

COMPUTERISED BILLING SYSTEM
A CASE STUDY OF
NIGERIAN TELECOMMUNICATIONS
(NITEL) PLC

BY

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PGD/MCS/152/96

**A PROJECT SUBMITTED TO THE DEPARTMENT OF
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APPROVAL SHEET

This is to certify that this project report was carried out under supervision and has been approved to be adequate both in scope and quality for the partial fulfillment of the requirements for the award of Post Graduate Diploma in Computer Science.

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EXTERNAL EXAMINER

DATE

CERTIFICATION

This is to certify that this project was carried out by YAHAYA ELIZABETH OMODELE (REG. NO. PGD/MCS/152/96) to meet the requirement for the award of Post-Graduate Diploma in Computer Science of Federal University of Technology, Minna.

DEDICATION

This project is dedicated to the Glory of the Almighty God and to my beloved brother, Mr. Benjamin Olaniyi Ajani (CAESAR) and my daughter, Sherifat Omowunmi Yahaya.

ACKNOWLEDGEMENT

I give thanks to the Almighty God for seeing me through the successful completion of this Post-Graduate course in Computer Science.

I am especially grateful to my supervisor in person of the Head of Department of Mathematics/Computer Science, Prof. K.R. Adeboye whose expertise contributions and advice enabled me to accomplish this goal.

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ABSTRACT

The delay in the preparation and distribution of bills charged by the Nigerian Telecommunications PLC to the consumers has been causing the organization a lot of set back.

This project is aimed at introducing computer to the preparation of bills in NITEL at the regional level. This will ensure accurate, faster and more efficient service to the customers than is presently available.

This program was written using dBASE III Plus package.

CHAPTER ONE

INTRODUCTION

1.1 INSIGHT INTO NIGERIAN TELECOMMUNICATIONS (NITEL) PLC EXISTING COMPUTERIZED BILLING SYSTEM

The Consumer Billing System involves the way of charging the users of telephone facilities. In most corporate Organizations, like NEPA, Water Board, NITEL etc, utility charges are essential in order to keep the organization moving.

The Billing System was introduced in 1990 and installed in 19 exchange locations in the country.

In the past, the billing system was prepared manually and this contributed to long delays in serving the consumers with what they were to pay. These delays also retarded the revenue collections in the organization. The preparation manually did not only cause delays but also full of human errors.

This type of billing also always created avenues, whereby fraudulent staff of NITEL could prepare fraudulent bills and send it to customers irrespective of whether the service was rendered or not.

With all these, the public perception of NITEL services became very low and a lot of allegations were levelled against staff especially Account staff who were concerned with billing of the customers. In the light of this, NITEL introduced computerization in 1990 but still it could not cope with the demand more especially as it was introduced at Kaduna which caters for many state in the North.

Therefore, this study is aimed at developing a computer program that will be processing the billing in Minna territorial area of NITEL. It is hoped that this will hasten the production of monthly bills and install confidence in the minds of the customers.

1.2 NEED FOR EFFICIENT COMPUTERIZED TELEPHONE BILLING SYSTEM

The motivation for this study derives from the general observation on the organization of the telephone billing system in the country and the various methods employed by NITEL authorities in preventing late and incorrect telephone billing.

This observation is further confirmed by the study carried out by NITEL (Telecommunications in Nigeria, October 1993, Edition) which also reveals that the greatest problems facing NITEL, are customers records storage and their quick retrieval for investigation purposes.

Generally, NITEL presently discharges her duties using limited computers in preparing customers bills. These are grossly inadequate to cope with the trend in the country.

The need for efficient computerized billing system is borne out of the fact that the present billing system lacks information processing procedures. These include, fast decision making policy, the speed of inference, good data storage capabilities, easy retrieval of data from storage and the pictorial presentation of data.

Finally, from our knowledge of the capability of computers in the areas of information storage and retrieval, we are convinced that the machine would be of

immense use to NITEL in Minna in their crusade to reduce late preparation of an incorrect telephone bills to the barest minimum.

1.3

AIMS AND OBJECTIVES

The aims and objectives of this study are:

1. To simplify billing system in NITEL.
2. To quicken services of bills to subscribers which hither to had always been delayed for 2 to 3 months.
3. To avoid errors in billing system.
4. To ensure proper accountability since the documentation is easy to access and property arranged.

1.4

BENEFITS TO THE SOCIETY

The billing system will provide prompt and accurate service to consumers. It will also help the organization (NITEL) to have enough fund thereby serving the public better. It will also check fraudulent practices among the NITEL personnel.

CHAPTER TWO

BACKGROUND INFORMATION

2.1 HISTORICAL BACKGROUND OF NITEL PLC

The Nigerian Telecommunications Limited (NITEL) was in 1984 incorporated as a Private Limited Liability Company under the 1968 companies Act.

The rights, assets and liabilities of the Telecommunications Division of the defunct Posts and Telecommunications Department (P&T) were by an act of the Federal Military Government, transferred to, and vested in NITEL.

However, the Nigerian External Telecommunications Limited (NET), being a limited liability company, which came into existence under the statute (the companies law of Nigeria), could only cease to exist in accordance with statutory provisions.

The Federal Government therefore, opted for the amalgamation of NET with NITEL. By an act of the Federal High Court made on 22nd May, 1989, NET was dissolved without being wound up and its undertakings, assets and liabilities were also transferred to and vested in NITEL.

NITEL was in 1984 registered with a share capital of 4,000,000.00 divided into 4,000,000.00 shares of N1.00 each. The subscribers to these shares were all representatives of the Federal Government owned company. Nigeria Telecommunications (NITEL) became a public Liability Company on Friday, 22nd May, 1992 by virtue of the Technical Committee on Privatization and Commercialization (TCPC) exercise of the power conferred on it by Decree 25 of 1988.

Although, the performance contract was signed into law in May 1992, it was deemed to have taken effect from January 1992. With re-registration of NITEL on 18th June, 1992, as a Public Liability Company, it then became statute-bound to include the suffix "PLC", after its name.

2.2

SERVICES

NITEL PLC., registered with a share capital of 5.5 billion share of ₦100.00 each, is more than ever committed to the provision of efficient, reliable and cost effective telecommunications services, both nationally and internationally.

NITEL PLC. has 500,00 lines of which 120,00 are digital. It also has 13,000 Telex lines in the network. With the planned expansion and modernization of the network, the total installed capacity of telephone lines is expected to reach one million by 1997.

The newest of NITEL's services is the Cellular Mobile Telephone which became operational with an initial 10,000 lines during the second quarter of 1992. Other services provided by the company include:

2.2.1 Telephone Services

Telephone with International Direct Dialing (IDD) facility

Public Pay Phone

Call Office and Public Counter Services

Operator Assistance Services

Emergency Information, e.g.(Police and Fire)

2.2.2 Telex Services

Domestic Telex

International Telex

Telex Delivery Services (TDS)

2.2.3 Telegraph Services

Telegraph (Domestic)

International Telegraph

Registered Telegraphic Address(RTA)

Phonogram

2.2.4 Specialized Services

Leased Circuits

Private Wire

Alternate Voice Data

Transmission and Reception of Real time

Television for Network Programs.

2.2.5 Other Services

Voice cast and Press Reception

NIFAX Service

Training of Telex and PBX Operators

Pal-Secam Tape Conversion

International Maritime Satellite service.

2.2.6 New Services

Data Switching System

Electronic Mail(National Service Only)

Word/Data Processing

Teleconferencing

Collect Call

Cellular radio Telephone

International and local Card Payphone.

NITEL PLC. has continued to live-up to the expectations of the Federal Government and its subscribers by consolidating its achievements in the management of the nations telecommunications network.

The company has firmly established its corporate existence by providing adequate, efficient and modern telecommunication services to meet the need and aspirations of the nation.

NITEL PLC. has since the commercialization adopted a mission, purpose and values which must be accomplished by the staff.

Nigerians have fully embraced the telecommunications revolution that is fast reducing the world into a close neighborhood. The implementation of the commercialization programme in the Nigerian Telecommunications PLC has made this vital national economic institution more efficient, effective, profitable and market competitive.

By this very fact, NITEL has, been re-oriented towards developing a commercially viable and efficient company that is financially and technologically self-reliant to provide diversified and effective telecommunications services and facilities for the economic development of Nigeria.

2.3 DIGITALIZATION

The digitalization of the network has particularly improved connectivity, enhanced completion rate and generally brought about significant improvements in quality of services in the commercial nerve centers of the country.

The Cellular Mobile Telephone services which premiered in Lagos and in the last quarter of 1993 is a versatile and convenient system which has made the busy businessman to reach and be reached anywhere in the world within the covered areas.

Efforts are being made to cover the Northern and Eastern parts of the country. To ensure good quality service, a joint venture company, Mobile Telecommunications Services(MTS) was incorporated by NITEL PLC. and Digital Telecommunications Limited, an American Company was employed to run the Cellular phone system for the country.

The Additional new services include; the Voice Mail, the alphanumeric paging system, the public Cardphone for local and international telephone and the trunked radio. Others are the Cellular phone for the rural communities, the data switch and word data processing, Teleconferencing, Collect calls, packet switching electronic mails, most of which are being delivered through the Computer Oriented Switch for Information Transfer(COSIT).

There is also the Integrated Digital Services Network (IDSN) that makes it possible for one to use the same telephone line for fax, telephone, image transmission and a lot of other things.

2.4 NETWORK CAPACITY AND TRAFFIC EXPANSION

As at 1980's NITEL has about 512,760 installed telephone lines in the network today which represents 89.9% increase. Out of these, 300,000 are digital lines spread across the country.

The cellular mobile telephone injected additional 10,000 digital lines distributed nationwide in the following order. 5,000 lines in Lagos area(including the Southwest), 2,500 lines in Enugu area and another 2,500 in Abuja area. 15,00 voice-mail and 50,000 paging systems have also been cut over to the national network.

Line connection has also increased from 194,499 in 1985 to 330,915 as at March, 1993 representing a net increase of 136,416 or 70.14%.

This ambitious network and traffic expansion is to ensure that the country enjoys 10 million capacity telephone lines by 1997, thus achieving the International Telephone Union(ITU) stipulated standard of one telephone to 100 populations. This means that in the next four years NITEL will be striving to add 400,000 lines to the national network.

Apart from increasing the services other bold and positive steps have also been taken to adequately cater for the telecommunications service requirements of the public. These measures include among others:

- i. Provision of on-line enquiry system in all major population center.
- ii. Improved operator services in both local and international Telephone and Telex Exchanges.
- iii. Improved Billing System Prior to 1990 bills were always prepared in arrears of two months preceding the use of service.
- iv. Automated detail billing has been installed in 19 Exchange locations. This will provide customers with details of all calls and thereby facilitate collections of receivables.
- v. Introduction of payment of bills through the banks. This is also a contribution to the liquidity of the banking system and hence the national economy in general.

