessary. They should start investing on computer technology, but they must invest wisely by acquiring the right computer technology that suites their individual operations otherwise they may end-up with problems and wastage of their resources.

- * Computer literacy is a must for all bank employees, if the banks want to succeed in their computer technology programme. Therefore intensive and comprehensive computer training programme should be organized for all bank employees preparatory to the introduction of computer technology in any bank.

- * For any bank to actually have the upper hand or command the leadership of the banking industry in the new millennium, such bank will not only embark on computer technology acquisition, but it has to go network. The successful implementation of the modified waste system proposed in this research work by any bank will serve as a pointer to its networking programme.

- * Acquisition of computer technology of any sort is a capital-intensive project. Therefore, banks must put every safety and security measures in place to protect the systems, both the hardware and the software to avoid damages to them.
- * Customers must be put on notice and properly briefed on the new modification and restructuring to enable them cope with the new system and identify with the banks incase of any problem emanating during the implementation process. This is very important to avoid loss of customer patronage.
- * Banks with large network of branches are advised to choose a few or selected branches for implementation of the new system to test its effectiveness before implementing it in all branches.
- * Banks are strongly advised to have a parallel run of the old and new system to test the efficacy of the new system before switching over completely to the new system.

REFERENCES

- ADEDAPO; O. A. (1994):** Electronic Banking. An Instrument in Banking Revolution In Nigeria. The Polytechnic Banker magazine. A Publication of the Banking and Finance Students Association of the Kwara State Polytechnic Ilorin. Vol. 3, no 1, page 34 - 35
- ANDERSON; R. G. (1987):** Data Processing Vol. 1, Principles and Practice M & E Hand book series Sixth Edition Longman Group UK LTD.
- DEJI – FOWOKAN; L. (1997):** I. T. Investment and Electronic Banking in Nigeria Computer Plus magazine. December 1997 Edition, Issue No. 6, page 9 – 10.
- LAMPTON; C. (1990):** Data Processing/Programming in Basic. A Computer Awareness First Book. Franklin Walt Library Edition New York.
- NWANKWO; G. O. (1982):** Basic Economics For West African Students Second Edition Cambridge University Press New York, U.S.A.
- NWANKWO; G. O. (1980):** The Nigeria Financial System Macmillan Press Limited London.

OLIVER E. C. & CHAPMAN; R. J. (1990): Data Processing and Information Technology. An instrumental manual for business and accountancy students. Eight Editions. English Language Book Society/ D. P. Publication Limited.

OVWIELEFUOMA; G. (1988): Nigerian Foreign Exchange Market & Finance of International Trade. First Edition Mike-Win Publishers Nigeria Limited Akoka, Yaba - Lagos.

UNION BANK OF NIGERIA PLC, (1988): Annual Report and Accounts.

APPENDIX I - PROGRAM DOCUMENTATION

MENU.PRG

```
set talk off
set status off
set safety off
set scoreboard off
set bell off
set date british
do while .t.
  clear
  @ 0,15 to 22,64 double
  @ 1,30 say 'UNION BANK PLC ABUJA'
  @ 2,30 to 2,49 double
  @ 3,28 say 'COMPUTERISED WASTE SYSTEM'
  @ 4,28 to 4,53 double
  @ 6,35 say "MAIN MENU"
  @ 7,35 to 7,43
  @ 9,25 say 'W..... WASTE DETAIL MANAGEMENT '
  @ 11,25 say 'P..... PROCESS WASTE '
  @ 13,25 say 'T.....TRANSACTION UPDATE'
  @ 15,25 say 'R.....REPORT GENERATION'
  @ 17,25 say 'Q.....QUIT'
  @ 20,21 say 'Pick your choice (W, P, T, R or Q):'
  @ 19,19 to 21,59
do while .t.
  choice1=' '
  @ 20,57 get choice1 picture '!'
  read
  if choice1 $ 'WPTRQ'
```

```
'exit
endif
enddo
@ 21,18 clear to 23,60
do case
  case choice1= 'W'
    do waste
  case choice1= 'P'
    do process
  case choice1= 'T'
    do tran
  case choice1= 'R'
    do report
  otherwise
    exit
endcase
enddo
clear
return
```

WASTE.PRG

```
set talk off
set status off
set scoreboard off
set bell off
set date british
do while .t.
  clear
  @ 0,15 to 22,64 double
```

```
@ 1,30 say 'UNION BANK PLC ABUJA'
@ 2,30 to 2,49 double
@ 3,28 say 'COMPUTERISED WASTE SYSTEM'
@ 4,28 to 4,53 double
@ 6,26 say "WASTE DETAIL MANAGEMENT MENU"
@ 7,26 to 7,53
@ 9,25 say 'A..... ADD WASTE DETAIL '
@ 11,25 say 'U..... UPDATE WASTE DETAIL '
@ 13,25 say 'C.....CHECK WASTE DETAIL'
@ 15,25 say 'D.....DELETE WASTE DETAIL'
@ 17,25 say 'Q.....QUIT'
@ 20,21 say 'Pick your choice (A, U, C, D or Q):'
@ 19,19 to 21,59
do while .t.
  choice1=' '
  @ 20,57 get choice1 picture '!'
  read
  if choice1 $ 'AUCDQ'
    exit
  endif
enddo
@ 21,18 clear to 23,60
do case
  case choice1= 'A'
    do waste1
  case choice1= 'U'
    do waste2
  case choice1= 'C'
    do waste3
  case choice1= 'D'
    do waste4
```

```
    otherwise
      exit
    endcase
  enddo
clear
return
```

