COMPUTER APPLICATION TO DRUG REVOLVING FUND SCHEME MANAGEMENT, (A CASE STUDY OF NIGER STATE DRUG REVOLVING FUND SCHEME)

BY

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MINNA.

SEPTEMBER 2001.

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A PROJECT SUBMITTED TO DEPARTMENT OF MATHEMATICS/COMPUTER SCIENCE, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA IN PARTIAL FULFILMENT OF POST-GRADUATE DIPLOMA IN COMPUTER SCIENCE.

SEPTEMBER 2001.

APPROVAL SHEET

This Project has been duly supervised, examined and is in fulfillment of the requirement for the Post-Graduate Diploma in Computer Science of the Federal University of Technology, Minna.

PROJECT SUPERVISOR MR. L. N. EZEAKO	DATE
HEAD OF DEPARTMENT DR. S. A. REJU	DATE
EXTERNAL EXAMINER	DATE

DEDICATION

This project is dedicated to Almighty ALLAH who has given me the health, strength and ability to go through the programme.

ACKNOWLEDGEMENT

I wish to begin by expressing my gratitude to Federal university of Technology Minna and the Department of Mathematics and Computer science of FUT in particular for the opportunity given to me to undergo PGD programme in Computer Science. I am most grateful to Mr. L. N. Ezeako my able Project Supervisor who had taken time and pains in reading through this project in draft form and with his expertise, patients and understanding encourages and helped in no small way to the successful completion of this project.

I am equally grateful to Dr. S. A. Reju the Head of Department whose untiring effort and unreserved commitment has resulted in a high standard of academic performance for which the department and her products are known.

I must also express my profound gratitude to Prof. K. R. Adeboye, Mall. Audu Isah, Prince R. O. Badamosi, Mall. Hakimi Danladi, Dr. Yomi Aiyesimi, Messers Kolo Raimi, Dr. Akin Wande and all other lecturers of the department who through the dissemination of their wealth of knowledge had direct or indirect role in this material.

My sincere gratitude goes to my parents and all members of my family for their understanding, and cooperation throughout the period of this programme.

ABSTRACT

The importance of simplifying and speeding up tasks in every aspect of life has made computer application very imperative in virtually all aspects of human endeavor. Pharmacy is no exception. The Drug Revolving Fund Scheme (DRFS) is a system where by drugs procured by a health facility/organization are dispensed at affordable price to patients in a manner that will guarantee the replacement of the same quality and quantity of drug, so that the process ensures constant availability of quality drugs in the facility at all times.

In this project, using Niger State Drug revolving Fund Scheme (NSDRFS) as a case study a computer application was designed using Visual Foxpro 6.0 to ensure timely and accurate report for quality decision by the management of the NGSDRFS which will result in better drug management and greatly increase the NGSDRFS capabilities, productivity and efficiency.

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CHAPTER ONE

GENERAL INTRODUCTION

1.1. THE COMPUTER

The computer is defined as an electronic machine, which accepts data and input, process and stores the data to give desired output as information.

The computer which is no longer a luxury but a necessity has taken over most offices works, schools and likewise homes.

The computer generally performs three functions;

i. Accepts data
ii. Process data and
iii. Output data

Data, which can come in various forms as words, images, numbers and sounds can be entered into a computer through input devices like mouse, keyboard, joystick, scanner and even though voice commands. It is then processed through the Central Processing Unit (CPU) and the result communicated through the output unit like the monitor or printer.

1.2. THE COMPUTER GENERATIONS

Since the computer and computerization has however been the order of the day, its therefore imperative to talk about its origin and development.

Computer generation is a term to describe the major technological advances in the development of computers.

FIRST GENERATION

First generation programmable electronic computers dating from the early 1940's into 1950's were general purpose machines using vacuum tubes for the Central Processing Unit. Its very large and could only handle up to 20,000 bits of information with the speed of 100,000 additions per seconds.

The most popular model of the first generation computer was the IBM 650 developed in 1954.

SECOND GENERATION

In the second generation computers of the mid 1950's to the mid 1960's, vacuum tubes were replaced by individual transistors, which enabled greater capacities and faster speed up to one million operations per second.

The most popular model of this generation is the IBM 1401.

THIRD GENERATION

These machines were supplanted by the third generation computer of the mid 1960's and 1970's in which the use of silicon micro clip to house thousand of effective transistors miniaturized the electronics by a factor of a thousand.

The most popular model of this generation was the IBM 360. The circuitry (Hybrid Circuitry) was used in IBM 360 series and it requires low voltage, produces very little heat and as more reliable.

FOURTH GENERATION

In the 1980's, the introduction of a very large scale integration (VLSI), whereby many thousands of transistors and thousands circuitry of microscopic size can be manufactured on a small single silicon chip, has revolutionized both the size and design of fourth-generation computer.

A major model of this generation is the IBM 370 series.

FIFTH GENERATION

The concept of the fifth generation computers utilizes the full potential of VLSI in enabling ARTIFICIAL INTELLIGENCE to be incorporated. Such computers whose development began in the 1980's will be able to work and think like the human. They will be useful, for example, in tactics, in the armed services, in diagnostic medicine and in literate translation from one language to another; they will also be the kernel of electronic office.

We are still employing the fifth generation with various improvements. We have clips of higher capacity like Pentium, AMD, and Athlon processor.

1.3 DRUG REVOLVING FUND SCHEME

Drug Revolving Fund Scheme is one of the two components of Essential Drug Programme; the other component is essential drug list and formulary. The concept of essential drugs advocates that, despite limited resources, developing countries can extend the accessibility of the most needed drugs to greater majority of the population by implementing their health career programmes with selected list of basic or essential drugs.

Essential drugs have been defined by the World Health Organization (WHO) as those drugs that satisfy the health care needs of the majority of the population. For effective health care system to exist these drugs should be available at all times in adequate quantities and in the appropriate dosage forms at all levels of the health care system. In order to ensure availability of essential drugs at all times in the health care system the Drug Revolving Fund Scheme is employed.

The Drugs Revolving Fund Scheme (DRFs) is a process whereby drugs procured by a health facility or organization are dispensed at affordable price to clients/patients in a manner that will guarantee the replacement of the same quality and quantity of drugs, so that the process ensures constant availability of quality drugs in an establishment at all times.