2.5 BACKGROUND INFORMATION ABOUT THE ORGANIZATION

NITEL is headed by a Managing Director whose main duty is the general coordination of all Telecommunications services and making recommendation and reports to the Minister of Communications of the country.

The Minister of Communications is responsible to the president.

The Managing Director is assisted by two Deputy Managing Directors, with one heading Operations and the other, Administration. Each Zonal headquarters of NITEL is headed by a General Manager.

The duty of the General Manager is to coordinate the operation of the state headquarters. Each state headquarters of NITEL is headed by a Territorial Manager.

The Territorial Manager reports directly to the General Manager of their respective zone.

The Accounts and commercial department carry out the registration of subscribers, allocation of lines, billing and distribution of bills as well as collection of statement of account from banks since payment is done through the selected banks. These duties are made possible and easier with the introduction of computer services. The computer makes information processing faster and more accurate. The result is usually more reliable and valid.

Billing is usually on monthly basis and defaulters lines are usually tossed after several warnings.

2.6 PROBLEMS FACING NITEL

NITEL being a public liability company has numerous problems which militate against its progress, such problems include:

- i. Delayed payment of bills which is usually caused by late-serving of bills by the organization since bills are prepared at Kaduna. Hence this project is out to find a solution to it.
- ii. Periodic fire disasters which destroy lines e.g. the recent Ikeja digital line fire episode.
- iii. Vandalization by thieves.

2.7

SUGGESTED SOLUTIONS TO THE PROBLEMS

- i. Decentralization of bill preparation center from Kaduna to various Territorial areas.
- ii. Establishment of task force to check and guide against vandalization and theft.
- iii. Use of fire proof cables.

CHAPTER THREE

SYSTEM DESIGN AND CONFIGURATION

3.1 HARDWARE SPECIFICATIONS

Hardware is the physical components of the computer system. Examples are the monitor, keyboard, printer, mouse and the central processing unit.

The TELBILL as presently developed is run on a personal computer, with the following features:

- * 80386DX - 33 Processor
- * 64k cache Memory
- * 6MB Ram
- * 1.2MB, 5.25 "Drive
- * 1.44MB, 3.5 "Drive
- * 2 Serial, 1 Parallel
- * 120MB Hard Disk
- * Super VGA Monitor
- * Microsoft Dos 5.0
- * 101 Enhanced Keyboard
- * Math Co-processor
- * Microsoft Windows 3.1

3.1.1 Choice of Programming Language

TELBILL was developed using dBASE III Plus. dBASE III Plus is not only a complete and efficient database management system but also incorporates one of the fourth generation programming languages.

dBASE III Plus was preferred to other programming languages because of its some powerful functions it performs and its flexibility in managing a database. One of the file organization techniques incorporated in dbase, indexed sequential, is very easy to use and, of course, access to records is very fast.

dBASE III PLUS can create simple database applications such as keeping names and addresses or inventory records.

It can also be used to create complex applications such as general ledger, accounts receivable, accounts payable, payroll and so on.

The dBASE III Plus is very close to English language and thus enable easier programming language that enables us to construct our own database applications. A large number of built-in functions are provided including mathematical functions, string manipulation functions, and so on.

The programming language includes commands to perform conditional branching, looping, calculations, sort records format input screens, output reports and so on.

A screen design facility is provided for us to custom-design our input and output screens and to perform error, checking and editing on input. Multiple database files can also be linked (joined) to form a large database.

Finally, the fact that we did not have a prior knowledge of the challenging, its interesting using dBASE III Plus.

3.2 DESIGN DESCRIPTION

In this section, some light shall be thrown on the make up of the system design. This, it is hoped, will pave way for a better understanding of the of the entire system and will make the programming work highly comprehensive.

3.2.1 Programming Technique

Programming is based on the modular technique. This is a method of splitting up a large and complex program into a series of smaller manageable units called modules, each of which can be designed, coded and tested individually. Once the module have been fully designed they are complete in themselves and can interact with each other.

In the design of this system, the direct method of modular programming is employed. This is a case in which the modules are in series with an interface between each pair, so that control is passed from the end of one to the beginning of the next. The advantages of the modular technique that makes it very desirable in the present situation include:

- (a) Ease of Estimating duration of the design.
- (b) Improved quality of the resultant program.
- (c) Accurate program documentation.

- (d) Testing time is cut significantly due to the simultaneous testing of modules in the same modules in the program. Debugging is quicker because the unit is small.
- (e) Amendments to the program will affect limited modules.
- (f) Subsequent maintenance is easier and quicker and therefore less costly.
- (g) Duplication of efforts is avoided by using existing modules which perform common functions.

Modular programming encourages sound program structure by forcing logical functions and their interactions to be clearly defined.

Though the technique sometimes increases the time-spent on the program structure and coding, the above advantages clearly justify the adoption of the method.

3.2.2 File Organization and Access Issues

The file organization used in the design of this system is indexed sequential. Under indexed sequential, a master index of all Telephone number is maintained in memory.

When a record having a certain Telephone is to be accessed, the master index is examined to determine which Cylinder on the direct access media contains the record.

The Cylinder index on the proper Cylinder is then accessed and examined to determine the proper track on which the record is placed.

The records on the track are then accessed and the proper record is finally found.

3.2.3 Security Facility in TELBILL

The term security is used in database against unauthorized disclosure, alterations or destruction. From this definition, it follows that the system must not allow any operation to be performed on the database unless the user is authorized for the operation concerned. In doing this, TELBILL Incorporates the use of password to allow access into the system(i.e The Main menu and The Customer's Bill).

In TELBILL, the password is made up of four(4) characters and is not shown on the screen when it is being typed into the system.

Log in password will be allowed for up to four times, after which the system exists. Entering the correct password takes the user to the main menu of TELBILL package.

Another protection facility included in TELBILL is program and data encryption. This turns the program commands and the data into special codes and ensures that the user does not tamper with the program and also makes data unreadable until it is described.

Data encryption in database has an added advantage of reducing comment lines and indentrance, thus saving storage space. The program encryption is done by running the Dbcode and dblinker of dBASE III Plus after finishing the design and full test running carried out and the system is ready for use.

3.2.4 The Interactive Nature of The Bill

TELBILL is menu driven. That is, at different stages helpful information on all operations and processing are listed on the monitor for the user to pick his/her choice.

Input Specification

In designing the computerized Telephone bill, the input data or information are used:

- (1) Telephone Number
- (2) First Name
- (3) Last Name
- (4) Address
- (5) Category
- (6) Last Reading
- (7) Current Reading
- (8) Access Charge
- (9) Open Balance
- (10) Current Balance
- (11) Amount Due
- (12) Amount Paid
- (13) Date

Output Specification

In designing the new system, the output report which is called pay-in-slip is required with the following details:

- (1) Telephone Number
- (2) Name

- (3) Address
- (4) Open Balance
- (5) Access Charge
- (6) Current Charge
- (7) Amount Due
- (8) Amount Paid
- (9) Date Paid Last
- (10) Cheque Number(optional) Otherwise Cash
- (11) Amount in words
- (12) Cashier's Name
- (13) Cashier's Stamp & Sign

The appropriate output medium is the laser printer which produces a hard copy of the bill to be distributed to various customers.

3.4 IMPLEMENTATION

3.4.1 The Main Menu

To put package into operation, the module TELBILL is made to run on the machine by typing "DO TELBILL" at the dot prompt level of the DBASE III PLUS.

On running this module, it supplies all the items on the main menu. These are the four(4) major areas in which emphasis are laid in the design of TELBILL.

They are as follows:

- (1) Customers Maintenance
- (2) Preparing Customers Bills
- (3) Sorting Customers Data
- (4) Printing Customers Address

It is interesting running TELBILL especially because of the attractive screen designs that come along with various menus.

The exit return the user to the dot prompt of DBASE III PLUS.

4.4.2 Sub Menus

Each of the first four items is a menu function on its own, and items for the sub menu for any chosen item of main menu are put on display immediately the choice is made.

All the four items involve the building up of one file or the other.

The items are:

- (1) Adding new records
- (2) Modifying Existing Records
- (3) Deleting Existing Records
- (4) Printing Records

4.4.2.1 Addition of Records

The Adding of new customer option once chosen allows a user to add new customer to the database file concerned, for example, adding the record of a new customer whose application has been approved and a new Telephone number assigned to the customer.

Adding a new record to a file will not in any way affect the existing records in the file. If incomplete information is entered, missing information may later be added under the modify option.

Each time a record is added, a print out of the record is provided to verify if entries are right.

4.4.2.2 Modification of Record

The modify records option enables modification to be made on existing records.

Some types of modifications which can be made include:

- (a) Correction of errors in spelling and punctuation of names, address and category.
- (b) Adding omitted information. For a modification to take place, upon supplying the phone number to the computer, it searches the entire record until a record that matches the entered phone number is located and then go to display the entire record on the screen and necessary modification can then be made.

4.4.2.3 Printing of Record

The Print record option enables the user to view or obtain a hard copy(a print out) of a particular record.

The procedure for identifying the particular record is the same as that of modification of records.

4.4.2.4 Deletion of Record

Customer record are automatically marked for deletion immediately, the customer's request is approved by the exchange supervisor.

The procedure for identifying the particular record is the same as that of modification of record. In each case, the customer's record to be deleted is first obtained on a hard copy (Print out).

4.4.2.5 Quit and Return to Main Menu

The last option, 'quit', returns the user to the sub-menu that activates the current menu.

CHAPTER FOUR

CONSUMER BILLING SYSTEM SOFTWARE

EXPERIMENTATION

4.1 PROGRAMMING LANGUAGE USING dBASE III PLUS

dBASE III PLUS from Ashton - Tate is one of the leading database program. dBASE III PLUS can create simple database applications, such as keeping names and addresses or inventory records. It can also be used to create complex applications such as general ledger, accounts receivable, accounts payable, payroll and so on. Because dBase III PLUS is a relational database a database file is organized in the form of a table made up of rows which are records. The records of a database file must have the same fields, and the corresponding fields must have the same structure and must contain the same type of information.

A database can be made up of many database files of which as many as 10 can be active at any time. A database file can have up to one billion records or two billion characters. A record can have up to 128 fields and can contain up to 4,000 characters of information.

dBASE III Plus can be used in a very simple manner, using a menu facility called the Assistant.

dBASE commands (called dot commands) can also be used directly without using the menu facilities provided by the Assistant. dBase III Plus offers a large number of commands for us to create and manage our database files.

dBASE III Plus offers programming language that enables us to construct our own database applications. A large number of built-in functions are provided, including mathematical functions, string manipulation functions. The programming languages includes commands to perform conditional branching, looping, calculations, sort records, format input screens, output reports and so on.

