COMPUTERIZATION OF PATIENT MEDICATION PROFILE

A CASE STUDYOF PHARMACY DEPARTMENT, USMAN DAN FODIO UNIVERSITY TEACHING HOSPITAL, SOKOTO.

BY

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PGD\MCS\339

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CERTIFICATION

This is to certify that this project title; COMPUTERIZATION OF PATIENT MEDICATION PROFILE, was carried out by ABDULSALAM MUSTAPHA of the department of Mathematics/Computer science, and science education, Federal University of Technology, Minna.

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DATE.

EXTERNAL EXAMINER

DATE.

DECEMBER, 1999

DEDICATION

This project is dedicated to Almighty God and the following people:

My late father, Alh. Abdulsalam Abdulgadir,

My mother, Madam Kaka Hafsatu "Abdulsalam"

My late friend, prince Iliya bello Sarki Paiko

ACKNOWLEDGMENT

A pre-requisite of any contemporary empirical research is the generous cooperation and contributions of individuals.

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Moh'd Danjuma and my in-law madam Amina Moh'd, Aminu Ndaman , Dr. Usman M.T., Alhaji Alhassan Bahago, Mal. Moh'd Bashir Lawal and the entire staff of NYSC Yola.

ABSTRACT

It has been statically established that relevant development in computer technology especially in its application to the solution of human problems has significally facilitated the computerization of patient medication profile in most medical institutions.

Health personnel in Usman DanFodio University Teaching Hospital have had very limited exposure to Computers and Computerization of patient medical profile.

In this project, dBaseIV, a classical data-base management system for microcomputers, that allows interaction with data, through multiple selection, was used to up a patient medical profile.

This system provides Health personnel with direct information and ensures proper recording of the profile and medical history of patient at Usman DanFodio University Teaching Hospital, Sokoto.

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CHAPTER ONE

1.0 INTRODUCTION TO PATIENT MEDICATION PROFILE

1.1 Introduction

The Usmanu Danfodiyo University Teaching Hospital (UDUTH) which was until 1988 referred to as the Sokoto University Teaching Hospital (SUTH) was conceived by the implementation committee set up by the then Vice Chancellor of Sokoto University (UNISOK) on 16th July, 1981.

On 1st November, 1982 in accordance with decree No 74 of 1979, the Board of Management of the Usmanu Danfodiyo University Teaching Hospital (UDUTH) was inaugurated and charged with the general management of the Teaching Hospital.

The teaching hospital has a board of management, the board consists of a chairman who is usually appointed by the Head of State of the Federal republic of Nigeria on the recommendation of the Minister of health.

Other members of the board consists of:-

(a) The Chief Medical Director of the Teaching Hospital

(b) One representative of the federal ministry of health.

(c) Three person nominated by the ministry of health to represent a wide variety community interests in health matters.

(d) One representative of medical profession not being a person who is a member of the teaching staff of any University.

(E) One representative of the senate of the University.

(F) One representative of other professions in the health sector not being a staff of the University Teaching Hospital concerned.

(G) One representative of the commissioner for health of the state in which the teaching hospital is situated.

(H) The Dean of the medical school or the provost of the college of health sciences of the University.

(i) The chairman medical advisory committee of the teaching hospital concerned.

(J) One representative of the vice-chancellor of the University.

The board of management of the teaching hospital holds office for period not exceeding four years. The day to day management of the teaching Hospital affairs however is on the hands of its Chief Medical Director. He is however assisted by two other principal officers: the Chairman Medical advisory committee who is in charge of general administration of all the clinical departments (see organisational chart table), the Director of administration who is in charge of general administration of the support services departments.

The Usmanu Danfodiyo University Teaching Hospital (UDUTH) like all other University Teaching Hospital in Nigeria was set with the following objectives as specified in the period operation manual of teaching hospitals (1985: 2-4)

(a) To serve as learning centre for medical students of the associate University.

(b) To serve as referred centre for patients cases that cannot be handled by the general hospitals or the specialist hospital in the catchment areas.

(c) To serve as a training centre for house officers i.e. newly qualified medical doctors that have spend one year post-graduation training before going for the National Youth Service Corps (NYSC) and same applies to newly qualified pharmacists.

(d) To serve as a residency training centre; a training programme for medical doctor to become consultants.

(e) To carry out medical researches that would enhance health delivery system.

ORGANISATIONAL STRUCTURE:

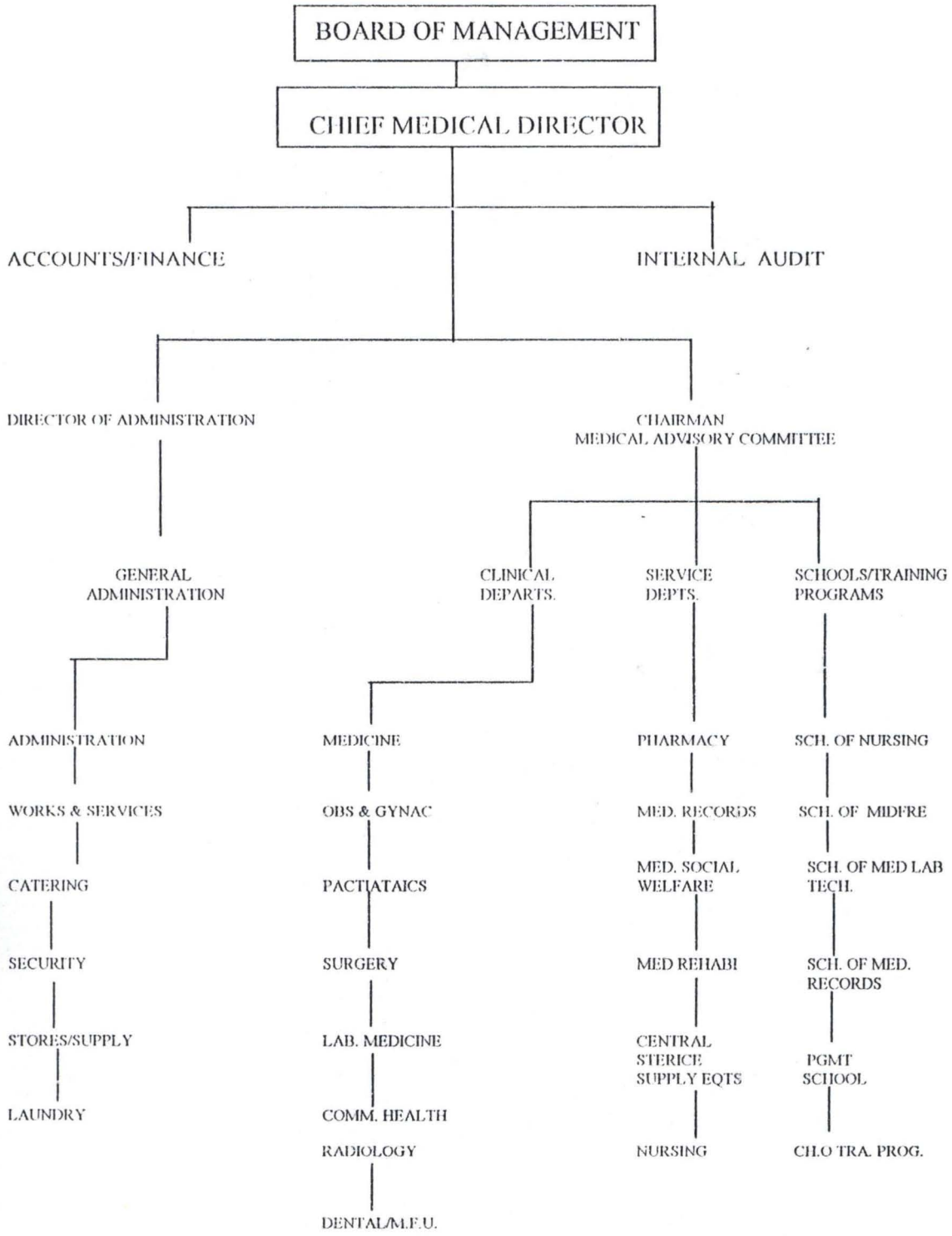
The organisational structure of SUTH is as provided by its operational manual. The Board of its management is the top-most in the organisational structure and is responsible to the Minister of health. The Chief Medical Director is the Chief Executive of the teaching Hospital and is responsible for the day to day management of the Hospital's affairs. He is assisted by two other officers (as mentioned earlier). These two officers Chairman medical advisory committee and Director of administration. Each head a Directorate of Clinical services, training and research is headed by the Chairman Medical advisory committee. The Directorate of administration, headed by the Director of

administration. This directorate has all the departments that provide support services. Under each departments in both directorate. There are divisions, units or forms as referred to by the clinical department. Presently, some departments/schools under the directorate of clinical services and training are not yet operational. These are post-Graduate Medical Schools (DGMS) and the School of Medical Laboratory technology (SMLT).

S. U. T. H. Operational Manual (Diagram)

S. U. T. H. OPERATIONAL MANUAL

ORGANISATIONS STRUCTURE



2. Staff appointments, promotion and disciplinary committee - charged with decisions/recommendation on appointments of noble cadre and junior staff to the management.

3. Administrative advisory committee- Charged with decisions/recommendations of general administrative matters to the management.

4. Staff welfare committee - Charged with decisions/recommendations of general staff welfare (Loans, reelection) etc. for staff to the management.

Unlike other governmental Ministries or departments whose funding are based on the authority to incur Expenditure (AJE), the University Teaching hospitals generally being parastatals are funded based on quarterly subventions from the Federal Ministry of Health. (FMH).

1.2. AIM AND OBJECTIVE OF THE STUDY

The study is aimed at to highlight the level of need for the teaching hospital, to employ the services of computer in its pharmacy Department. This will assist in deciding future drug needs, and in monitoring supplier performance, drug quality, consumption patterns, drug management and cash flow.

Above all, give easier access to patients records (in terms of Drug prescription and dispensing).

1.3 SCOPE AND LIMITATION

The study will be limited to the computerization of patient record (patient medication profile) of retainership pharmacy of Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto.

Patient record in pharmacy department in UDUTH was chosen as a case study on the bases of limited resources and time available for this research work.

It is quite practicably improbable for me to study the records of all the various units (as mentioned earlier) in the hospital due to inadequate time and funds to cover the entire department.