1.4. STATEMENT OF THE PROBLEM

Its known that health is wealth, there should be the right and quality medication prescribed for each ailment. It's usually found out that some patients lack enough and quality drug at their disposals especially those in the Government Hospitals.

Since the priority of every Government is for the well being of her citizen, and also the major reason why the Drug Revolving Fund Scheme (DRFs) is created is to ensure constant availability of quality drugs in an establishment at all times. Its therefore imperative that a system should be built which adequately manages and monitor the good intention of the DRFs because of the limited capability of human when it comes to regulation, stocking and controls.

1.5 AIMS AND OBJECTIVE OF THE PROGRAM

i. Examine the suitable application programs to meet the need of Niger State Drug Revolving Fund Scheme.
ii. Surveying of suitable application program to meet the organization.
iii. Analyzing the hardware requirement of the suitable software.
iv. Selection of optimal computer system that meets the hardware requirement of the soft ware.

1.6 SCOPE AND LIMITATION

The scope of this project is to cover the DRFS of Ministry of Health Minna.

While the Limitation of the study includes the followings:

1. The study is limited to the activities of the DRF at CMS and the Headquaters of the Ministry of Health Minna.

For information and Data utilize from the services areas is limited to such delivered by staff from the service areas.

The DRF Scheme is a subset of the Ministry of Health Minna and its data collection is limited to available fund provided for running cost of the DRF.

CHAPTER TWO

BACKGROUND OF THE STUDY

2.1 EVOLUTION OF DRFS

Drug has a strategic position in Health Care Delivery Services. They make health care credible because they can cure diseases, relieve symptoms, diagonise disease and alleviate suffering. The psychological satisfaction produced by drugs creates a favourable environment in which preventive and educational elements of health care can be built with consequent further improvement in health.

In 1929 when penicillin was discovered, drug was seen as a magic bullet and since then there has been an increasing expectation on the wonders drug can make. In the late sixties and early seventies there was an increase in the number of marketed drugs in the world market but, that increase was not matched by a proportional improvement in health, particularly in developing countries. If anything the indiscriminate use of multiple drugs (poly pharmacy) in treatment led to an increase in frequency of drug induced diseases. It was proceeded by a situation whereby drugs are procured with little regard to the needs and priorities of health care of the population, availability of drug in hospitals was largely a response to the sales promotional activities of manufacturers and bears little relation to the actual needs of the population.

In the mid seventies, despite flood of drugs in the world market, some developing countries lack basic essential drugs in their hospitals.

Around the same period new diseases began to emerge creating demands for additional and more specialized medicines and elements of drugs abuse emerge on scene. Drug procurement and distribution began to be hampered due to dwindling resources, lack of foreign currency, planlessness, decadent implementation of programme, political and social instability. Government capacity at all levels was over stretched. In Nigeria it became difficult for Government to allocate five percent of its total budget to Health Sector as recommended by WHO and couple with facts it became difficult for resources allocated to health establishment to allow for efficient management of the sector leading to hospitals, eventually becaming mare consulting clinics.

In view of the above development, simply summarized as inadequate funds for essential needed drugs, drug procurement with little or no regard to health needs of the population, increasingly large number of marketed drugs which did not match with improvement in health care, weakness in drug administration and drug quality and stock control, the 28th World Health Assembly of WHO in 1975, approved the concept of essential drugs and by 1977 WHO produced the first model of list of essential; drugs lists which was the basis of Drug Revolving Fund Scheme. By 1988 above 100countries had and were using their own lists of essential drugs.

In Nigeria, it is equally relevant to state that the introduction of Structural Adjustment Programme (SAP) in 1980's increased duty on both Pharmaceutical raw materials and finished products, which further aggravated the crises in the drug supply system and pushed

drug prices beyond the reach of most Nigerians leading to inequity in accessibility. The inability to enforce the pharmacy and poisons laws appropriately led to chaos in the drug management and supply.

The situation ultimately sets for the introduction of National Health Policy and National Drug Policy with the goal of redressing Nigeria myriad health problem.

With the WHO introducing the concept of essential drug programme, Nigeria made it as its national drug policy and decree 43 of 1989 was to give a legal backing to the essential drug list and consequently the drug revolving fund scheme.

The Government of Niger State introduced the cost recovery programme in all its health institutions in 1985, which was later upgraded into Drug Revolving Fund programme in 1989.

MANAGEMENT

The SDRFS is made of a committee, headed by the Permanent Secretary Ministry of Health. The composition of the committee is as follows:

- Permanent Secretary Ministry of Health	Chairman
- Director Pharmaceutical Services	Controller
- Director Medical Services	Member
- Director Nursing Services	"
- Theater Nurse i/c G. H. Minna	"
- Chief Laboratory Officer	"
- Head of Hospital services G.H. Kontagora	"
- DRF Accountant	"
- Pharmacists i/c CMS -	Secretary

The DPS act as the controller. The committee meet on quarterly basis or when the need arises to deliberate on the activities of the scheme with a view to moving it forward.

2.2 FUNCTION OF THE DRFS

The DRFS is to procure essential drugs and other hospital consumables for Health Institutions under the State Ministry of Health for dispensing at affordable price to clients/patients in a manner that will guarantee the replacement of the same quality and quantity of drugs so that the process ensures constant availability of drugs/hospital consumables in all the State Health Institutions at all times.