A screen design facility is provided for us to custom design our input and output screens and to perform error checking and editing on input. Multiple database files can also be linked (joined) to form a large database. dBase III PLUS also provides a local area network operating mode, permitting multiple users to access the same database on a local area network system.

dBASE III Plus can be used either for basic filing or to construct Quite complex applications. Its versatility is perhaps one reason why it is so popular. dBASE III Plus requires a minimum of 25K bytes of memory and two disc drives. However, it should be used on computers with more than 256 bytes of memory, and a hard disk is recommended.

4.2 SYSTEM TESTING

This involves the running of the new system to see how workable it is. It also allows area of mistakes to be identified and corrections effected. It is after every aspect of the new system is confirmed workable that it is approved.

The diagram below are for each data

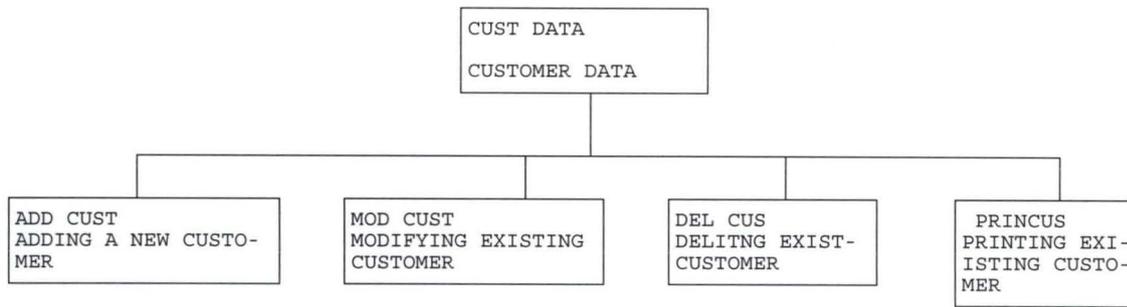


Fig. 1

CUSTOMERS MAINTENANCE

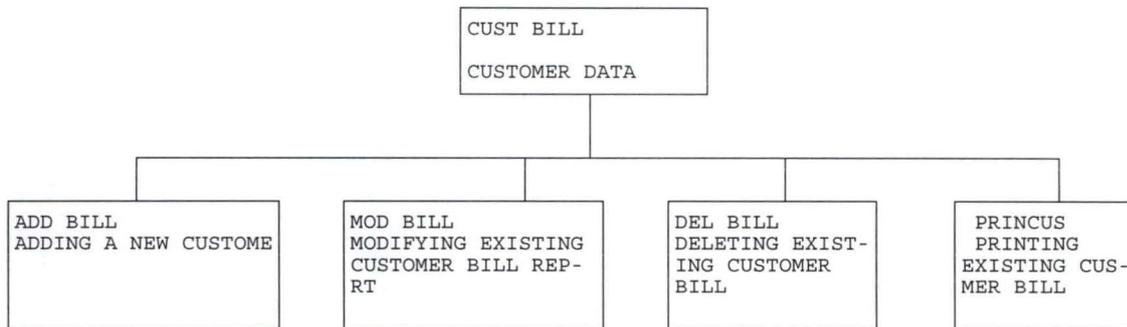


Fig. 2

CUSTOMERS BILLING

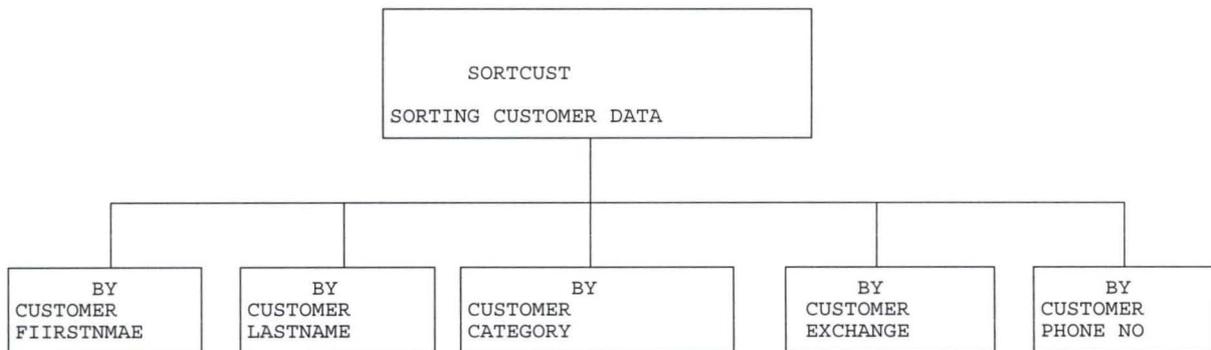


FIG. 3
SORTING CUSTOMERS DATA

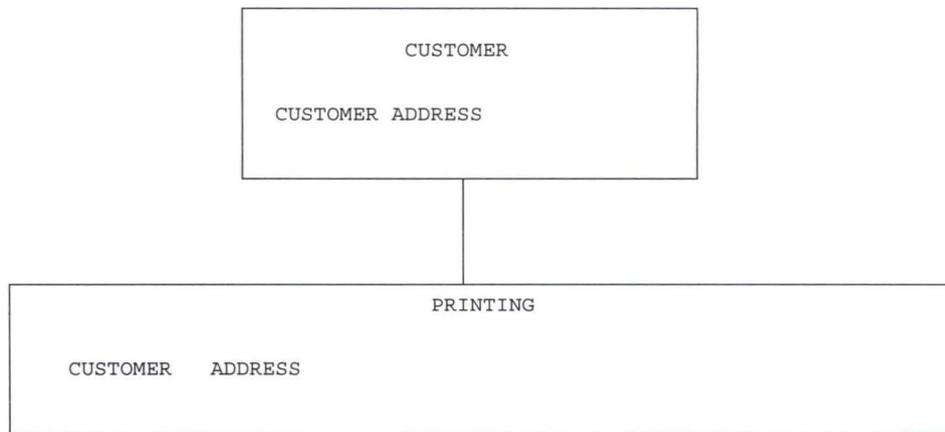


FIG. 4

CUSTOMERS ADDRESS

4.3 PREPARING CUSTOMERS BILL

This involves preparation of the monthly bill for the services rendered to customers.

The format of the bill includes:

- (1) Customers Name
- (2) Customers Address
- (3) Customers Category
- (4) Customers Exchange Code
- (5) Customers Phone Number
- (6) Amount Consumed
- (7) Amount Charged (₦)

This format would make it easier for sorting, deleting, adding, Printing and modifying customers data.

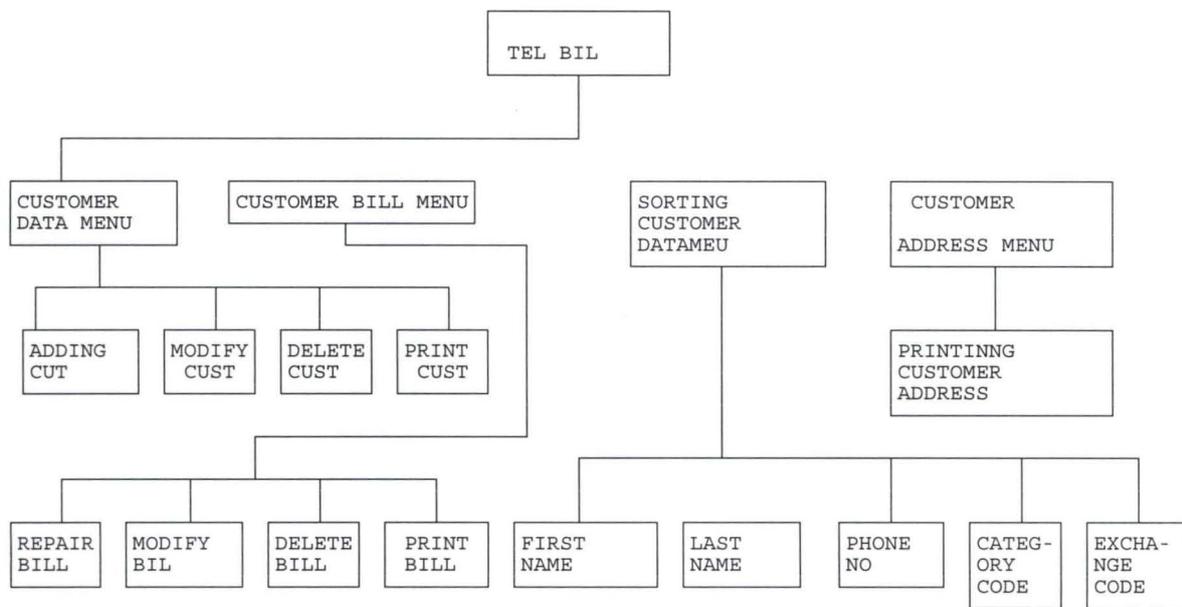


Fig. 5
SYSTEM PROGRAM

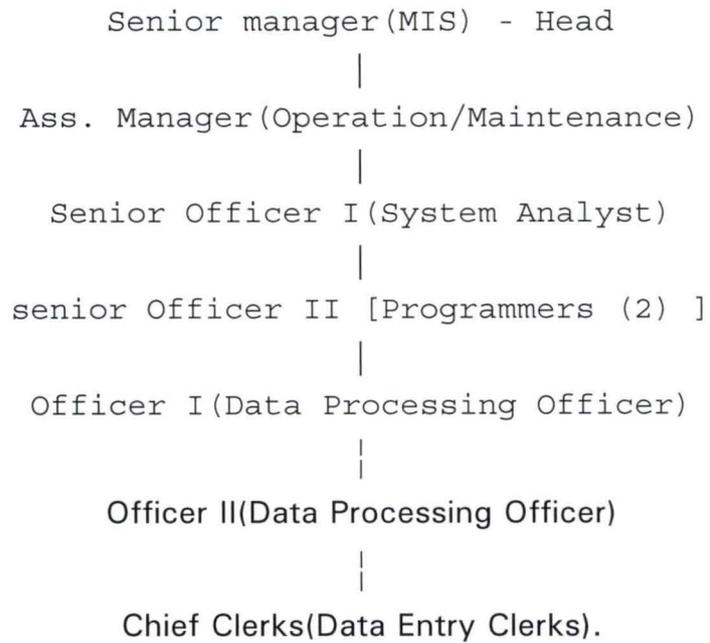
4.4 FILE MAINTENANCE

The new system needs to be protected against destruction, interference and restriction against unwanted people. For this, program security is necessary and password is used. Similarly, duplicate copy of program is produced as a backup.

