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Title Page

A COMPUTER APPROACH

TO

MORTGAGE OPERATIONS

(A Case Study Of Federal Mortgage Finance Ltd. Minna)

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Post Graduate Diploma In Computer Science**

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CERTIFICATION

We agree in every capacity that this project work was produced by the bearer, **Ayoka Angela Anaele** in partial fulfilment of the award of Post Graduate Diploma in Computer Science.

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DEDICATION

Dedicated to GOD ALMIGHTY to whom I owe everything.

ACKNOWLEDGEMENT

First I wish to thank GOD who has remained faithful to his promises.

I am particularly grateful to my husband MR. H.P.C ANYANWU who solely financed both the course work and the project for his love, care and support. I also wish to pray for God's blessings on my little daughter CHIDALU whom I denied my love and care for the whole period of the course; and also my sister and sisters-in-law THECLA AYOKA, OKWUDIRI ANYANWU and IJEOMA respectively for taking care of my family while I was away.

I am most grateful to all my lecturers especially Messrs KOLA and BADAMOS whose study materials were used extensively, and also the management and staff of Federal Mortgage Finance Ltd., Minna for assisting me with all necessary information.

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Finally, I am indebted to all my friends and well wishers who morally, financially or through their prayers supported me during the course of my study. May God bless them all.

ABSTRACT

Mortgage Operations is an aspect of banking and finance operations that aims at accelerating mortgage services and providing management with efficient system needed for effective decision making. But due to some fundamental and logistic problems the mortgage industry has not been able to fulfil these noble functions.

The objective of this project is therefore to provide the organization with adequate and up to date information that will be used to automate the system for greater efficiency and effectiveness so that more people will be able to benefit from their loans and be able to build their own houses.

To this effect, this project analysed the problems of a manual system and benefits of automated systems. It also provided a guide to process of automation and the resource requirements.

Finally a Dbase IV program has been developed which could accept and store data, calculate interest on loan, draw up the repayment schedule and then produce the required reports.

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CHAPTER ONE

THE SUBJECT MATTER OF THE PROJECT

- 0 Computers are increasingly becoming indispensable. Many tasks at home and in the office that were hitherto executed manually are being automated at a very fast pace. Thus it is very apparent that no matter the field of study or nature of work, the computer is an important tool for efficiency improvement and precision of job or task execution.

The banking and finance sector, for one is a place where the need for computerization cannot be overemphasized. Such vital areas as decision making, stock and inventory control, payroll system, investment and financial analysis which could be improved by a good management information system constitute the bedrock for any financial institution therefore they ought to be properly managed.

The primary aim of a Mortgage bank is to help provide shelter for the citizens without placing unnecessary burden on the mortgagor. The Federal Mortgage Finance is a brainchild of the Federal Mortgage Bank of Nigeria and their service centres around loan disbursement and advice on cost and value for money spent in the construction industry.

There is nothing that destroys bank-customer relationship and confidence more than lack of adequate, accurate and up-to-date information or fast service, which are what the customers look out for. These could best be achieved by a good mortgage computerization especially with the Federal Government's effort to ensure that every eligible citizen has his/her own home.

1.1 AIMS AND OBJECTIVES

This project is aimed at studying the complex nature of the Federal Mortgage Finance in order to understand how it functions or operates in order to make recommendations that will bring about greater efficiency and effectiveness.

The project will try to explore, formulate and evaluate the computerization in the Mortgage industry. In doing this, the following objectives are hoped to be achieved.

1. To take up the preliminary studies of the existing system and make recommendations for a successful automation of the system.
2. To embark on system design based on the recommendations
3. To evaluate the cost and benefit of the proposed system
4. Work towards the implementation and final integration of the new system.

1.20 WHAT IS A COMPUTER

A computer could be defined as an electronic device, which accepts, and process data by following a set of instructions called programs to produce an accurate and efficient result known as information.

The ultimate aim of a computer is to produce information hence the art of computing is called information processing. Due to its electronic nature, computers have the ability of getting results at a very high speed and storing very large amount of data. These are done with relative accuracy and precision. That is why computers are preferred to manual operations.

Every computer system is basically made up of four elements – The hardware, Software, Procedures, and People. The hardware elements are the visible or tangible parts of the computer system, example, keyboard, monitor, and printer.

The software elements comprise the instructions that facilitate the processing of all activities of the computer system.

The Procedures are the methods employed in producing the software while the people comprise of programmers, analysts, operators and users.

1.21 CHARACTERISTICS OF COMPUTERS

The characteristics of computers could be classified under six broad headings.

- (1) **Speed:** The computer was invented as a high-speed calculator. The ability to get answers fast enough makes real-time computing possible. It also gives the user time to take action on the answers or make alternative plans. The speed of processing of the computer is referred to in terms of the following:
 - Milliseconds (thousands of a second)
 - Microseconds (Millionth of a second)
 - Nanoseconds (thousand-millionth of second)
 - Picosecond (Million-millionths of a second)
- (2) **Storage:** The speed with which computers can process large quantities of information has led to the generation of information on a vast scale. The internal memory of the computer is used for storing a lot of information. It is built up in K-modules where K equals 1024 storage locations. Information could also be stored on external memory e.g. disk and cassettes.
- (3) **Accuracy:** The accuracy of the computer is very high. Errors in machinery can occur but due to increased efficiency in error detecting techniques. These errors seldom led to false result. In most cases, errors in computing are due to human rather than technological weakness.
- (4) **Versatility:** It could be said that the computer has limited ability. This is because in the final analysis, it actually performs three basic operations. They are as follows:
 - It passes information between itself and the external world via Input / Output devices

- It moves data internally within the Central Processing Unit (C.P.U)
 - It performs basic arithmetic operations. A computer is capable of performing almost any task provided that task can be reduced to a series of logical steps.
- (5) **Automatic:** A computer is much more than an adding machine or calculator, all of which require human operations to press the necessary keys for the operation to be performed. Some of the computer operations are performed automatically without the user pressing any key.
- (6) **Diligence:** Being a machine, a computer does not suffer from human traits of tiredness and lack of concentration. It will perform the last job with the same speed and accuracy as the first job even if ten million jobs were involved.

1.3 HISTORY OF FEDERAL MORTGAGE FINANCE

The History of the Federal Mortgage Finance will not be complete without first going back to the history of Federal Mortgage Bank of Nigeria.

The Federal Mortgage Bank of Nigeria was established under the decree No. 7 of 1977 and it is aimed at accomplishing the following objectives:-

1. The Board in accordance with government regulations may determine the provision of long-term credit facilities to Mortgage Institutions in the country at such rates and upon such terms as may be determined.
2. To encourage and promote the development of mortgage institution at state and National Level.
3. To supervise and control the activities of mortgage institutions in Nigeria on directives by the Federal Government.
4. Provide long-term credit facilities directly to citizens at such rates and upon such terms as maybe determined by the Board.
5. Provide competitive commercial rates of interest of credit facilities to commercial property developers of office and other special types of

building. Until 1993 this bank continued to function in these capacities and experienced a lot of growth both in scope and activities. And with the increasing demand on the Federal Government to sensitize the Mortgage Industry so that the teeming population could be helped to build their own houses to solve the accommodation problem in the country. The Federal Government recognized that it is imperative to divest the old Federal Mortgage Bank of Nigeria of its retail banking and mortgage operations so that the Federal Mortgage Bank would concentrate on its rightful role as the nation's apex mortgage lending agency; and supervisory organ.

This led to the establishment of the Federal Mortgage Finance Limited and it was incorporated in July 1993 to take over the retail banking and mortgage operations of the Federal Mortgage Bank of Nigeria. It is fully owned by the Federal Government of Nigeria and its objective is to provide credible and responsive housing finance services that will facilitate housing delivery to all segments of the Nigerian Society. Presently it has about 62 operational outlets spread all over the federation.

. 4 SCOPE AND LIMITATIONS OF THE PROJECT

The Federal Mortgage Finance Ltd. carries out two major operations, these are the Mortgage and the Banking services. Due to time and size factors, this project work has been limited to only Mortgage services, which is the core of the company's operations. The project will therefore cover virtually all aspects of Account Keeping, Loan Disbursement and Repayment and Report Generation.

CHAPTER TWO

2.1 FUNCTIONS OF FEDERAL MORTGAGE FINANCE LTD.

The primary functions of the Federal Mortgage Finance Limited are as follows:-

- (i) To ensure equitable distribution of mortgage lending activities all over the country.
- (ii) To operate as an efficient and effective mortgage institution which will be a role model for the private mortgage institutions.
- (iii) To dictate the level and pace of growth of mortgage finance industry
- (iv) To minimize avoidable and fraudulent losses, and to ensure a timely and adequate loan recovery performance, in order to create opportunities for structured expansion in the provision of housing finances.

2.2 TYPES OF LOANS

From The information gathered in the company's brochure, there are basically three types of loans offered by the company. These are:

1. **Social Loan:-** Loans of amount between ~~N~~1.00 – ~~N~~300,000.00 classified as social / retail loans and they attract 14% interest per annum in the first year and 18.5% in subsequent years. The term of repayment is 20 years.
2. **Economic Loans:-** Loans of ~~N~~300,001.00 - ~~N~~1,000,000.00 are classified as Economic loans. They attract interest at the rate of 15.5% in the first year and 20% in the subsequent years. The term of repayment is 10 years and the mortgagor can be an individual or corporate body.