To achieve the above, the committee:

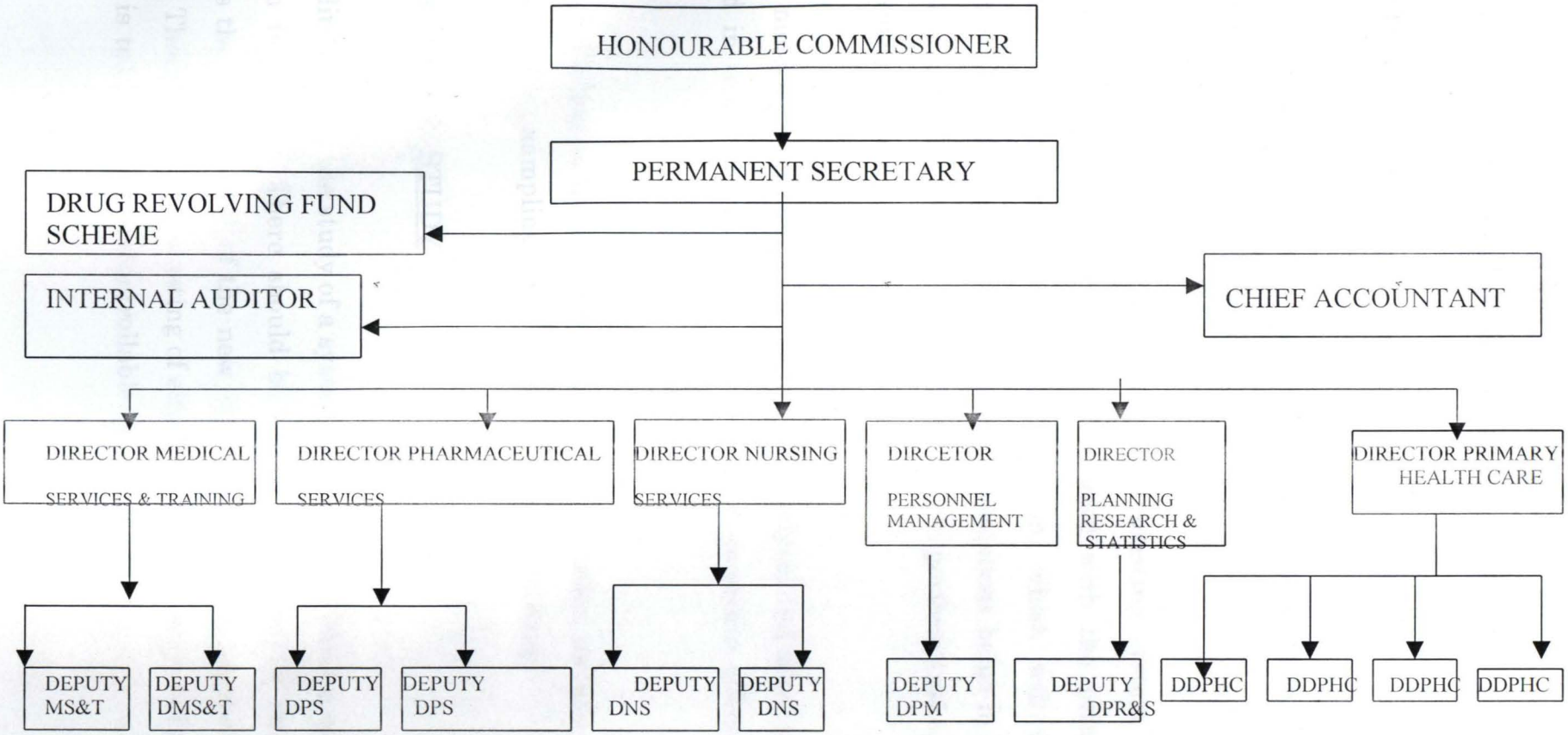
- Complies and review the State essential; drugs and other hospital consumables list
- It make purchases of required essential drugs and hospital consumables
- It put in place appropriate machinery to ensure collection, banking and utilization of funds generated from its services.
- It ensures the smooth running of the scheme
- It request from time to time funds or stocks from the State Government to augment the DRFS.
- It forward to the Ministry individual/institution found wanting in performing his/her responsibilities with regard to the DRFS.
- It suggest to the Ministry ways to improve health services in the State.

Drugs are purchased initially by the State Government and when ever there is need to augment the DRFs, such drugs are stored in the State Central

Medical Stores. Initial stock is provided to all the health institutions and on selling/dispensing to the clients/patients, the revenue generated on daily basis is banked in the nearest SDRF Bank account. At the end of the month such monies are remitted to the Central Account of the Scheme in Minna in form of Bank draft.

Whenever there is a fall or any of the essential item is out of stock the committee makes purchases to replenish such item with the funds so generated by the scheme. Through this system the scheme revolves.

NIGER STATE MINISTRY OF HEALTH
ORGANIZATIONAL STRUCTURE AT THE HEADQUARTER MINNA



several alternatives seem to be realistic in their potential costs and benefits, the project proceed to the next phase.

The objectives that were achieved.

1. UNDERSTANDING THE PROJECT: Interview and researches were conducted to determine the attainment of the project. Under this certain vital questions are asked.
    i. Why did the problem occur?
    ii. Why were the present methods adopted?

This help to spells out the strength and weakness of the existing system.

2. KNOWING THE SCOPE: Its quite necessary to know the size of this project so that an estimate of time to be allotted to it could be known. This will help in knowing the work force to be designated to the work for development and implementation.
3. ASSESSING THE COST AND BENEFIT OF THE PROPOSED SYSTEM: Before embarking on any project, its important to know the cost implication of it and also know the benefits to be derived from it. The financial involvement includes the training of the staff, technical, financial and operation feasibility of alternative approaches.

Everything find were documented and sent to the Head of Department as recommended and proposal for acceptant of the proposed system.

3.3. METHOD OF RESEARCH

Several method were used in the investigation and also the gathering of information. The following method were used in the research work.

4.3. STARTING THE SYSTEM

The system is made up of three installation floppy disks.
Insert the disk 1 into the floppy drive and access the floppy drive, double click on setup EXE, follow the instructions to install the system.

However, to be able to access the system, click start, move to settings, click on taskbar, click add, click browse, click on Drug folder, click DRUD, EXE, click O.K, click Next twice, and click finish, click O.K. then click start and click on Drug EXE, then type the password which is DRUG and type in other LOGIN INFORMATION the click O.K.

4.4. MENU STRUCTURE

The menu structure is made up of the following

File	Report	Quit
Procurement	Drug Procurement	
Disbursement	Drug Disbursement	

The main menus are File, Report and Quit while the submenus are Procurement, Disbursement, Drug procurement and Drug disbursement.

4.5. EXIT THE PROGRAM

To exit the program, the following steps are required.

- Click Quite from the main menu
- Click Yes from the dialogue box to confirm

Then the program will be closed.

