

TITLE PAGE

**COMPUTERIZATION OF CUSTOMER CARE UNIT  
A CASE STUDY OF NEPA, MINNA**

**By**

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**A PROJECT SUBMITTED TO THE  
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POSTGRADUATE DIPLOMA IN COMPUTE SCEINCE.

**FEDERAL UNIVERSITY OF TECHNOLOGY,  
MINNA, NIGER STATE.**

**November 2004**

## **DECLARATION**

I hereby declare that this research work (project), a partial fulfillment of requirement for the award of post graduate diploma of computer science of computer science of, Federal University of Technology, Minna is a product of my research effort.

All sources of information collected for the project are clearly acknowledged by means of references.

LAWAL JIBRIN

SIGNATURE

DATE

# **CERTIFICATION**

I hereby certify that this project is the original work of **MR. LAWAL JIBRIN** PGD/MCS/2003/2004/1128. Submitted for the award of **POSTGRADUATE DIPLOMA IN COMPUTER SCIENCE OF FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA.**

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**EXTERNAL EXAMINER**

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**DATE**

## **DEDICATION**

**This project is dedicated to almighty Allah who has granted me the time and energy to go through my studies successful.**

## ACKNOWLEDGEMENT

My deep gratitude to almighty Allah who ;has been so nice to my life, family and throughout the pursue of this course.

My sincere appreciation goes to my supervisor Dr N.I Akinwande of Maths and Computer department, Federal; University of technology, Minna who despite his tight schedule was always patient reading through the entire manuscript and made valuable suggestions and correction which improved the standard and quality of my work.

I always wish to acknowledge with gratitude the love ,patience , moral and understanding support of my wife and her family who spare most of her time.

I wish also to acknowledge with gratitude and respect to my brother and friend Musa Isa who has contributed through direct participation in the success of my work.

I am full of gratitude to my mother and my family especially Garba jibrin and his family for their prayer and financial support.

I heartily wish to tender my special thanks to the following people Muhammed Abdulhakeem, and my colleges in office and class and those numerous to mention both outside and within the school.

## ABSTRACT

This project work is aimed at computerizing the customer care unit of NEPA, MINNA. the Manual way of computation was briefly explained and a program written in visual basic was written to facilitate the computation of statement of account of a customer.

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**REFERENCE**

# CHAPTER ONE

## INTRODUCTION

### 1.1 PREAMBLES: -

Public utilities are service oriented enterprises or public enterprises created by act of parliament or decree as corporate bodies. The government from taxation or from public borrowing provides their capital. They are subject to government control but have freedom to manage their day-to-day affairs and if necessary to operate commercial. Example, broadcasting, railways, water and Electricity Corporation.

These bodies are set up by government to satisfy public needs and provide services that are needed by the society which if left in the hands of private individuals, in which they may operate contrary to public interest. The government organizes some of these corporations because no private individual can afford the capital required to set them up! Yet such services are considered necessary for comfortable survival of individual in the society. The duties and power of these corporation on how they are to set up and the manner of their operation are all spelt out by the act on their establishment. They are also organized to make profit e.g. NEPA, NPA, etc.

Service oriented enterprises are established to serve particular function, which are inter alias. To provide essential services without profit motivation; these are services that are needed to make life bearable and worth living e.g., NEPA and water board. They are also expected to provide employment for citizens and therefore reduce unemployment rate in order to promote economic development, such ventures like electricity and steel are capital projects.

This project is intended to analyze and identify the computerization of customer care unit in NEPA. It will also suggest some possible ways on how to improve the standard of computerization in customer care unit not only in NEPA but the whole of service-oriented enterprise.

NEPA is solemnly Nigeria government enterprise charged with the responsibility of supplying electricity to day to day running of most industries and residential places in Nigeria. Electricity as a basic necessity of economic output, which NEPA sells, has continuously served as a tool in fostering unity, progress and revenue base throughout the country. Certainly, electricity generated through dams is inevitable for any viable society.

## **1.2 HISTORY OF NEPA**

The National Electricity Power Authority (NEPA) is the major producer of electricity in Nigeria. The body (NEPA) is the major producer of electricity in Nigeria. The body is a product of the amalgamation of two different corporations known as Electricity Corporation of Nigeria (ECR) and the Nigeria Dams Authority (NDA) in 1972.

Decree NO 24 of the then federal military government established NEPA in June 1972.

The authority is charged with the responsibility and managing electricity undertakings throughout the country with a view of generating, transmitting, distributing and selling electricity at reasonable prices. In addition, the authority is also empowered to manufacture and provide for sale or hire, maintain and repair any electricity apparatus or appliances for lighting, heating of power and to maintain shops and show rooms for the display, sales and hire of electricity equipment of all kinds.

However, NEPA is a service-oriented enterprise as earlier said with many undertakings, stores, etc.

Due to rapid growth of NEPA in the country, the authorities today supply not only for the country's consumption but also some neighbors countries with electricity such as NIGER and GHANA.

The NEPA district office Minna is under NEPA directorate in Abuja, headed by the district manager. The district office comprises of several departments such as administrative office, account and audit department, public relation department, and not to forget about the customer care unit. There are other departments such as the commercial department, maintenance department, etc.

### **3 HISTORICAL BACKGROUND & OPERATION OF NEPA**

In 1946, the first electricity generating plant with capacity of 60 KV was installed in Lagos. In 1950, legislative ordinance number 15 of 1950 established the electricity corporation of Nigeria (ECN). It has the responsibility of supply of electricity to some parts of the country.

National Electric Power Authority (NEPA) has eight major generating power stations located strategically nation wide. Basically, NEPA employs two methods to generate electricity namely: Hydro and Thermal.

There are three Hydro power stations namely

- 1) KAINJI POWER STATION, NIGER STATE
- 2) JEBBA            "            "            "            "
- 3) SHIRRORO    ,,            ,,            "            "            "

On the other hand, the thermal power stations are:

- (1) OGOREDE POWER STATION, SAPELE, DELTA STATE
- (2) AFAM            "            "            , AFAM , RIVERS STATE
- (3) DELTA            "            "            , UGELLI, DELTA STATE
- (4) IJORA            "            "            , IJORA, LAGOS STATE
- (5) LAGOS            "            "            , EGBIN, LAGOS STATE

The eight major power stations of the NEPA have installed generating capacity of 6,000 megawatts (MW). But the total power generation for the country is adequate as the maximum demand at peak period is less than 3,000 MW for now.

The hydro power station depends on water to generate electricity at a cheaper rate, though it is more expensive to build. The thermal power stations depends on high Fuel oil / Gas for its operation. The cost of running a thermal power station is much higher than its equivalent capacity hydro plant. The power generated is required at various load centers all over the country of which NEPA is equally charged with the responsibility of transporting this power to the various load centers. This process is

called transmission, which is done at 330 Kilovolt (kv) and 132kv. This is to ensure minimum loss during the transmission. NEPA also has a National Control Center (NCC) at Oshogbo, Osun state where the power interconnection (National Grid System) is being monitored.

Since no consumer can take supply directly from the high voltage transmission lines, power has to be stepped down at various load centers.

Amongst terms of reference of NEPA operation is distribution of electricity. Distribution of electricity is the process of stepping down high electricity voltage to smaller voltage for easy consumption by the different categories of customers. Power is stepped down to 33 kv and 11 kv for industries and down to 415volts for domestic consumers, meters are then installed to measure power consumption of the consumers.

Finally, electricity sold to customers. The sale of electricity is the activity whereby customers are appropriately billed for electricity used or consumed. They are basically two types of billing system used in NEPA.

They are; manual and computerized billings.

Manual billing as the name implies is done manually or by hand while computerized billing is the system whereby the computer is

used for billing. This later method is more efficient since several thousands of bill copies can be produced within a short time.

#### **1.4 ORGANIZATION STRUCTURE**

In discussing the organizational structure of NEPA, it is intended to convey the reality of executive responsibilities or functional inter-relationship that is the main lines of communication and the flow of authority and responsibilities.