WASTE1.PRG

```
sele a
  use master
sele b
  use waste
sele c
  use tcode
tdate=date()
do while .t.
  mbno=' '
  mcbal=0
  mdbal=0
  clea
  @ 1,29 say 'WASTE DATA ENTRY FORM'
  @ 0,27 to 2,51 doub
  @ 3,2 say 'BATCH NO (Enter "9999" to exit):' get mbno
  read
  if mbno='9999'
    exit
  endi
  @ 3,2 ciea to 3,50
  @ 3,2 say 'BATCH NO:'
```

```
@ 3,11 get mbno
@ 3,18 say 'DEBIT BAL:'
@ 3,28 get mdbal pict '999,999,999,999.99'
@ 3,49 say 'CREDIT BAL:'
@ 3,60 get mcbal pict '999,999,999,999.99'
clea gets
@ 4,2 to 24,77 doub
@ 5,4 say 'S/NO'
@ 5,11 say 'CODE'
@ 5,20 say 'TRANSACTION'
@ 5,47 say 'ACCT NO.'
@ 5,62 say 'AMOUNT (#)'
@ 5,9 to 21,9
@ 5,16 to 21,16
@ 5,45 to 21,45
@ 5,56 to 21,56
@ 6,3 to 6,8
@ 6,10 to 6,15
@ 6,17 to 6,44
@ 6,46 to 6,55
@ 6,57 to 6,76
@ 22,3 to 22,76 doub
k=0
r=6
decl mtcd[15],mtdsc[15],manb[15],mamt[15],manm[15]
do while .t.
  r=r+1
  finish='N'
  k=k+1
  mtcd[k]=' '
  manb[k]=spac(6)
```

```
mamt[k]=0
mtdsc[k]=spac(25)
manm[k]=spac(30)
@ r,5 say k pict '99'
do whil .t.
  @ r,12 get mtcd[k]
  read
  if mtcd[k]=' '
    finish='Y'
    exit
  .endi
  sele c
  go top
  loca for tcd=mtcd[k]
  if .not. foun()
    @ 23,22 say 'CODE DOES NOT EXIST - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    @ 23,21 say spac(40)
    loop
  .endi
  exit
endd
if finish='Y'
  exit
.endi
mtdsc[k]=tdsc
@ r,18 get mtdsc[k]
clea gets
do whil .t.
```



```

@ r,49 get manb[k]
read
sele a
go top
loca for anb=manb[k]
if .not. foun()
  @ 23,19 say 'ACCOUNT NO DOES NOT EXIST - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  @ 23,18 say spac(50)
  loop
endi
exit
endd
manm[k]=anm
@ 23,25 say 'ACCOUNT NAME:'
set colo to w+/b+*
@ 23,39 say manm[k]
set colo to w+/b+
@ r,58 get mamt[k] pict '999,999,999,999.99'
read
* do case
*   case mtcd[k]='01'
*     mcbal=mcbal+mamt[k]
*   case mtcd[k]='02'
*     mdbal=mdbal+mamt[k]
*   othe
*     mdbal=mdbal+mamt[k]
*     mcbal=mcbal+mamt[k]
* endc

```

```
@ 3,28 get mdbal pict '999,999,999,999.99'  
@ 3,60 get mcbal pict '999,999,999,999.99'  
clea gets  
@ 23,21 say spac(40)  
if k=15  
  exit  
endi  
endd  
@ 23,28 say 'TO UPDATE FILE (Y/N):'  
do while .t.  
  resp=' '  
  @ 23,50 get resp pict '!'  
  read  
  if resp $ 'YN'  
    exit  
  endi  
endd  
if resp='Y'  
  sele b  
  n=1  
  do while n<k  
    appe blan  
    repl bno with mbno,tcd with mtcd[n]  
    repl tdsc with mtdsc[n],anb with manb[n]  
    repl anm with manm[n],date with tdate  
    repl amt with mamt[n]  
    n=n+1  
  endd  
endi  
endd  
clos all
```

clea

retu

WASTE2.PRG

sele a

use master

sele b

use waste

sele c

use tcode

tdate=date()

do whil .t.

mbno=' '

mcbal=0

mdbal=0

clea

@ 1,30 say 'UPDATING WASTE FORM'

@ 0,28 to 2,50 doub

@ 3,2 say 'BATCH NO (Enter "9999" to exit):' get mbno

read

if mbno='9999'

exit

endi

@ 3,2 clea to 3,50

@ 3,2 say 'BATCH NO:'

@ 3,11 get mbno

@ 3,18 say 'DEBIT BAL:'

@ 3,28 get mdbal pict '999,999,999,999.99'