4.6. REQUIREMENT SPECIFICATIONS FOR THE NEW SYSTEM

The specification below will be adequate for the proposed system.

Pentium II – 450 MMX
64 MB of RAM
14/15 BVGA Monitor
10GB Hard disk
31/2 Floppy Disk Drive
UPS
Stabilizer
Printer (HP 1100)

4.7. CHANGE OVER PROCEDURE

The changeover from the old to the new system takes place when the system has been proved to the satisfaction of the system analysis and the other implementation activities have been completed.

The type of changeover advised is direct changeover. Since there has not been an existing system used before but just the manual one. This method is the complete replacement of the old system by the new one in a move. This is undertaken only when everyone concerned has confidence in the new system.

In this changeover, there should be comprehensive system tests and also training, and the changeover itself planned in detail.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

The technological advancement in the field of computing is crossing across everywhere. The decision of computerizing the DRFS is a wise one, as a lot of redundancy will be reduced. The appreciation of a paperless office which is the autumn of every society now should be introduced into every sector, which include the health.

5.2. RECOMMENDATION

This software DRFS should be recommended to the Government especially that of Niger State for implementation.

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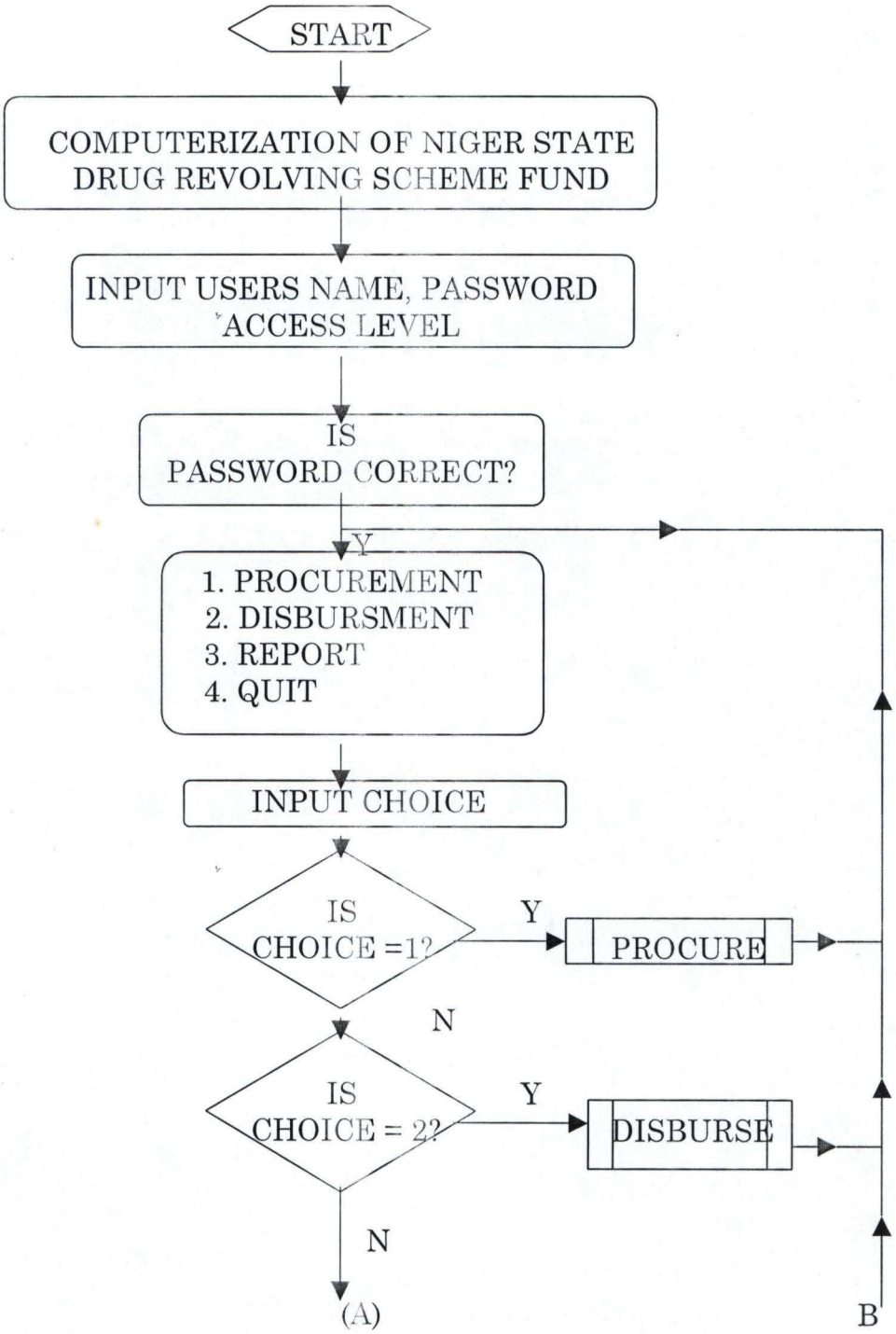
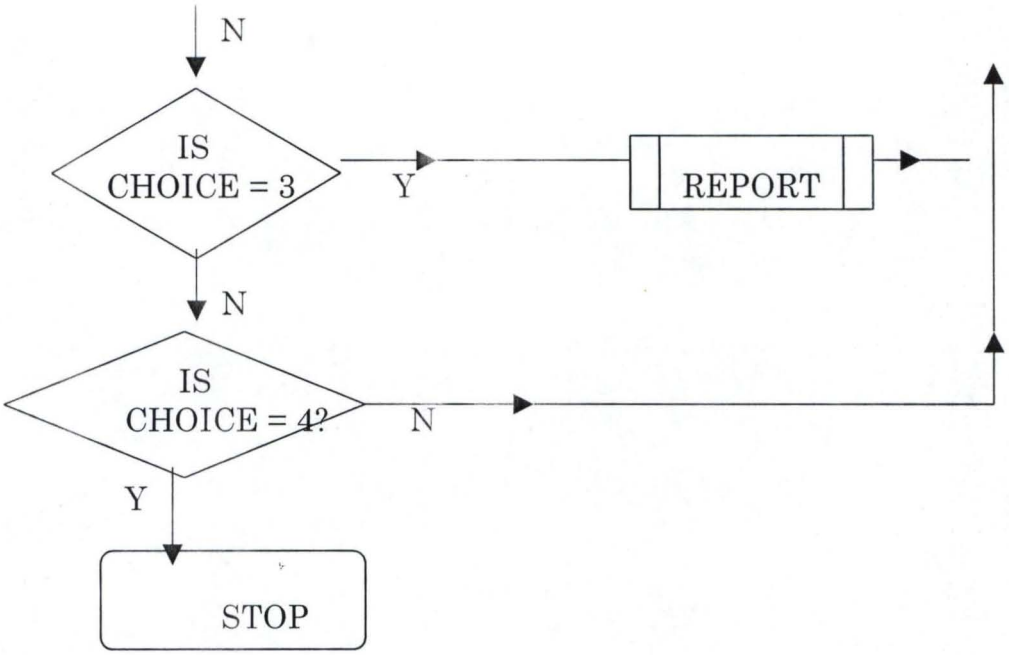
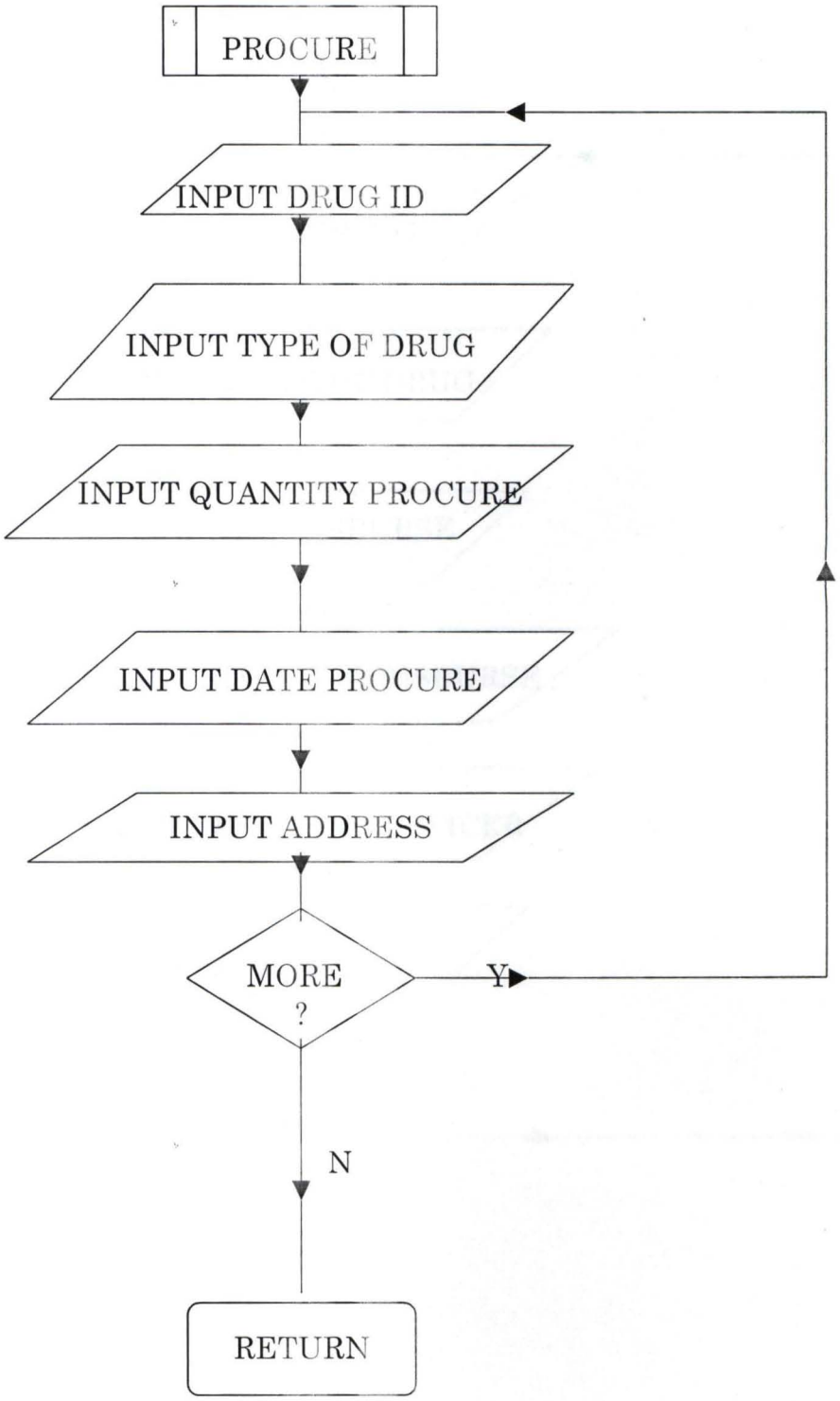
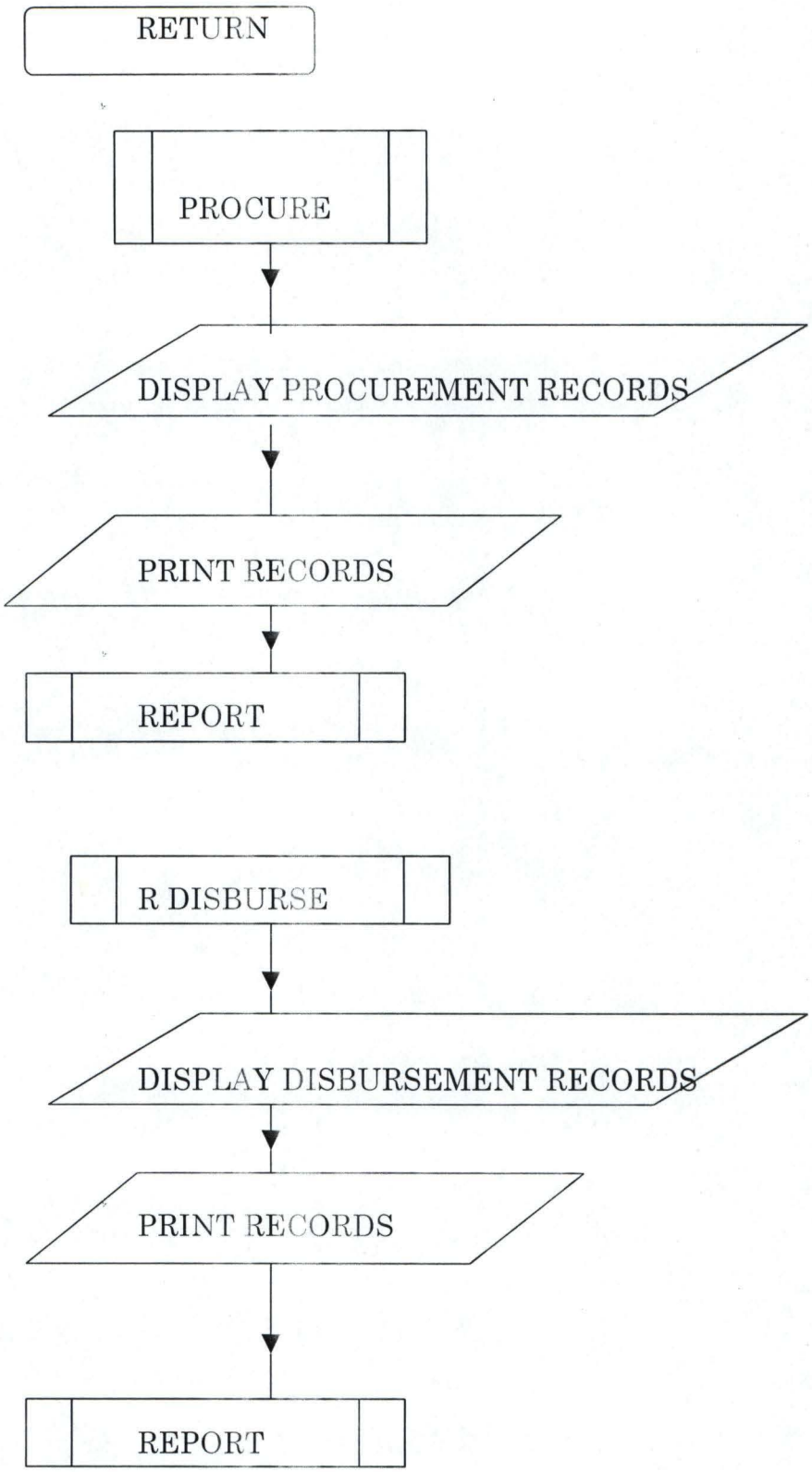
4. Shelly & Cashman (1980) Introduction to computers and Data processing. Anaheim publishing company
5. Steven C. Lawbor (1990) Computer Information Systems Harcount Brace Jovanonel publisher
6. Dr. Fred B. Adenika (1992) Essential Drugs Management Shanesol C. I. Ltd. Publishing Company