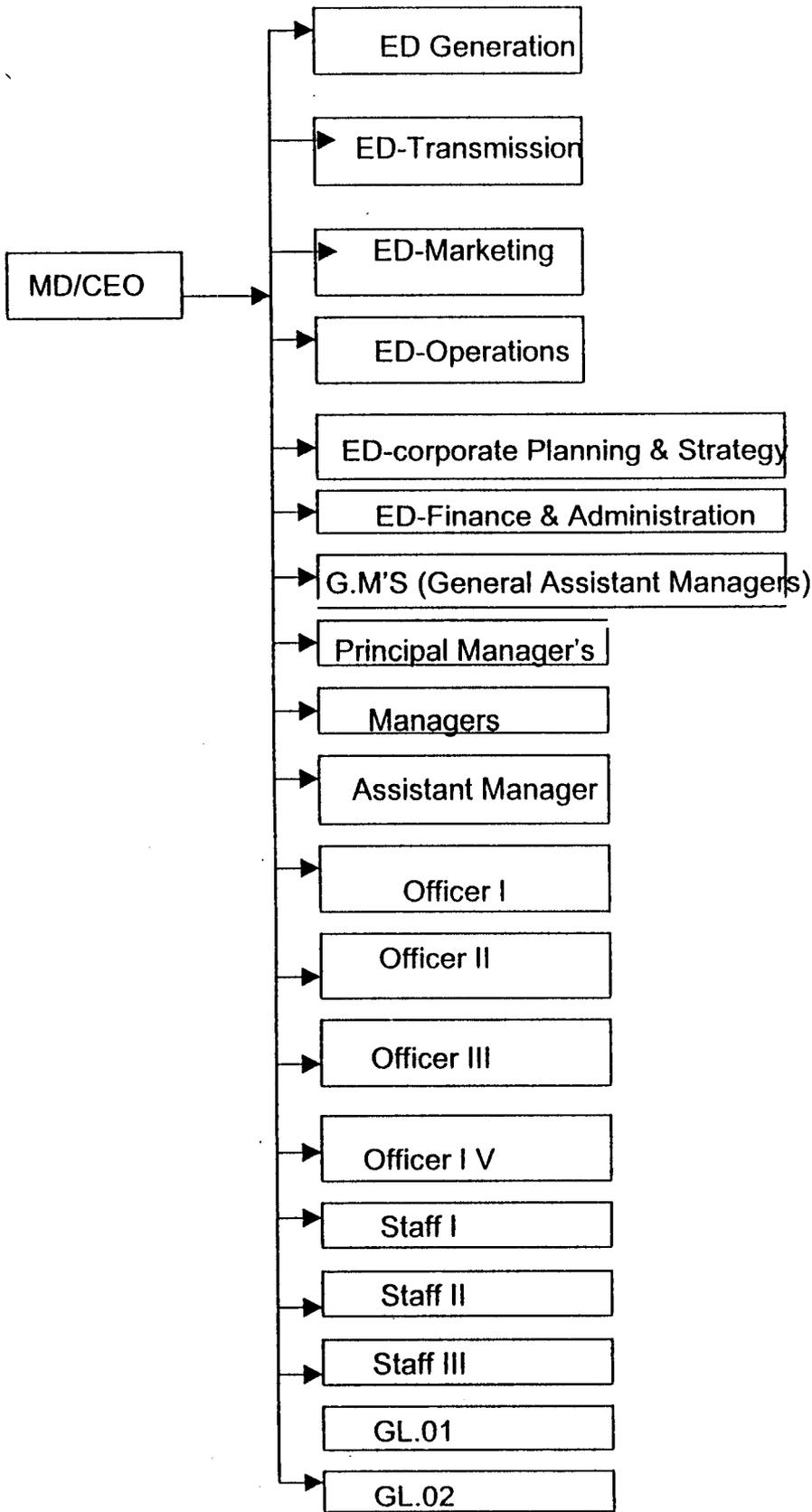
Management has approved a new organizational structure of NEPA on the 26<sup>th</sup> and 27<sup>th</sup> February on new improved structure of the authority. This structure is designed to achieve the federal governments objectives under the on going power sector reform project. It is also intended to enhance responsibility accountability and performance management. Basically, the structure consists of the managing director/chief executives (MD/CE's) office, the seven sector offices and their field units.

Seven (7) Executive directors in charge of Generation, Transmission, assist the managing director and chief executive in distribution, marketing, operations, corporate planning and strategy and lastly finance and administration.

The sector offices are further broken down into directorate office and further into district offices. The organizational structure of NEPA is as drawn below:

At the district level there is a commercial manager who is responsible for all commercial activities ranging from electricity problems to collection of meters and meter bills.

There is a distribution manager who is responsible for all work distribution. At the undertaking level, there is the commercial and distribution superintendent, who performs similar functions as the commercial and distribution managers at the district level.



## **1.5 SIGNIFICANCE OF THE STUDY**

One of the many reasons of undertaking this study is to bring into focus the activities of service-oriented enterprises with cognizance to NEPA Minna district.

The study is to enhance the design and creation of a better communication between services oriented enterprise and consumer through customer care.

The study will also make an insight observation into problems facing NEPA Minna district as a service oriented enterprise and thus, recommending ways of limiting or solving such problems.

Elicit suggestions and measures as to how NEPA can service their customers efficiently and how customers care aids in realization and other goals achieve.

## **1.6 Aims And Objectives Of The Study**

- 1) To ensure consistent and accurate data record of customers at all the time
- 2) To facilitate retrieval of customers history of account
- 3) To provide a substitute that will be more efficient and will replace the manual method

- 4) To provide a room for customers file interrogation and update at any given time

## **1.7 SCOPE AND LIMITATION**

As earlier stated, the study is limited to NEPA Minna district office. The study will also focus on the computerization and customer care role dept in the course of rendering services to their customers and how these have aided their performance.

Time factor is one of the elements that made gathering and collection of data difficult. This is because one has to consult so many sources of data and preparing for examination at the same time.

However, it is an interesting and useful task to go on such study .it will help a layman in this field to be aware and understand the services of NEPA and to put such theoretical knowledge into practice

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Bill And Billing System

A **BILL** can be said to as unconditional order in writing, addressed by NEPA to its customers requiring the customer to whom it is addressed, to pay on demand or at a fixed or determinable future time, a certain sum of money for electrical consumption and services rendered to a specified or prescribed cash collection e.g new cash collection centers, banks e.t.c

A **BILLING SYSTEM** can be said to as the process and procedures that are involved in the production of bill. Components of billing system are previous meter reading, present meter reading, tariff, multiplier, fixed charges, demand charges and bill distributor.

#### 2.2 Various complaints attended by customer care unit

The customer care unit section should be a mirror of the authority's image. It deals with the public daily and should

contribute to the authorities good image. The unit is therefore expected to practice good customer relationship habitually. Factors to enhance good customer relations are

- Courtesy (such as politeness, kindness, e.t.c)
- Enthusiasm and interest in customers problems
- Diligence in performance of duty
- Knowledge of work content
- Consistency and patience
- Attentiveness in order to get to the facts
- Tactfulness in speech

## **2.3 CAUSES OF COMPLAINTS**

Most customers come with genuine complaints and it is important that they are treated courteously. Few customers complain with a view of defaulting the authority. In both cases, it is strongly recommended to assume that every consumer has a genuine complaint until proven otherwise .As consumer enquiry center on the bill, the aim here is to identify the factors that create these complaints. Some are as follows:-

1) Error in gathering of data: -

Mistakes in meter reading or in transcribing data to input documents like the CAAD and CRMD, e.g. wrong tariff, multiplying factors, read code, e.t.c

- 2) Error in processing of information-: programming error or keying error
- 3) Error in billing distribution process-: bills that never reach there destinations

## **2.4 TYPES OF CUSTOMER COMPLAINTS**

There are various consumer complaints, some of which are listed below

- 1) No bill received or bills irregular
- 2) Crazy arrears
- 3) Inflated bill, out of average range bills
- 4) Consecutive nil consumption
- 5) Change of tenant
- 6) Wrong account number
- 7) Account not found in the billing register
- 8) Two bill for a customer at a time
- 9) Present reading less than previous reading
- 10) Meter not read and yet bill issued

## 11) Payment not credited on next bill

Treating customer complaints: - the following actions if taken will assist the inquiring clerks in responding favorably to consumer complaints.

### •No Bill Received Or Bills Irregular

- a) Check the consumers folio for reading
- b) Check the latest billing history for the account number of the customer.
- c) If account is located, prepare a copy bill based on the last bill recorded on the history.
- d) If account is not located
  - 1) Direct the consumer to the commercial section (customer care) in order to raise a CRMD to set up the meter information
  - 2) The supervisor of customer care unit should then prepare a manual bill with the account number and readings an the folio with which the consumer can pay.

There are two possible reasons why the bill is not received, either

- 1) Meter information not set up in time after installations or
- 2) The bill is sent to a wrong place

3) Duly sign CRMD asking NEPA to stop billing temporary or permanently.

For irregular bills, the billing history will easily display the monthly changes in the consumer account. But if due to irregular reading of meter the most recent bill will take care of the consumptions for previous months.

• **Crazy Arrears**

- (a) Examine the bill to see if it has an error in reading pattern. If absent, not that the error was carried over from previous months bill.
- (b) Refer the customer to the customer care unit where the cause of error should be investigated and corrected. A reference to the pre-billing control report will show cause of the error.
- (c) If bills carry an exception number e.g. 999 etc this is due to error in readings, refer consumer to the customer care unit for necessary rectification.

**In Coordination sections:-**

- 1) Examine the bill
- 2) Perform extraction on monthly billing of the account, as far back as necessary, using the billing history
- 3) Locate and raise a CRMD to correct errors patenting reading

- 4) Continuously assure consumer that corrective action will be taken on the account before next billing, and ensure it is done.

**•Inflated Bill/Out Of Average Range Bills**

- (a) Examine the bill
- (b) If the bill carries the exceptions schedules numbers, it should never have reached the consumer. Refer consumer to the coordination section.
- (c) Apologize to consumer and refer him/her to the commercial section (customer care unit) if error occurred due to wrong meter data e.g.  
read code, multiplying factor, number of digits in the meter etc.

In the commercial section

- 1) Ascertain correct meter reading from meter folio. Adjust meter reading
- 2) Identify other necessary corrections and advise the customer care unit section on time before next months bill turn even crazier.