3. Commercial Loan:- All loans above ₦1 million are classified as commercial and attract interest rate of 16.5% in the first year and 21% in subsequent years. The term is 10 years and it is also open to individuals and corporate bodies. The 4.5% difference in interest rate in the first year in each case is to allow for service charges.

Mortgage Administration Deposit Scheme:-

This is a programme specially designed to assist employers of labour who cannot or do not wish to administer their staff housing loan scheme.

2.30 CONDITIONS FOR GRANTING A LOAN

Before a loan could be approved the applicant must meet the following conditions:-

1. He must be a Nigerian not less than 21 years
2. The loan must be for any of these purposes
 - (a) Construction or purchase of a residential house
 - (b) Development of a landed property
 - (c) Repair or renovation of existing property
3. The architectural and structural design of the house must be approved By the town planning authority
4. There must be a valid title to the land, example Certificate of Occupancy – This is the only thing the bank can accept as security for the loan. This is done by a successful search at the land registry.
5. Survey plan of the proposed structure must be presented – This is to ensure that the proposed building is in accordance to government specifications so that it is not demolished later on and to be sure that the loan will be enough to complete the project.
6. There must be satisfactory evidence of income high enough to repay the loan.
7. He must be a savings account holder with the bank. This is to ensure that the applicant is helping the bank to satisfy its dual role of saving /

fund mobilization. He must have a balance of at least ₦10,000.00 in his savings account with the bank. This limit could be raised depending on the management perception of the customer. If the applicant meets the above conditions then the loan could be approved. A file is opened for him and he is given a number.

Disbursement could be in a number of installments. Conditions for repayment are spelt out in the agreement form as follows:-

- Interest alone is paid within the 1st three months. This period is regarded as the moratorium period.
 - Capital and interest may be payable with such rates and upon such terms as may be determined by the board, immediately after the moratorium period.
8. Tax clearance:- This is to prove that the applicant is gainfully employed. Only employed or income earning citizens pay tax. The pay-slip of the past 3 months can also be asked for. This requirement is to avoid a situation where the applicant had stopped working. For a company the balance sheet / current Account Statement is demanded. This aims at ensuring that the applicant has means of repaying the loan.

Ledger card for each mortgagor is prepared and updated each time a transaction is carried out on the account either a repayment or additional loan granted or charges.

Every six months each mortgagor is given a bank reconciliation statement so that he will be able to know his exact position with the bank and then compare it with his own records.

31 PROCESSING A MORTGAGE APPLICATION

STEP 1 The customer brings in an application and completes the bank application form

STEP 2 He submits the documents demanded for together with two passport size photographs

- STEP 3** A file is opened for him where in the photocopies of all the documents cited are put. The application is registered in the application register
- STEP 4** He is required to pay the search fee and inspection fees before further processing can be done. And also maintain a balance of ₦10,000.00 in his Savings Account for the whole period of the loan.
- STEP 5** The Legal Department is contacted to conduct a search at the land registry to ascertain the authenticity of the property title.
- STEP 6** The Legal Department will make a report of their findings.
- STEP 7** Based on report of step 6 an appraisal will be made and then passed on to the Credit Committee which will now take the final decision as to approve or not to approve the loan.
- STEP 8** If it is approved an Offer Letter will be prepared wherein the conditions for the loan are clearly stated.
- STEP 9** Disbursement is commenced at this stage. The original copies of all the documents submitted are collected from the customer and kept as security documents until the loan is fully retired.
- STEP 10** The progress of the project is monitored as money is being disbursed to ensure that the fund is not used for some other purposes other than that for which it was given.

2.4 ORGANIZATION OF FEDERAL MORTGAGE FINANCE LTD.

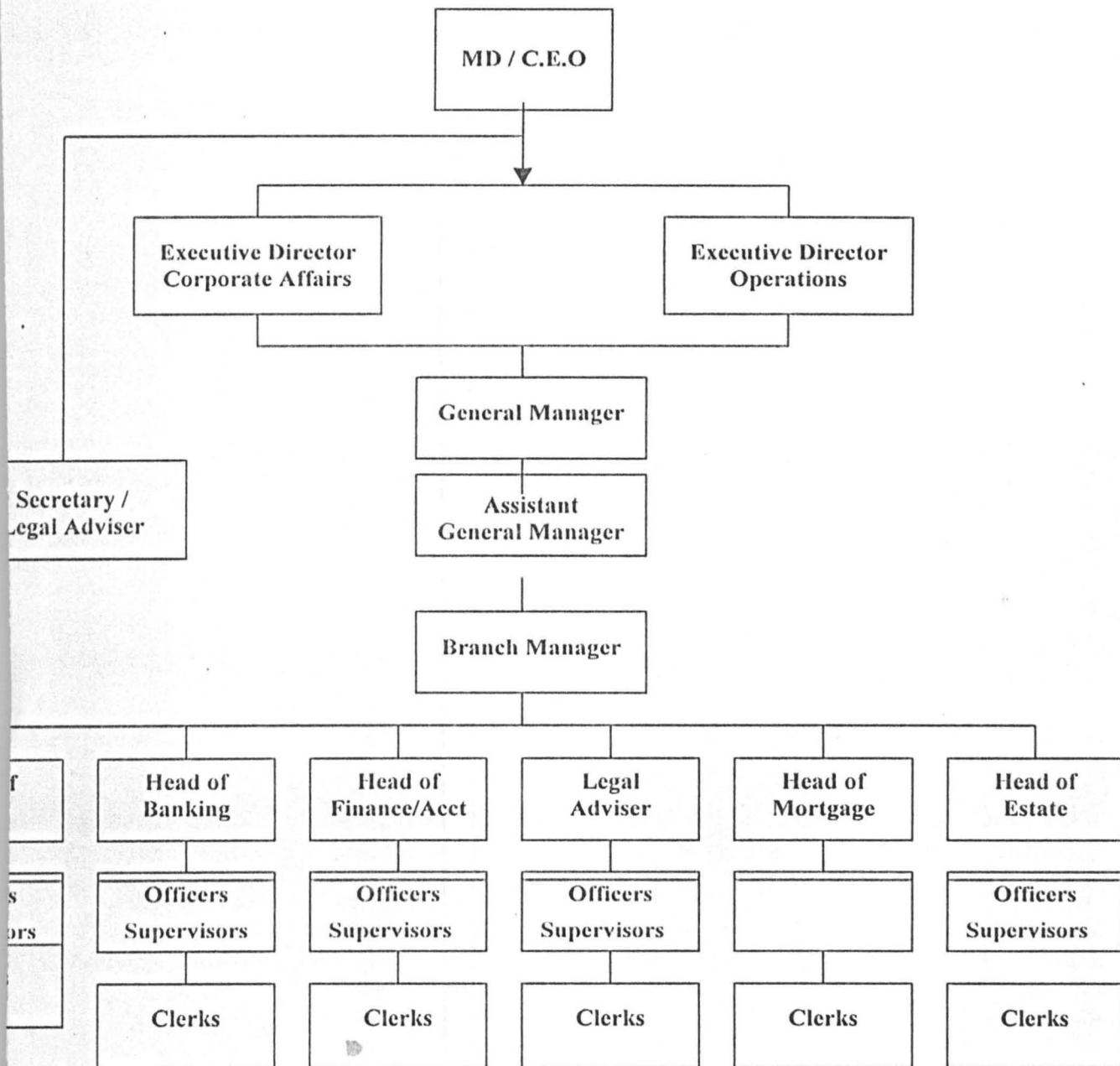
Like any other organization, Federal Mortgage Finance Ltd., Minna processes data to obtain information needed by the organization in order to meet its financial goals and expectations. Reports are generated based on

inter relationship and inter connectedness among the units that make up the organization. In respect of this the following operational departments exist.

1. **Administration Department:-** Inquiries relating to the organization are made here and relevant information about the operations within and outside the banking sector are obtainable in the unit; including information about the management and the staff. This department equally keeps track of the documents and reports of different kinds in the company.
2. **Banking Department:-** This department is responsible for accepting deposits from the public. This unit is very vital to the successful operation of the organization. They generate funds from which loans will be given to customers who need them.
2. **Account and Finance Department:-** This Department takes care of the financial position of the company making sure that all accounting records involving customers, personnel, payroll are properly maintained. They evaluate the financial commitment of the company and ensure that periodic reports to the supervising body are timely available.
3. **Legal Department:-** They take care of all legal matters involving the company and also verifies the authenticity of the legal title of the property to be used as collateral for loan.
4. **Estate Department:-** This unit is made up of a team of Architects, Land, Quantity and Estate Surveyors as well as building Engineers. Their work is to assess the project cost, recommend the amount to be approved to the prospective mortgagor and the mode of disbursement of the loan and monitor the project to make sure that the fund is properly utilized.

5. **Mortgage Department:-** This forms the core of the organization. The financial decision on who should be given loan is taken here. They also take all necessary controls to ensure that the loans are recovered as and when due. They prepare various reports like the bank reconciliation statement and ledger card of mortgagors

2.5 ORGANIZATION CHART



ANALYSIS OF EXISTING SYSTEM

OPERATIONAL METHOD OF THE MORTGAGE DEPARTMENT

The work of the Mortgage Department starts when a customer of a bank applies for a mortgage loan. These are loans secured by a mortgage over land or landed property and are made to individuals, savings and loans associations commercial banks, insurance companies or other financial institutions for the purpose of building renovating or buying a house or land.

Repayment of such loans may under certain circumstances be insured or guaranteed by the Federal Mortgage agencies or government. Loans to home buyers are generally limited to 80 – 90% of the appraised value of the property. Where the mortgagor fails to repay the loan as agreed, the security may be sold to recover the amount outstanding.