CHAPTER TWO

2.0 CASE STUDY OF PHARMACY DEPARTMENT FOR PATIENT MEDICATION PROFILE

2.1 SHORTCOMINGS OF THE PRESENT SYSTEM

The present system of operation which has been described above as a manual system is really below the standard. It falls below what is obtained in the developed countries and below the mark of excellence when it come to accuracy, reliability and speed (especially when trying to retrieve on information about a patient).

The following are some of the shortcomings of the present system of operation:-

i. Lost of record book or papers usually result in lost of an important information.

ii. Record books or forms are most of the time kept in flimsy and scattered form because of frequent reference on them.

iii. When compiling the monthly bill for the various companies at the end of each month, mistakes in calculation may occur.

iv. A lot of time is being wasted in trying to retrieve an information about a patient who visited the pharmacy on a certain date.

v. A lot of time is also wasted in manual calculation.

vi. Poor quality of information always produced as a result of the manual system of patient record.

vii. Poor overall management control.

2.2 COMPUTER SYSTEM AND PATIENT MEDICAL PROFILE

Computer are becoming widely used in an increasing number of applications. Computerized systems are gradually replacing manual systems in almost all fields of human endeavour. Computers are as well very useful in patient medical profile record keeping.

Computer have the ability to store and recall information at a very fast speed. They can also be used to hold large amounts of information over long period of time. These abilities coupled with that of calculation means that the computer is very important in the process of maintaining patient records as well as amount of drugs consumed by the patients on daily basis.

2.3. WHY WE NEED COMPUTERS IN PATIENT MEDICATION PROFILE.

A management information system is an information system designed to expedite the management or decision making process. An information system is a combination of people, equipment, and products (i.e. a system) organised to provide certain information to certain persons in a way that enables them to make informal decisions. Components parts of a system must function together as one inter-dependent unit.

An information system comprises of three elements:- Input, Output, and process.

INPUT - PROCESS - OUTPUT

Input consist of the data items necessary to generate selected indicators for better programme management.

Output is the processed information designed to satisfy user's needs.

Process is the link between the input and the output, the means by which raw data are transformed into useable information by being collated.

Apart from the bureaucratic operational structure, there are various board and management standing committees charged with different types of decision making. The various board committees include:-

1. Finance and General purpose committee- charged with general decisions and recommendations about finances of board of management.
2. Appointments, Promotions, and Disciplinary Committee charged with appointment/promotion and discipline of very senior officers to the board of management.

3. Tenders Committee - Charged with decisions and recommendations of tenders for supplies/constructions of the board of management.

The various management committees also includes:-

1. Medical Advisory Committee - Charged with decisions/recommendation of general health services delivery to the management aggregated, analysed and presented on time in legible, understandable formats.

One of the objectives of management information system is that it assists in dealing with future drugs needs and in monitoring supplier performance, drugs quality, consumption patterns, (patient profile) drug management and cost flow.

In most modern management information system, the computer serves as the "processing Unit" (called the CPU or Central Processing Unit) of the system. The scope, speed and accuracy the efficiency of management information system, especially in the pharmacy department where it can be used for a pharmacy patient profile.

With the introduction of computer in the pharmacy for patient profile record keeping.

(a) There will be an increase in speed in the task of data entry and retrieving.

(b) To reduce the usage and wastage of bulky papers and books Invoiced in a manual system.

(c) To increase the reliability and accuracy of the patient records being kept.

(d) For a better presentation of patient record.

CHAPTER THREE

3.0 ANALYSIS AND DESIGN OF THE PROGRAMME

3.1 CHOICE OF A PROGRAMMING LANGUAGE/PACKAGE

To address the problem of manual system of keeping patient's record in the pharmacy department, there is need to switch over to a computer based system of patient's records.

The need to maintain a computer based database in patient's records in this organisation evolves from the fact that, for the smooth running and of course the continued existence of the hospital's effectiveness, reliability and up-to-date information about the patient's medications, such information needs to be organised in ways for it to be of meaning to the pharmacy department in the hospital. Some of the ways that a computer-based database system can help organise such information includes:-

1. Maintenance of large volume of interrelated records.
2. Update of new/existing records, such as adding new records to existing ones, changing already existing ones. E.tc.
3. Searching for records that meet certain conditions.
4. Re-arrangement of files or records into any given order.
5. Performing calculation on the data entered.

The achieve all these, using the computer, the Dbase package/program helps to maintain a large volume of records, allows for constant update of records either by adding new records to existing ones or changing already existing ones.

3.2 DATABASE IV PACKAGE

Dbase IV is a powerful database management package in use today, to create, and maintain database files.

i. FIELD RECORD AND FILE

A field is a single data item that cannot be broken down any further. Let us take for example, a typical patient record from where we have details like Date, Name of the patient, prescription, drug-dispensed etc.; each of these item makes a field.

A record is a collection of several fields of interrelated information. In other words, it is a single entry in database. In the example above all the data item listed come together to form a record.

A file is made up of one or more records. It is treated as a single unit in a storage device.