In the customer care unit section

- 1) Check that the adjusted reading is correct.

- 2) Raise adjustment to correct wrong bill amount
- 3) Forward CAAD dully sign by the authorized signatories  
for adjustment and other corrections with next batch to  
data control
- 4) If out of average range bill, correct accordingly

• **Consecutive Nil Consumption**

This implies no consumption is recorded on the bill and to correct  
this: -

- 1) Find out how this anomaly has continued
- 2) Refer the case to the supervisor in charge of meter  
reading

In the commercial section

- 1) Search for meter folio. If found with readings, ensure it is  
field in the right meter book

- 2) If meter reading is constant every month, pay a visit to his/her premises to inspect the meter. It may be faulty, not recording, or not accessible to meter readers, take necessary action, or advise consumer to make meter accessible. Note that this complaint will not arise as soon as we start estimating unread meters.

### •Change Of Tenant

A new tenant does not want to pay the areas of old tenant:

- 1) Explain to the consumer that you would very much like to help him/her but the regulation states that the public should inform NEPA before moving into a new premises to avoid mixing the old tenants consumption with new tenants.
- 2) Advise him/her that he/her should fish out the previous tenant and sort it out with him/her, discuss it with his/her landlord or simply settle the bill totally or paying instalmentally.

### •Wrong Account Number

This is usually due to account number change, or rectification of duplicate account numbers.

1) Dispel the fear the consumer may have about his payment going astray. It will be transferred to the new account if it is a valid number.

2) Refer him to the commercial section (customer care unit)

In the customer care unit

1) Check if account number has affected the consumer

2) If that is the case, advise him to settle his bill and that the system will take care of it.

3) If due to correction of duplicate account numbers, and he has made payment on the wrong account number refer him to the account section.

In the account section

Raise a CAAD transaction code 36 to transfer his payment from the wrong

account number to the correct one. Credit his account and debit the wrong account. The CAAD has to be sign by the authorized signatories.

- **Account Not Found In The Billing History**

Consumer has been receiving bills regularly until suddenly the account number does not appear billed anymore

- 1) Check out the account number from the latest Billing history for his district. It may require looking through a month's complete billing history as the meter book can be billed into any run during the month.
- 2) Check through as many previous billing history as available.
- 3) If all efforts fail to locate the account, report to the Commercial Section.

In the commercial section (customer unit)

- 1) Verify if account is closed temporary or permanently or changed to another one.
- 2) If closed, re-open account and advise the customer care unit to adjust the records accordingly.  
  
If manually changed to another account, also report this to the customer care unit and prepare an account number changed document to data control. This will enable the computer merger the old account to the new one.

## **CHAPTER THREE**

### **SYSTEM ANALYSIS AND DESIGN**

#### **3.1 Problem Definition**

The problem associated with the manual record of activities of customer care unit is expected to be resolved through the use of computer.

Considering the manual activities of customer care unit of NEPA, displacement of files and records are usually associated with the old system, which is not reliable when compared with the proposed system.

#### **3.2 Feasibility Study**

A thorough feasibility study was carried out before embarking on this program. This is to determine whether the proposed project (that is the activities of customer care unit) will be possible. Hence to find out whether it will be feasible to change from the manual activities to an automated data processing. During the preliminary

investigation, some of the problems associated with the manual system were identified and these include missing of customers records and files, delayment in processing of monthly bills and also delay in processing of annual report

### **3.3 System Requirements**

A system could be defined as the integration of hardware, software and human ware responding to input to produce output.

For effective management in NEPA, the following will be required: -

#### **3.3.1 Hardware Requirement**

These are the physical component of the computer system, which are used for input, storage, processing and output of information

Two sets of multi-user computer system each having a master station and 4-slave station will be required to effectively handle this computerized system. The exact specification of these computer systems together with the accessories will be listed below

2-number multi-user computing system

20GB HDD

3.5" or 5<sup>1/2</sup> floppy disk drive

VGD 14 monitor

4 number lave station

Printer, laser jet type

## UPS

### VOLTAGE stabilizer (2400)

Out of the two set of computer, one set will be in use while the other set will be reserved as spare, which will be used in the extent of the system in service, developing fault.

It will be important to arrange for quick repairs and maintenance to prevent the two set of computer breaking down at the same time, as this will paralyze the entire operation of the system.

### **3.3.2 Software Requirement**

These comprise all forms of program, which control the operation of the computer. Apart from operating system, other software, which will be required for effective implementation of the proposed system, is the program to use.

### **3.3.3 Manpower requirement**

A system could be defined as the interaction of hardware and human ware. The importance of human ware cannot be overemphasized. In view of this, the management of NEPA will have to conduct training for the implementation of the new system.

The following categories of people need to be trained; they are operator and technical staff.

It is observed that the proposed system does not attract extra cost arising from salaries and wages of system operator. This is because

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It is observed that the proposed system does not attract extra cost arising from salaries and wages of system operator. This is because the system operator will be drawn from regular worker in the organization and will be made to undergo some training on operation of the computer system.

### **3.4 Benefits Of The Proposed System**

The benefits of the proposed system will be in the long run out weighting the extremely high cost of introducing the system.

The benefits are as follows

- 1) The unit will have a standard data bank for different class of customer (consumer) that is residential, commercial and maximum demand (MD) customers.
- 2) The computerized system will provide quick access to stored data and information.
- 3) Illegal access to customers account or altering will be eliminated, since the data file will be stored with password known to the authorized personnel only.
- 4) Loss of information or misplacement of entries files will be eliminated.
- 5) Indiscriminate entry of data into files and alterations will be

eliminated since entries can only be made through the master station, which is passworded and well secured.

6) Merging of back ups to form one data base for long history of account requirement.

There will be general improvement in the overall efficiency of the operation

### **3.5 Specification Of The Proposed System**

The specification of any system provides a detailed documentation of that system. The specification of activities of customer care unit (NEPA) is expected to serve as

communication medium to manager, programmer, operating staff and also to provide standard and consistent record for each customer.

### **3.6 Justification Of The Proposed System**

Change over from the old system of manual record keeping to the new system, which entail the use of computer system for carrying out the database management are considered under the following three headings

**Technical feasibility:** - this tries to see whether the technology needed is available and if available whether it is used. Hence, the

specified computer systems to be used are readily available in the country. The technician supports required are readily available as many organization such as banks, company, hospital have already embark in similar changeover have acquired the technical know-how.

In view of the above consideration, the project is technically viable.

Operational feasibility-: to find this, we ask whether the proposed solution can fit in with existing operation and whether the right information at the right time is provided to users. The proposed system will perfectly fit into the existing method. The right information required from the database of the activities of customer care unit of NEPA will be readily available. The information that will be generated from this database will be more readily than the previous manual data processing procedure.

### **3.7 Design Element**

The elements of design of the new system can be

conveniently divide into the following

### **3.7.1 Input specification**

This is the process of converting an external user oriented input system into a machine format. Considering of the input will be influenced greatly by the use of output. Hence, in designing the input form of new system we must have the following in mind

Name of system

Name of document

Source and method of origination

Detail of data element

Frequency of preparation

Volume

Draft layout of document

Screen layout

### **3.7.2 File Specification**

This is concerned with the type of file organization to use depending on the volume of data. Considering the file specification, the following should be put in mind

Name of system

File name

File label

Size of record

Record type

Block size

Field name

File medium- tape reader, cassette, floppy, fixed or exchangeable file security, private and confidential, use of password.

### **3.7.3 Output specification**

Like any other system, control are given to what is required of this new system before describing how to set about producing it, the design of the output depends on the information required. Hence, serious consideration should be given to the following criteria before producing the output, these are

Name of system

Name of report

Number of print lives

Maximum size of fields

Destination of report

Draft of report

Screen layouts

**3.8 Economic feasibility** -: Here, we ask whether finance is available for implementing the proposed solution and whether for implementing the proposed solution and whether the money

spent is recovered by the savings or by better use satisfaction.

The automation of activities of customer care unit of NEPA is

economically viable to the fact that the cost of implementing the changeover form manual processing of data to computerized system is not too much for a big organizations like NEPA, bearing in mind the efficiency and reliability of the new system.