PROBLEMS OF THE EXISTING SYSTEM

As at present all the operations of Federal Mortgage Finance Ltd., Minna is being manually. The database is not automated and far from being well organized. This poses a lot of problems, which could be discussed under the following headings.

1. **SPEED:-** One of the disadvantages of manual operation is lack of speed. Customers always kept waiting any time they come to the bank for one reason or the other. This is not in the best interest of the customers who have many other things to attend to or the company who may loose their customers to better-organized banks.
2. **ACCURACY:-** Human being are always prone to mistakes. This is often reflected in the mistakes noticed in customer ledger card. Sometimes a wrong calculation could be done or incorrect balance carried down. Interest rates and amount of installmental payment are often times miscalculated since their workings are a bit complicated.

3. **FLEXIBILITY:-** The system is not very flexible. Anytime there is any small change in policy, the staff find it difficult to adjust. Also any increase in the number of customers at a time disorganizes the staff who find it difficult to cope with the work load.
4. **TIMELY REPORT:-** There is always delays in the generation of reports for instance the bank reconciliation statement for customers, periodic reports to the supervising authorities. This could cause problems for management since there is a penalty for delayed reports.
5. **REFERENCING / ENQUIRY:-** It is not always easy to access a customer's record since the pile of ledger cards needed to be searched and this could be cumbersome. There are even times when a customer's card will be lost outright or misplaced.

NEED FOR COMPUTERIZATION

Taking into consideration the operations of the Mortgage Department of the Federal Mortgage Finance it is quite evident that there is need for an improvement. The following reasons well explain the importance of computerization of the system.

(1) PROBLEM WITH THE EXISTING SYSTEM

There is the need to eliminate errors, delays and system inefficiencies and increase profit by reducing cost.

(2) INCREASING COMPETITION:- Computer technology is growing everyday and the banking industry is one field of life where computers have made a very great impact. Any bank in this present era that is not computerized will just be losing her customers and business opportunities to its competitors.

(3) ORGANIZATIONAL GROWTH:- It is the desire of every organization to grow or expand. Computerization is needed so that the company will be able to meet the need of increasing customer service.

(4) EFFECTIVE USE OF INFORMATION:- Computerization is necessary to make more effective use of information, and avoid data redundancy thereby saving time and resources.

MAIN FOCUS OF THE PROPOSED SYSTEM

The main objective of the proposed system is to take care of the problems being encountered by the existing system. In this light the system aims at:-

1. Developing management information system that is relevant, precise, accurate, timely and adaptable.
2. To speed up decision making by providing a relative and accurate data.
3. To make available a responsive service to meet customers needs.
4. To encourage a sound organizational procedure
5. To provide an affordable system that will generally reduce cost, improve efficiency and increase profit.

FACT FINDING METHODS

In the course of the project work three major techniques were used to get facts. These are:-

- [1] **Observations:-** This entails watching the operations at different times to see for oneself exactly what happens
- [2] **Interviewing:-** Some of the bank staff comprising both management and non management staff were interviewed. Also some customers were spoken with to know how they see the present system and how they desire an improvement.
- [3] **Record Search:-** This involved reaching some write-ups by professionals in the banking, finance and computer industry.

CHAPTER THREE

SYSTEM DESIGN

NEED TO DESIGN A NEW SYSTM - From the analysis of the existing system it has become imperative that to enhance the decision making mechanism and ensure efficiency in the operations of the company a computerized version of the mortgage operation need to be developed. In doing this emphasis will be led on the Design of Output, Input, Files, the human and material resources needed.

The chapter will also look into the cost and benefit analysis of the proposed system.

FORMAT USED IN THE DESIGN – For the database (collection of data and organization of files) the relational structure is used. This is because it is conceptionally simple and easily understandable by information system professionals and many end users. The relational data base structure is in the form of a two-dimensional table of data consisting of columns and rows. The structure will also be used to generate reports.

Modular approach will be used for the programs and the result of such modules would be linked up using hierarchical structure in a top-down manner.

OUTPUT DESIGN

The Output of management information system is a collection of reports that are needed to help the various levels of management in decision making. The main types of report needed in Federal Mortgage Finance are:

1. **Scheduled Reports** - examples of this are Daily Transaction Report, Monthly Financial Position of Customers and Bank Reconciliation.
2. **Demand Report** - These are produced when the request for it is made and the format will be determined by the user.
2. **Exception Report** - These are produced when there is immediate need for management action, on a particular issue for instance giving an automatum to a mortgagor concerning the repayment of his loan.

The output design will be based on narrative, tabular, and graphic presentation.

STEPS TO GENERATE REPORTS

Transaction Reports:- A program has been designed to keep record of daily transaction using the following data input:

Name of Customer

Account Number

Date

Nature of Transaction (Debit / Credit)

Amount

At the end of the month these will be summed up and used to update the master file.

Monthly Account Report:- To produce this report which serves as the master file the following data has to be available:

Name of Customer

Address

Loan Amount

Duration of Loan

Interest

Date
Referees
Debit / Credit
Arrears
Balance

To achieve the desired result the program has been designed to allowed automatic debit and credit and then calculate the balance as well as showing the part of the balance that is in arrears.

At the end of a defined period the program will prepare a bank reconciliation statement for every customer to enable them know their exact financial position with the bank.

There will also be provision for editing and deleting records as well as providing demand reports for management.

2 DESIGN OF FILES

The Mortgage department of the Federal Mortgage Finance Ltd. deals with assorted data and records which, are arranged in files. This calls for the maintenance of different kinds of files which include Transaction files, Master files, Report files and Backup files.

Transaction Files: - These contain data about business activities taking place within a specified period of time. These will contain information like monthly repayment of principal and interest. At the end of every month information in this file will be used to update the master file. This is a temporary file at the end of the month the file will be emptied to prepare it for the next month's activities.

Master Files: - Customers' files form the bulk of the master file. They are permanent in nature and contain very vital information about the

customer for instance the Customers' Name, Address, Amount of loan approved, Amount disbursed and interest rate. If any of these information changes then the master file should be updated.

Back-up File: - Back up files will be created for security purposes that is in case the operational files get corrupted. For instance files could be used as backup such that if anything happens they can be successfully reconstructed.

Report Files: - These are temporary files used when printing time is not available for all the reports produced. This is necessary since the printer will be shared with other departments. This file will store information that are expected to be directed to the printer.

21 **FILE ORGANIZATION**

In any set-up the system of file organization depends on the storage medium in use and the method of processing the files. However, it is very essential that care should be taken in choosing the type of organization to adopt so that the data processing needs of the different users would be met.

For the purpose of this project the sequential file organization method will be used. This is simply the serial file sorted in a certain order depending on a sort key. More than one key can be used to aid retrieval.

This type of organization is preferred because it is both accommodated by a direct access media example magnetic disk and a serial access media e.g. magnetic tape.

22 **STRUCTURE FOR DATA BASE FILES**

The file has the record of all mortgagors with the bank. The structure is as shown below.

Structure for database: C:\MORTGAGE\MORTGAGE.DBF

Number of data records: 3

Date of last update : 21/05/02

Field No.	Field Name	Type	Width	Dec	Index
1	ACCTNO	Character	7		N
2	SNAME	Character	20		N
3	MNAME	Character	20		N
4	FNAME	Character	20		N
5	LGA	Character	20		N
6	HTOWN	Character	20		N
7	OCCUPY	Character	20		N
8	PWORK	Character	20		N
9	STATE	Character	15		N
10	NATION	Character	15		N
11	AGE	Character	2		N
12	GL	Character	2		N
13	ADATE	Date	8		N
14	SLOCATE	Character	30		N
15	HADDR	P-Work	30		N
16	PHONE	Character	13		N
17	SEX	Character	1		N
18	BSCODE	Numeric	3		N
19	STATUS	Character	10		
	** TOTAL **		277		

Structure for database: C:\MORTGAGE\APPLY.DBF

Number of data records: 3

Date of last update : 21/05/02

Field No.	Field Name	Type	Width	Dec	Index
1	ACCTNO	Character	7		N
2	SNAME	Character	20		N
3	MNAME	Character	20		N
4	FNAME	Character	20		N
5	OCCUPY	Character	20		N
6	PWORK	Character	20		N
7	GL	Character	2		N
8	ADATE	Date	8		N
9	SLOCATE	Character	30		N
10	HADDR	Character	30		N
11	PHONE	Character	13		N
12	BSCODE	Numeric	3		N
13	MONTHS	Numeric	3		N
14	AMOUNT1	Numeric	12	2	N
15	PURPOSE1	Character	50		N
16	PURPOSE2	Character	50		N
17	DATE	Date	8		N
18	REMARK	Character	12		
	** TOTAL **		329		

Structure for database: C:\MORTGAGE\APPROVE.DBF

Number of data records: 3

Date of last update : 21/05/02

Field No.	Field Name	Type	Width	Dec	Index
1	ACCTNO	Character	7		N
2	SNAME	Character	20		N
3	MNAME	Character	20		N
4	FNAME	Character	20		N
5	OCCUPY	Character	20		N
6	PWORK	Character	20		N
7	GL	Character	2		N
8	ADATE	Date	8		N
9	SLOCATE	Character	30		N
10	HADDR	Character	30		N
11	PHONE	Character	13		N
12	BSCODE	Character	3		N
13	MONTHS	Numeric	3		N
14	AMOUNT1	Numeric	12	2	N
15	PURPOSE1	Character	50		N
16	PURPOSE2	Character	50		N
17	DATE	Date	8		N
18	DATE2	Date	8		N
19	APPROVE	Character	55		
20	AMOUNT2	Numeric	12	2	
21	BALANCE	Numeric	12	2	
22	INT	Numeric	5	1	
	** TOTAL **		409		