@ 3,49 say 'CREDIT BAL:'

```
@ 3,60 get mcbal pict '999,999,999,999.99'  
clea gets  
@ 4,2 to 24,77 doub  
@ 5,4 say 'S/NO'  
@ 5,11 say 'CODE'  
@ 5,20 say 'TRANSACTION'  
@ 5,47 say 'ACCT NO.'  
@ 5,62 say 'AMOUNT (#)'  
@ 5,9 to 21,9  
@ 5,16 to 21,16  
@ 5,45 to 21,45  
@ 5,56 to 21,56  
@ 6,3 to 6,8  
@ 6,10 to 6,15  
@ 6,17 to 6,44  
@ 6,46 to 6,55  
@ 6,57 to 6,76  
@ 22,3 to 22,76 doub  
k=0  
r=6  
decl mtcd[15],mtdsc[15],manb[15],mamt[15],manm[15]  
do while .t.  
  r=r+1  
  finish='N'  
  k=k+1  
  mtcd[k]=' '  
  manb[k]=spac(6)  
  mamt[k]=0  
  mtdsc[k]=spac(25)  
  manm[k]=spac(30)  
  @ r,5 say k pict '99'
```

```
do while .t.  
  @ r,12 get mtdc[k]  
  read  
  if mtdc[k]=' '  
    finish='Y'  
    exit  
  endi  
  sele c  
  go top  
  loca for tcd=mtdc[k]  
  if .not. foun()  
    @ 23,22 say 'CODE DOES NOT EXIST - PRESS ANY KEY'  
    set cons off  
    wait  
    set cons on  
    @ 23,21 say spac(40)  
    loop  
  endi  
  exit  
endd  
if finish='Y'  
  exit  
endi  
mtdsc[k]=tdsc  
@ r,18 get mtdsc[k]  
clea gets  
do while .t.  
  @ r,49 get manb[k]  
  read  
  sele a  
  go top
```

```
loca for anb=manb[k]
if .not. foun()
  @ 23,19 say 'ACCOUNT NO DOES NOT EXIST - PRESS ANY KEY'
  set cons off
  wait
  set cons on
  @ 23,18 say spac(50)
  loop
endi
exit
endd
manm[k]=anm
@ 23,25 say 'ACCOUNT NAME:'
set colo to w+/b+*
@ 23,39 say manm[k]
set colo to w+/b+
@ r,58 get mamt[k] pict '999,999,999,999.99'
read
* do case
* case mtcd[k]='01'
* mcbal=mcbal+mamt[k]
* case mtcd[k]='02'
* mdbal=mdbal+mamt[k]
* othe
  mdbal=mdbal+mamt[k]
  mcbal=mcbal+mamt[k]
* endc
@ 3,28 get mdbal pict '999,999,999,999.99'
@ 3,60 get mcbal pict '999,999,999,999.99'
clea gets
@ 23,21 say spac(40)
```

```
    if k=15
        exit
    endi
endd
@ 23,28 say 'TO UPDATE FILE (Y/N):'
do whil .t.
    resp=' '
    @ 23,50 get resp pict '!'
    read
    if resp $ 'YN'
        exit
    endi
endd
if resp='Y'
    sele b
    n=1
    do whil n<k
        appe blan
        repl bno with mbno,tcd with mtcd[n]
        repl tdsc with mtdsc[n],anb with manb[n]
        repl anm with manm[n],date with tdate
        repl amt with mamt[n]
        n=n+1
    endd
endi
endd
clos all
clea
retu
```