### **3.9 Cost /Benefit Of The Proposed System**

#### **3.9.1 Cost Of New System Implementation**

<b>ITEM</b>	<b>cost</b>
System analysis and design	50,000
Software development	100,000

2 multi-user computer with four sub-station each	500,000
Two printer (laser jet)	140,000
Two ups	50,000
Two stabilizer	22,000
Installation charges	50,000
Staff training (4persons for 4weeks)	20,000

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932,000.00  
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Operating cost	Monthly	Annually
Material	5,000	60,000
Salaries/wages		
Equipment maintenance	3,000	36,000
Others	1,000	12,000

-----  
108,000.00  
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### 3.10 Analysis Of Existing System

A customer complains high-debit, the staff of the customer care unit brings his file and prepares his history of account as follows

#### NEPA ACCOUNT DETAIL REPORT

Account number 90-11-49-1149-01

Customer Name LAWAL JIBRIN

Address No 4, Idowu road

Meter Number 0000000415

Tarrif N/A

Rating

MINNA NIGER

Open balance

Date	Type	Batch	Docn	Reading	Consumption KVA	Amount	Balance
18-11-2004	PMT	1146	94940	-	-	1,500.00	4,280.90
31-01-2004	Bill			4643	300E	1,396.50	5,677.40
29-02-2004	Bill			4943	300E	1,396.50	7,073.90
18-02-2004	PMT	1173	46254			2,720.00	4353.90
31-03-2004	Bill			5243	300E	1,396.50	5,750.40
30-04-2004	Bill			5543	300E	1,396.50	7,146.90
4-5-2004	PMT	1022	4625			3,800.00	3,346.90
30-05-2004	Bill			5843	300E	1,396.50	4743.40
30-06-2004	Bill			6143	300E	1,396.50	6139.90

From the above history of account of Lawal Jibrin, before his payment of 11-18- 2003, he had a debit balance of 5780.9 and after his payment of 1,500, the balance debit reduced to 4280.90. Under type, it was payment (PMT) with a batch number and document number. Since it was payment,

there will be neither meter reading nor consumption. A bill was issued on the 1-31-2004 with meter reading and consumption per KVA amounting to ₦1, 396.50 which when added to the previous balance gives a new balance of ₦ 5,677.40. And so his transaction continued.

# CHAPTER FOUR

## System development

### 1 Programming language used

The customer care unit deals with a large volume of data and the fact that visual basic programming language provides full relational data base environment to users was why it was selected. Other reasons why visual basic programming language was used are that it provides debugging fertilities and the features are expressed close to natural language, which makes it easy to use.

Using control center and without the use of command language you can design database, generate reports, perform data base query and browse database. Similarly, with it programs and procedures can be compiled and saved as object codes for faster execution. Additional with database IV, users designable functions up to 99 files can be opened at one time

## 4.2 Algorithm: Diagrammatic Representation

Flowchart is a diagrammatic representation of commands of expression following a stated pattern. These pattern include the use of symbols to represent statements

## **CHAPTER FIVE**

### **Conclusion and recommendation**

#### **5.1 Summary**

This research work is based on activities of customer care Unit. This new unit of NEPA deals with complaints of customer and ensure that the customer fully enlightened about his/her consumption.

#### **5.2 Conclusion**

The manual computation takes a staff of the unit a minimum of 20 minutes to prepare the history of account of a single customer. This exercise does affect the customer because in most cases, a customer feels neglected and leaves the premises. This process affects also the staff due to its strannous nature and the time it takes doing a single work.

With the computerized system, history of account of several customers can be prepared in fraction of minute. As such, the manual process should be kept aside to ensure efficiency and accuracy.

### **5.3 Recommendation**

This system should be implemented using the recommended hardware requirements such as the two multi-user computing systems so that one can always be on stand-by.

Staff training on how to use the program should be ensured to avoid corrupting the program

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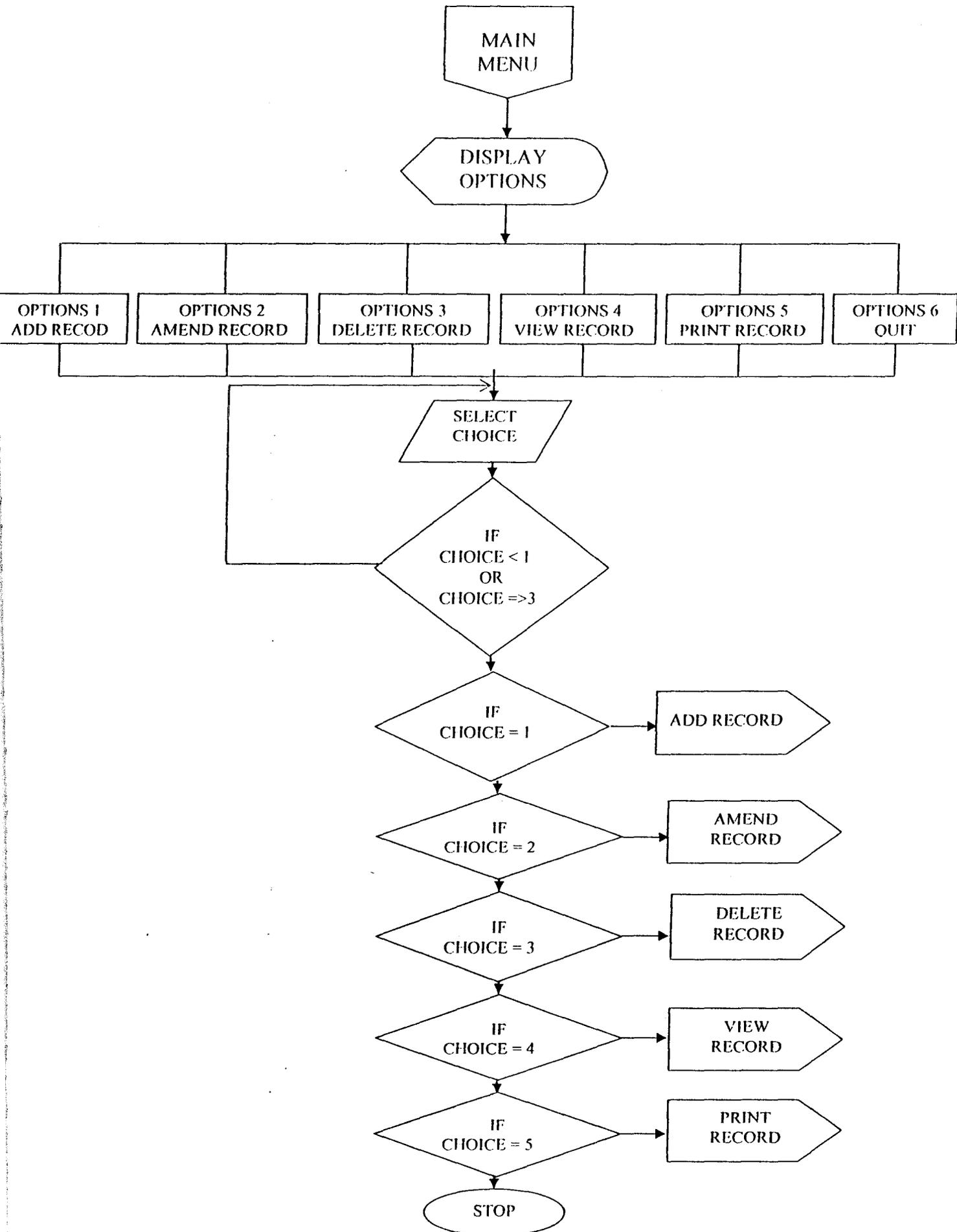
Frank J.Kohout (1974)