Structure for database: C:\MORTGAGE\REPAY.DBF

Number of data records: 2

Date of last update : 21/05/02

Field No.	Field Name	Type	Width	Dec	Index
1	ACCTNO	Character	7		N
2	SNAME	Character	20		N
3	MNAME	Character	20		N
4	FNAME	Character	20		N
5	OCCUPY	Character	20		N
6	PWORK	Character	20		N
7	GL	Character	2		N
8	ADATE	Date	8		N
9	SLOCATE	Character	30		N
10	HADDR	Character	30		N
11	PHONE	Character	13		N
12	BSCODE	Character	3		N
13	MONTHS	Numeric	3		N
14	AMOUNT1	Numeric	12	2	N
15	PURPOSE1	Character	50		N
16	PURPOSE2	Character	50		N
17	DATE	Date	8		N
18	DATE2	Date	8		N
19	APPROVE	Character	55		
20	AMOUNT2	Numeric	12	2	
21	BALANCE	Numeric	12	2	
22	DATE3	Date	8		
	** TOTAL **		412		

INPUT DESIGN

Alphanumeric and Numeric data form the main stream of data processing in the organization under focus. The data needs of the files created are as follows:-

(1) **Customer:**

Account Number

Name of Customer

Bank Account Code (Popular Savings)

Address (Postal Address)

Age

Sex

Marital Status

Amount of Loan

Referee's Names and Addresses

Nationality

Home Town

Nature of Transaction (Debit or Credit)

Reference

Data

Amount of Transaction

These data will be organized into the different files and effort made to ensure that minimum redundancy is maintained.

SYSTEM SECURITY AND CONTROLS

This involves ensuring that the information and assets that constitute the system both manual and automated are secured.

It is important to note that if the hardware for instance fails the information system has failed. Therefore adequate measures should be taken regarding

both the software and hardware subsystems.

For the purpose of this project security will be treated under a sub-titles namely physical safeguards, procedural controls, recovery plan and insurance.

PHYSICAL SAFEGUARDS: The following steps should be taken:

(1) The computer house/room contains very expensive set of equipment and vital records therefore effort should be made to avoid unwarranted incidents like fire outbreak or burglary. Fire resistant materials should be used in building and fire extinguishers installed. Doors and Windows should have burglary proofs.

(2) Access to the computer room should be limited to only those who have specific need to be there. To ensure this, admission badges should be won conspicuously by those who are entitled to be there for any business. Where a computer room personnel for any reason stops having business with the computer room, entrance cards should be collected from him and destroyed so that access is denied to him.

There should be changes in access rules from time to time. In case of a dismissed staff he should be made to leave the premises immediately so that he does not come back to spoil his terminal or corrupt the software or files.

(3) **PASSWORDS** should be provided and assigned to particular terminals. There should be security software that will only grant access to designated directories on the hard disk.

Encrypt Passwords so that they are not available in plain language to some extent; this will prevent Password espionage through shoulder surfing.

PROCEDURAL CONTROLS

These involve personnel policies and procedures by the computer unit. It aims at preventing operational errors that may lead to data / program file destruction. These policies may include:

- (1) Labeling files to know file contents
- (2) Labeling Magnetic Tapes with protection rings to avoid writing and destroying the contents of the tape.
- (3) Protecting the tapes with protection ring to avoid writing and destroying the contents of the tape.
- (4) There should be a log (Register) for the use of disks and tapes and these should be kept in a secured place.

RECOVERY PLAN:-

This involves planning against accidental loss of files. Retaining the source document or transaction file until the master file is updated. There should be adequate back-up system such that in the case of data loss or file being corrupted the backup will be used.

INSURANCE:- Software with facility to maintain files and manage disks should be provided. They should be able to recover lost files or repair disk. Prominent among these software are Pc-Tools by Central Point Software Inc. and NORTONS by Symantec Corporation.

5 SYSTEM REQUIREMENTS

A computer system with the following features will support the proposed system.

HARDWARE:- Recall that this is the physical part of a computer that one can see, feel or touch. It comprises of the Central Processing Unit (C.P.U) and the Peripheral Devices for Input or Output operations.

PROCESSOR:-

IBM PC or IBM compatibles

Intel Based Processor

Hard Disk - 2.2 GB

Disk Drive - Double Disk Drive

Memory - 32 MB

Mass Storage Option - 1.44 MB - 3.5 "Disk"

Expansion Slots 32 bits Expansion

Speed - Pentium 166 MHZ, MMV Memory

Card Adapter 2 MB

Full Multi Media

MONITOR

Super visual graphic display (VGA)

Display - Colour and Graphic

KEY BOARD

Windows 95 Key Board

PRINTER

Epson Lq 2170

POWER SOURCE

Stabilizer 250 VA

UPS 600 VA (Automatic Voltage Regulator (AVR))

51 SOFTWARE REQUIREMENT

dBase IV Package

Disk Operating System

52 MAN POWER REQUIREMENT

Because the system is menu driven and user friendly, it requires less proficiency. The need for many highly trained personnel is not crucial. However a good keyboard operator or data entry clerk is needed for faster job processing. With quality training users will be put through within a very short time.

The services of the following key personnel will be needed:

Data Entry Personnel

Computer Operator

System Analyst

Computer Scientist

6 STAFF TRAINING

This involves the general training of users of the system. This becomes very necessary so that they will appreciate the use of the computer, its capabilities and limitations and how best to handle it so that it is put to its best use.

Specialized training will however be given to the key computer personnel and this is expected to last for 3 months.

7 COST AND BENEFIT ANALYSIS

One of the motivating factors of this system is to cut down operational cost. To this effect the proposed system has been designed in such a way that the cost of processing data is minimized.

The cost has been divided into three:- Development Cost, Operational / Staff cost and equipment.

Development Cost

System Analysis and Requirement determination	20,000.00
System Design	30,000.00
Development and Implementation	<u>10,000.00</u>
	60,000.00

Equipment Cost

System Unit (With Preloaded Application Packages)	120,000.00
Printer	70,000.00
Sight Preparation & Installment	<u>30,000.00</u>
	220,000.00

Operational / Staff Cost

Staff Training	20,000.00
Paper / Stationeries	15,000.00
Equipment Maintenance (1 Year Guarantee)	<u>15,000.00</u>
	50,000.00

Total Cost for the 1st Year **N330,000.00**

8 SYSTEM BENEFITS

Savings on additional staff not needed	95,000.00
Elimination of cost due to calculation errors	5,000.00
Recovery of bad and doubtful debts	20,000.00
Reduction in overtime	20,000.00
Savings in Stationeries	<u>20,000.00</u>
	N160,000.00

Intangible Benefits

Better Planning	
Better Customer Relation	
More Satisfied Employees	
Increase In Business and profit	<u>60,000.00</u>
Total Savings due to Computerization (PA)	<u>N220,000.00</u>

It is anticipated that from the above analysis that the system which has a life span of 5 years will pay-off within one and half years. The income generated for the rest of the years will be enough to take care of possible increase in equipment and personnel cost and be able to buy new ones, repair old ones and upgrade the software to accommodate growth in business or improved technology.

CHAPTER FOUR

.0 DEVELOPMENT OF SOFTWARE

The software development and implementation stage of any computerization process is a very important stage. It involves the selection of a software application package or the writing of programs; the testing of such packages or programs and documentation.

To ensure that this process was smooth and successful the following steps were taken

1. The support of top level management was sort at all levels of the development
2. All the prospective users were carried along so that they will cooperate with the analyst and not sabotage the work at any time
3. The goals and objectives have been clearly defined
4. Emphasis was led on the most important problems and opportunities
5. The design of the system has been so simplified that it will not be difficult for anybody to understand.

1 PROGRAMMING LANGUAGE USED

While writing the programme many programming languages such as FORMULA TRANSLATOR (FORTRAN), Common Business Oriented Language (COBOL), PASCHAL, Beginners All Purpose Symbolic Instruction Code (BASIC), Dbase, etc vis-à-vis their capabilities, advantages and disadvantages were considered. At the end dBase IV was chosen as the most appropriate for the project.

The reasons for the choice are as follows:

- Dbase IV comes as an application package and also has its own programming language
- It is very comprehensive and simple to understand
- The aspects of the project which could not be fully covered doing program writing due to time and other constraints will be taken care of and information retrieval
- It is user friendly.

. 11 DBASE IV APPLICATION PACKAGES

dBase IV is an advanced version of dBASE that provides a full relational database environment to users. Through the control center and without the use of command languages it is possible to design data bases, manipulate and edit records and files, generate reports, perform database query, design labels and browse database. Data fields can be specified with default values as well as valid ranges. Data can be verified automatically as they are entered into fields. Furthermore up to 255 fields can be specified per record and a database can be related with more than 2 other databases.

Programs and procedures can also be compiled and saved as object codes for faster execution. Pop-up menus and windows can be designed.