WASTE3.PRG

```
sele a
  use master
sele b
  use waste
sele c
  use tcode
tdate=date()
do while .t.
  mbno=' '
  mcbal=0
  mdbal=0
  clea
  @ 1,30 say 'CHECKING WASTE FORM'
  @ 0,28 to 2,50 doub
  @ 3,2 say 'BATCH NO (Enter "9999" to exit):' get mbno
  read
  if mbno='9999'
    exit
  endi
  @ 3,2 clea to 3,50
  @ 3,2 say 'BATCH NO:'
  @ 3,11 get mbno
  @ 3,18 say 'DEBIT BAL:'
  @ 3,28 get mdbal pict '999,999,999,999.99'
  @ 3,49 say 'CREDIT BAL:'
  @ 3,60 get mcbal pict '999,999,999,999.99'
  clea gets
  @ 4,2 to 24,77 doub
  @ 5,4 say 'S/NO'
```

```
@ 5,11 say 'CODE'  
@ 5,20 say 'TRANSACTION'  
@ 5,47 say 'ACCT NO.'  
@ 5,62 say 'AMOUNT (#)'  
@ 5,9 to 21,9  
@ 5,16 to 21,16  
@ 5,45 to 21,45  
@ 5,56 to 21,56  
@ 6,3 to 6,8  
@ 6,10 to 6,15  
@ 6,17 to 6,44  
@ 6,46 to 6,55  
@ 6,57 to 6,76  
@ 22,3 to 22,76 doub  
k=0  
r=6  
decl mtdc[15],mtdsc[15],manb[15],mamt[15],manm[15]  
do while .t.  
  r=r+1  
  finish='N'  
  k=k+1  
  mtdc[k]=' '  
  manb[k]=spac(6)  
  mamt[k]=0  
  mtdsc[k]=spac(25)  
  manm[k]=spac(30)  
  @ r,5 say k pict '99'  
do while .t.  
  @ r,12 get mtdc[k]  
  read  
  if mtdc[k]=' '
```

```
finish='Y'  
exit  
endi  
sele c  
go top  
loca for tcd=mtcd[k]  
if .not. foun()  
    @ 23,22 say 'CODE DOES NOT EXIST - PRESS ANY KEY'  
    set cons off  
    wait  
    set cons on  
    @ 23,21 say spac(40)  
    loop  
endi  
exit  
endd  
if finish='Y'  
    exit  
endi  
mtdsc[k]=tdsc  
@ r,18 get mtdsc[k]  
clea gets  
do while .t.  
    @ r,49 get manb[k]  
    read  
    sele a  
    go top  
    loca for anb=manb[k]  
    if .not. foun()  
        @ 23,19 say 'ACCOUNT NO DOES NOT EXIST - PRESS ANY KEY'  
        set cons off
```

```
wait
set cons on
@ 23,18 say spac(50)
loop
endi
exit
endd
manm[k]=anm
@ 23,25 say 'ACCOUNT NAME:'
set colo to w+/b+*
@ 23,39 say manm[k]
set colo to w+/b+
@ r,58 get mamt[k] pict '999,999,999,999.99'
read
* do case
* case mtcd[k]='01'
* mcbal=mcbal+mamt[k]
* case mtcd[k]='02'
* mdbal=mdbal+mamt[k]
* othe
  mdbal=mdbal+mamt[k]
  mcbal=mcbal+mamt[k]
* endc
@ 3,28 get mdbal pict '999,999,999,999.99'
@ 3,60 get mcbal pict '999,999,999,999.99'
clea gets
@ 23,21 say spac(40)
if k=15
  exit
endi
endd
```

```
@ 3,2 clea to 3,50
@ 3,2 say 'BATCH NO:'
@ 3,11 get mbno
@ 3,18 say 'DEBIT BAL:'
@ 3,28 get mdbal pict '999,999,999,999.99'
@ 3,49 say 'CREDIT BAL:'
@ 3,60 get mcbal pict '999,999,999,999.99'
clea gets
@ 4,2 to 24,77 doub
@ 5,4 say 'S/NO'
@ 5,11 say 'CODE'
@ 5,20 say 'TRANSACTION'
@ 5,47 say 'ACCT NO.'
@ 5,62 say 'AMOUNT (#)'
@ 5,9 to 21,9
@ 5,16 to 21,16
@ 5,45 to 21,45
@ 5,56 to 21,56
@ 6,3 to 6,8
@ 6,10 to 6,15
@ 6,17 to 6,44
@ 6,46 to 6,55
@ 6,57 to 6,76
@ 22,3 to 22,76 doub
k=0
r=6
decl mtcd[15],mtdsc[15],manb[15],mamt[15],manm[15]
do while .t.
  r=r+1
  finish='N'
  k=k+1
```

```
mtcd[k]=' '
manb[k]=spac(6)
mamt[k]=0
mtdsc[k]=spac(25)
manm[k]=spac(30)
@ r,5 say k pict '99'
do whil .t.
  @ r,12 get mtcd[k]
  read
  if mtcd[k]=' '
    finish='Y'
    exit
  endi
  sele c
  go top
  loca for tcd=mtcd[k]
  if .not. foun()
    @ 23,22 say 'CODE DOES NOT EXIST - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    @ 23,21 say spac(40)
    loop
  endi
  exit
endd
if finish='Y'
  exit
endi
mtdsc[k]=tdsc
@ r,18 get mtdsc[k]
```

```
clea gets
do whil .t.
  @ r,49 get manb[k]
  read
  sele a
  go top
  loca for anb=manb[k]
  if .not. foun()
    @ 23,19 say 'ACCOUNT NO DOES NOT EXIST - PRESS ANY KEY'
    set cons off
    wait
    set cons on
    @ 23,18 say spac(50)
    loop
  endi
  exit
endd
manm[k]=anm
@ 23,25 say 'ACCOUNT NAME:'
set colo to w+/b+*
@ 23,39 say manm[k]
set colo to w+/b+
@ r,58 get mamt[k] pict '999,999,999,999.99'
read
* do case
*   case mtcd[k]='01'
*     mcbal=mcbal+mamt[k]
*   case mtcd[k]='02'
*     mdbal=mdbal+mamt[k]
*   othe
*     mdbal=mdbal+mamt[k]
```



```
mcbal=mcbal+mamt[k]
* endc
@ 3,28 get mdbal pict '999,999,999,999.99'
@ 3,60 get mcbal pict '999,999,999,999.99'
clea gets
@ 23,21 say spac(40)
if k=15
  exit
endi
endd
@ 23,28 say 'TO DELETE DATA (Y/N):'
do while .t.
  resp=' '
  @ 23,50 get resp pict '!'
  read
  if resp $ 'YN'
    exit
  endi
endd
if resp='Y'
  sele b
  dele
  pack
endi
endd
clos all
clea
retu
```

PROCESS.PRG

```
clea
@ 9,20 to 15,59
@ 11,25 say 'ARE YOU READY TO PROCESS WASTE'
@ 13,28 say 'Enter [Y]ES or [N]O:'
do while .t.
  resp=' '
  @ 13,49 get resp pict '!'
  read
  if resp $ 'YN'
    exit
  endi
endd
if resp='N'
  clea
  retu
endi
use tran
if .not. eof()
  zap
endi
sele a
  use master
sele b
  use waste
sele c
  use tcode
sele d
  use tran
sele b
```

```
do while .not. eof()
  mtc=tc
  manb1=anb
  mamt=amt
  sele c
  loca for tc=mtc
  manb2=anb
  mtype=type
  sele d
  appe blan
  repl anb1 with manb2
  repl anb2 with manb1
  if mtype='D'
    repl dr with mamt
  else
    repl cr with mamt
  endi
  appe blan
  repl anb1 with manb1
  * repl anb2 with manb2
  repl anb2 with mtc
  if mtype='D'
    repl cr with mamt
  else
    repl dr with mamt
  endi
  sele b
  skip
endd
clea
@ 9,20 to 15,59
```

@ 11,25 say 'WASTE PROCESSING IS COMPLETED'

@ 13,28 say 'PRESS ANY KEY TO EXIT'

set cons off

wait

set cons on

clos all

clea

retu

TRAN.PRG

set talk off

set status off

set scoreboard off

set bell off

set date british

do while .t.

clear

@ 0,15 to 22,64 double

@ 1,30 say 'UNION BANK PLC ABUJA'

@ 2,30 to 2,49 double

@ 3,28 say 'COMPUTERISED WASTE SYSTEM'

@ 4,28 to 4,53 double

@ 6,26 say "TRANS DETAIL MANAGEMENT MENU"

@ 7,26 to 7,53

@ 9,25 say 'A..... ADD TRANS DETAIL '

@ 11,25 say 'U..... UPDATE TRANS DETAIL '

@ 13,25 say 'C.....CHECK TRANS DETAIL'