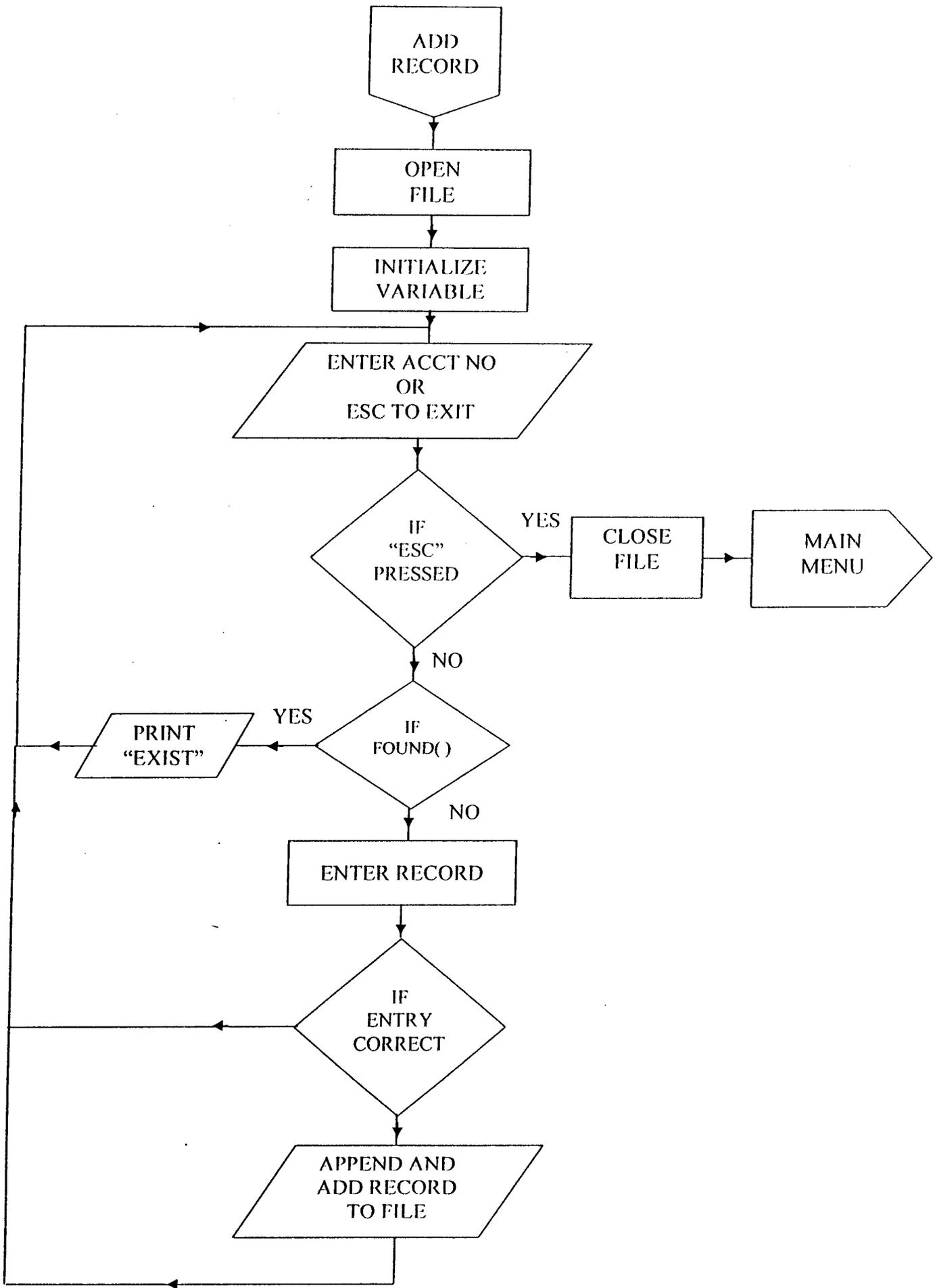
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SCIENTISTS  
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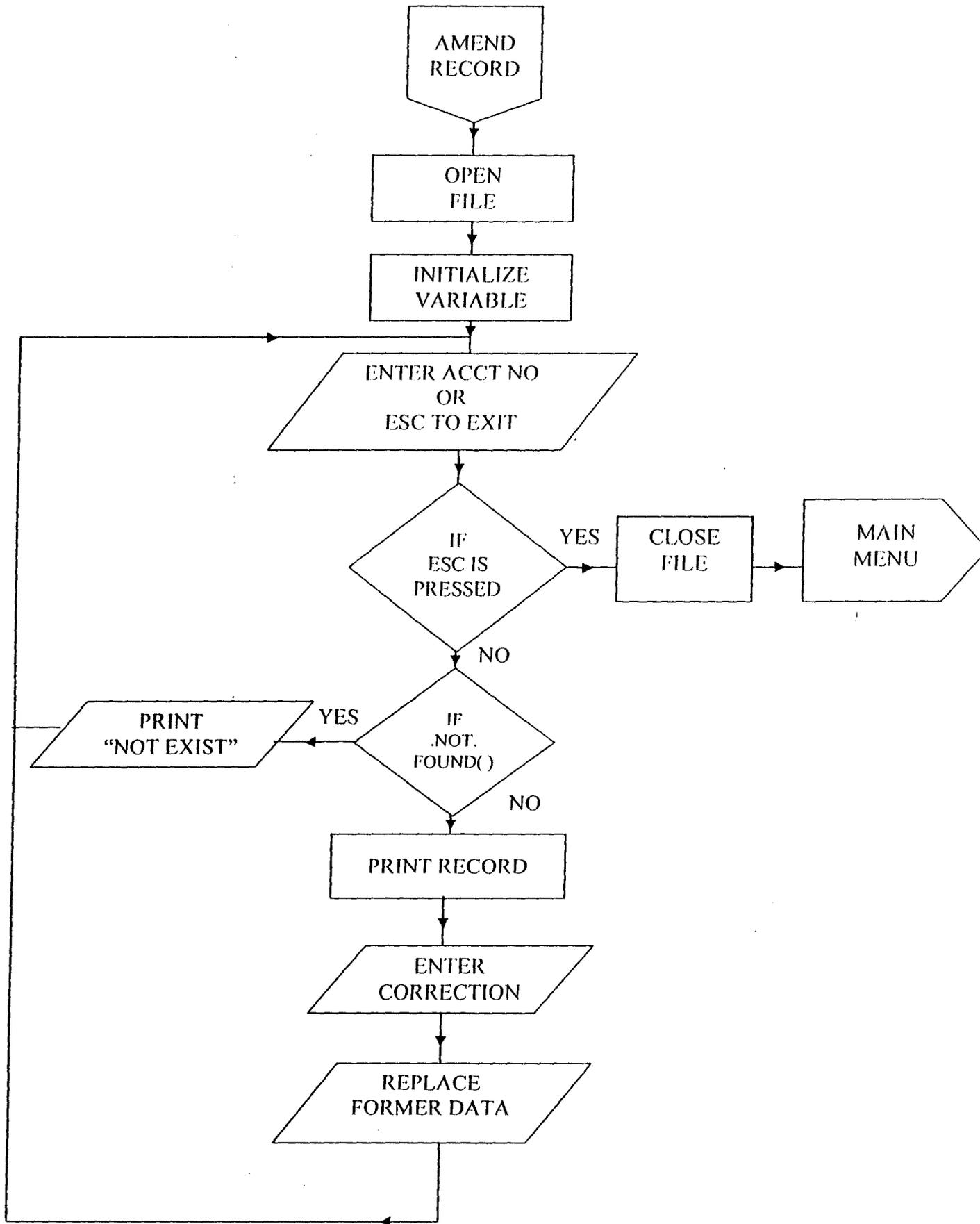
## PERSONAL.DBF

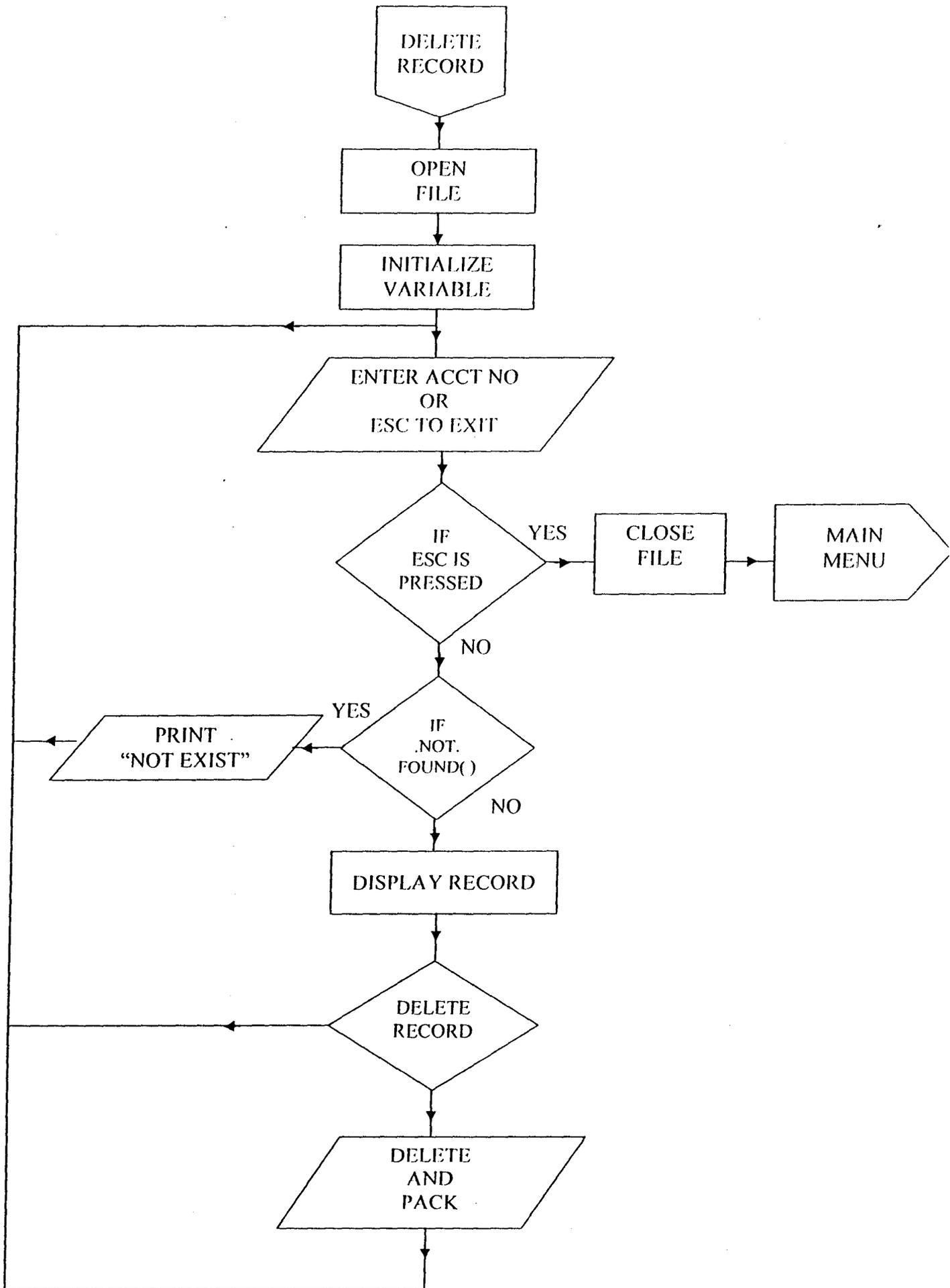
NUM	FIELD NAME	FIELD TYPE	WIDTH	DEC	INDEX
1.	ACCT_NO	CHARACTER	20		N
2.	CUST_NO	CHARACTER	30		N
3.	ADDRESS	CHARACTER	30		N
4.	METER_NO	NUMERIC	10		N
5.	TARIFF	CHARACTER	4		N
6.	RATING	NUMERIC	2		N
7.	TYPE	CHARACTER	5		N
8.	BATCH	NUMERIC	4		N
9.	READING	NUMERIC	6		N
10.	CONSUMP	CHARACTER	4		N
11.	AMOUNT	NUMERIC	11	2	N
12.	BALANCE	NUMERIC	11	2	N
13.	DATE_BILL	DATE	8		N