FLOWCHART


START
COMPUTERIZATION OF NIGER STATE DRUG REVOLVING SCHEME FUND
INPUT USERS NAME, PASSWORD ACCESS LEVEL
IS PASSWORD CORRECT?
Y
1. PROCUREMENT
2. DISBURSMENT
3. REPORT
4. QUIT
INPUT CHOICE
IS CHOICE =1?
Y
PROCURE
N
IS CHOICE = 2?
Y
DISBURSE
N
(A)
B


N
IS
CHOICE = 3
Y
REPORT
N
IS
CHOICE = 4?
N
Y
STOP


PROCURE
INPUT DRUG ID
INPUT TYPE OF DRUG
INPUT QUANTITY PROCURE
INPUT DATE PROCURE
INPUT ADDRESS
MORE ?
Y
N
RETURN


RETURN
PROCURE
DISPLAY PROCUREMENT RECORDS
PRINT RECORDS
REPORT
R DISBURSE
DISPLAY DISBURSEMENT RECORDS
PRINT RECORDS
REPORT

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POST GRADUATE DIPLOMA IN COMPUTER SCIENCE DEPT. OF MATHS/COMPUTER SCIENCE. FEDERAL UNVERSITY OF TECHNOLOGY, MINNA.

DESIGNED BY ALIYU HARUNA
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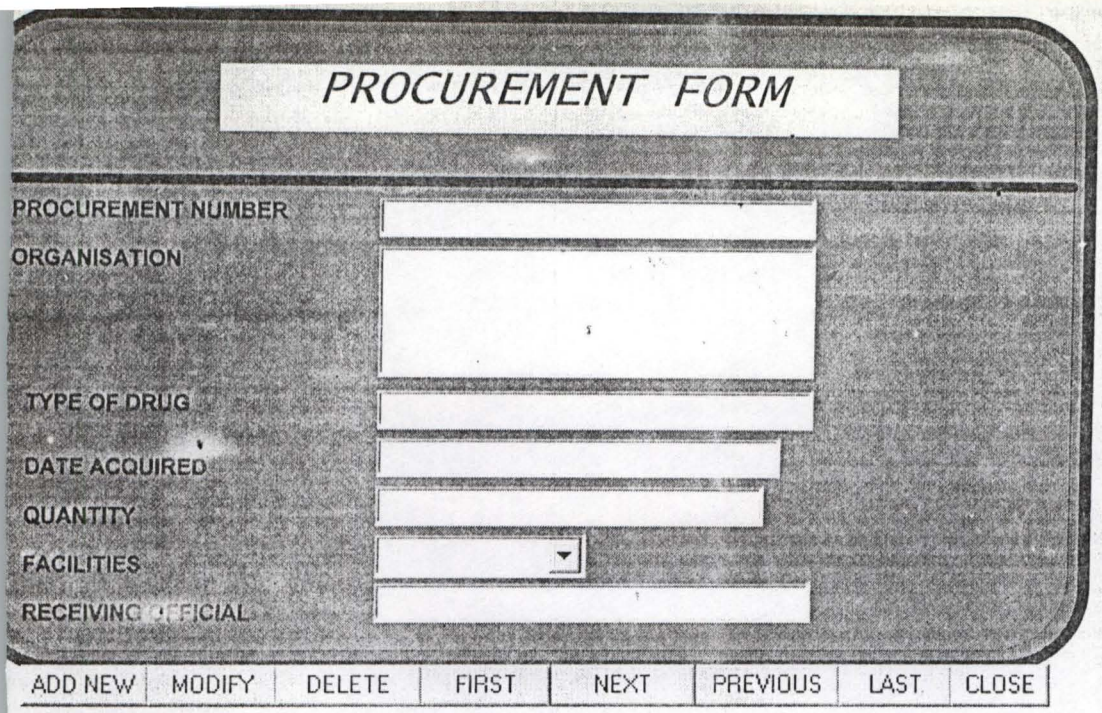
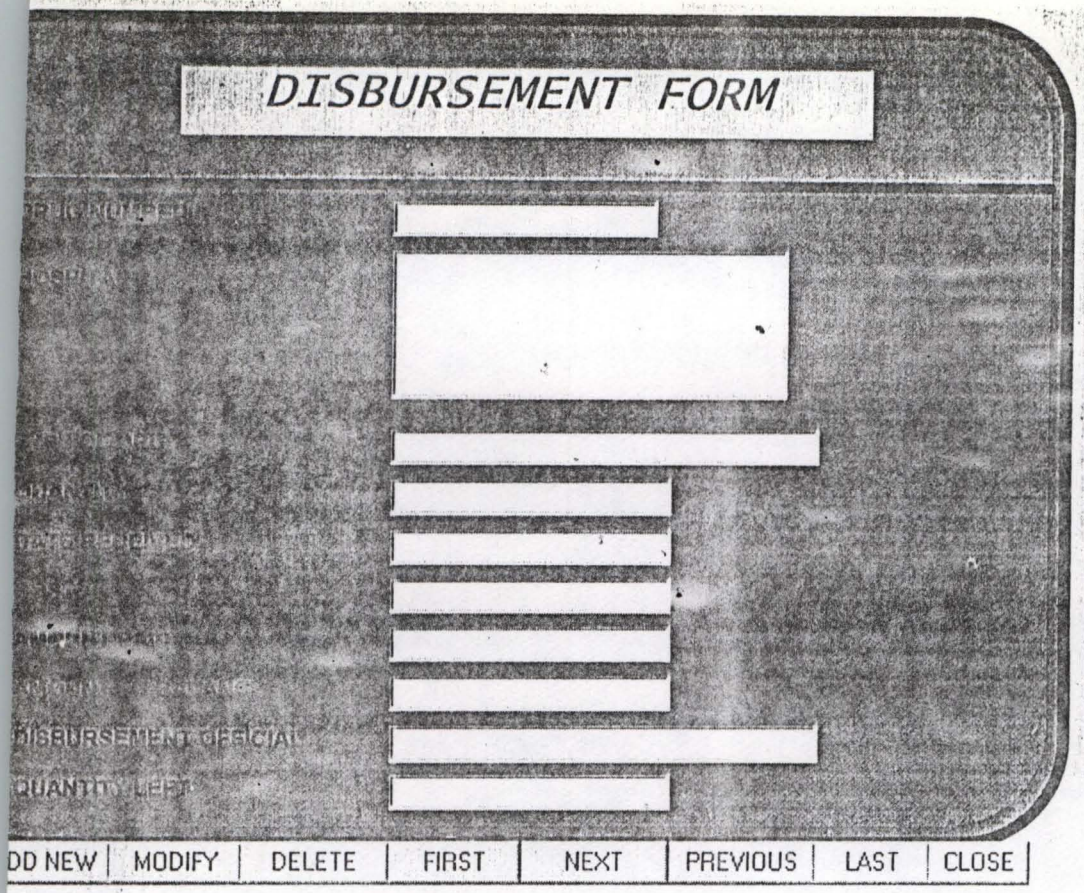
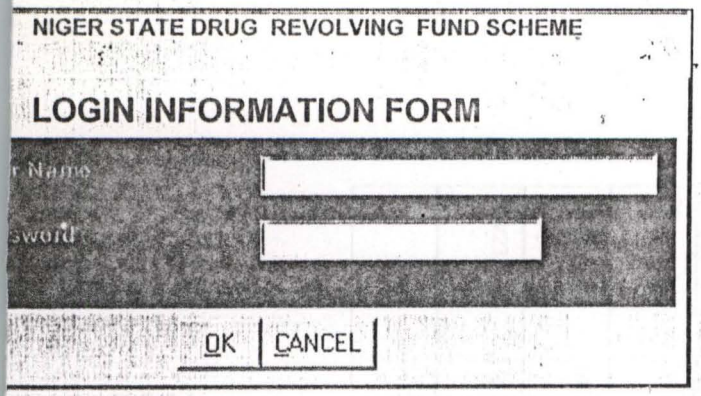

PROCUREMENT FORM
PROCUREMENT NUMBER
ORGANISATION
TYPE OF DRUG
DATE ACQUIRED
QUANTITY
FACILITIES
RECEIVING OFFICIAL
ADD NEW
MODIFY
DELETE
FIRST
NEXT
PREVIOUS
LAST
CLOSE