4.5 FLOW CHART

4.5.1 Flow Chart of the System as Regards the Maintenance Information System(MIS)

The Management Information System is headed by a senior Manager(MIS) that is:



4.5.2 Flow Chart of the Program

The system is designed to use modular programming in which there is the main programme and sub-programs as modules. This allows multiple programmers to work on different sub-programs and later integrate them into one. This method also allows mistakes to be easily identified in any sub-program. The sub-programs are activated to join the main menu.

Module C - This deals with the customer data.

Module B - This deals with the customer bill

Module S - Sorting customers data

Module A - Printing customers Address

Module Q - Quits the Programme.

The flowchart for the design is as contained in the appendix.

CHAPTER FIVE

DISCUSSION OF RESULT

5.1 ANALYSIS OF RESULT

The Program is made into modular programming. The main body of the program is called main menu. The sub-programs are grouped into Task Codes. Labelled C for maintaining customers data, B for maintaining customers bill, S for sorting customers data, A for Printing customers address and Q for Quitting program. Whichever letter may be the choice can be activated into the main menu. This method allows correction in the sub-programs. It also allows different programmers to work on different sub-programs.

For maintaining customers data, this allows, new customers to be added, modification of existing customers, deletion of existing customers or printing names of existing customers.

For the customer bill, it also allows adding a new customer's bill, modifying existing customer's bill, deleting existing customer's bill, and printing existing customer's bill.

The Sorting customer data allows particulars about the customer to be documented such as first name, last name, category, exchange code, phone number.

The customer's mail, prints out the customer's address.

5.2

RECOMMENDATION

- (1) The Nigerian Telecommunications (NITEL) PLC should endeavor to implement the new system so as to reduce the delay in the billing system.
- (2) The officials in Telecommunication PLC. can generate more funds for the organization by serving the customers their bills when due.
- (3) More computer systems should be acquired to cope with the various customers demands.
- (4) This method of decentralization of billing system should be extended to other states to facilitate quick service of bills.

5.3

CONCLUSION

The computer being an electronic device that assists in processing information quicker, would help tremendously in the preparation of bills. Since Nigerian Telecommunications is a revenue generating organization, this new system would help the Niger Territory of the organization in ensuring quicker and more efficient preparation of bills than ever before.

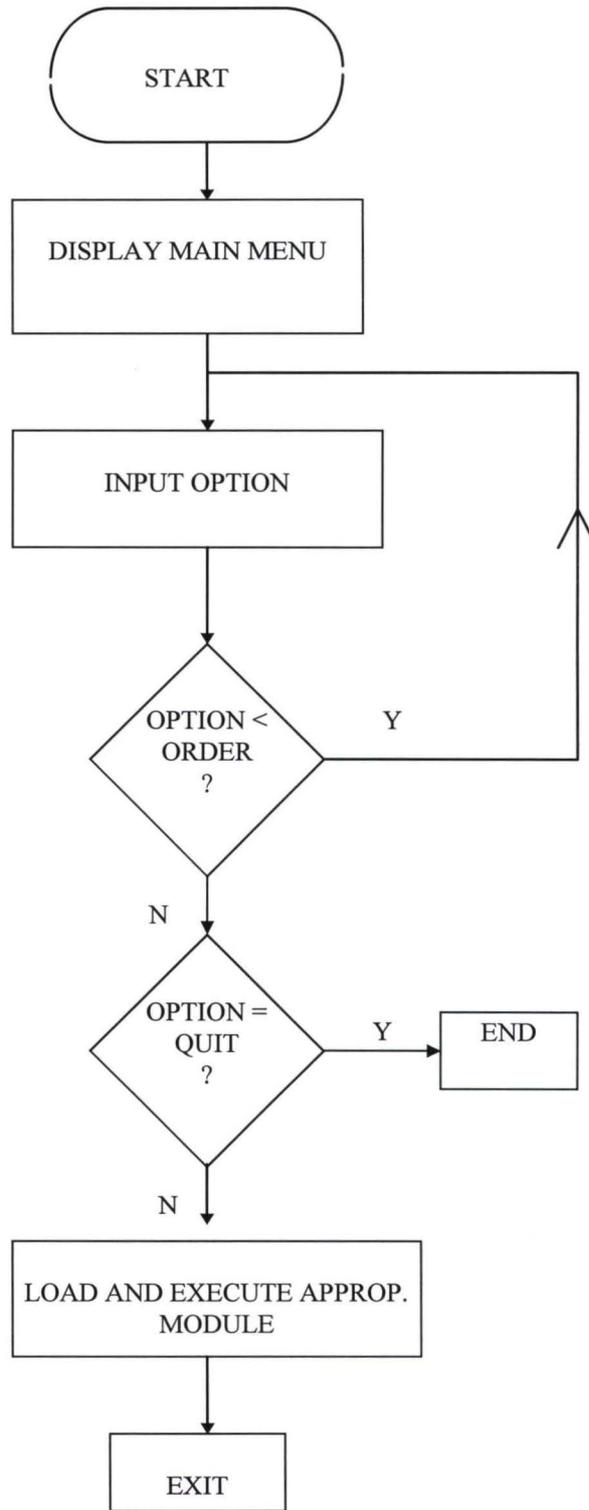
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APPENDIX A

4.5.2

FLOWCHART OF THE PROGERAM



APPENDIX B

```
* PROGRAM NAME : TELBIL.PRG
* DATE       : 02/2/98
* PROGRAMMED BY : ELIZABETH O. YAHAYA
* REGISTRATION NUMBER : PGD/MSC/152/96
* THIS PROGRAM DISPLAY A PASSWORD ENTRY BOX SCREEN
ALLOWED = .F.
KT = 0
DO WHILE .T.
CLEAR
SET COLOR TO W + /N
@7,18 TO 15,45 DOUBLE
STORE SPACE(4) TO PASSWORD
@11,20 SAY "Enter password:"
SET COLOR TO N,N,N,N,
@11,36 GET PASSWORD PICT '!!!!!!'
READ
SET COLOR TO
@12,1 CLEAR TO 12,79
PASSWORD = LTRIM(RTRIM(PASSWORD))
IF UPPER(PASSWORD) = 'FINE'
CLEAR
SET COLOR TO RG + /N
@17,20 SAY ""

STORE .T. TO ALLOWED
WAIT SPACE(27) + 'PRESS ANY KEY TO CONTINUE'
EXIT
ENDIF
IF KT = 3
CLEAR
SET COLOR TO RGT/M
STORE .F. TO ALLOWED
@11,20 SAY 'YOU ARE NOT ALLOWED TO USE TELBIL'
EXIT
ENDIF
SET COLOR TO RG + /N
@18,20 SAY ""
WAIT SPACE(20) + 'WRONG PASSWORD. PRESS A KEY TO TRY AAGAIN'
KT = KT + 1
ENDDO
SET COLOR TO
```

```

IF ALLOWED
DO B: MAIINMENU.PRG
ELSE
RETURN
ENDIF
*THIS PROGRAM IS THE MAIN MENU
DO WHILE .T.
CLEAR
USE CUSTOMER
SET COLOR TO W + /N
@2,18 SAY " NIGERIAN TELECOMMUNICATIONS (NOTEL) PLC"
SET COLOR TO W + /N
@4,26 SAY "MAINMENU"
@6,19 SAY " TASK                CODE"
SET COLOR TO
@8,21 SAY "[C] ----- MAINTAINING CUSTOMERS DATA"
@10,21 SAY "[B]-----PREPARING CUSTOMER BILL"
@12,21 SAY "[S]-----SORTING CUSTOMERS DATA"
@14,21 SAY "[A]-----PRINTING CUSTOMERS ADDRESS"
@16,21 SAY "[Q]-----QUIT"
18,25 SAY "ENTER CHOICE(TYPE IN TASK CODE)[]"
@1,8 TO 20,71 DOUBLE
@18,60 GET CHOICE
READ
DO CASE
CASE UPPER (CHOICE) = "C"
DO CUSTDATA
CASE UPPER (CHOICE) = "B"
DO CUSTBIL
CASE UPPER (CHOICE) = "S"
DO SORTCUST
CASE UPPER (CHOICE) = "A"
DO CUSTMAIL
CASE UPPER (CHOICE) = "Q"
CLEAR
SET COLOR TO RG* + /N
@12,21 SAY 'THANK YOU FOR USING TELBIL'
SET COLOR TO
RETURN
OTHERWISE
@23,30 SAY 'WRONG KEY PRESSED'
??CHR(7)
i = 0
DO WHILE i < 110

```

```

i = i + 1
ENDDO
*THIS PROGRAM DIRECTS THE CUSTOMER DATA MENU
STORE "" TO CHOICE
CLEAR
DO WHHILE .T.
CLEAR
USE CUSTOMER
SET COLOR TO W + /N
@2,18 SAY " NIGERIAN TELECOMMUNICATIONS (NOTEL) PLC"
@4,21 SAY "CUSTOMER DATA SUBMENU"
@6,19 SAY " TASK                CODE"
SET COLOR TO
@8,17 SAY "[A] ----- ADD NEW CUSTOMER DATA"
@10,17 SAY "[M]-----MODIFY EXISTING CUSTOMER DATA"
@12,17 SAY "[D]-----DELETE EXISTING CUSTOMER DATA"
@14,17 SAY "[P]-----PRINTING CUSTOMER DATA"
@16,17 SAY "[Q]-----QUIT AND RETURN TO MAIN MENU"
18,53 SAY "ENTER CHOICE(TYPE IN TASK CODE)[]"
@1,8 TO 20,26 DOUBLE
@18,53 GET CHOICE
READ
DO CASE
CASE UPPER (CHOICE) = "A"
DO ADDCOST
CASE UPPER (CHOICE) = "M"
DO MODCOST
CASE UPPER (CHOICE) = "D"
DO DELCOST
CASE UPPER (CHOICE) = "P"
DO PRINTCOST
CASE UPPER (CHOICE) = "Q"
RETURN
OTHERWISE
@23,30 SAY 'WRONG KEY PRESSED'
??CHR(7)
i = 0
DO WHILE i < 110
i = i + 1
ENDDO
LOOP
ENDCASE
ENDDO
RETURN