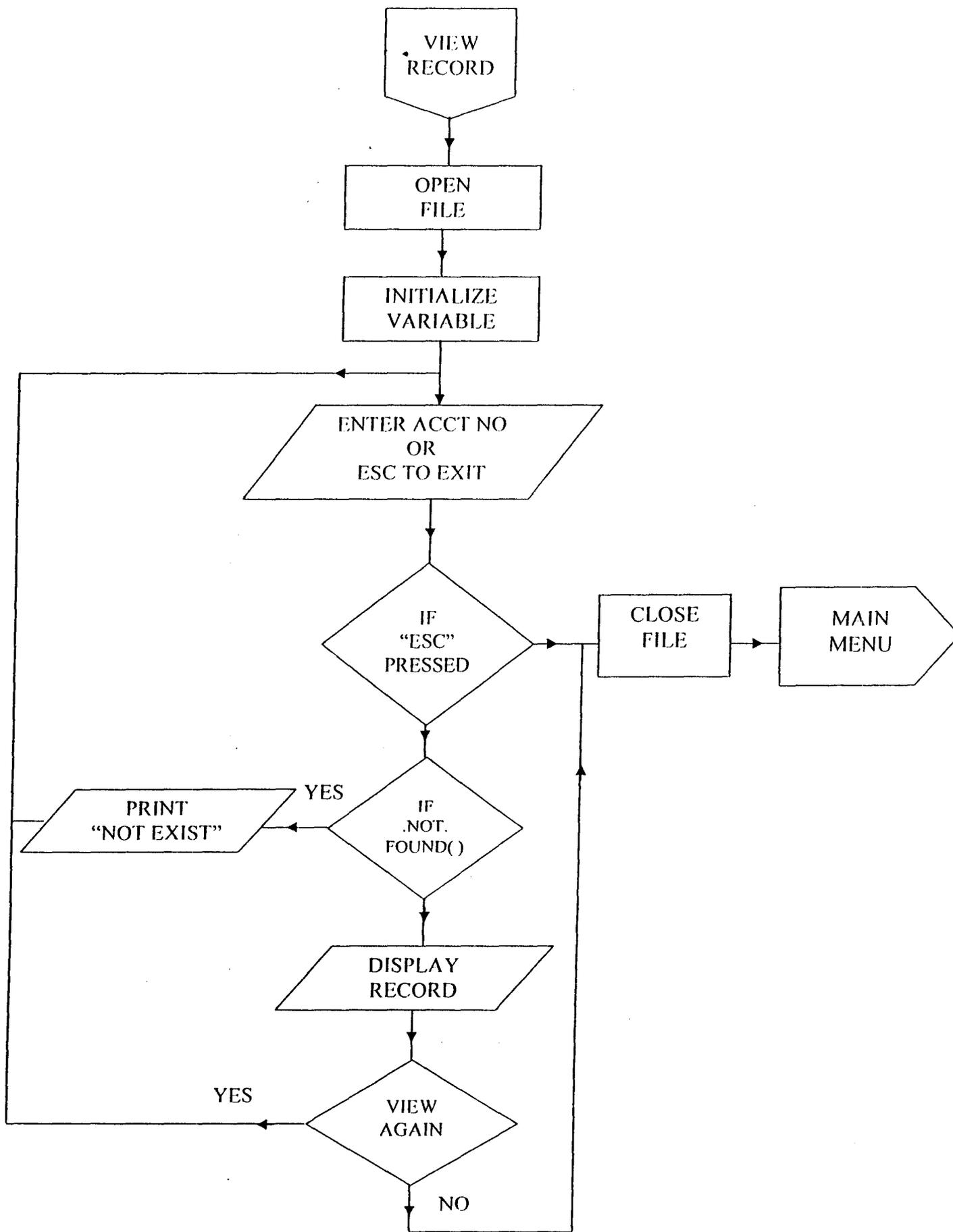
# SYSTEM FLOWCHART

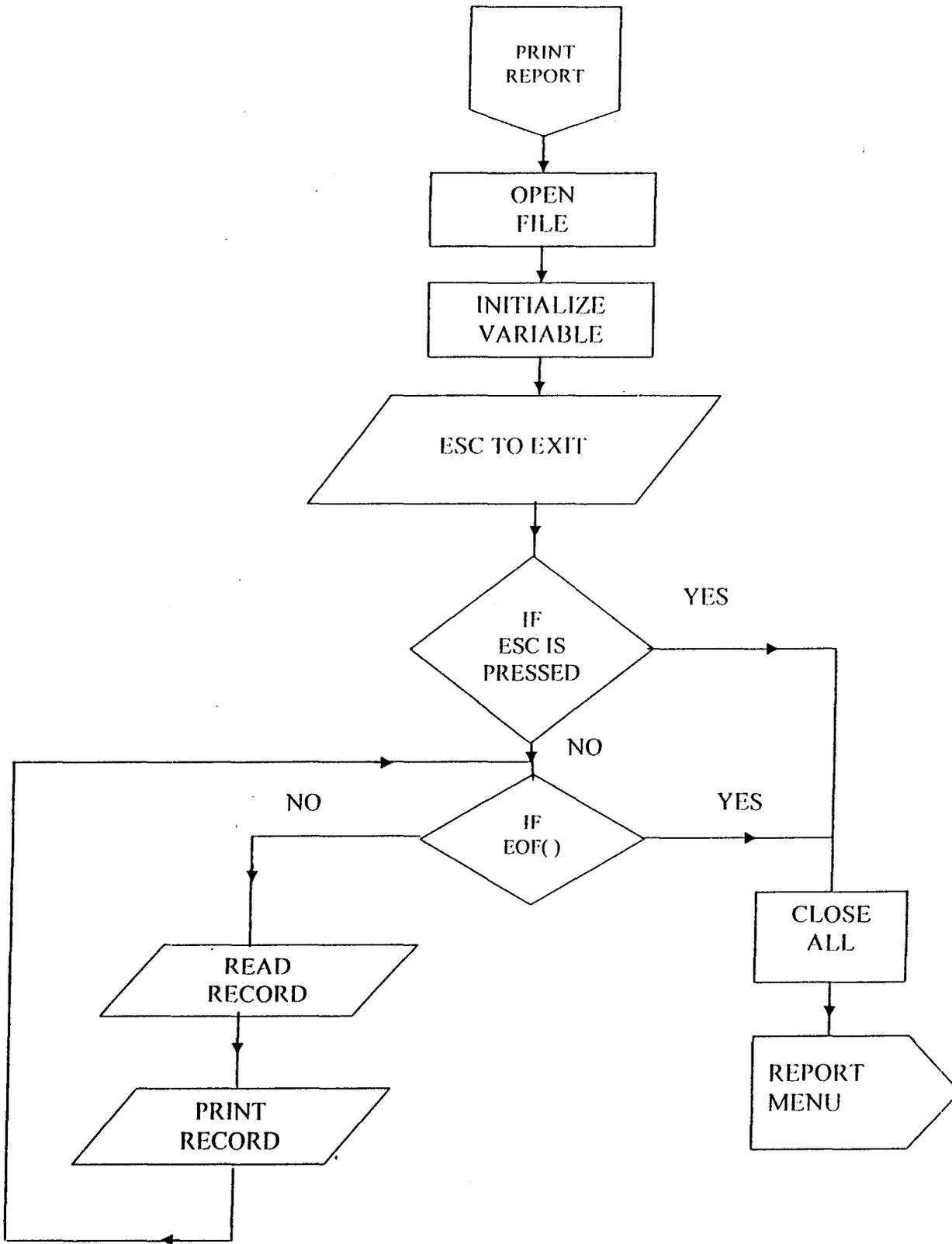












\* \* \* \* \* PROGRAM MAIN MENU \* \* \* \* \*

\* \* \* \* \* AUTHOR LAWAL JIBRIN \* \* \* \* \*

CLEAR ALL

SET SCOREBOARD OFF

SET HEADING OFF

SET STATUS OFF

SET CLOCK TO 7, 57

SET HOUR TO 12

SET CONSOLE OFF

DO WHILE. T.