Dbase IV package also has special features that enable us to organise our files, or records, in any form or order desired. This can be done using the Querry, Sorting and Index commands.

ii. QUERRY

This is a set of instruction that specifies how Dbase IV should be organised. For example, we may wish to view the various diagnosis and the drug frequently prescribed recorded only from the beginning of the work or for a certain period, or we may wish to find out which Company, patient or staff visits the Pharmacy department on weekly basis. All these could be appropriately done with the use of Dbase acceptable operators.

iii. SORTING

This command helps to rearrange the whole file and have another file of the same size with the actual Dbase file. This is also helpful in organising files. But the main disadvantage with sorting is that it makes second copy of the whole file and as such consumes more memory space than necessary.

iv. **INDEX**

An index organises data from a data file in a specified order. This is more preferred to sorting and mostly used. This command links only the indicated parameter to the Dbase file and rearranges as specified.

3.3 DBASE IV PROGRAMMING LANGUAGE

This is a programming language that allows record base oriented procedures to be manipulated at the convenience of the user and that is why we have chosen the language in this project.

ADVANTAGES OF DBASE IV PROGRAMMING OVER DBASE IV PACKAGE

1. **Flexibility of Data Entry as well as Data Report:** The user has his free will to design the form of data entry as well as reporting.
2. It combines many commands of the package into one program module for easy and faster execution.

3.4 HARDWARE REQUIREMENT AND SELECTION

When we talk of the hardware, we also referring to the physical components that make up the computer system. This includes the visual display unit, (Monitor or VDU) key board, printer, diskette, processors, mouse, memory chips, etc. In the selection of Hardware, the nature of task for which the computer is to be installed must be considered. In the case of patient medical record keeping for which the computer is expected to be used, the following hardware requirements are necessary.

i. **HARD DISK**

This is a fixed storage device used to store data permanently for future use. This will act as the primary data storage medium in view of the task the computer will be used for which will involve a lot of data entry and the creation of several data file. It will be reasonable to have a hard disk of atlases 500 MB. This will be able to store a large amount of data and information.

ii. **FLOPPY DISK**

Sometimes we may need to transfer information or data from one computer system to another; diskettes are used to do this.

They are removable and portable disks, that can store information like the hard disk. To allow the use of diskettes, a 3.5" drive with 20MB read/write head should be selected. This will also be ideal for loading software packages.

iii. **RAM**

This is another important feature in selecting a computer system. Most current software packages require a fairly large RAM for optimum operation. It will be ideal to have a fairly large RAM, say about 16MB for the computer system. However, this could be upgraded if the need arises.

iv. **PROCESSOR**

This is the component that carries out mathematical and logical operation within the computer. It also controls the different hardware units that make up the computer system. A processor having a speed of about 20MHZ will be suitable.

v. **INPUT DEVICES**

This refers to all those devices that accept data from the external environment, convert it to electronic pulses and transmit it to the central processing unit. Those include keyboard, mouse, scanner, card reader, joystick, light pen, voice reader e.t.c.

The keyboard is the primary means of entering data into the computer. This input device is preferred to the rest because of the relative ease with which data could be entered into the computer. A 102 keyboard will be sufficient for the operation.

vi. **OUTPUT DEVICES**

These refer to all those devices used by the computer to communicate the result of any processing to the external environment. We have two means of output devices:-

i. MONITOR (VISUAL DISPLAY UNIT)

This is the most common output device. Results and messages are output on a screen rather than printed on paper (soft copy). This is usually referred to as soft copy output. There are various types of monitors. For our purpose a 14" non-interfaced SVGA colour monitor will be sufficient.

ii. PRINTER

Results from the computer processing are frequently required in printed form as a permanent feature. This is called hard copy output. There are essentially two types of printers. Impact printers, and non impact printers. Impact printers are those that generate characters by hammering or pressing each character against the paper. The most common of those is the Dot Matrix Printer, which is suitable for our proposed operation because its cost advantage and ability to produce carbon copies, and at the same time it gives relatively high resolution output that will suffice for our proposed operation. The other printer, the non-impacts printer generate characters chemically and electronically. Examples are the laserjet and Inkjet printer.

3.5 SOFTWARE SELECTION

Software refers to all those instruction or programs that drive the computer (Hardware) for productivity, software can be categorised into system software and application software.

I. SYSTEM SOFTWARE

These are programs that oversee the internal operation of the computer. This includes the operating system, Utility programs, language translations, etc.

The operating system establishes the method of interaction between the user and the computer. There are several types and the most widely used is the MS-DOS, and the windows. For our proposed operation, Windows '95 will be suitable as it allows better file management and maximum use of the hardware.

ii. **APPLICATION SOFTWARE.**

These are a group of programs that determines the type of application of the computer. They direct the computer to execute specify job. They can be categorised into application packages and customised programs.

(a) **APPLICATION PACKAGES**

These include all the personal productivity software and a wide variety of programs designed for general application. As mentioned before, the best application package that will able us to handle our patient records operation effectively is the Dbase IV package.

This data base management package enabled us to create and maintain files. It also has several special features that make it possible to organise our files or records in any form or order desired.

(b) CUSTOMISED PROGRAMS.

These are programs designed and written by computer experts for specific organisational needs. Usually a great deals of time effort and of course money goes into the design.