Other commendable features of dBASE IV are:

- Very large number of memory variables
- User definable functions
- Ability to open up to 99 files at a time
- Improved indexing facilities

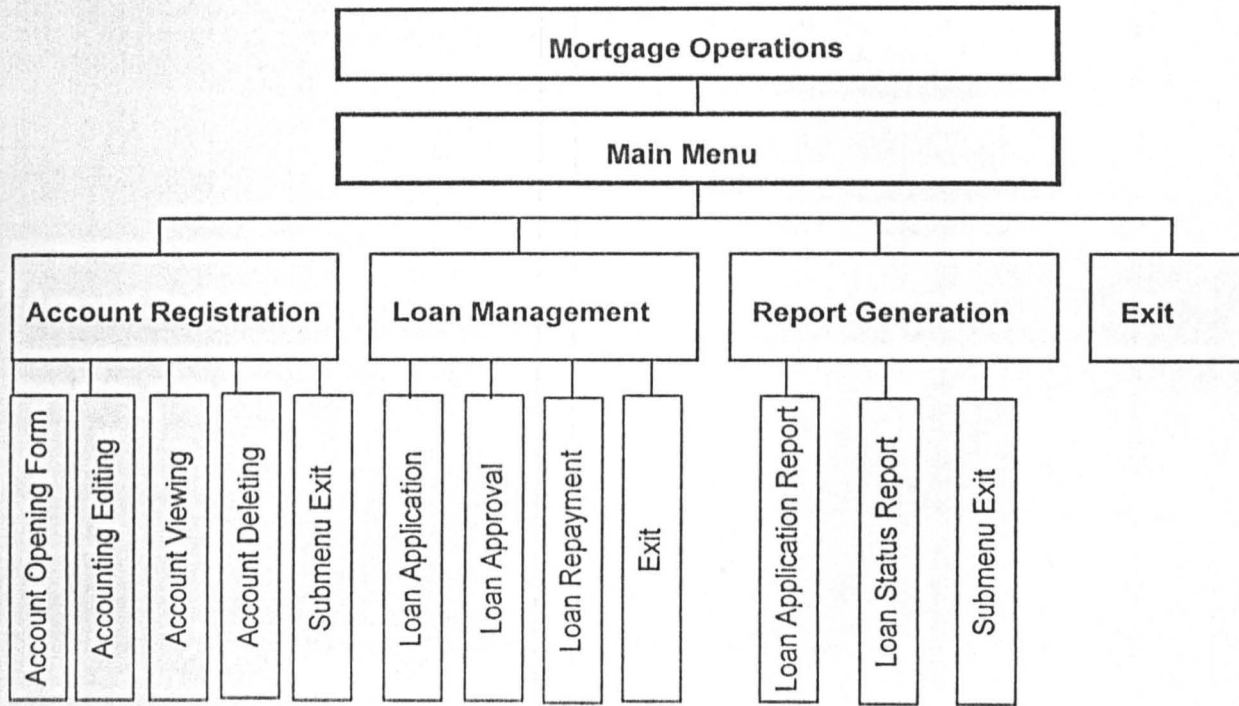
- Large command line buffer
- Improved printer, handling capabilities and faster execution
- A query-by-example function
- A full relational data base capabilities using Structured Query Language (SQL)
- Compatible with IBM machines.

4.12 dBASE IV PROGRAMS

A dbase IV program is a set of instructions designed to perform a particular task. These instructions or commands are stored in a file known as dBase as command file. A command file can be created either with a text editing program that is part of dbase IV or with a word processing program in non-document mode. The instructions in a command file are accessed in batch processing mode.

The dbase IV programs are made up of the set-up Area that begins the program. The body, which contains the instructions, and the closing section, which does the house keeping by ensuring that all files, is properly closed.

4.2 ALGORITHM OF NEW SYSTEM



4.3 HOW THE SOFTWARE WORKS

As you log into the system named mortgage operations, it usher you into the main menu The main menu offers four options:

- (1) Account Registering
- (2) Loan management
- (3) Report Generation
- (4) Quit to dot prompt

The Account registering program has 5 (five) options:

- a. Account opening form – As a prospective customer comes into The bank on he is given an ^{account} according opening form wherein he supplies data with which an account is ^{opened} opening for him. This program creates a file for the customer.
- b. Account editing from:- This is used to amend any information in the customer record example change of name, address, marital status etc
- c. Account viewing program:- This allows the user access to a customers account. A customer who wants to see the state of his Account could be put through by this facility.

(2) Loan management:- This is divided into the following.

- (a) Loan Application:- As a customer opens an account it is Not compulsory that he will ask for a loan. This program keeps a record of all loan Applications received.
- (b) Loan Approval:- This program is used to know the loan applications that were approved and the terms of the loan.
- (c) The loan repayment. Shows the state of the loan Account, that is the amount to be repaid each month both out of principal and the interest it also shows the out standing balance.

HOOKING-UP PROCEDURE

- (1) Carefully go through this manual
- (2) Plug the system units power cord into the wall socket or a suitable extension outlet. If you have UPS and a stabilizer first the system unit to the UPS then connect UPS to the stabilizer and lastly the stabilizer to wall socket or an extension outlet.
- (3) Connect the system unit to the monitor cable
- (4) Connect the keyboard to the system unit with the keyboard cable
- (5) Connect the printer (if any) to the system unit with the printer's cable
- (6) Then connect the printer's built-in cord to a wall socket or an extension outlet.
- (7) Go to the starting-up procedure.

44 STARTING-UP PROCEDURE

Cold-Booting

- (1) Carefully go through this manual
- (2) Be sure all your computer components are properly connected (hooked-up) to one another and that the appropriate cord is plugged into a power supply.
- (3) Turn on the main power (and the stabilizer followed by the UPS)
- (4) If you are working with a Hard Disk system go to step 9 else continue with step 5
- (5) Make sure you have your system disk (the DOS diskette) with you and that the diskette will fit your disk drive. For 3.5" disk drive there is no door but a latch. For 5.25" disk drive the drive has a door.

- (6) Open the door (latch) of your diskette drive. If your system unit has only one drive it serves as both drive A and B but if it has two drives use drive A (the one on top or on the left as your start-up drive)
- (7) Hold the DOS diskette by the labeled end with the label facing up gently insert your DOS back-up copy diskette into drive A
- (8) Gently close the disk drive door
- (9) Switch on the system unit and then the monitor by pressing the appropriate power buttons or knobs. You will notice a green and yellow light indicator on the system unit while a yellow light will appear on the monitor's indicator.
- (10) You can switch on the printer if you want to make use of it as the use of the computer, is not affected by the state of the printer either when off or on.

If you successfully carry out the start procedure it will load the DOS from hard disk or diskette in Drive A into the main storage or the primary storage.

You will see lights from some indicators and the lights remain on until the whole DOS has been loaded. As the DOS loads you may hear some clicks and whirs sounds. There may also be some information flash on your screen.

Warm-Booting

If your computer is already on (started-up) and you need DOS to display a DOS command prompt (i.e. A:> or C:>) on the screen then you need not turn your computer off and on as with the case of cold booting. This procedure is faster than cold booting and reduces the wear and tear of the computer hardware.

However restating DOS through cold or warm booting procedure without exiting all activated applications and programs may damage data and files.

The procedure is as follows

- (1) If you are working with a hard disk system go to step 6 otherwise continue with step 2
- (2) Make sure you have your system disk (the DOS diskette) with you and that the diskette will fit your disk drive A. Your Disk Drive A could be 3.5" or 5.25" Diskette Drive
- (3) Open the door (latch) of your diskette drive
- (4) Gently insert your DOS diskette into drive A
- (5) Close the door of the disk drive
- (6)
 - (a) Press and hold down the "Ctrl" key
 - (b) while still holding down "Ctrl" press and hold down the "Alt" key
 - (c) While still holding down 'Alt' key press and hold down the "Del" key
 - (d) Release all the 3 keys at the same time or
- (7) Locate the "reset" power button or knob on your system unit and press it.

USAGE – THE SOFTWARE

Having booted the system slot in the software and call up the mortgage operation from the dot prompt. It will prompt you to enter your password to gain entrance into the Main Menu.

There are different options, select the one you wish to work on using the arrow keys or pressing the code of the desired option. This will usher you into the work area of your choice.

To exit particular menus choose the exit option. The chain continues until you get to the DOT Prompt.

6 RUNNING THE PROGRAM

To run the program type Do followed by the name of the file which is Mortgage at the Dot Prompt. The file will be opened and read line by line starting at the top and performing each command in sequence.

PROVISION FOR FUTURE AMMENDMENT

Due to constant improvement in computer technology and advancement in the mortgage industry it has been necessary to make provision for future improvement.

There may be the need to write more or modify existing programs to suit user and management demands.

To WRITE a program the dBase IV text editor can be used. The text editor can be activated by typing MODIFY COMMAND followed by the filename. The command and the filename are entered at the DOT Prompt and an environment to enter your program will be displayed on the computer once all the instructions have been entered they can be saved on the disk by typing CTRL and END keys.

The MODIFY COMMAND can also be used to edit an existing program. The software is quite interactive and user friendly and is very flexible. Follow all the instructions and read to messages displayed.

4.7 PROJECT EVALUATION

In evaluating the performance of the new system, two operational goals have been used as yard sticks. These are reliability and maintainability.

RELIABILITY:- Generally a system is said to be reliable if it does not produce dangerous or costly failures when used normally. To ensure system reliability adequate provisions has been made to see that the equipment are always in good shape and really working.

The system was designed in such a way that common errors will be avoided. However in a situation where an error is committed a device to detect and correct such error(s) has been built into the system.

MAINTENABILITY:- All the features of the system have been properly identified and they are readily available. It will not be difficult to keep the system working, to repair or replace any worn out or out dated part.