@ 15,25 say 'D.....DELETE TRANS DETAIL'

@ 17,25 say 'Q.....QUIT'

@ 20,21 say 'Pick your choice (A, U, C, D or Q):'

@ 19,19 to 21,59

do while .t.

choice1=' '

@ 20,57 get choice1 picture '!'

read

if choice1 \$ 'AUCDQ'

exit

endif

enddo

@ 21,18 clear to 23,60

do case

case choice1= 'A'

do tran1

case choice1= 'U'

do tran2

case choice1= 'C'

do tran3

case choice1= 'D'

do tran4

otherwise

exit

endcase

enddo

clear

return

TRAN1.PRG

```
use tcode
do while .t.
  clea
  mtcd=' '
  mtdsc=spac(30)
  manb=spac(6)
  mtype=' '
  @ 3,10 to 21,69 doub
  @ 17,11 to 17,68 doub
  @ 4,27 say 'COMPUTERISED WASTE SYSTEM'
  @ 5,27 to 5,51 doub
  @ 8,27 say 'ADDING TRANSACTION DETAIL'
  @ 7,25 to 9,53
  @ 11,12 say 'TRANSACTION CODE (Enter "99" to exit):' get mtcd pict '99'
  read
  if mtcd='99'
    exit
  endi
  go top
  loca for tcd=mtcd
  if foun()
    @ 19,25 say 'Duplicate Code - Press any key'
    set cons off
    wait
    set cons on
    loop
  endi
  @ 13,12 say 'TRANSACTION DESCRIPTION:' get mtdsc pict '@!'
  @ 15,12 say 'CORRESPONDING ACCT NO:' get manb
```

```
@ 15,45 say '[D]EBIT or [C]REDIT:' get mtype
read
@ 19,28 say 'TO SAVE DETAIL (Y/N):'
do while .t.
  resp=' '
  @ 19,50 get resp pict '!'
  read
  if resp $ 'YN'
    exit
  endi
enddo
if resp='Y'
  appe blan
  repl tcd with mtcd
  repl tdsc with mtdsc
  repl anb with manb
  repl type with mtype
  endi
enddo
clos all
clea
retu
```

TRAN2.PRG

```
use tcode
do while .t.
  clea
  mtcd=' '
  @ 3,10 to 21,69 doub
```



```
@ 17,11 to 17,68 doub
@ 4,27 say 'COMPUTERISED WASTE SYSTEM'
@ 5,27 to 5,51 doub
@ 8,26 say 'UPDATING TRANSACTION DETAIL'
@ 7,24 to 9,54
@ 11,12 say 'TRANSACTION CODE (Enter "99" to exit):' get mtcd pict '99'
read
if mtcd='99'
    exit
endi
go top
loca for tcd=mtcd
if .not. foun()
    @ 19,22 say 'Code does not exist - Press any key'
    set cons off
    wait
    set cons on
    loop
endi
mtdsc=tdsc
manb=anb
mtype=type
@ 13,12 say 'TRANSACTION DESCRIPTION:' get mtdsc pict '@!'
@ 15,12 say 'CORRESPONDING ACCT NO:' get manb
@ 15,45 say '[D]EBIT or [C]REDIT:' get mtype
read
@ 19,28 say 'TO SAVE UPDATE (Y/N):'
do whil .t.
    resp=' '
    @ 19,50 get resp pict '!'
    read
```

```
endi
go top
loca for tcd=mtcd
if .not. foun()
  @ 19,22 say 'Code does not exist - Press any key'
  set cons off
  wait
  set cons on
  loop
endi
mtdsc=tdsc
manb=anb
mtype=type
@ 13,12 say 'TRANSACTION DESCRIPTION:' get mtdsc pict '@!'
@ 15,12 say 'CORRESPONDING ACCT NO:' get manb
@ 15,45 say '[D]EBIT or [C]REDIT:' get mtype
clea gets
@ 19,19 say 'VIEWING TRANSACTION DETAIL - Press any key'
set cons off
wait
set cons on
endd
clos all
clea
retu
```

TRAN4.PRG

```
use tcode
do whil .t.
```

```
clea
mtcd=' '
@ 3,10 to 21,69 doub
@ 17,11 to 17,68 doub
@ 4,27 say 'COMPUTERISED WASTE SYSTEM'
@ 5,27 to 5,51 doub
@ 8,26 say 'DELETING TRANSACTION DETAIL'
@ 7,24 to 9,54
@ 11,12 say 'TRANSACTION CODE (Enter "99" to exit):' get mtcd pict '99'
read
if mtcd='99'
  exit
endi
go top
loca for tcd=mtcd
if .not. foun()
  @ 19,22 say 'Code does not exist - Press any key'
  set cons off
  wait
  set cons on
  loop
endi
mtdsc=tdsc
manb=anb
mtype=type
@ 13,12 say 'TRANSACTION DESCRIPTION:' get mtdsc pict '@!'
@ 15,12 say 'CORRESPONDING ACCT NO:' get manb
@ 15,45 say '[D]EBIT or [C]REDIT:' get mtype
clea gets
@ 19,24 say 'TO DELETE TRANS DETAIL (Y/N):'
do whil .t.
```

```
resp=' '  
@ 19,54 get resp pict '!'  
read  
if resp $ 'YN'  
  exit  
endi  
endd  
if resp='Y'  
  dele  
  pack  
endi  
endd  
clos all  
clea  
retu
```