3.6 PROBLEM SOLVING METHODS

These involve:-

i. Data collection, Input, and Output methods. The date to be entered to the data base file have to come from existing "written document" The written document has to first be examined and then edited in order to obtain the relevant data in such a way that its accessible to computer system. This method of converting paper naked files to computer files is called "file conversion"

ii. **Method of Input.**

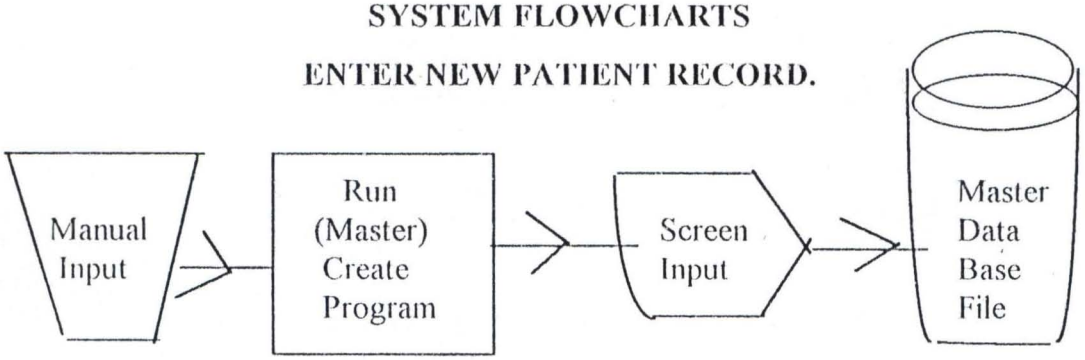
The main medium of input has to be from the keyboard. All the necessary contents of the file(s) will have to be keyed to the hard disk of the computer and might need hiring of employee to do the keeying.

iii. **Method of Output.**

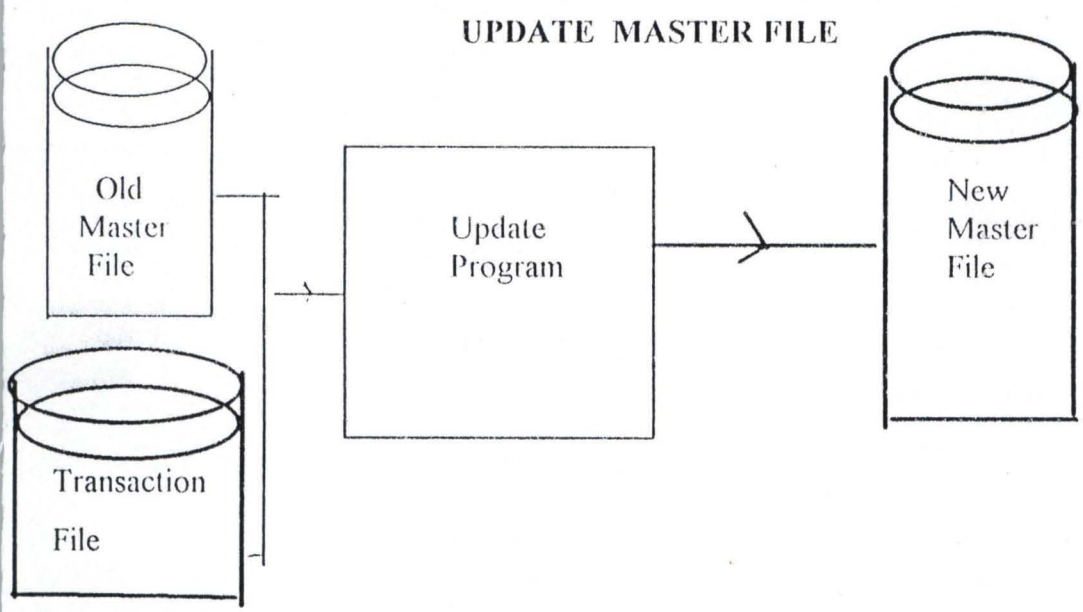
Method of Output depends on the situation in which the output is required. If its for reference purpose, then the required information can be displayed on the visual display unit (VDU) in the case of a patient re-visiting the hospital pharmacy. If a hard copy is required, it has to be printed out, using a printer on paper or on a pre-printed form.

SYSTEM FLOWCHARTS

ENTER NEW PATIENT RECORD.



UPDATE MASTER FILE



3.7 DATA SECURITY METHOD

Information in a data base is highly essential for the day to day running of the organisation, so precautions have to be taken in order to protect the data from getting into unwanted hands.

Methods of data security include:-

i. Introducing password to the Database which is known only to the data base managers and other top officials so that its accessible only to authorized persons.

ii. Locking up drives-bays-the drive bays can be locked up so as to prevent unauthorised copying and data entry.

iii. Installing anti-virus packages which are capable of detecting virus diskettes and also cleaning up of virus that might be introduced to the system.

iv. Backup system - These refer to the copies of the data base kept away from the main database. This precaution is necessary in case the main database is tampered with or destroyed. The back up copies act as standby in case of unexpected failure or destruction of the data base. The backup copies can be written document, copies on floppy diskettes or copies on CD-ROM