Choice = 0

@ 4, 20 TO 21, 68 DOUBLE COLOR RG+

@ 6, 26 SAY "NEPA ACCOUNT" COLOR W+|BG

@ 7, 35 SAY "DETAIL REPORT" COLOR W+/BG

@ 8, 52 SAY "DATE" COLOR G+

@ 8, 58 SAY "DATE()" COLOR G+

@ 16, 21 SAY REPLICATE ("\*", 46) COLOR W+

@ 12, 35 SAY "PERSONAL EMOLUMENTS RECORD" COLOR W+\*/B

@ 14, 32 SAY "1. ADD RECORD" COLOR W+ | BG

@ 15, 32 SAY "2 AMED RECORD" COLOR W+'|BG

@ 16, 32 SAY "3 DELETE RECORD" COLOR W+ |BG

@ 17, 32 SAY "4 VIEWRECORD" COLOR W+|BG

@ 18, 32 SAY "5 PRINT REPORT" COLOR W+ | BG

@ 19, 32 SAY "6 QUIT" COLOR W+|BG

@ 20, 25 SAY "ENTER CHOICE" COLOR W+|BG

@ 20, 48 GET CHOICE PICT "@Z9";

RANGE =1, 6;

VALID CHOICE >= 1. AND. CHOICE <= 6;

ERROR "CHOICE MUST BE BETWEEN 1- 6";

MESSAGE "ENTER CHOICE"

READ

@ 20, 25 CLEAR TO 20, 56

SET MESSAGE TO

IF CHOICE = 1

@ 12, 30 CLEAR TO 20, 60

DO EMLADD

END IF

IF CHOICE = 2

@ 12, 30 CLEAR TO 20, 60

DO EMLAME

ENDIF

IF CHOICE = 3

@ 12, 30 CLEAR TO 20, 60

DO EMLDEL

ENDIF

IF CHOICE = 4

@ 12, 30 CLEAR TO 20, 60

DO EMLVIE

ENDIF

IF CHOICE = 5

@ 12, 30 CLEAR TO 20, 60

DO EMLPRINT

ENDIF

IF CHOICE = 6

CLOSE ALL

QUIT

ENDIF

ENDDO

RETURN

\*\*\*\*\* PROGRAM EMLADD \*\*\*\*\*

\*\*\*\*\* AUTHOR LA WAL JIBRIN \*\*\*\*\*

CLEAR

SET SCORE BOARD OFF

SET SAFETY OFF

SET ESCAPE ON

SET STATUS OFF

SET HEADING OFF

SET CENTURY ON

USE PERSONAL

INDEX ACCT – NO TO BILL. NDX

CLEAR

DO WHILE . T.

STORE SPACE (30) ToMACct- NO, Mcust- NAM, maddress,

STORE SPACE (10) TO mTariff, mType, mconsumption

STORE SPACE (0) TO mmeta- NO, Mrating, mBatch, mReading; mamount, mBalance

STORE C TO D (“ / / ”) TO mDate - Bill

@ 1, 5 to 22, 68 Double

@ 3, 27 SAY “ENTER NEPA” COLOR W+/BG

@ 4, 26 SAY “DETAIL RECORD” COLOR W+/BG

@ 6, 25 TO 8, 40 DOUBLE COLOR G+

@ 7, 27 SAY “ADD RECORD” COLOR W+|BG

@ 9, 10 SAY “ENTER ACCOUNT NUMBER--- ESC TO EXIT” COLOR BG|G

@ 9, 42 GET Macct – NO PICT “!!!!!!!!!!!!!!!”;

MESSAGE “ENTER ACCOUNT NUMBER”

READ

SET MESSAGE TO

MLAST KEY =LASTKEY (C)

IF LASTKEY ( ) =27

CLEAR

EXIT

ENDIF

Seek Macct -NO

If .NOT. Found( )

?? CHR(7)

@ 10, 10 SAY "ACCOUNT NO NOT CORRECT"

@ 12, 12 SAY "PRESS ANY KEY TO CONTINUE"

X = INKEY(0)

CLEAR

LOOP

ENDIF

\*\*\*\*\* ENTER RECORDS NOW \*\*\*\*\*

@ 9, 10 CLEAR TO 10, 67

@ 9, 6 SAY "ACCOUNT NUMBER" COLOR BG+/B

@ 9, 20 GET MACCT - NO PICT "!!!!!!!!!!!" COLOR /W+

@ 10, 6 SAY "CUSTOMERS NAME" COLOR BG/B

@ 10, 20 GET Mcust-nam pict "!!!!!!!!!!!" color/B

@ 11, 6 SAY "ADDRESS" COLOR BG+/B

@ 11, 13 GET Maddress pict "!!!!!! +30" color+

@ 12, 6 SAY "METER NUMBER" COLOR /W+

@ 12, 17 GET mmeter-NO PICT "9999999999" COLOR BG/B

@ 13, 6 SAY "TRAFFIC" COLOR/W+

@ 13, 13 GET mTariff" color BG+/B

@ 13, 25 SAY "RATING" COLOR /W+

@ 13, 32 GET mrating Pict "99" BG+/B

@ 14, 6 SAY "TYPE" COLOR/W+

@ 14, 12 GET Mtype Pict "!!!!!" color BG/B

@ 14, 20 SAY "BATCH" COLOR /W+

@ 14, 26 GET mbatch pict "9999" color BG+/B

@ 15, 6 SAY "READING" COLOR BG+/B

@ 15, 13 GET mreading pict "999999" color BG+ /B

@ 15, 27 SAY "CONSUMPTION" COLOR BG+|B

@ 15, 37 GET mConsump pict "!!!!" COLOR |W+  
@ 16, 6 SAY "AMOUNT" COLOR BG+|B  
@ 16, 11 GET MAMOUNT PICT "999, 999, 999. 99" COLOR BG+|B  
@ 17, 6 SAY "BALANCE" COLOR BG+|B  
@ 17, 12 GET mbalance pict ""999, 999, 999. 99" color BG+|B  
@ 18, 6 SAY "DATE OF THE BILL" COLOR |W+  
@ 18, 30 GET mdate – Bill pict "99/ 99/ 9999" COLORBG+|B  
@ 23, 29 SAY "IS ENTRY CORRECT (Y|N)" COLOR BG+|B  
@ 23, 51 GET mChoice pict "@! AX";

VALID Mchoice = "y". OR. Mchoice = "N";

ERROR "CHOICE MUST BE Y OR N

READ

IF MCHOICE = "N"

CLEAR

LOOP

ENDIF

#### APPEND BLANK

Replace Acct-No with Macct-No  
Replace Cust-Nam with Mcust-Nam  
Replace Address with Maddress  
Replace Meter-No with Mmeter-No  
Replace Tariff with Mtariff  
Replace Rating with Mrating  
Replace Type with Mtype  
Replace Batch with Mbatch  
Replace Reading with Mreading  
Replace Consump with Mconsump  
Replace Amount with Mamount  
Replace Balance with Mbalance  
Replace Date-Bill with Mdate-Bill

```
CLEAR
LOOP
ENDIF
CLEAR
CLOSE ALL
@ 10, 20 TO 22, 68 DOUBLE
RETURN
```

```
***** PROGRAM EMLAME *****
```

```
***** AUTHOR LA WAL JIBRIN *****
```

```
CLEAR
SET SCORE BOARD OFF
SET SAFETY OFF
SET ESCAPE ON
SET STATUS OFF
SET HEADING OFF
SET CENTURY ON
USE PERSONAL
SET INDEX TO BILL.NDX
```

```
CLEAR
```

```
DO WHILE .T.
```

```
    mchoice = 0
```

```
@ 1, 5 TO 22, 68 Double
```

```
@ 3, 27 SAY "AMEND NEPA" COLOR W+/BG
```

```
@ 4, 26 SAY "DETAIL RECORD" Color W+ |BG
```

```
@ 6, 25 TO 8, 40 DOUBLE COLOR G+
```

```
@ 7, 27 SAY "AMEND RECORD" COLOR W+*/BG
```

```
@ 9, 10 SAY "ENTER ACCOUNT NUMBER ---ESC TO EXIT"
```

```
@ 56 GET MACCT - NO pict "!!!!!!!!!!".
```

```
    MESSAGE "ENTER ACCOUNT NUMBER"
```

```
READ
```

SET MESSAGE TO

Mlastkey = Lastkey( )

If Lastkey ( ) = 27

Clear

EXIT

ENDIF

Seek macct – NO

IF. NOT. Found ( )

?? CHR (7)

@ 10, 10 SAY “THIS ACCOUNT DOES NOT EXIT”

@ 12, 12 SAY “PRESS ANY KEY TO CONTINUE”

X= INKEY (0)