```

```

*THIS PROGRAM REGISTERS A NEW CUSTOMER
DO WHILE .T.
CLEAR
USE CUSTOMER
STORE '-' TO MPHONE_NO
STORE SPACE(15) TO MFIRSTNAME, MLASTNAME
STORE SPACE(30) TO MADDRESS1,MADDRESS2,MADDRESS3
STORE SPACE(1) TO MCATEGORY
SET COLOR TO W + /N
@2,20 SAY "NIGERIAN TELECOMMUNICATIONS PLC"
@4,24 SAY "CUSTOMER INPUT SCREEN"
SET COLOR TO
@6,18 SAY "TELEPHONE NO"
@6,34 GET MPHONE_NO PICT '99-9999999'
@8,21 SAY "FIRSTNAME"PICT '@!'
@8,34 GET MFIRSTNAME
@10,22 SAY "LASTNAME"
@10,34 GET MLASTNAME
@12,23 SAY "ADDRESS"
@12,34 GET MADDRESS1
@13,34 GET MADDRESS2
@14,34 GET MADDRESS3
@16,22 SAY ":CATEGORY"
@16,34 GET MCATEGORY
@18,14 SAY "SAVE AND [C]CONTINUE [S]AVE AND QUIT [Q]UIT"
@1,9 TO 20,67 DOUBLE
READ
i=0
DO WHILE i = 0
i = INKEY()
SET COLOR TO W + /N
@18,63 SAY CHR(i)
SET COLOR TO
IF CHR(i)$ 'CcSsQq'
MCHOICE = CHR(i)
EXT
ELSE
ENDDO
IF NCHOICE$ 'Qq'
CLEAR
EXIT
RETURN
APPEND BLANK
REPLACE PHONE_NO WITH MPHONE_NO, FIRSTNAME WITH MFIRSTNAME

```

```

REPLACE LASTNAME WITH MLASTNAME,ADDRESS1 WITH MADDRESS1
REPLACE ADDRESS2 WITH MADDRESS2, ADDRESS3 WITH MADDRESS3
REPLACE CATEGORY WITH MACATEGORY
IF MCHOICE$ 'Ss'
@16,62 SAY ""
CLEAR
EXIT
RETURN
ELASE
LOOP
ENDIF
ENDIF
ENDDO
* THIS PROGRAM MODIFY CUSTOMER DATA
DO WHILE .T.
CLEAR
USE CUSTOMER
SET COLR TO W + /N
@2,18 SAY "NIGERIAN TELECOMMUNICATIONS (NITEL)PLC"
@4,24 SAY :MODIFY CUSTOMER DATA SCREEN"
SET COLOR TO W + /N
@6,18 SAY "TELEPHONE NO"
SET COLOR TO
@8,21 SAY "FIRSTNAME"
@10,22 SAY "LASTNAME"
@12,23 SAY "ADDRESS"
@16,22 SAY "CATEGORY"
@1,9 TO 20,67 DOUBLE
STORE SPACE(10) TO MPHONE_NO
@6,34 GET MPHONE_NO PICT '99-9999999'
RAED
@6,18 SAY "TELEPHONE NO"
LOCATE FOR PHONE_NO = MPHONE_NO
IF .NOT. FOUND()
@23,20 SAY ""
WAIT SPACE(2) + 'RECORD NOT FOUND PRESS ANY KEY TO CONTINUE'
LOOP
ENDIF
STORE FIRSTNAME TO MFIRSTNAME
STORE LASTNAME TO MLASTNAME
STORE ADDRESS1 TO MADDRESS1
STORE ADDRESS2TO MADDRESS2
STORE ADDRESS3 TO MADDRESS3
STORE CATEGORY TO MCATEGOTY

```

```

@8,34 GET MFIRSTNAME PICT '@!'
@10,34 GET MLASTNAME
@12,34 GET MADDRESS1
@13,34 GET MADDRESS2
@14,34 GET MADDRESS3
@16,34 GET MCATEGORY
@6,34 GET MPHONE_NO PICT '99-9999999'
READ
@18,16 SAY "SAVE & [C]ONTINUE [S]AVE & QUIT[Q][]"
  i=0
  DO WHILE i=0
  i = INKEY()
  SET COLOR TO W + /N
  @18,62 SAY CHR(i)
  SET COLOR TO
  IF CHR() $ CHR(i)
  EXIT
  ELSE i=0
  ENDIF
  ENDDI
  IF MCHOICE $ 'Qq'
  CLEAR
  EXIT
  RETURN
  ELSE
  REPLACE PHONE_NO WITH MPHONE_NO, FIRSTNAME WITH MFIRSTNAME
  REPLACE LASTNAME WITH MLASTNAME, ADDRESS1 WITH MADDRESS1
  REPLACE ADDRESS2 WITH MADDRESS2, ADDRESS3 WITH MADDRESS3
  REPLACE CATEGORY WITH MACATEGORY
  IF MCHOICE $ 'Ss'
  @16,62 SAY ""
  CLEAR
  EXIT
  RETURN
  ELSE
  LOOP
  ENDIF
  ENDIF
  ENDDO
  * THIS PROGRAM DELETE CUSTOMER DATA PERMANENTLY FROM THE FILE
  DO WHILE .T.
  CLEAR
  USE CUSTOMER
  SET COLOR TO W + /N

```

```

@2,20 SAY 'NIGERIAN TELECOMMUNICATION PLC"
@4,24 SAY 'CUSTOMER'S DELETE SCREEN"
SET COLOR TO
@8,21 SAY "FIRST NAME"
@10,22 SAY "FIRSTNAME"
@10,22 SAY "LASTNAME"
@12,23 SAY " ADDRESS"
@16,22 SAY "CATEGORY"
@1,9 TO 20,67 DOUBLE
STORE SPACE(10) TO MPHONE_NO
@6,34 GET MPHONE_NO = MPHONE_NO
IF .NOT. FOUND()
@23,20 SAY ""
WAIT SPACE(20) + 'THE RECORD HAS BEEN DELETED PRESS ANY KEY'
LOOP
ENDIF
  STORE LASTNAME TO MFIRSTNAME
  STORE ADDRESS1 TO MADDRESS1
  STORE ADDRESS2 TO MADDRESS2
  STORE ADDRESS3 TO MADDRESS3
  STORE CATEGORY TO MCATEGORY
  @8,34 GET MFIRSTNAME PIC '@!'
  @10,34 GET MADDRESS1
  @12,34 GET MADDRESS2
  @14,34 GET MADDRESS3
  @16,34 GET MCATEGORY
  @6,34 GET MPHONE_NO PICT '99-9999999'
  CLEAR GETS
  @18,16 SAY "DELETE & [C]ONTINUE [D]ELETE & QUIT[Q]UIT"
  i=0
  DO WHILE i=0
  i = INKEY()
  SET COLOR TO W + /N
  @18,62 SAY CHR(i)
  SET COLOR TO
  IF CHR() $ CHR(i)
  EXIT
  ELSE i=0
  ENDIF
  ENDDO
  IF MCHOICE $ 'Qq'
  CLEAR
  EXIT
  RETURN

```

```

ELSE DELETE
PACK
IOF MCHOICE$ 'Dd'
@16,62 SAY ""
CLEAR
EXIT
RETURN
ELSE
LOOP
ENDIF
ENDIF
ENDDO
*THIS PROGRAM PRINTS CUSTOMER DATA"
@5,1 SAY "ENTER TELEPHONE NO OF THE CUSTOMER:"
@7,1 SAY " "
ACCEPT " TELEPHONENO-----TO MPHONE_NO
CLEAR
SET DEVICE TO PRINT
@3,8 SAY "NIGERIAN TELECOMMUNICATIONS PLC"
@5,10 SAY "CUSTOMER PRSONAL DATA SHEET"
@7,8 SAY "TELEPHONE NO :" + PHONE_NO
@9,8 SAY "NAME(FIRST, LAST) : " + TRIM(FIRSTANME) + ", + TRIM(LASTNAME)
@10,8 SAY "ADDRESS      :" + ADDRESS1
@11,8 SAY "ADDRESS      :" + ADDRESS2
@12,8 SAY "ADDRESS      :" + ADDRESS2
@13,8 SAY "CATEGORY CODE  :" + CATEGORY
@14,8 SAY "EXCHANGE CODE  :" + EXCHANGE
@1,4 TO 16,60 DOUBLE
SET DEVICE TO SCREEN
RETURN
* THIS PROGRAM PRINTS CUSTOMER DATA
@5,1 SAY "ENTER TELEPHONE NO OF THE CUSTOMER:"
@7,1 SAY " "
ACCEPT " TELEPHONENO-----TO MPHONE_NO
CLEAR
SET DEVICE TO PRINT
@3,8 SAY "NIGERIAN TELECOMMUNICATIONS PLC"
@5,10 SAY "CUSTOMER PRSONAL DATA SHEET"
@7,8 SAY "TELEPHONE NO :" + PHONE_NO
@9,8 SAY "NAME(FIRST, LAST) : " + TRIM(FIRSTANME) + ", + TRIM(LASTNAME)
@10,8 SAY "ADDRESS      :" + ADDRESS1
@11,8 SAY "ADDRESS      :" + ADDRESS2
@12,8 SAY "ADDRESS      :" + ADDRESS2
@13,8 SAY "CATEGORY CODE  :" + CATEGORY

```

```

@14,8 SAY "EXCHANGE CODE  :" + EXCHANGE
@1,4 TO 16,60 DOUBLE
SET DEVICE TO SCREEN
RETURN
*THIS PROGRAM PRINTS CUSTOMER DATA
@5,1 SAY "ENTER TELEPHONE NO OF THE CUSTOMER:"
@7,1 SAY " "
ACCEPT " TELEPHONENO-----"TO MPHONE_NO
USE CUSTOMER
LOCATE FOR PHONE_NO = MPHONE_NO
CLEAR
SET DEVICE TO PRINT
@3,8 SAY "NIGERIAN TELECOMMUNICATIONS PLC"
@5,10 SAY "CUSTOMER PRSONAL DATA SHEET"
@7,8 SAY "TELEPHONE NO  :" + PHONE_NO
@9,8 SAY "NAME(FIRST,LAST) : " + TRIM(FIRSTANME) ", + TRIM(LASTNAME)
@10,8 SAY "ADDRESS      :" + ADDRESS1
@11,8 SAY "ADDRESS      :" + ADDRESS2
@12,8 SAY "ADDRESS      :" + ADDRESS2
@13,8 SAY "CATEGORY CODE  :" + CATEGORY
@14,8 SAY "EXCHANGE CODE  :" + EXCHANGE
@1,4 TO 16,60 DOUBLE
SET DEVICE TO SCREEN
RETURN
*THIS PROGRAM DIRECTS THE CUSTOMER BILLING MENU
DO WHILE .T.
CLEAR
USE BILLING
SET COLOR TO W + /N
@2,20 SAY " NIGERIAN TELECOMMUNICATIONS (NOTEL) PLC"
@4,21 SAY "CUSTOMER BILLING SUBMENU"
@6,19 SAY " TASKCODE          CODE"
SET COLOR TO
@8,17 SAY "[A] ----- ADDING CUSTOMER BILL"
@10,17 SAY "[M]-----MODIFYING CUSTOMER BILL"
@12,17 SAY "[D]-----DELETING CUSTOMER BILL"
@14,17 SAY "[P]-----PRINTING CUSTOMER PAY-IN-SLIP"
@16,17 SAY "[Q]-----QUIT AND RETURN TO MAIN MENU"
@18,18 SAY "ENTER CHOICE(TYPE IN TASK CODE)[]"
@1,8 TO 20,66 DOUBLE
@18,53 GET CHOICE
READ
DO CASE
CASE UPPER (CHOICE) = "A"