REPORT.PRG

```
do while .t.  
  clear  
  @ 1,11 to 23,66 double  
  @ 2,30 say 'UNION BANK PLC ABUJA'  
  @ 3,30 to 3,49 double  
  @ 5,27 say 'COMPUTERISED WASTE SYSTEM'  
  @ 6,27 to 6,51 double  
  @ 8,29 say "REPORT GENERATION MENU"  
  @ 7,27 to 9,52 doub  
  @ 11,26 say 'W ..... WASTE REPORT'  
  @ 13,26 say 'S ..... WASTE STATEMENT OF ACCOUNT'  
  @ 15,26 say 'L ..... LARGE ITEMS REPORT'
```

```
@ 17,26 say 'F ..... FULL UPDATE REPORT'
@ 19,26 say 'Q ..... QUIT'
@ 22,21 say 'Pick your choice (W, S, L, F or Q):'
@ 21,12 to 21,65 doub
do while .t.
  choice1=' '
  @ 22,57 get choice1 picture '!'
  read
  if choice1 $ 'WSLFQ'
    exit
  endif
enddo
do case
  case choice1= 'W'
    do report1
  case choice1= 'S'
    do report2
  case choice1= 'L'
    do report3
  case choice1= 'F'
    do report4
  otherwise
    exit
endcase
enddo
clear
return
```

REPORT1.PRG

```
tdate=date()
set devi to prin
@ 1,31 say 'WASTE SUMMARY REPORT FOR '+dtoc(tdate)
@ 2,31 say repl('=',33)
@ 3,1 say repl('-',78)
@ 4,1 say '|'
@ 4,3 say 'B/NO'
@ 4,8 say '|'
@ 4,10 say 'ACCT NO'
@ 4,18 say '|'
@ 4,24 say 'ACCOUNT NAME'
@ 4,51 say '|'
@ 4,53 say 'TCODE'
@ 4,59 say '|'
@ 4,67 say 'AMOUNT'
@ 4,78 say '|'
@ 5,1 say repl('-',78)
r=5
tldr=0
tcr=0
sele a
    use waste
sele b
    use tcode
sele a
do whil .not. eof()
    r=r+1
    mbno=bno
    mtcd=tcd
```

```
manb=anb
manm=anm
mamt=amt
sele b
go top
loca for tcd=mtcd
mtype=type
if mtype='D'
    tcr=tcr+mamt
else
    tdr=tdr+mamt
endi
@ r,1 say '|'
@ r,3 say mbno
@ r,8 say '|'
@ r,10 say manb
@ r,18 say '|'
@ r,20 say manm
@ r,51 say '|'
@ r,54 say mtcd
@ r,59 say '|'
@ r,61 say mamt pict '9,999,999,999.99'
@ r,78 say '|'
r=r+1
@ r,1 say '|'
@ r,8 say '|'
@ r,18 say '|'
@ r,51 say '|'
@ r,59 say '|'
@ r,78 say '|'
sele a
```



```
skip
endd
r=r+1
@ r,1 say repl('-',78)
r=r+2
@ r,31 say 'TOTAL DEBIT ='
@ r,44 say tdr pict '999,999,999,999.99'
r=r+2
@ r,31 say 'TOTAL CREDIT ='
@ r,45 say tcr pict '999,999,999,999.99'
set devi to scre
use
retu
```

REPORT2.PRG

```
use tran
sort on anb1 to temp
use temp
go top
manb1=anb1
use
sele a
    use temp
sele b
    use master
sele c
    use tcode
sele b
go top
```

loca for anb=manb1

manm=anm

mbal=bal

tdate=date()

set devi to prin

@ 1,20 say 'WASTE STATEMENT OF ACCOUNT FOR '+dtoc(tdate)

@ 2,20 say repl('=' ,39)

@ 4,1 say 'ACCOUNT NAME: '+rtrim(manm)+' ('+rtri(manb1)+)'

@ 5,1 say repl('-',78)

@ 6,1 say '|'

@ 6,2 say 'TRANSACTION DETAIL'

@ 6,27 say '|'

@ 6,33 say 'DEBIT'

@ 6,44 say '|'

@ 6,49 say 'CREDIT'

@ 6,61 say '|'

@ 6,65 say 'BALANCE'

@ 6,78 say '|'

@ 7,1 say repl('-',78)

@ 8,1 say '|'

@ 8,2 say 'BALANCE BROUGHT FORWARD'

@ 8,27 say '|'

@ 8,44 say '|'

@ 8,61 say '|'

@ 8,62 say mbal pict '9,999,999,999.99'

@ 8,78 say '|'

@ 9,1 say '|'

@ 9,27 say '|'

@ 9,44 say '|'

@ 9,61 say '|'

@ 9,78 say '|'

```
r=9
tdr=0
tcr=0
sele a
do while .not. eof()
  r=r+1
  manb1=anb1
  mdr=dr
  mcr=cr
  manb2=anb2
  tdr=tdr+mdr
  tcr=tcr+mcr
  if rtri(manb1)>='100'
    mbal=mbal-mdr+mcr
  else
    mbal=mbal+mdr-mcr
  endi
  if rtri(manb1)>='100'
    sele c
    go top
    loca for tcd=rtri(manb2)
    manm2=tdsc
  else
    sele b
    go top
    loca for anb=manb2
    manm2=anm
  endi
  @ r,1 say '|'
  @ r,2 say rtri(manm2)+' '+rtri(manb2)
  @ r,27 say '|'
```

```
@ r,28 say mdr pict '9,999,999,999.99'  
@ r,44 say '|'  
@ r,45 say mcr pict '9,999,999,999.99'  
@ r,61 say '|'  
@ r,78 say '|'  
r=r+1  
@ r,1 say '|'  
@ r,27 say '|'  
@ r,44 say '|'  
@ r,61 say '|'  
@ r,78 say '|'  
sele a  
skip  
if anb1<>manb1  
  manb1=anb1  
  r=r+1  
  @ r,1 say '|'  
  @ r,2 say 'TOTALS'  
  @ r,27 say '|'  
  @ r,28 say tdr pict '9,999,999,999.99'  
  @ r,44 say '|'  
  @ r,45 say tcr pict '9,999,999,999.99'  
  @ r,61 say '|'  
  @ r,62 say mbal pict '9,999,999,999.99'  
  @ r,78 say '|'  
mdr=0  
mcr=0  
r=r+1  
@ r,1 say repl('-',78)  
sele b  
go top
```