DISBURSEMENT FORM
DISBURSEMENT OFFICIAL
QUANTITY LEFT
DD NEW
MODIFY
DELETE
FIRST
NEXT
PREVIOUS
LAST
CLOSE


NIGER STATE DRUG REVOLVING FUND SCHEME
LOGIN INFORMATION FORM
r Name
sword
OK
CANCEL

SOURCE LISTING PROGRAM

ADD NEW RECORD

```
IF THIS.CAPTION = "\<Add New"

        THISFORM.SETALL("Readonly",.F.,"Textbox")
        THISFORM.SETALL("Readonly",.F.,"ComboBox")
        THISFORM.SETALL("Readonly",.F.,"EDITbox")

        IF USED("TDRUG")
                SELE TDRUG
        ELSE
                SELE 0
                USE TDRUG
        ENDIF

        SCATTER MEMVAR MEMO BLANK
        THISFORM.txtdnum.SETFOCUS
        THISFORM.SETALL("enabled",.F.,"commandbutton")
        THIS.ENABLED = .T.
        THISFORM.cmdclose.ENABLED = .T.
        THISFORM.REFRESH
        THIS.CAPTION = "\<Save"
ELSE
        THISFORM.SETALL("Readonly",.T.,"Textbox")
        THISFORM.SETALL("Readonly",.T.,"combobox")
        THISFORM.SETALL("Readonly",.T.,"editbox")
        THISFORM.SETALL("enabled",.T.,"commandbutton")

        IF USED("TDRUG")
                SELE TDRUG
        ELSE
                SELE 0
                USE TDRUG
        ENDIF

        GO TOP
        IF EMPTY(M.DNUM)
                        MESSAGEBOX("NULL Record is NOT allowed, O.K!", "Warning.")
                        THISFORM.REFRESH
        ELSE
        LOCATE FOR dnum = m.dnum
        IF  FOUND()
                MESSAGEBOX("This Record Already Exists!", "Warning.")
                THISFORM.REFRESH
        ELSE
```

```
            *THISFORM.TXTQL.VALUE=QTY.VALUE-THISFORM.TXTQTY.VALUE
            *thisform.txtql.value=thisform.txtdep.value
                INSERT INTO TDRUG FROM MEMVAR
                THISFORM.REFRESH
        ENDIF
        ENDIF
        THIS.CAPTION = "\<Add New"
ENDIF
```

TO MODIFY RECORD(S)

```
THISFORM.SETALL("Readonly",.F.,"Textbox")
THISFORM.SETALL("Readonly",.F.,"combobox")
THISFORM.SETALL("Readonly",.F.,"EDITbox")


IF USED("TDRUG")
        SELE TDRUG
ELSE
        SELE 0
        USE TDRUG
ENDIF
IF THIS.CAPTION = "\<Modify"
        THIS.CAPTION = "\<Save"
        THISFORM.SETALL("Readonly",.F.,"Textbox")
        THISFORM.SETALL("enabled",.F.,"commandbutton")
        THIS.ENABLED = .T.
        THISFORM.cmdclose.ENABLED = .T.
ELSE
        GATHER MEMVAR MEMO
        THIS.CAPTION = "\<Modify"
        THISFORM.SETALL("Readonly",.T.,"combobox")
        THISFORM.SETALL("Readonly",.T.,"EDITbox")
        THISFORM.SETALL("Readonly",.T.,"Textbox")
        THISFORM.SETALL("enabled",.T.,"commandbutton")
        THISFORM.REFRESH
ENDIF
```

TO DELETE RECORD(S)

```
IF USED("TDRUG")
        SELE TDRUG
ELSE
        SELE 1
        USE TDRUG EXCLUSIVE
ENDIF

ans = MESSAGEBOX("This record will be deleted, Proceed?", 4 + 32,"Warning")
IF ans = 6
        DELETE
        PACK
```

```
        IF !EOF()
                SKIP
        ELSE
                SKIP -1
        ENDIF
ENDIF
THISFORM.REFRESH
```

TO MOVE TO THE FIRST RECORD

```
IF USED("TDRUG")
        SELE TDRUG
ELSE
        SELE 0
        USE TDRUG
ENDIF
IF !BOF()
        GO TOP
        SCATTER MEMVAR MEMO
        THIS.ENABLED = .F.
ELSE
        MESSAGEBOX("This is the First Record", "Warning")
ENDIF
        THISFORM.REFRESH
        THISFORM.cmdlast.ENABLED = .T.
```

TO MOVE TO THE NEXT RECORD

```
IF USED("TDRUG")
        SELE TDRUG
ELSE
        SELE 0
        USE TDRUG
ENDIF

IF NOT EOF()
        SKIP 1
        THISFORM.cmdfirst.ENABLED = .T.
        SCATTER MEMVAR MEMO
        THISFORM.REFRESH
ELSE
        THISFORM.cmdlast.ENABLED = .F.
        MESSAGEBOX("This is the Last Record", 0 + 64, "Warning")
        THIS.ENABLED = .F.
ENDIF
THISFORM.cmdprevious.ENABLED = .T.
```

TO MOVE TO THE PREVIOUS RECORD

```
IF USED("TDRUG")
        SELE TDRUG
ELSE
        SELE 0
        USE TDRUG
ENDIF
IF NOT BOF()
        SKIP -1
        SCATTER MEMVAR MEMO
        THISFORM.REFRESH
        ThisForm.cmdlast.ENABLED = .T.
ELSE
        ThisForm.cmdfirst.ENABLED = .F.
        MESSAGEBOX("This is the First Record",0 + 64, "Warning")
        THIS.ENABLED = .F.
ENDIF
THISFORM.cmdnext.ENABLED = .T.
```

TO MOVE TO THE LAST RECORD

```
IF USED("TDRUG")
        SELE TDRUG
ELSE
        SELE 0
        USE TDRUG
ENDIF
IF      !EOF()
        GO BOTTOM
        SCATTER MEMVAR MEMO
        THISFORM.REFRESH
ELSE
        MESSAGEBOX("This is the Last Record", 0 + 64, "Warning")
ENDIF
THIS.ENABLED = .F.
THISFORM.cmdfirst.ENABLED = .T.
```

TO CLOSE THE DATABASE

```
THISFORM.RELEASE
```

SOURCE LISTING FOR LOGIN PROGRAM FORM

```
IF !(m.user_name = " " OR m.MYACCESS = " ")
        IF UPPER(M.MYACCESS)="DRUG" AND !EMPTY(M.USER_NAME)
                thisform.RELEASE
```

```
            MESSAGEBOX("Please, Keep this Secret to yourself, O.K!","ACCESS
GRANTED!")
            DO mainmenu.mpr
        ELSE
            MESSAGEBOX("Unauthorised user is not permitted, O.K!","ACCESS DENIED!")
        ENDIF

ELSE
        MESSAGEBOX("Invalid User Codes. Please Try Again", 0 + 48, "Warning")
        thisform.txtMYACCESS.SETFOCUS
ENDIF
```

CLOSE LOGIN PROGRAM FORM

```
THISFORM.RELEASE
        SET SYSMENU TO DEFA
        _SCREEN.CAPTION = "Microsoft Visual Foxpro"
        _SCREEN.PICTURE = " "
        CANC                    &&quit          &&thisform.release
```

WELCOME SCREEN

```
DO FORM frmlogin
```