```

```
DO ADDBILL
CASE UPPER (CHOICE) = "M"
DO MODBILL
CASE UPPER (CHOICE) = "D"
DO DELBILL
CASE UPPER (CHOICE) = "P"
DO PRINTBILL
CASE UPPER (CHOICE) = "Q"
RETURN
OTHERWISE
LOOP
ENDCASE
RETURN
* THIS PROGRAM PREPARES CUSTOMER BILL
```

```
SET COLOR TO W + /N
@2,18 SAY "NIGERIAN TELECOMMUNICATIONS(NITEL)PLC"
@4,24 SAY "CUSTOMER BILLING SCREEN"
@6,18 SAY " EXCHANGE CODE"
@6,45 SAY "CTEGORY"
SET COLOR TO
@8,15 SAY "METRER READING SCREEN CHARGES SCEEN"
@10,5 SAY " PHONE NO"
@12,5 SAY "LAST READING"
@12,31 SAY "DATE"
@14,5 SAY "CURR READING"
@14,31 SAY "DATE"
@10,45 SAY " ACCESS CHARGE"
@11,45 SAY " OPEN BALANCE"
@12,45 SAY " CURR CHARGES"
@13,48 SAY "AMOUNT DUE"
@14,48 SAY " AMOUNT PAAID"
@15,48 SAY "DATE PAID"
@18,12 SAY "SAVE & [C]ONTINUE [S]AVE & QUIT[Q][]"
@7,4 TO 16,45
@7,47 TO 16,73
@1,2 TO 19,75 DOUBLE
STORE SPACE(11) TO MPHONE_NO
DO WHILE .T.
@ 10,15 GET MPHONE_NO PICT '99-9999999'
READ
USE CUSTOMER
LOCATE FOR MPHONE_NO = PHONE_NO
IF .NOT. FOUND()
```

```

@23,20
WAIT SPACE(20) + MPHONE_NO'...NOT REGISTERED, PRESS ANY KEY!'
@24,0 CLEAR TO 24,78
LOOP
ELSE
MEXCHANGE = ESHANGE
MCATEGORY = Category
do case
CASE MCATEGORY = 'P'
MACCE_CHAR = 50
MRATE = 1.6
CASE MCATEGORY = 'G'
MACCE_CHAR = 8
MRATE = 1.8
CASE MCATEGORY = 'C'
MACCE_CHAR = 100
MRATE = 2.1
ENDCASE
EXIT
ENDIF
ENDDO
STORE 0 TO MCURR_READ_PAID, MAMT_DUE, MCURR_CAHR
USE BILLING
LOCATE FOR PHONE_NO = MPHONE_NO
NEWRECORD = .F.
IF .NOT. FOUND()
NEWRECORD = .T.
*@22,1
*WAIT SPACE(20) + MPHONE_NO + 'HAS NEVER BEEN BILLED'
*LOOP
STORE 0 TO MLAST_READ,MOPEN_BALAN
MLAST_DATE = DATE()
ELSE
MLAST_READ = CURR_READ && MAKE LAST READING & DATE LAST
MLAST_DATE = CURR_DATE &&MONTH,S CURRENTREADING & DATE
STORE OPEN_BALAN TO MOPEN_BALAN
ENDIF
STORE DATE() TO MPAY_DATE,MCURR_DATE
@6,32 GET MEXCHANGE PICT 'AAA'
@6,55 GETMCATEGORY PICT 'A'
12,18 GET MLAST_READ PICT '999999999'
@12,37 GET MLAST_DATE
@11,63 GET MOPEN_BALAN PICT '999999.99'
@12,37 GET MLAST_DATE

```

```

@11,63 GET MOPEN_BALAN PICT '999999.99'
@10,63 GET MACCE_CHAR PICT '999999.99'
@13,63 GET MAMT_DUE PICT '999999.99'
LEAR GETS
@7,4 TO 16,45
@7,47 TO 16,73
@1,2 TO 19,75 DOUBLE
DO WHILE .T.
@14,18 GET MCURR_READ PICT '999999999'
READ
IF MCURR_READ < MLAST_READ
@22,1
WAIT SPACE(20) + 'INVALID CURRENT METER READING!'
@23,20 CLEAR TO 23,78
LOOP
ELSE
EXIT
ENDIF
ENDDO
MCURR_CHAR = MRATE * (MCURR_READ-MLAST_READ)
MAMT_DUE = MACCE_CHAR + MOPPEN_BALAN + MCURR_CHAR
@12,63 GET MCURR_CHAR PICT '999999.99'
@13,63 GET MAMT_DUE PICT '999999.99'
CLEAR GETS
DO WHILE .T.
@14,37 GET MCURR_DATE
READ
IF MCURR_DATE > DATE()
@22,1
WAIT SPACE(20) + 'INVALID CURRENT DATE!'
@23,20 CLEAR TO 23,78
LOOP
ELSE
EXIT
ENDIF
ENDDO
DO WHILE .T.
@14,63 GET MAMT_PAID PICT '999999.99'
READ
IF MAMT_PAID < 0
@22,1
WAIT SPACE(20) + 'INVALID AMT PAID'
@23,20 CLEAR TO 23,78
LOOP

```

```

ELSE
EXIT
ENDIF
ENDDO
  MOPEN_BALAN = MAMT_DUE-MAM_PAID
@11,63 GET MOPEN_BALAN PICT '999999.99'
CLEAR GETS
DO WHILE .T.
@15,63 GET MPAY_DATE PICT '999999.99'
READ
IF MPAY_DATE > DATE()
@22,1
WAIT SPACE(20) +INVALID DATE OF PAYMENT!'
@23,20 CLEAR TO 23,78
LOOP
ELSE
EXIT
ENDIF
ENDDO
  i = 0
DO WHILE i=0
i=INKEY()
SET COLOR TO W + /N
@18,55 SAY CHR(i)
SET COLOR TO
IF CHR(i) $ 'CcSCQq'
  MCHOICE = CH(i)
  EXIT
ELSE
  i=0
ENDIIF
ENDDO
IF MCHOICE $ 'Qq'
CLEAR
  EXIT
  RETURN
ELSE
  IF NEW RECORD
  APPEND BLANK
ENDIF
REPLACE EXCHANGE WITH MXCHANGE
REPLACE PHONE_NO WITH MPHONE_NO, LAST_READ WITH MLAST_READ
REPLACE CURR_READ WITH MCURR_READ,CURR_DATE WITH MCURR_DATE
REPLACE CURR_CHAR WITH MCURR_CHAR, LAST_READ WITH MLAST_READ

```

```

REPLACE PAY_DATE WITH MPAY_DATE
REPLACE AMT_PAID WITH MAMT_PAID,AMT_DUE WITH MAMT_DUE
REPLACE OPEN_BALAN WITH MOPEN_BAL, ACCE_CHAR WITH MACCE_CHAR
IF MCHOICE$'Ss'
CLEAR
EXIT
RETURN
ELSE
LOOP
ENDIF
ENDIF
* THIS PROGRAM MODIFY CUSTOMER BILL
DO WHILE .T.
CLEAR
USE BILLING
STORE 0 TO MCURR_READ,MAMT_PAID,MAMT_DUE
STORE 0 TO MCURR_CHAR
STORE CTOD('///') TO MLALST_DATE,MCURRDATE,MPAY_DATE
STORE SPACE(1) TO MCATEGORY
STORE SPACE(3) TO MEXCHANGE
SET COLOR TO W+/N
@2,20 SAY "NIGERIAN TELECOMMUNICATIONS(NITEL)PLC"
@4,24 SAY "MODIFY CUSTOMER BILLING SCREEN"
@6,18 SAY "EXCHANGE"
@6,41 SAY "CATEGORY"
SET COLOR TO
@8,15 SAY "METER READING SCREEN CHARGES SCREEN"
SET COLOR TO W+/N
@10,5 SAY "PHONE NO"
SET COLOR TO
@10,45 SAY "ACCESS CHARGE"
@11,45 SAY "OPEN BALANCE"
@12,5 SAY "LAST READING"
@12,31 SAY "DATE"
@12,45 SAY "CURR CHARGE"
@13,48 SAY "AMOUNT DUE"
@14,5 SAY "CURR READING"
@14,31 SAY "DATE"
@14,48 SAY "AMOUNT PAID"
@15,48 SAY "DATE PAID"
@18,12 SAY "MODIFY &[C]ONTINUE[M]ODIFY&QUIT[Q]UIT"
@7,4 TO 16,45
@7,47 TO 16,73
@1,2 TO 19,75 DOUBLE

```

```

STORE SPACE(10) TO MPHONE_NO
DO WHILE .T. && REPEAT THIS LOOP UNTIL THE PHONE IS ENETERED
@10,19 GET MPHONE_NO PICT '99-9999999'
READ
@10,5 SAY "PHONE_NO'
LOCATE FOR PHONE_NO = MPHONE_NO
IF .NOT. FOUND()
@23,20 SAY ''
WAIT SPACE(20) + 'RECORD NOT FOUND!PRESS ANY KEY TO CONTINUE
@24,0 CLEAR TO 24,78
LOOP
ELSE
STORE CURR_CHAR TO MCURR_CHAR
STORE AMT_DUE TO MAMT_DUE
STORE OPEN_BALAN TO MOPEN_BALAN
STORE ACCE_CHAR TO MACCE_CHAR
STORE CURR_READ TO MCURR_READ
STORE LAST_READ TO MLAST_READ
STORE AMT_PAID TO MAMT_PAID
STORE EXCHANGE TO MEXCHANGE
STORE CATEGORY TO MCATEGORY
STORE LAST_DATE TO MLAST_DATE
STORE CURR_DATE TO MCURR_DATE
STORE PAY_DATE TO MPAY_DATE
LAST RECNO = RECNO()
USE CUSTOMER
MCATEGORY = CATEGORY
MOPEN_BALAN = MAMT_DUE-MAMA_PAID
EXIT
ENDIF
ENDDO && WHILE .T. FOR PHONE
USE BUILDING
GO LAST RECORDNO
@6,28 GET MEXCHANGE PICT 'AAA'
@6,50 GET MCATEGORY PICT 'A'
@10,19 GET MPHONE_NO PICT '99-9999999'
@10,63 GET MACCE_CHAR PICT '999999.99'
@11,63 GET MOPEN_BALAN PICT '999999.99'
@12,18 GET MLLAST_READ PICT '999999.99'
@12,37 GET MLAST_READ PICT '9999999999'
@12,63 GET MCURR_CHAR PICT '9999999999'
@13,63 GET MAMT_DUE PICT '999999.99'
@14,18 GET MCURR_READ PICT '9999999999'
@14,37 get mcurr_date