CLEAR

LOOP

ENDIF

\*\*\*\*\* ENTER CORRECTIONS NOW \*\*\*\*\*

@ 9, 10 CLEAR TO 10, 67

@ 9, 6 “ACCOUNT NUMBER” COLOR BG+ /B

@ 9, 20 GET ACCT – NO PICT “!!!!!!!!!!!!” COLOR/W+

@ 10, 6 SAY “CUSTOMERS NAME” Color BG +/B

@ 10, 20 GET CUST – nam pict “!!!!!!!!!!!!” Color/w+

@ 11, 6 SAY “address” Color BG+/B

@ 11, 13 GET address pict “!!!!!!!!!!!!!!” Color/w+

@ 12, 6 SAY “METER NUMBER” Color /w+

@ 12, 17 GET Meter- no pict “9999999999” Color BG+ /B

@ 13, 6 SAY “TARRIF” Color /w+

@ 13, 13 GET tariff Color BG+ /B

@ 13, 25 SAY “RATING” Color /w+

@ 13, 32 GET rating pict “99” Color BG+/B

@ 14, 6 SAY “TYPE” Color /w+

@ 14, 12 GET Type pict “!!!!” Color BG+/B

@ 14, 20 SAY "BATCH" Color /w+  
@ 14, 26 Get Batch pict "9999" Color BG+/B  
@ 15, 6 SAY "READING" Color BG+/B  
@ 15, 13 GET reading pict "999999" Color BG+/B  
@ 15, 27 SAY "CONSUMPTION" Color BG+/B  
@ 15, 37 GET Consump pict "!!!!" Color /w+  
@ 16, 6 SAY "Amount" Color BG+ /B  
@ 16, 11 GET amount" pict "999,999,999.99" Color/w+  
@ 18, 6 SAY "DATE OF THE BILL" Color /w+  
@ 18, 30 GET date – Bill pict "99|99|9999" Color BG+

READ

@ 23, 10 SAY "PRESS ANY KEY TO CONTINUE" Color BG+\*/B

X= Inkey (0)

CLEAR

LOOP

ENDDO

CLEAR

CLOSE ALL

@ 10, 20 TO 22, 68 DOUBLE

RETURN

\*\*\*\*\* PROGRAM \*\*\*\*\*

\*\*\*\*\* AUTHOR LAWAL JIBRIN \*\*\*\*\*

CLEAR

SET SCOREBOARD OFF

SET SAFETY OFF

SET ESCAPE ON

SET HEADING OFF

SET CENTURY ON

USE BILL

SET INDEX TO BILL. NDX

CLEAR

DO WHILE .T.

STORE SPACE (2) TO mchoice

STORE 0 to mAcct – NO

@ 1, 5 TO 22, 68 DOUBLE

@ 3, 27 SAY DELETE NEPA COLOR W+ | BG

@ 6, 25 TO 8, 40 DOUBLE COLOR G+

@ 7, 27 SAY “DETAIL RECORD” COLOR W+\* | BG

@ 9, 10 SAY, “ENTER ACCOUNT NUMBER – ESC TO EXIT”

@ 9, 42 GET macct – NO PICT “!!!!!!”;

Message “ENTER ACCOUNT NUMBER”

READ

SET MESSAGE TO

Mlastkey = LastKey ()

If LastKey () = 27

CLEAR

EXIT

ENDIF

Seek macct – NO

If .NOT. FOUN ()

?? CHR (7)

@ 10, 10 SAY, "THIS RECORD DOES NOT EXIST"

@ 12, 12 SAY, "PRESS ANY KEY TO CONTINUE"

X= INKEY (0)

CLEAR

LOOP

ENDIF

@ 9, 10 CLEAR TO 10, 67

DO SUBMENU

@ 23, 29 SAY "DELETE (Y/N)" COLOR BG+ | B

@ 23, 51 GET mchoice PICT "@! AX";

VALID mchoice = "Y" .OR. mchoice = "N";

ERROR "CHOICE MUST BY Y OR N"

READ

IF mchoice = "N"

CLEAR

LOOP

ENDIF

CLEAR

LOOP

ENDDO

CLEAR

@ 10, 10 SAY, "PLEASE WAIT I AM DELETING RECORDS"

PACK

CLOSE ALL

@ 10, 20 TO 22, 68 Double

RETURN

\*\*\*\*\* PROGRAM VIEW \*\*\*\*\*

\*\*\*\*\* AUTHOR LAWAL JIBRIN \*\*\*\*\*

CLEAR

SET SCOREBOARD OFF

SET SAFETY OFF

SET ESCAPE ON

SET HEADING OFF

SET CENTURY ON

USE PERSONAL

SET INDEX TO BILL. NDX

CLEAR

DO WHILE .T.

STORE SPACE (2) TO mchoice

STORE 0 to macct\_no

@ 1, 5 TO 22, 68 DOUBLE

@ 3, 27 SAY "VIEW NEPA" COLOR W+/BG

@ 6, 25 TO 8, 40 DOUBLE COLOR G+

@ 7, 27 SAY "DETAIL RECORD" COLOR W+\*/BG

@ 9, 10 SAY, "ENTER ACCOUNT NUMBER—ESC TO EXIT"

@ 9, 42 GET macct-NO PICT "!!!!!!";

Message "ENTER Account NUMBER"

READ

SET MESSAGE TO

MlastKey = LastKey ( )

If LastKey ( ) = 27

Clear

Exit

Endif

Seek Macct-NO

If .NOT. FOUND( )

?? CHR (7)

@ 10, 10 SAY, "THIS RECORD DOES NOT EXIST"

@ 12, 12 SAY, "PRESS ANY KEY TO CONTINUE"

X = INKEY (0)

Clear

Loop

Endif

@ 9, 10 CLEAR TO 10, 67

DO SUBMENU

@ 23, 29 SAY "DELETE (Y/N)" COLOR BG+/B

@ 23, 51 GET mchoice Pict "@! AX";

VALID mchoice = "Y" .OR. Mchoice = "N"

ERROR "CHOICE MUST BE Y OR N"

READ

IF mchoice = "N"

CLEAR

EXIT

ENDIF

CLEAR

Loop

ENDDO

CLEAR

CLOSE ALL

@ 10, 20 TO 22, 68 Double

RETURN

\*\*\*\*\* PROGRAM TO PRINT REPORT \*\*\*\*\*

\*\*\*\*\* AUTHOR LA WAL JIBRIN \*\*\*\*\*

CLEAR

SET SCOREBOARD OFF

SET SAFETY OFF

SET ESCAPE ON

SET STATUS OFF

SET HEADING OFF

SET CENTURY ON

JES = 60

PCODE = SPACE (35)

P PAGE = 0

STORE REPLICATE ("\*", 130) TO RULESTAR

@ 1, 5 TO 22, 68 DOUBLE

@ 10, 12 SAY "ON PRINTER -- FIX PAPER" W+/ BG

@ 6, 25 TO 8, 40 DOUBLE COLOR G+

@ 16, 12 SAY "PRESS -- ESC TO EXIT OR ANY KEY TO  
CONTINUE" COLOR BG+/B

Mlastkey = lastkey ( )

IF lastkey ( ) = 27

CLEAR

CLOSE ALL

RETURN

END IF

X = Inkey (0)

@ 6, 12 CLEAR TO 17, 60

@ 8, 12 SAY "WAIT PRINTING IN PROGRESS "Color BG + / B

SAY DEVICE TO PRINTER

SAY PRINTER ON

\*\*\*\*\* A PRINTING BEGIN \*\*\*\*\*

DO WHILE .NOT. EOF( )

NAP = AAAT-NO

IF NAP = 0

SKIP LOOP

END IF

IF JES >= 1

P PAGE = PPAGR = + 1

@ JES + 1, 40 SAY "NEPA ACCOUNT DETAIL REPORT"

@ JES + 2, 10 SAY "PAGE "

@ JES + 2, 14 SAY PPAGE

@ JES + 2, 42 SAY "DATE OF PRINTING "

@ JES + 2, 58 SAY DATE( )

@ JES + 3, 5 SAY "ACCOUNT NUMBER"

@ JES + 3, 15 SAY ACCT-NO

@ JES + 4, 5 SAY "CUSTOMER NAME"

@ JES + 4, 17 SAY CUST-NAM

@ JES + 5, 5 SAY "ADDRESS"

@ JES + 5, 7 SAY ADDRESS

@ JES + 5, 47 SAY "METER NUMBER"

@ JES + 5, 57 SAY METER-NO

@ JES + 6, 47 SAY "TARIFF"

@ JES + 6, 52 SAY TARIFF

@ JES + 7, 47 SAY "RATING"

@ JES + 7, 57 SAY RATING

ENDIF

@ JES + 8, 6 SAY "DATE"

@ JES + 8, 12 SAY "TYPE"

@ JES + 8, 20 SAY "BATCH"

@ JES + 8, 27 SAY "DOCN"  
@ JES + 8, 35 SAY "READING"  
@ JES + 8, 44 SAY "CONSUMPTION"  
@ JES + 8, 54 SAY "KVA"  
@ JES + 8, 57 SAY "AMOUNT"  
@ JES + 8, 67 SAY "BALANCE"

@ JES + 9, 6 SAY DATE-BILL  
@ JES + 9, 12 SAY TYPE  
@ JES + 9, 20 SAY BATCH  
@ JES + 9, 27 SAY DOCN  
@ JES + 9, 35 SAY READING  
@ JES + 9, 44 SAY CONSUMPTION  
@ JES + 9, 54 SAY KVA  
@ JES + 9, 57 SAY AMOUNT  
@ JES + 9, 67 SAY BALANCE

SKIP

ENDDO

CHOSE DATABASES

CLOSE ALL

SET PRINTER OFF

SET DEVICE TO SCREEN

EJECT

CLEAR

WAIT "PRESS ANY KEY TO CONTINUE"

CLEAR

@ 10, 20 TO 21, 68 DOUBLE

RETURN