8 CHANGEOVER PROCEDURE

Changeover from the old to the new system is a very important aspect of system development and implementation. It can only take place when:

- The system has been proved to the satisfaction of the system analyst and the other implementation activities have been completed
- User managers are satisfied with the results of the system tests, staff training and reference manuals
- The target date for changeover is due

There are basically 4 methods of changeover. These include Direct, Parallel Running, Pilot Running and Staged Changeover.

DIRECT CHANGEOVER:- This is a complete replacement of the old system by the new in one move. It is a bold move, which should be undertaken only when everyone concerned has confidence in the new system.

When this option is taken system test and training should be comprehensive. This method is relatively cheap but very risky. This is because if the system fails it could be disastrous. To avoid this the old system should be held in abeyance so that in the event of a major failure of the new system the organization can revert to the old system and also enough back-ups should be made.

PARALLEL:- This involves carrying the old system along with the new system for a specific period and comparing their results. Its main advantage is that the old system is kept alive and operational until the new system has been proved for at least one system cycle, using full live data in the real operational environment of place, people, equipment and time. It allows the results of the new system to be compared with the old system before acceptance by the user thereby promoting user confidence.

The main problem with this system is that it is expensive. It is difficult for the same staff to be carrying out his duty with by manual and electronic means and where more staff is involved it becomes more expensive.

PILOT RUNNING:- Here data from one or more system periods are run on the new system after which the results are compared with what was gotten with the manual method. This method could be referred to as an extended system test and it is not as disruptive as the parallel method. Timing is not very critical here.

STAGED CHANGEOVER:- Here sections of the organization are taken at a time. When the management is convinced that the new system is working well with the section another section can be taken up. This method reduces the risks inherent in a direct changeover of the whole system and enables the analyst and users to learn from mistakes made as the changeover progresses.

Its main problem is that of controlling the selected parts of the old and new system and it tends to prolong the implementation period.

For the project at hand, the parallel running method is recommended. The system may seem more expensive but it is always said that what is worth doing at all is worth doing well. The benefits will definitely outweigh the cost. Both systems will be allowed to go on for three months by so doing real life situation and data will be tested, mistakes will be spotted out and corrected.

It has been planned that there will be no retrenchment of staff because of the introduction of the new system. The staff strength will be able to support the additional work, which will arise as a result of the two systems being carried on at the same time and of course, it will be just for three months.

CHAPTER FIVE

1 ACHIEVEMENTS

1. The system has helped in ensuring continuous maintenance of all the relevant records due to its automatic updating ability. These records are kept in a master file, which make them easy to be accessed at a particular time or on request.
2. There is greater customer and employee satisfaction and a sense of fulfillment for management and these have a very positive effect on the overall performance of the establishment.
3. The system generates required reports in very good time.
4. The management can now obtain a quick decision over issues concerning the organization as the system gives the status of the individual customers and the organization at any given time.

2 RECOMMENDATION

The banking industry in general and mortgage services in particular and the computer industry keep improving every day. Each new day experiences improved technology and innovations.

The system though ideal and efficient in the existing conditions may need to be improved upon in the future. Anybody wishing to continue with this project or do any modification should acquaint himself with the existing conditions and the requirements of the organization. This will help him do a better job than what is at hand.

The management is encouraged to be more liberal in releasing information to future analysts. This will help them in designing a system that will suit the needs of organization. They should not see it as selling out information about the company.

It is recommended that the management should try to exploit the opportunities for expansion so that some staff who would be made redundant

by the automation could be gainfully employed. This will make the staff have a right attitude towards computerization. Some of these staff could be very useful in marketing the products of the company.

3 CONCLUSION

It has really been a very big task embarking on this project alone and carrying it this far. Many physical, financial and logistic problems were encountered but reasonably managed. It was really not easy to break through some of the staff to get all the detailed fact needed to analyze the existing system in order to design a new system.

Experience has shown that the best way to approach the development of this kind of comprehensive project is to adopt a teamwork which will incorporate key staff of the department in question.

These difficulties notwithstanding the system developed is capable of providing management with the information that will effectively take care of the present needs of the company.

This study will be concluded with the note of warning that much as we are often dazzled by the data-processing capabilities of computers, we keep in mind that they are only machines that blindly process data at extremely high speeds, in languages foreign to most observers. They can neither discern whether the data being processed is true or false, nor can they discern when they are a party to fraud.

Computers do not have a sense of right or wrong, as do their human counterparts. In short, they can be manipulated by anyone having access to them, and they will obey a manipulator's instructions to the letter. Therefore it is very important that every caution be exercised while making use of the computerized system so that its full benefit will be reaped.

DEFINITION OF TERMS

Computer :

A computer is an electronic device, which accepts, and process data by following a set of instructions called programs to produce an accurate and efficient result known as information.

Mortgage : The conveyance of a legal or an equitable interest in real or personal property as security for a debt.

Mortgagor : The person who borrows money in a mortgage agreement.

UPS : Uninterruptible Power Supply is a device specially designed to protect microcomputers against power failures.

Data : Is a piece or collection of raw facts representing people, objects, events and concepts.

Data Base : An organized collection of information or data.

Field : Is a combination of characters, which form a meaningful value. For example, Dept field or Name fields.

File : It is a collection of logically related records about an entity. For example a File of employee records.

Hardware : The equipment that makes up a computer system. It includes the input and output devices.

Information : Is a result of modeling, formatting, organizing or converting data for useful purposes that is – information is a processed data.

Input : Anything you enter into the computer is referred to as input.

Monitor : A high quality screen designed to display computer output. Monitors give better results than television sets but tend to cost more. It is also called a Video Display Unit (VDU) or a Cathode Ray Tub (CRT).

Output : Any result which comes from the computer is output. Usually output is in the form of text or graphics displayed on the screen or printed on paper.

Printer : Device that produces printed output when connected to the printer. A printed output is referred to as hard copy while output displayed on the screen is referred to as soft-copy.

Program : Is an ordered and definite set of instruction written in a specific computer language to perform a given task(s) i.e. a list of instructions for the computer to obey written in a special language.

Programming Language : Is a special language which can be translated into the machine's own language for the processor to obey. There are hundreds of different programming languages.

Software : The programs, routines or instructions and data that allow the computer to perform tasks. Examples are operating system and word processing programs.

System : A computer system is made up of all the hardware computer input devices, output devices, external memory and the software which together allow a computer to do useful work.

Password : A security measure used to restrict access to computer systems and sensitive files.

Menu : A list of options from which a program user can select in order to perform a desired action.

GAGE.PRG

```
talk off
stat off
safe off
scor off
date brit
hil .t.
ea
3,18 to 7,61 doub
4,24 say 'FEDERAL MORTGAGE FINANCE - MINNA'
6,24 say 'COMPUTERISED MORTGAGE OPERATIONS'
9,35 say 'MAIN MENU'
10,18 to 18,61
11,22 say 'A ----- ACCOUNT REGISTERING OPTION'
13,22 say 'B ----- LOAN MANAGEMENT OPTION'
15,22 say 'C ----- REPORT GENERATING OPTION'
17,22 say 'Q ----- MAIN MENU EXIT'
19,18 to 21,61
  while .t.
  resp=' '
  @ 20,27 say 'Press a CODE for choice:' get resp pict '!'
  read
  if resp $ 'ABCQ'
    exit
  endi
  fd
  case
  case resp='A'
    do prg1
  case resp='B'
    do prg2
  case resp='C'
    do prg3
  othe
  exit
dc
```

.PRG

```
hil .t.
ea
2,18 to 6,61 doub
3,24 say 'FEDERAL MORTGAGE FINANCE - MINNA'
5,24 say 'COMPUTERISED MORTGAGE OPERATIONS'
8,26 say 'ACCOUNT REGISTERING OPTIONS'
9,18 to 19,61
10,24 say 'A ----- ACCOUNT OPENING FORM'
12,24 say 'B ----- ACCOUNT EDITING FORM'
14,24 say 'C ----- ACCOUNT VIEWING FORM'
16,24 say 'D ----- ACCOUNT DELETING FORM'
18,24 say 'Q ----- SUBMENU EXIT'
20,18 to 22,61
  while .t.
  resp=' '
```



```

@ 21,27 say 'Press a CODE for choice:' get resp pict '!'
read
if resp $ 'ABCDQ'
  exit
endi
endd
do case
  case resp='A'
    do prg11
  case resp='B'
    do prg12
  case resp='C'
    do prg13
  case resp='D'
    do prg14
  othe
  exit
endc
endd
clea
retu

```

PRG2.PRG

```

do while .t.
  clea
  @ 3,18 to 7,61 doub
  @ 4,24 say 'FEDERAL MORTGAGE FINANCE - MINNA'
  @ 6,24 say 'COMPUTERISED MORTGAGE OPERATIONS'
  @ 9,29 say 'LOAN MANAGEMENT OPTION'
  @ 10,18 to 18,61
  @ 11,24 say 'A ----- LOAN APPLICATION FORM'
  @ 13,24 say 'B ----- LOAN APPROVAL SCREEN'
  @ 15,24 say 'C ----- LOAN REPAYMENT FORM'
  @ 17,24 say 'Q ----- SUBMENU EXIT'
  @ 19,18 to 21,61
  do while .t.
    resp=' '
    @ 20,27 say 'Press a CODE for choice:' get resp pict '!'
    read
    if resp $ 'ABCQ'
      exit
    endi
  endd
  do case
    case resp='A'
      do prg21
    case resp='B'
      do prg22
    case resp='C'
      do prg23
    othe
    exit
  endc
endd
clea
retu