```

```

@14,63 GET MAMT_PAID PICT'999999.99'
@15,63 GET MPAY_DATE
CLEAR GETS && DO NOT ALLOW THE ABOVE IELDS TO BE CHARGED
@14,63 GET MAMT_PAID PICT '9999999.99'
@15,63 GET MPY_DATE
READ && ALLOW ONLY THE ABOVE TWO FIWLDS TO BE CHARGED
i=0
DO WHILE i=0 && REPEAT THS LOOP UNTIL A KEY IS PRESSED
i=INKEY() && STORE THE NUMBER OF KEY JUST BEING PRESSED
SET COOR TO
IF CHR(i) $CcMmQq'MCHOICE = CHR(i)
EXIT && YES A CORRECT KEY HAS BEEN PRESS SO LEAVE THE LOOP
ELSE
i=0 && END OF MLOOP WHILE i=0
IF MCHANCE$'Qq'
CLEAR
EXIT
RETURN
ELSE
USE BUILDING
REPLACE EXCHANGE WITH MEXCHANGE
REPLACE PHONE_NO WITH MPHONE_NO, LAST_READ WITH NLAST_READ
REPLACE CURR_READ WITH MCURR_READ, CUR_DATE WITH MCURR_DATE
REPLACE CURR_CHAR WITH MCURR_CHAR LAST_DATE WITH MLAST_DATE
REPLACE PAYDATE WITH MPAY_DATE, CATEGORY WITH MCATGORY
RPLACE AMT_PAID WITH MAMT_PAID, AMT_DUE WITH MAMT_DUE
REPLACE OPEN_BALAN WITH MOPEN\BALAN, ACCE_CHARWITH MACCE_CHAR
IF MCHOICE $ 'Mm'
@18,60 SAY ''
CLLEAR
EXIT
ELSE
CLEAR
LOOP
ENDIF
ENDDO
* THIS PROGRAM DELETES CUSTOMER DATA FROM THE FILE
DO WHILE .T.
USE BILLING
SET COLOR TO W + /N
@2,22 SAY "NIGERIAN TELECOMMUNICATIONS PLC"
@4,25 SAY "CUSTOMER'S DELETING SCREEN"
SET COLOR TO W + /N
@6,13 SAY "PHONE NO"

```

```

SET COLOR 0
@8,15 SAY "METER READING SCREEN CHARGES SCREEN"
@10,45 SAY "ACCESS CHARGE"
@11,45 SAY " OPEN BALANCE"
@12,5 SAY "LAST RESADINNG"
@12,31 SAY "DATE"
@12,45 SAY "CURRENT C HARGES"
@13,48 SAY " AMOUNT DUE"
@14,5 SAY " CURR READING"
@14,31 SAY "DATE"
@14,48 SAY "AMOUNT PAID"
@18,12 SAY "DELETE &[C]CONTINUE[D]ELETES& QUIT[[Q]UIT
@7,4 TO 16,45
@7,47 TO 16,73
@1,2 TO 19.75 DOUBLE
STORE SPACE(10) TO MPHONE_NO
@6,22 GET MPHONE_NO PICT '99-9999999'
READ
@6,13 SAY "PHONE NO""
LOCATE FOR PHONE_NO = MPHONE_NO
IOF ,NOT. FOUND()
@23,20 SAY ""
WAIT SPACE(20) + 'THE RECORD HAS BEEN DELETED!PRESS ANY KEY
LOOP
ENDIF
STORE PHONE_NO TO MPHONE_NO
STORE EXCHANGE TO MEXCHANGE
STORE CATEGORY TO MCATEGORY
STORE LAST_DATE TO MLAST_DATE
STORE CURR_DATE TO MCURR_DATE
STORE AMT_PAID TO MAMT_PAID
STORE AMT_DUE TO MAMT_DUE
STORE OPEN_BALAN TO MOPEN_BALAN
STORE ACCE_CHAR TO MACCE_CHAR
STORE CURR_READ TO MCURR_READ
STORE LAST_READ TO MLAST_READ
STORE AMT_PAID TO MAMT_PAID
STORE PAY_DATE TO MPAY_DATE
@6,22 GET MPHONE_NO PICT '99-9999999'
@6,55 GET MCATEGORY PICT 'A'
@10,15 GET MEXCHANGE PICT 'AAAAAAAAAAA'
@10,63 GET MACCE_CHAR PICT '999999.99'
@11,63 GET MOPEN_BALAN PICT '999999.99'
@12,18 GET MLAST_READ PICT '999999999'

```

```

@12,37 GET MLAST_DATE
@12,63 GET MCURR_CHAR PICT '999999.99'
@13,63 GET MAMT_DUE PICT'999999.99'
@14,18 GET MCURR_READ PICT '9999999999'
@14,37 GET MCURR_DATE
@14,63 GET MAMT_PAID PICT '999999.99'
@15,63 GET MPAY_DATE
CLEAR GETS
i=0
DO WHILE i=0
i= INKEY()
SET COLOR TO w + /n
@18,60 SAY CHR(i)
SET COLOR TO
IF CHAR(i) $ 'CcDdQq'
EXIT
LSE
i=0
ENDIF
ENDDO
IF MCHOICE $ 'Qq'
CLEAR
EXIT
RETURN
ELSE DELETE
PACK
IF MCHOICE $ 'Dd'
@18,61 SAY ""
CLEAR
EXIT
RETURN
ELSE
LOOP
ENDDIF
ENDCASE
* THIS PROGRAM PRINT CUSTOMER BILL
STORE 0 TO MAMT_DUE
STORE 0 TO MCURR_CHAR
STORE SPACE(1) TO MCATEGORY
STORE SPACE(3) TO MEXCHANGE
STORE SPACE(10) TO MPHONE_NO
STORE CTOD('///') TO MPAY_DATE
DO WHILE .T.
SET COLOR TO W + /N

```

```

@3,18 SAY "NIGERIAN TELECOMMUNICATIONS(NITELE)PLC"
@4,30 SAY "PAY_IN SLIP"
SET COLOR TO
@6,7 SAY "PHONE NO"
@6,36 SAY "EXCHANGE"
@6,58 SAY "CATEGORY"
@8,7 SAY "NAME"
@9,7 SAY "ADDRESS"
@10,50 SAY "CHEQUE NO..."
@12,50 SAY "TICKN THE CORRESPONDING ONE"
@14,7 SAY "OPOEN BALANCE"
@14,50 SAY "CASH.."
@15,7 SAY "ACCESS CHARGE"
@14,61 SAY "CERT.CHEQUE"
@16,7 SAY "CURRENT CHARGES"
@16,50 SAY "AMOUNT IN WORDS.."
@17,7 SAY "AMOUNT DUE"
@17,50 SAY "....."
@18,7 SAY " AMOUNT PAID"
@18,50 SAY '.....'
@19,7 SAY "DATE PAID"
@19,50 SAY "CASHIER NAME....."
@20,50 SAY "CASHIER STAMP AND SIGN...."
@21,45 SAY "CASHIER SIGN"
@2,1 TO 21,70 DOUBLE
@13,5 TO 20,40
DO WHILE .T.
@6,18 GET MPHONE_NO PICT '99-9999999'
READ
PHONE_NO = MPHONE_NO
@6,7 SAY "PHONE NO"
USE CUSTOMER
LOCATE FOR PHONE_NO = MPHONE_NO
IF .NOT. FOUND()
@23,20 SAY ''
WAIT SPACE(20) RECORD NOT FOUND! PRESS ANY KEY TO CONTINUE
@24,0 CLLEAR TO 24,78
LOOP
ELSE
STORE PHONE_NO TO MPHONE_NO
STORE EXCHANGE TO MEXCHANGE
STORE CATEGORY TO MCATEGORY
STORE FIRSTNAME TO MFIRSTNAME
STORE LASTNME TO MLASTNAME

```

```

STORE ADDRESS1 TO MADDRSS1
STORE ADDRESS2 TO MADDRSS2
STORE ADDRESS3 TO MADDRSS3
USE BUILDING
LOCATE FOR MPHONE_NO = PHONE_NO
IF NOT FOUND()
!23,20 SAY ""
WAIT SPACE(20) + "BILL NOT PREPARED YET"
@24,0 TO 24,78
STORE 0 TO
MOPEN_BALAN,MAMT_DUE,MACCE_CHAR,MCCURR_CHAR,MAMT_PAID
STORE CTOD('///') TO MPAY_DATE
EXIT
ENDIF
STORE OPEN_BALAN TO MOPEN_BALAN
STORE ACCE_CHAR TO NACCE_CHAR
STORE AMT_DUE TO MAMT_DUE
STORE CURR_CHAR TO MCURR_CHAR
STORE AMT_PAID TO MAMT_PPAID
STORE PAY_DATE TO MPAY_DATE
ENDDO
MNAME = TRIM(MFIRSTNAME) + " + TRIM(MLASTNAME)
@6,67 GET MCATEGORY PICT 'A'
@8,18 GET MADDRESS1
@10,18 GET MADDRESS2
@11,18 GET MADDRESS3
@6,45 GET MEXCHANGE PICT 'AAA'
@14,23 GET MOPEN_BALAN
@17,23 GET MAMT_DUE
@15,23 GET MACCE_CHAR
@16,23 GET MCURR_CHAR
@18,23 GET MAMT_PAID
@19,23 GET MPAY_DATE
@6,18 GET MPHONE_NO PICT '99-9999999'
CLEAR GETS
@22,7 SAY "SEND TO [P]RINTER [Q]RETURN TO MAINMENU
AWIT "" TO CHOICE
DO CASE
CASE UPPER(CHOICE) = "P"
@22,1 CLEAR TO 22,79
SET DEVICE TO PRINTER
SET PRINT ON
LOOP
CASE UPPER(CHOICE) = 'Q'

```

```

SET DEVICE TO SCREEN
SET PRINT TO
SET PRINT OFF
RETURN
OTHERWISE
LOOP
ENDCAES
ENDDO
RETURN
* THIS PROGRAM SORT CUSTOMER BY DATA
SET TALK OFF
SET ECHO OFF
SET STATUS OFF
STORE "" TO CHOICE\
CLEAR
DO WHILE .T.
CLEAR
USE CUSTOMER