loca for anb=manb1

manm=anm

mbal=bal

r=r+3

@ r,1 say 'ACCOUNT NAME: '+rtri(manm)+' ('+rtri(manb1)+)'

r=r+1

@ r,1 say repl('-',78)

r=r+1

@ r,1 say '|'

@ r,2 say 'TRANSACTION DETAIL'

@ r,27 say '|'

@ r,33 say 'DEBIT'

@ r,44 say '|'

@ r,49 say 'CREDIT'

@ r,61 say '|'

@ r,65 say 'BALANCE'

@ r,78 say '|'

r=r+1

@ r,1 say repl('-',78)

r=r+1

@ r,1 say '|'

@ r,2 say 'BALANCE BROUGHT FORWARD'

@ r,27 say '|'

@ r,44 say '|'

@ r,61 say '|'

@ r,62 say mbal pict '9,999,999,999.99'

@ r,78 say '|'

r=r+1

@ r,1 say '|'

@ r,27 say '|'

@ r,44 say '|'

```
@ r,61 say '|'  
@ r,78 say '|'  
tdr=0  
tcr=0  
endi  
sele a  
endd  
r=r+1  
@ r,1 say repl('-',78)  
set devi to scre  
clos all  
clea  
retu
```

REPORT3.PRG

```
tdate=date()  
set devi to prin  
@ 1,24 say 'LARGE ITEMS REPORT FOR '+dtoc(tdate)  
@ 2,24 say repl('=',31)  
@ 3,1 say repl('-',78)  
@ 4,1 say '|'  
@ 4,3 say 'S/NO'  
@ 4,8 say '|'  
@ 4,10 say 'ACCT NO'  
@ 4,18 say '|'  
@ 4,24 say 'ACCOUNT NAME'  
@ 4,51 say '|'  
@ 4,53 say 'TCODE'  
@ 4,59 say '|'
```

```
@ 4,67 say 'AMOUNT'  
@ 4,78 say '|'  
@ 5,1 say repl('-',78)  
r=5  
msno=0  
use waste  
do while .not. eof()  
  mtc=tc  
  manb=anb  
  manm=anm  
  mamt=amt  
  if mamt>=100000  
    r=r+1  
    msno=msno+1  
    @ r,1 say '|'  
    @ r,3 say msno pict '99'  
    @ r,8 say '|'  
    @ r,10 say manb  
    @ r,18 say '|'  
    @ r,20 say manm  
    @ r,51 say '|'  
    @ r,54 say mtc  
    @ r,59 say '|'  
    @ r,61 say mamt pict '9,999,999,999.99'  
    @ r,78 say '|'  
    r=r+1  
    @ r,1 say '|'  
    @ r,8 say '|'  
    @ r,18 say '|'  
    @ r,51 say '|'  
    @ r,59 say '|'
```

```
@ r,78 say '|'  
endi  
skip  
endd  
r=r+1  
@ r,1 say repl('-',78)  
set devi to scre  
use  
retu .
```

REPORT4.PRG

```
set devi to prin  
tdate=date()  
@ 1,24 say 'FULL UPDATE REPORT FOR '+dtoc(tdate)  
@ 2,24 say repl('=',31)  
@ 3,7 say repl('-',66)  
@ 4,7 say '|'  
@ 4,9 say 'ACCOUNT NO'  
@ 4,20 say '|'  
@ 4,25 say 'ACCOUNT NAME'  
@ 4,53 say '|'  
@ 4,58 say 'BALANCE'  
@ 4,72 say '|'  
@ 5,7 say repl('-',66)  
r=5  
msno=0  
use master  
do whil .not. eof()  
manb=anb
```


UNION BANK PLC ABUJA
COMPUTERISED WASTE SYSTEM

MAIN MENU

W..... WASTE DETAIL MANAGEMENT

P..... PROCESS WASTE

T.....TRANSACTION UPDATE

R.....REPORT GENERATION

Q.....QUIT

Pick your choice (W, P, T, R or Q):

FIG. 1

UNION BANK PLC ABUJA
COMPUTERISED WASTE SYSTEM

WASTE DETAIL MANAGEMENT MENU

- A..... ADD WASTE DETAIL
- U..... UPDATE WASTE DETAIL
- C.....CHECK WASTE DETAIL
- D.....DELETE WASTE DETAIL
- Q.....QUIT

Pick your choice (A, U, C, D or Q):

FIG 2

DELETING WASTE FORM

BATCH NO:0001 DEBIT BAL: 567,500.00 CREDIT BAL: 567,500.00

S/NO	CODE	TRANSACTION	ACCT NO.	AMOUNT (#)
1	05	TELEGRAPHIC TRANSFER (I)	100	24,500.00
2	02	WITHDRAWAL	104	50,000.00
3	01	DEPOSIT	102	120,000.00
4	05	TELEGRAPHIC TRANSFER (I)	103	248,000.00
5	11	OVERDRAFT	101	125,000.00
6				

TO DELETE DATA (Y/N) :

Fig. 6

ARE YOU READY TO PROCESS WASTE

Enter [Y]ES or [N]O:

WASTE PROCESSING IS COMPLETED

PRESS ANY KEY TO EXIT

Fig. 7

UNION BANK PLC ABUJA
COMPUTERISED WASTE SYSTEM

TRANS DETAIL MANAGEMENT MENU

- A..... ADD TRANS DETAIL
- U..... UPDATE TRANS DETAIL
- C.....CHECK TRANS DETAIL
- D.....DELETE TRANS DETAIL
- Q.....QUIT

Pick your choice (A, U, C, D or Q):

Fig. 8

COMPUTERISED WASTE SYSTEM

ADDING TRANSACTION DETAIL

TRANSACTION CODE (Enter "99" to exit): 16

TRANSACTION DESCRIPTION: COMMISSION RECEIVED

CORRESPONDING ACCT NO: 004 [D]EBIT or [C]REDIT: c

TO SAVE DETAIL (Y/N):

FIG. 9

COMPUTERISED WASTE SYSTEM

UPDATING TRANSACTION DETAIL

TRANSACTION CODE (Enter "99" to exit): 16

TRANSACTION DESCRIPTION: COMMISSION RECEIVED

CORRESPONDING ACCT NO: 004 [D]EBIT or [C]REDIT: C

TO SAVE UPDATE (Y/N):

FIG. 10

COMPUTERISED WASTE SYSTEM

DELETING TRANSACTION DETAIL

TRANSACTION CODE (Enter "99" to exit): 16

TRANSACTION DESCRIPTION: COMMISSION RECEIVED

CORRESPONDING ACCT NO: 004 [D]EBIT or [C]REDIT: C

TO DELETE TRANS DETAIL (Y/N):

FIG. 12

UNION BANK PLC ABUJA

COMPUTERISED WASTE SYSTEM

REPORT GENERATION MENU

- W WASTE REPORT
- S WASTE STATEMENT OF ACCOUNT
- L LARGE ITEMS REPORT
- F FULL UPDATE REPORT
- Q QUIT

Pick your choice (W, S, L, F or Q):

FIG. 13

WASTE STATEMENT OF ACCOUNT FOR 23/06/99

=====

ACCOUNT NAME: CASH (000)

TRANSACTION DETAIL	DEBIT	CREDIT	BALANCE
BALANCE BROUGHT FORWARD			50,000,000.00
DANJUMA AUDU 102	120,000.00	0.00	
DANLADI SHEHU 104	0.00	50,000.00	
BALARABE MUSA 101	0.00	125,000.00	
TOTALS	120,000.00	175,000.00	49,945,000.00

ACCOUNT NAME: HEAD OFFICE (001)

TRANSACTION DETAIL	DEBIT	CREDIT	BALANCE
BALANCE BROUGHT FORWARD			1,250,000.00
MICHAEL HUSSAINI 100	24,500.00	0.00	
JOHN YARIMA 103	248,000.00	0.00	
TOTALS	272,500.00	0.00	1,522,500.00

ACCOUNT NAME: MICHAEL HUSSAINI (100)

TRANSACTION DETAIL	DEBIT	CREDIT	BALANCE
BALANCE BROUGHT FORWARD			50,000.00
TELEGRAPHIC TRANSF. (I) 05	0.00	24,500.00	
TOTALS	0.00	24,500.00	74,500.00

ACCOUNT NAME: BALARABE MUSA (101)

TRANSACTION DETAIL	DEBIT	CREDIT	BALANCE
BALANCE BROUGHT FORWARD			20,000.00
OVERDRAFT 11	125,000.00	0.00	
TOTALS	125,000.00	0.00	-105,000.00

ACCOUNT NAME: DANJUMA AUDU (102)

TRANSACTION DETAIL	DEBIT	CREDIT	BALANCE
			30,000.00

DEPOSIT 01	0.00	120,000.00	
TOTALS	0.00	120,000.00	150,000.00

ACCOUNT NAME: JOHN YARIMA (103)

TRANSACTION DETAIL	DEBIT	CREDIT	BALANCE
BALANCE BROUGHT FORWARD			500,000.00
TELEGRAPHIC TRANSF. (I) 05	0.00	248,000.00	
TOTALS	0.00	248,000.00	748,000.00

ACCOUNT NAME: DANLADI SHEHU (104)

TRANSACTION DETAIL	DEBIT	CREDIT	BALANCE
BALANCE BROUGHT FORWARD			700,001,200.00
WITHDRAWAL 02	50,000.00	0.00	
TOTALS	50,000.00	0.00	699,951,200.00

ACCOUNT NAME: ()

TRANSACTION DETAIL	DEBIT	CREDIT	BALANCE
BALANCE BROUGHT FORWARD			0.00

LARGE ITEMS REPORT FOR 23/06/99

=====

S/NO	ACCT NO	ACCOUNT NAME	TCODE	AMOUNT
1	102	DANJUMA AUDU	01	120,000.00
2	103	JOHN YARIMA	05	248,000.00
3	101	BALARABE MUSA	11	125,000.00

FULL UPDATE REPORT FOR 23/06/99

=====

ACCOUNT NO	ACCOUNT NAME	BALANCE
000	CASH	49,945,000.00
001	HEAD OFFICE	1,522,500.00
002	INTEREST REC'D (P & L A/C)	350,000.00
003	INTEREST PAID (P & L A/C)	125,000.00
004	COMMISSION REC'D (P & L A/C)	70,000.00
100	MICHAEL HUSSAINI	74,500.00
101	BALARABE MUSA	-105,000.00
102	DANJUMA AUDU	150,000.00
103	JOHN YARIMA	748,000.00
104	DANLADI SHEHU	699,951,200.00

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