```

10.PRG

```

whil .t.
:lea
  4,18 to 8,61 doub
  5,24 say 'FEDERAL MORTGAGE FINANCE - MINNA'
  7,24 say 'COMPUTERISED MORTGAGE OPERATIONS'
  10,28 say 'REPORT GENERATING OPTION'
  11,18 to 17,61
  12,24 say 'A ----- LOAN APPLICATION REPORT'
  14,24 say 'B ----- CUSTOMER STATUS REPORT'
  16,24 say 'Q ----- SUBMENU EXIT'
  18,18 to 20,61
o whil .t.
  resp=' '
  @ 19,27 say 'Press a CODE for choice:' get resp pict '!'
  read
  if resp $ 'ABCQ'
    exit
  endi
ndd
o case
  case resp='A'
    do prg21
  case resp='B'
    do prg22
  case resp='C'
    do prg23
  othe
    exit
ndc
i
a
u

```

11.PRG

```

mortgage
whil .t.
:lea
  1,3 to 23,76 doub
  21,4 to 21,75 doub
  2,24 say 'FEDERAL MORTGAGE FINANCE - MINNA'
  3,24 to 3,55 doub
acctno=spac(7)
  4,5 say 'CUSTOMER ACCOUNT NO (Enter 99/9999 to exit):' get macctno pi
/9999'
  read
  f macctno='99/9999'
  exit
ndi
o top
oca for acctno=macctno
f .not. eof()
  @ 22,8 say 'Attempt to duplicate Account Number - Strike any key to
tinue'
  set cons off
  wait

```

```

set cons on
loop
endi
stor spac(20) to msname,mmname,mfname,mlga,mhtown,moccupy,mpwork
stor spac(15) to mstate,mnation
stor spac(2) to mage,mgl
madate=ctod(' / / ')
mslocate=spac(30)
mhaddr=spac(30)
mphone=spac(13)
msex=' '
mbscode=0
mstatus=spac(10)
@ 4,60 say 'DATE:' get madate
@ 6,7 say 'SURNAME'
@ 6,31 say 'MIDDLE NAME'
@ 6,54 say 'FIRST NAME'
@ 7,5 get msname pict '@!'
@ 7,29 get mmname pict '@!'
@ 7,53 get mfname pict '@!'
@ 9,8 say 'SEX'
@ 9,18 say 'AGE'
@ 9,27 say 'MARITAL STATUS'
@ 9,53 say 'HOME TOWN'
@ 10,9 get msex pict '@!'
@ 10,18 get mage pict '@!'
@ 10,29 get mstatus pict '@!'
@ 10,50 get mhtown pict '@!'
@ 12,7 say 'LOCAL GOVERNMENT AREA'
@ 12,34 say 'STATE OF ORIGIN'
@ 12,58 say 'NATIONALITY'
@ 13,7 get mlga pict '@!'
@ 13,34 get mstate pict '@!'
@ 13,56 get mnation pict '@!'
@ 15,5 say 'HOME ADDRESS:' get mhaddr pict '@!'
@ 15,51 say 'PHONE NO:' get mphone pict '( )-'
@ 17,8 say 'OCCUPATION'
@ 17,30 say 'GRADE LEVEL'
@ 17,51 say 'PLACE OF WORK'
@ 18,5 get moccupy pict '@!'
@ 18,35 get mgl
@ 18,51 get mpwork pict '@!'
@ 20,5 say 'SITE LOCATION:' get mslocate pict '@!'
@ 20,55 say 'BANK SORT CODE:' get mbscode pict '999'
clea gets
@ 4,60 say 'DATE:' get madate
@ 6,7 say 'SURNAME'
@ 6,31 say 'MIDDLE NAME'
@ 6,54 say 'FIRST NAME'
@ 7,5 get msname pict '@!'
@ 7,29 get mmname pict '@!'
@ 7,53 get mfname pict '@!'
@ 9,8 say 'SEX'
@ 9,18 say 'AGE'
@ 9,27 say 'MARITAL STATUS'
@ 9,53 say 'HOME TOWN'
@ 10,9 get msex pict '@!'
@ 10,18 get mage pict '@!'
@ 10,29 get mstatus pict '@!'

```

```

10,50 get mhtown pict '@!'
@ 12,7 say 'LOCAL GOVERNMENT AREA'
@ 12,34 say 'STATE OF ORIGIN'
@ 12,58 say 'NATIONALITY'
@ 13,7 get mlga pict '@!'
@ 13,34 get mstate pict '@!'
@ 13,56 get mnation pict '@!'
@ 15,5 say 'HOME ADDRESS:' get mhaddr pict '@!'
mphone1=' '
mphone2=' '
@ 15,62 get mphone1
@ 15,67 get mphone2
read
mphone=(' +mphone1+' )-' +mphone2
@ 17,8 say 'OCCUPATION'
@ 17,30 say 'GRADE LEVEL'
@ 17,51 say 'PLACE OF WORK'
@ 18,5 get moccupy pict '@!'
@ 18,35 get mgl
@ 18,51 get mpwork pict '@!'
@ 20,5 say 'SITE LOCATION:' get mslocate pict '@!'
@ 20,55 say 'BANK SORT CODE:' get mbscode pict '999'
read
do while .t.
  resp=' '
  @ 22,20 say 'Press "S" to SAVE or "A" to ABANDON:' get resp pict '
  read
  if resp $ 'SA'
    exit
  endi
endd
if resp='S'
  appe blan
  repl acctno with macctno, sname with msname, mname with mmname
  repl fname with mfname, lga with mlga, htown with mhtown
  repl occupy with moccupy, pwork with mpwork, state with mstate
  repl nation with mnation, age with mage, gl with mgl
  repl adate with madate, slocate with mslocate, haddr with mhaddr
  repl phone with mphone, sex with msex, bscode with mbscode
  repl status with mstatus
endi
dd
bs all
lea
tu
4
G12.PRG
a mortgage
while .t.
clea
@ 1,3 to 23,76 doub
@ 21,4 to 21,75 doub
@ 2,30 say 'ACCOUNT EDITING FORM'
@ 3,30 to 3,49 doub
macctno=spac(7)
@ 4,5 say 'CUSTOMER ACCOUNT NO (Enter 99/9999 to exit):' get macctno pi
9/9999'

```

```

adate=adate
date=ctod(' / / ')
slocate=slocate
haddr=haddr
phone=phone
phone1=substr(mphone,2,3)
phone2=substr(mphone,7,7)
phoner=space(13)
bscode=bscode
4,60 say 'DATE:' get madate
6,7 say 'SURNAME'
6,31 say 'MIDDLE NAME'
6,54 say 'FIRST NAME'
7,5 get msname pict '@!'
7,29 get mmname pict '@!'
7,53 get mfname pict '@!'
9,5 say 'HOME ADDRESS:' get mhaddr pict '@!'
9,51 say 'PHONE NO:' get mphoner pict '( )-'
9,62 get mphone1
9,67 get mphone2
11,8 say 'OCCUPATION'
11,30 say 'GRADE LEVEL'
11,51 say 'PLACE OF WORK'
12,5 get moccupy pict '@!'
12,35 get mgl
12,51 get mpwork pict '@!'
14,5 say 'SITE LOCATION:' get mslocate pict '@!'
14,55 say 'BANK SORT CODE:' get mbscode pict '999'
15,4 to 15,75
ea gets
months=0
amount1=0
amount2=0
mpurpose1=space(50)
mpurpose2=space(50)
16,5 say 'AMOUNT OF LOAN REQUESTED'
16,32 say 'ANTICIPATED PERIOD OF RECOVERY'
16,69 say 'DATE'
17,12 say '#'
17,10 get mamount1 pict '999,999,999.99'
17,41 get mmonths pict '999'
17,45 say 'MONTHS'
17,67 get mdate
19,5 say 'PURPOSE:' get mpurpose1 pict '@!'
21,14 get mpurpose2 pict '@!'
read
do while .t.
  resp=' '
  @ 23,20 say 'Press "S" to SAVE or "A" to ABANDON:' get resp pict
  read
  if resp $ 'SA'
    exit
  endif
enddo
if resp='S'
  sele 2
  appe blan
  repl acctno with macctno,sname with msname,mname with mmname
  repl fname with mfname,gl with mgl,date with mdate