```

```

STORE PHONE_NO TO MPHONE_NO
STORE FIRSTNAME TO MFIRSTNAME
STORE LASTNAME TO MLASTNAME
STORE CATEGORY TO MCATEGORY
STORE EXCHANGE TO MEXCHANGE
SET COLOR TO W + /N
@2,21 SAY "NIGERIAN TELECOMMUNICATIONS PLC"
@4,21 SAY "CUSTOMER SORT DATA SCREEN"
@6,15 SAY TASKCODE          CODE"
SET COLOR TO
@8,17 SAY "[P].....BY CUSTOMER PHONE"
@10,17 SAY "[E]..... BY CUSTOMER EXCHANGE CODE"
@12,17 SAY "[C].....BY CUSTOMER CATEGORY CODE"
@14,17 SAY "[F].....BY CUSTOMER SURENAME"
@16,17 SAY "[L].....BY CUSTOMER LASTNAME
@18,17 SAY "[Q].....QUIT AND RETURN TO MAIN MENU"
@20,18 SAY "ENTER CHOICE(TYPE IN TASK CODE)"
@1,8 TO 22,66 DOUBLE
@20.53 GET CHOICE
READ
USE CUSTOMER
DO CASE
CASE UPPER(CHOICE) = "P"
INDEX ON MPHONE_NO TO SORTED
CASE UPPER(CHOICE) = "E"

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```

INDEX ON MEXCHANGE TO SORTED
CASE UPPER(CHOICE) = "C"
INDEX ON MCATEGORY TO SORTED
CASE UPPER(CHOICE) = "F"
INDEX ON MFIRSTNAME TO SORTED
CASE UPPER(CHOICE) = "Q"
RETURN
OTHERWISE
@23,30 SAY 'WRONG KEY PRESSED!'
??CHR(7)
i=0
DO WHILE i < 10
i=i+1
ENDDO
LOOP
ENDCASE
CLEAR
DO WHILE .T.
USE CUSTOMER
@4,5 SAY "SORTED CUSTOMERS RECORD:"
@10,3 SAY "FIRSTNAME LASTNAME PHONE NO CATEGORY
GO TOP
DO WHILE .NOT. EOF()
?" + MFIRSTNAME + " + MLASTNAME" + MPHONE_NO" + MCATEGORY
SKIP
ENDDO
@23,7 SAY "SEND TO [P]RINTER [Q]RETURN TO MAINMENU
WAIT ""TO CHOICE
DO CASE
CASE UPPER(CHOICE) = "P"
@24,1 CLEAR TO 24,79
SET DEVICE TO PRINTER
SET PRINT ON
LOOP
CASE UPPER(CHOICE) = "Q"
SETDEVICE TO SCREEN
SET PRINT TO
SET PRINT OFF
RETURN
OTHEWRWISE
LOOP
ENDDCASE
ENDDO
CLOSE INDEX

```

```

ERASE SORTED.NDX
RETURN
* THIS PROGRAM PRINTS EXISTING CUSTOMER ADDRESS
USE CUSTOMER
STORE FIRSTNAME TO MFIRSTNAME
STORE LASTNAME TO MLASTNAME
STORE ADDRESS1 TO MADDRESS1
STORE ADDRESS2 TO MADDRESS2
STORE ADDRESS3 TO MADDRESS3
STORE PHONE_NO TO MPHONE_NO
STORE CATEGORY TO MCATEGORY\
DO WHILE .T.
CLEAR
SET COLOR TO W + /N
@2,20 SAY "NIGERIAN TELECOMMUNICATION PLC"
@4,21 SAY " CUSTOMER MAILING SCREEN"
@6,19 SAY "TASK CODE CODE"
SET COLOR TO
@8,21 SAY "[I]....BY TELEPHONE NUMBER"
@10,21 SAY "[Q].....QUIT & RETURN TO MAIN MENU"
@14,22 SAY "ENTER CHOICE (TYPE IN TASKCODE)[I]"
@1,8 TO 16,66 DOUBLE
@14,57 GET CHOICE
READ
DO CASE
CASE UPPERE(CHOICE) = "T"
CLEAR
@10,10 SAY "BEGINING PHONE_NO MUST BELONG TO AN EXISTING PHONE
@2,15 SAY " "
ACCEPT "ENTER: BEGINNING PHONE_NO...."TO BCODEF
ACCEPT "ENDING PHONE_NO....."TO ECODE
@20,10 SAY " "
WAIT "TURN ON AND ALLIGN THE PRINTER, PRESS ANY KEY TO BEGIN
PRINTING"
INDEX ON PHONE_NO TO KEYCODE
GO TOP
SEEK BCODE
SET PRINT ON
DO WHILE MPHONE_NO > = ECODE .AND. MPHONE_NO < = ECODE .AND. .NOT
EOF()
@4,10 SAY TRIM(MFIRSTNAME) + "," + MLASTNAME
@5,10 SAY MADDRESS1
@6,10 SAY MADDRESS2
@7,10 SAY MADDRESS3

```

```

*SKIP TO NEXT RECORD DATA
SKIP
ENDDO
SET DEVICE TO SCREEN
DO CASE
CASE UPPER(CHOICE) = "Q"
RETURN
OTHERWISE
@23,30 SAY "WRONG KEY PRESSED!"
??CHR(7)
I=0
DO WHILE I < 10
I=I+1
LOOP
ENDDO
ENDCASE
ENDDO
SET PRINT OFF
CLOSE INDEX
ERASE KEYCODE.NDX
RETURN

```

```

*THIS PROGRAM PRINTS EXISTING CUSTOMER NAME AND ADDRESS
SET TALK OFF
SET ECHO OFF
SET BELL OFF
SET STATUS OFF
STORE " " TO CHOICE
CLEA
USE CUSTOMER
STORE FIRSTNAME TO MFIRSTNAME
STORE LASTNAME TO MLASTNAME
STORE ADDRESS1 TO MADDRESS1
STORE ADDRESS2 TO MADDRESS2
STORE ADDRESS3 TO MADDRESS3
STORE PHONE_NO TO MPHONE_NO
STORE CATEGORY TO MCATEGORY
DO WHILE .T.
CLEA
SET COLOR TO W + /N
@4,20 SAY "NIGERIAN TELECOMMUNICATIONS PLC"
@6,21 SAY "CUSTOMER ADDRESS SCREEN"
@8,19 SAY "TASK CODE      CODE"
SET COLOR TO

```

```

@10,21 SAY "[T].....BY TELEPHONE NUMBER"
@12,21 SAY "[Q].....QUIT AND RETURN TO MAINMENU"
@16,21 SAY "ENTER CHOICE(TYPE IN TASK CODE)[]"
@1,8 TO 18,66 DOUBLE
@16,56 GET CHOICE
READ
DO CASE
CASE UPPER(CHOICE) = "T"
SORT ON PHONE_NO TO SORTED
CASE UPPER(CHOICE) = "Q"
RETURN
OTHERWISE
@23,30 SAY "WRONG KEY PRESSED!"
??CHR(7)
I=0
DO WHILE I<0
I=I+1
ENDDO
LOOP
ENDCASE
EXIT
ENDDO
USE SORTED
* CHOICE''
DO WHILE .T.
CLEAR
@2,4 SAY "CUSTOMERS NAME AND ADDRES"
@4,10 SAY TRIM(MFIRSTNAMES) + ", " + MLASTNAME
@5,10 SAY MADDRESS1
@6,10 SAY MADDRESS2
@7,10 SAY MADDRESS3
GO TOP
KOUNT = 0
DO WHILE .NOT. EOF()
?TRIM(MFISTNAME) + ", " + MLASTNAME
?MADDRESS1
?MADDRESS2
?MADDRESS3
KOUNT = KOUNT + 1
IF KOUNT = 3
KOUNT = 0
@21,0 SAY ""
WAIT SPACE(27) + 'PRESS ANY KEY TO CONTINUE'
@22,0 CLEAR TO 22,79

```

```
@5,0 CLEAR TO 19,79
@5,0 SAY''
ENDIF
SKIP
ENDDO
SET PRINT OFF
@23,7 SAY "[P]PRINT CUSTOMERS NAMES &ADDRESS ON PRINTER;
[Q]RETURN
WAIT " " TO CHOICVE
DO CASE
  CASE UPPER(CHOICE) = "Q"
    SET DEVICE TO SCREEN
    SET PRINT TO
    SET PRINT TO
    SET PRINT OFF
    EXIT
  OTHERWISE
    LOOP
ENDCASE
ENDDO
CLOSE INDEX
CLOSE DATABASES
RETURN
```

APPENDIX C

NIGERIAN TELECOMMUNICATIONS (NITEL) PLC CUSTOMER DATA SUB-MENU

| TASK CODE | CODE |
|-----------|-------------------------------------|
| [A] | ----- ADD a new customer data |
| [M] | ----- Modify existing customer data |
| [D] | ----- Delete existing customer data |
| [P] | ----- Print existing customer data |
| [Q] | ----- Quit & Return to Mainmenu |

ENTER CHOICE (Type in Task Code [])

NIGERIAN TELECOMMUNICATIONS (NITEL) PLC CUSTOMER BILL SUB-MENU

| TASK CODE | CODE |
|-----------|----------------------------------|
| [A] | ----- Adding customer data |
| [M] | ----- Modify customer data |
| [D] | ----- Delete customer data |
| [P] | ----- Print customer Pay-in-Slip |
| [Q] | ----- Quit & Return to Mainmenu |

ENTER CHOICE (Type in Task Code [])

NIGERIAN TELECOMMUNICATIONS (NITEL) PLC
CUSTOMER'S INPUT SCREEN

TELEPHONE NO-----

FIRSTNAME -----

LASTNAME -----

ADDRESS -----

CATEGORY -----

Save &[C]ontinue [S]ave & [Q]uit []

NIGERIAN TELECOMMUNICATIONS (NITEL) PLC
MODIFY CUSTOMER'S DATA SCREEN

TELEPHONE NO-----

FIRSTNAME -----

LASTNAME -----

ADDRESS -----

CATEGORY -----

Save &[C]ontinue [S]ave & [Q]uit []

NIGERIAN TELECOMMUNICATIONS (NITEL) PLC
DELETE CUSTOMER'S DATA SCREEN

TELEPHONE NO-----

FIRSTNAME -----

LASTNAME -----

ADDRESS -----

CATEGORY -----

Save &[C]ontinue [S]ave & [Q]uit []

NIGERIAN TELECOMMUNICATIONS (NITEL) PLC
SORTING CUSTOMER'S DATA SCREEN

TASK CODE

CODE

[P] ----- By customer Telephone No

[E] ----- By customer Exchange Code

[C] ----- By customer Category Code

[F] ----- By customer Firstname

[L] ----- By customer Lastname

[Q] ----- Quit & Return to Mainmenu

ENTER CHOICE (Type in Task Code []