PATIENT DATA ENTRY ROUTINE

Date 05/22/98

Patient Data entry

Entry Hosp. - No

Name of patient	AGE
Organisation	Diagnoses
Date of Visit	Drug Dispensed
Date of Admission	Cost
Date of Discharge	Comment
Ward	
Sex	

```
Set          Talk off
Set          Score board off
Set          Echo off
Use          Mas. DBF
Store        O to MHOSDNO
Store        Space (20) to MNAME
Store        Space (7) to MORGANISATI
Store        O to MDATEVIS
Store        O to NDATEDISC
Store        Space (3) to MWARD
Store        Space (1) to MSEX
Store        O to MAGE
Store        Space (36) to MDIAGNOSIS
Store        Space (25) to MPRESCRITI
Store        O to MCOST
Store        Space (36) to MCOMMENT
Store          "     to  OK
Set          Colour to W*+/GR+
Clear
Do While .T.
@4, 23 Say "patient Data Entry"
@6, 10, Get MHOSPNO PICT "999999999"
Read
if MHOSPNO  = O
Close all
Close database
endif
 set Color to W +/R+
@8, 10, Say "Name of patient"
@9, 10, Get MNAME
@10, 10 Say "ORGANISATION"
```

```
@11, 10, Get MORGANISAT
@12, 10, Set "Date  of Visit"
@13, 10, Get  MDATEVIS
@14, 10,  Say "Date of admission"
@15, 10, Get MDATEADM
@16, 10,  Say "Date of discharge"
@17, 10 Get MDATEDISC
@18, 10 Say "Ward"
@19, 10 Get MWARD
@20, 10 Say "Sex"
@21, 10 Get MSEX
@7, 32 Say "Age"
@8, 32 Get MAGE
@9, 32 Say "Diagnosis"
@10, 32 Get MSIAGNOSIS
@3, 30 Say "Date =" + Dtoc (Date C)
@5, 10 Say " Enter HOSP. NO"
@11, 32 Say "Drug Dispensed"
@12, 32 Get MDRUGDISP
@13, 32 Get MDRUGDISP
@14, 32 Say "Cost"
@15, 32 Get MCOST
@16, 32 Say "Comment"
@17, 32 Get MCOMMENT
@18, 32 MOCMMENT
Read
Store Space (1) to OK
Set Color to W+/B
@24, 14 Say "Should I save the data
            entered (Y/N)" get OK
            Pict "!"
```

```
Read
if OK =     "Y"
Appnend     Blank
Replace     HOSPNO with MHOSPNO, Name with MNAME
Replace     Organisation with MORGANISATION
Replace     date Vis with MDATEVIS, Dateadm with MDATEADM
Replace     datedisc with MDATEDISC, Ward with MWARD
Replace     Sex with MSEX, AGE with MAGE Diagnosis with MDIAGNOSIS
Replace     prescription with MPRESCRIPTION Drugdisp with DRUGDISP
Replace     Cost with MCOST, Comment with MCOMMENT
Close       Data bases
Read
Set Colot to
Clear
Endif
@24, 14 Say "
@24, 18 Say "Do you want to add more records" get OK pict  "!"

Read
if OK = "Y"
Set Color to
Clear
return
Endif
Enddo
```

CHAPTER FOUR

4.0 SOFTWARE DEVELOPMENT, IMPLEMENTATION AND DESIGN

4.1 PROGRAM MODULES

The whole patient system comprise of three modules. The main menu (main module) give access to the other sub modules in the patient system. The sub modules under the main module includes:-

i. Do you want to attend to patient?

ii. Do you want to report on patient?

iii. Do you want to exit the program?

Under these sub modules, the items available includes:

(i) Do you want to attend to patient? Under this sub module, the information (options) available are:-

a. Date (when data was entered)

b. Enter Hosp. No.

c. Name of Patient

d. Organisation

e. Date of Visit

f. Date of Admission

g. Date of Discharge

h. Ward

i. Sex

j. Age

k. Diagnosis

l. Drug Dispensed

m. Cost

n. Comments

This sub modules is for handling all patients attending the hospital and visiting the pharmacy department.