```



```
repl occupy with moccupy,pwork with mpwork
repl adate with madate,slocate with mslocate,haddr with mhaddr
repl phone with mphone,brcode with mbrcode,remark with 'NOT
OVED'
repl months with mmonths,amount1 with mamount1
repl purpose1 with mpurpose1,purpose2 with mpurpose2
di
```

all

.PRG

```
1
  apply
2
  approve
  il .t.
  a
  ,3 to 24,76 doub
  ,2,4 to 22,75 doub
  ,30 say 'LOAN APPROVAL SCREEN'
  ,30 to 2,49 doub
  acctno=spac(7)
  ,5 say 'CUSTOMER ACCOUNT NO (Enter 99/9999 to exit):' get macctno
  '99/9999'
  di
  macctno='99/9999'
  exit
  i
  e 1
  top
  ca for acctno=macctno
  eof()
  @ 23,11 say 'Account Number does not exist - Strike any key to
  inue'
  set cons off
  wait
  set cons on
  loop
  di
  name=sname
  name=mname
  name=fname
  ccopy=occupy
  work=pwork
  l=gl
  ate=date
  ddate=adate
  slocate=slocate
  haddr=haddr
  phone=phone
  phone1=substr(mphone,2,3)
  phone2=substr(mphone,7,7)
  phoner=spac(13)
  brcode=brcode
  ,3,60 say 'DATE:' get madate
  ,5,7 say 'SURNAME'
```

```

1 say 'MIDDLE NAME'
4 say 'FIRST NAME'
  get msname pict '@!'
9 get mmname pict '@!'
3 get mfname pict '@!'
  say 'HOME ADDRESS:' get mhaddr pict '@!'
61 say 'PHONE NO:' get mphoner pict '( )-
62 get mphone1
67 get mphone2
  ,5 say 'SITE LOCATION:' get mslocate pict '@!'
,55 say 'BANK SORT CODE:' get mbscode pict '999'
,4 to 11,75
ths=months
unt1=amount1
pose1=purpose1
pose2=purpose2
,5 say 'AMOUNT OF LOAN REQUESTED'
,32 say 'ANTICIPATED PERIOD OF RECOVERY'
,69 say 'DATE'
3,12 say '#'
3,10 get mamount1 pict '999,999,999.99'
3,41 get mmonths pict '999'
3,45 say 'MONTHS'
3,67 get mdate
5,5 say 'PURPOSE:' get mpurpose1 pict '@!'
6,14 get mpurpose2 pict '@!'
7,4 to 17,75
ea gets
at=0
nount2=0
ate2=ctod(' / / ')
pprove=spac(55)
18,5 say 'AMOUNT OF LOAN APPROVED'
18,32 say 'DATE OF APPROVAL'
18,52 say 'INTEREST RATE'
19,9 say '#'
19,10 get mamount2 pict '999,999,999.99'
19,36 get mdate2
19,53 get mint pict '999.9'
19,58 say '% P.A.'
21,5 say 'APPROVED BY:' get mapprove pict '@!'
ad
  while .t.
    resp=' '
    @ 23,20 say 'Press "S" to SAVE or "A" to ABANDON:' get resp pict

read
if resp $ 'SA'
  exit
endi
add
  resp='S'
  sele 2
  appe blan
  repl acctno with macctno,sname with msname,mname with mmname
  repl fname with mfname,gl with mgl,date with mdate
  repl occupy with moccupy,pwork with mpwork,int with mint
  repl adate with madate,slocate with mslocate,haddr with mhaddr
  repl phone with mphone,brcode with mbscode,balance with mamount2
  repl months with mmonths,amount1 with mamount1

```

```
1 purpose1 with mpurpose1,purpose2 with mpurpose2
1 date2 with mdate2,approve with mapprove,amount2 with mamount2
e 1
1 remark with 'APPROVED'
```

```
1
```

```
PRG
```

```
approve
```

```
repay
```

```
1 .t.
```

```
3 to 23,76 doub
```

```
1,4 to 21,75 doub
```

```
,30 say 'LOAN REPAYMENT FORM'
```

```
,30 to 4,48 doub
```

```
ctno=spac(7)
```

```
,5 say 'CUSTOMER ACCOUNT NO (Enter 99/9999 to exit):' get macctno  
'99/9999'
```

```
d
```

```
macctno='99/9999'
```

```
exit
```

```
di
```

```
le 1
```

```
top
```

```
ca for acctno=macctno
```

```
eof()
```

```
@ 22,11 say 'Account Number does not exist - Strike any key to  
inue'
```

```
set cons off
```

```
wait
```

```
set cons on
```

```
loop
```

```
di
```

```
name=sname
```

```
name=mname
```

```
name=fname
```

```
occupy=occupy
```

```
owork=pwork
```

```
gl=gl
```

```
adate=adate
```

```
slocate=slocate
```

```
haddr=haddr
```

```
phone=phone
```

```
phone1=substr(mphone,2,3)
```

```
phone2=substr(mphone,7,7)
```

```
phoner=spac(13)
```

```
bscode=bscode
```

```
balance=balance
```

```
5,60 say 'DATE:' get madate
```

```
7,7 say 'SURNAME'
```

```
7,31 say 'MIDDLE NAME'
```

```
7,54 say 'FIRST NAME'
```

```

get msname pict '@!'
9 get mmname pict '@!'
3 get mfname pict '@!'
5 say 'HOME ADDRESS:' get mhaddr pict '@!'
51 say 'PHONE NO:' get mphoner pict '( )-
62 get mphone1
67 get mphone2
5 say 'SITE LOCATION:' get mslocate pict '@!'
55 say 'BANK SORT CODE:' get mbscode pict '999'
4 to 13,75
unt2=amount2
rove=approve
e2=date2
=int
5 say 'AMOUNT OF LOAN APPROVED: #'
31 get mamount2 pict '999,999,999.99'
48 say 'DATE OF APPROVAL:' get mdate2
5 say 'APPROVED BY:' get mapprove pict '@!'
4 to 17,75
a gets
rrent=0
te3=ctod(' / / ')
8,5 say 'CURRENT AMOUNT TO PAY (PRINCIPAL): #'
8,41 get mcurrent pict '999,999,999.99'
8,58 say 'DATE:'
0,5 say 'BALANCE REMAINING: #'
0,43 say 'INTEREST PAYABLE: #'
ad
nt=mint/100*mbalance/12
al2=mbalance-mcurrent
20,25 get mbal2 pict '999,999,999.99'
20,62 get mint pict '999,999.99'
ea gets
18,64 get mdate3
ad
o while .t.
resp=' '
@ 22,20 say 'Press "S" to SAVE or "A" to ABANDON:' get resp pict
read
if resp $ 'SA'
exit
endi
add
resp='S'
sele 2
appe blan
repl acctno with macctno,sname with msname,mname with mmname
repl fname with mfname,gl with mgl
repl occupy with moccupy,pwork with mpwork
repl adate with madate,slocate with mslocate,haddr with mhaddr
repl phone with mphone,brcode with mbscode
repl date2 with mdate2,approve with mapprove,amount2 with mamount2
repl balance with mbal2,date3 with mdate3
sele 1
repl balance with mbal2
ndi
d
s all
a

```

etu

RG31.PRG

```
clea
use apply
set devi to prin
@ 1,28 say 'LOAN APPLICATION REPORT'
@ 2,28 say repl('=' ,23)
@ 4,4 say 'ACCOUNT NO'
@ 4,21 say 'NAME'
@ 4,45 say 'AMOUNT REQUESTED'
@ 4,65 say 'REMARKS'
@ 5,4 say repl('-' ,72)
row=5
do while .not. eof()
  row=row+1
  macctno=acctno
  msname=rtri(sname)
  mfname=fname
  mmname=mname
  msname=msname+' '+left(mfname,1)+'.'+left(mmname,1)+'.'
  mamount1=amount1
  mremark=remark
  @ row,5 say macctno
  @ row,17 say msname
  @ row,45 say mamount1 pict '999,999,999.99'
  @ row,64 say mremark
  skip
endd
set devi to scre
clos all
retu
```

PRG32.PRG

```
clea
use approve
set devi to prin
@ 1,31 say 'LOAN STATUS REPORT'
@ 2,31 say repl('=' ,18)
@ 4,2 say 'ACCOUNT NO'
@ 4,18 say 'NAME'
@ 4,43 say 'AMOUNT APPROVED'
@ 4,61 say 'BALANCE REMAINING'
@ 5,2 say repl('-' ,76)
row=5
do while .not. eof()
  row=row+1
  macctno=acctno
  msname=rtri(sname)
  mfname=fname
  mmname=mname
  msname=msname+' '+left(mfname,1)+'.'+left(mmname,1)+'.'
  mamount2=amount2
  mbalance=balance
  @ row,3 say macctno
  @ row,15 say msname
```


@ row,43 say mamount2 pict '999,999,999.99'
@ row,61 say mbalance pict '999,999,999.99'
skip
add
et devi to scre
los all
etu

FEDERAL MORTGAGE FINANCE - MINNA
COMPUTERISED MORTGAGE OPERATIONS

MAIN MENU

- A ----- ACCOUNT REGISTERING OPTION
- B ----- LOAN MANAGEMENT OPTION
- C ----- REPORT GENERATING OPTION
- Q ----- MAIN MENU EXIT

Press a CODE for choice:

FEDERAL MORTGAGE FINANCE - MINNA
COMPUTERISED MORTGAGE OPERATIONS

ACCOUNT REGISTERING OPTIONS

- A ----- ACCOUNT OPENING FORM
- B ----- ACCOUNT EDITING FORM
- C ----- ACCOUNT VIEWING FORM
- D ----- ACCOUNT DELETING FORM
- Q ----- SUBMENU EXIT

Press a CODE for choice:

FEDERAL MORTGAGE FINANCE - MINNA
COMPUTERISED MORTGAGE OPERATIONS

LOAN MANAGEMENT OPTION

- A ----- LOAN APPLICATION FORM
- B ----- LOAN APPROVAL SCREEN
- C ----- LOAN REPAYMENT FORM
- Q ----- SUBMENU EXIT

Press a CODE for choice:

FEDERAL MORTGAGE FINANCE - MINNA
COMPUTERISED MORTGAGE OPERATIONS

REPORT GENERATING OPTION

A ----- LOAN APPLICATION REPORT
B ----- CUSTOMER STATUS REPORT
Q ----- SUBMENU EXIT

Press a CODE for choice:

LOAN STATUS REPORT

=====

NT NO	NAME	AMOUNT APPROVED	BALANCE REMAININ
013	ANYANWU C.A.	4,000,000.00	3,500,000.00
005	NWAIWU U.V.	2,000,000.00	2,000,000.00
234	YAKUBU A.T.	500,000.00	400,000.00

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