ii. Do you want to report on patient

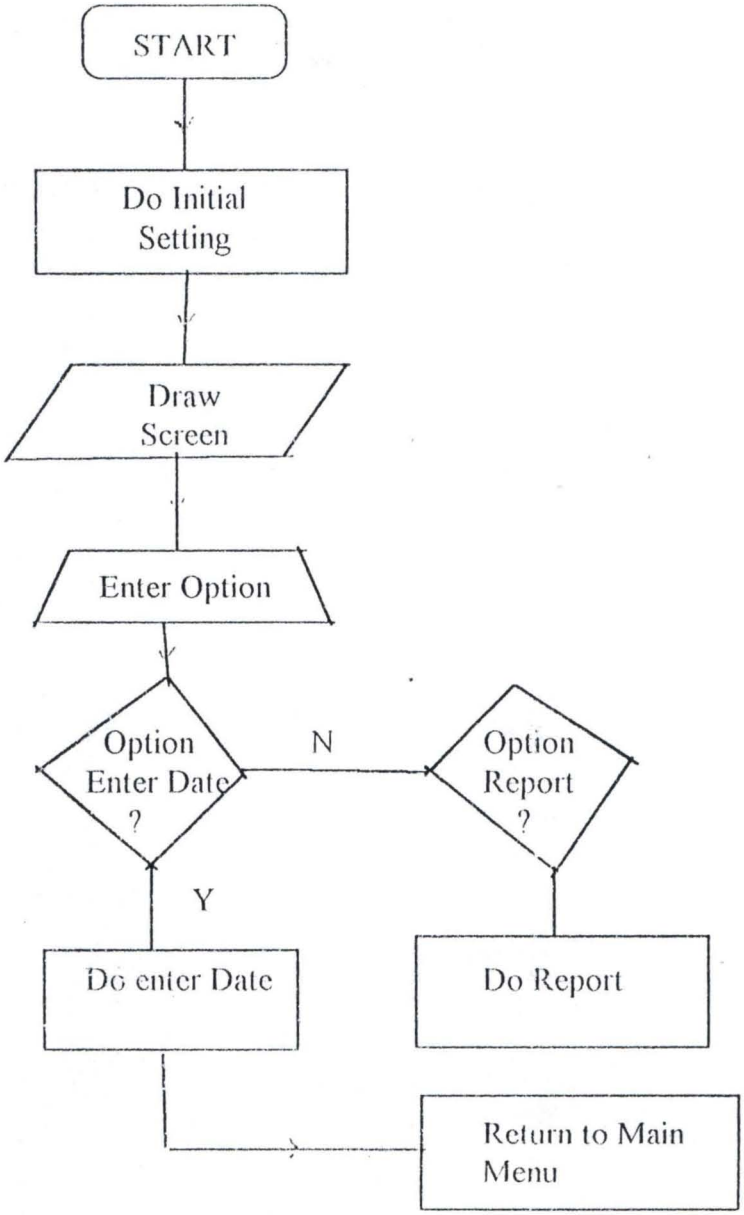
The options under this sub module are similar to the options in sub module (i). This sub module when activated, one is prompted with "Enter Hosp. No-" of which when entered the report on when the patient visited the hospital last. The screen display this time around is in a special pattern.

iii. Do you want to exit the program

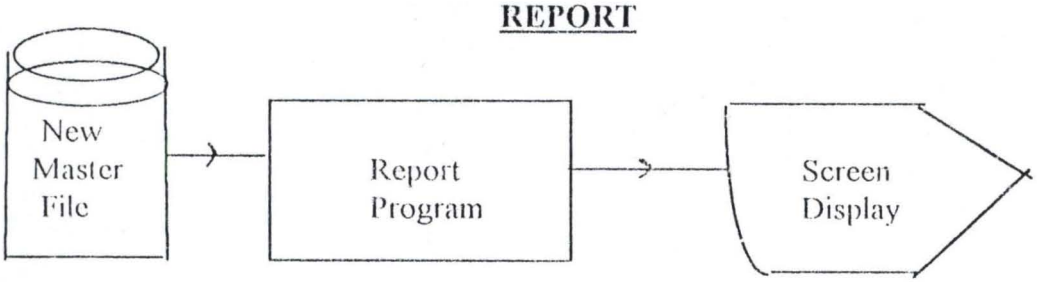
The sub routine enables us exit the program to DOS prompt

PROGRAM FLOWCHART

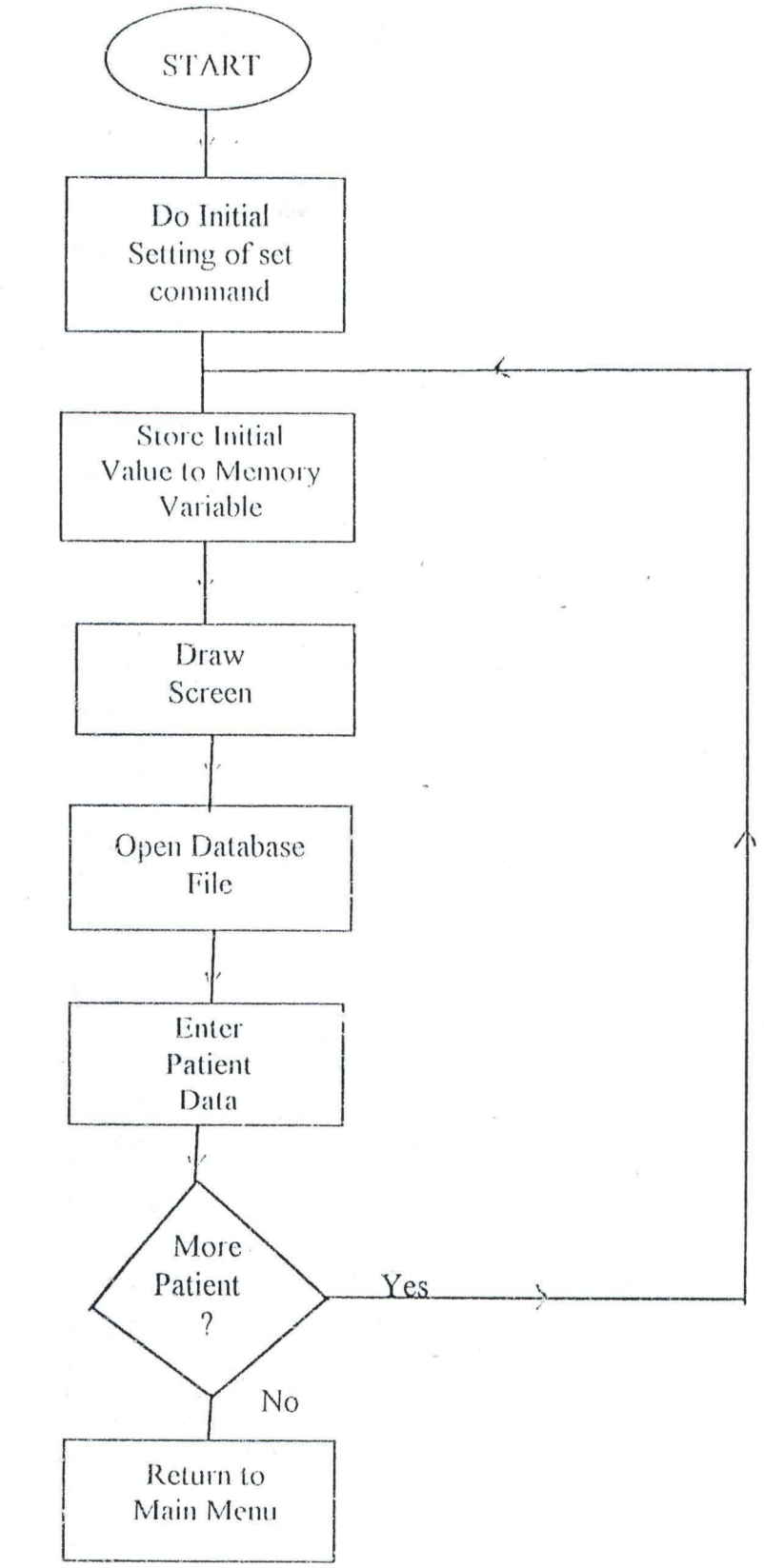
MAIN MENU



REPORT



ENTERING NEW PAYMENT



4.2 INSTALLATION OF PROGRAM AND OPERATIONS

This involves:-

(i) INSTALLING PATIENT SYSTEM

The patient system comes on 3.5 high density sized floppy diskette.

The installation steps are as follows:-

- At DOS prompt, type MD PATIENT SYSTEM and press (ENTER).
- Type CD/PATIENT SYSTEM and press (ENTER)
- Type COPY A:/*- * C: and Press (ENTER),
  If diskette is in drive A, otherwise type copy B:/*.* C:
  and press (ENTER).
- Install your Dbase IV files into the patient directory. If the dbase IV files are already installed on the system, you don't just include the home directory in the path command in your auto exec. Bat file of set a new path for your system from the DOS prompt.

ii OPERATING THE PATIENT SYSTEM

The patient system is developed using dbase IV, hence Dbase IV must be invoked before a patient system can be operated. Go to the home directory of the Dbase IV files and edit the config. db files to include this command.

Do patient system

4.3. IMPLEMENTATION

There are various methods used in changing over to a new system of operation. They include the direct conversion and parallel conversion.

The method used in changing over depends on which one best suites the organisation.

The method to be adopted here will be Direct-Conversion. This method involves the changing over to the new system at once, and completely abandoning the old one. The method is effective here in view of the size (small) of the department. However, it will

include a labour intensive task, feeding the records from paper records into the computer system.

Since there hasn't been a computer in existence in the department, there will be a need to purchase a good one. There will also be a need to purchase the application packages since their systems do not contain them.

To avert problem, like failure of the system accidental deletion of important file, the staff in charge will be trained to use and maintain the computer system.

DBASE STRUCTURE

Number	Filed Name	Field type	Width	Dec	Index
1	HOSP NO	Numeric	10	0	Y
2	NAME	Character	25		N
3	ORGANISATI	Character	15		N
4	DATE'S	Numeric	8		N
5	DATEADM	Numeric	8	0	N
6	DATEDISC	Numeric	8	0	N
7	WARD	Character	3	0	N
8	SEX	Character	1		N
9	AGE	Numeric	3		N
10	DIAGNOSIS	Character	28		N
11	PRESCRIPT	Character	28		N
12	DRUGDISP	Character	28		N
13	COST	Numeric	5	0	N
14	COMMENT	Character	28		N

PROGRAM OUTPUT.

Patient Name:- HAUWA ABDULSALAM (SIDI ADAMU)

Organisation:- CBN ABUJA

Date 07/19/ 98.

Date of admus	1998
Date of discharge	1998
WARD	Ante Natal
SEX	F
Diagnosis	Child deliver
Prescription	
Drug Dispens	Chemiron
Cost	360.00
Comment	Deliver safely.

Press any key to continue.

ID	SURNAME	FIRSTNA	DOB	SEX	POSTING	SALAI	DOPA	STATE	Expr1009	LGA	POST DE
1	Chinyeaka	Paschal	11/30/56	M	F/Supp.	06/5	7/11/94	Anambra	Driver/Mech	Nkikoka	Driver/Mec
2	Ochola	David	6/4/66	M	Personnel	06/5	7/12/98	Abia	Asst.Ex.Offr	Apa	Asst.Ex.Offr
8	Igonoh	Laraba	6/16/67	F	Personnel	06/5	12/15/97	Kogi	Asst.Ex.Offr	Dekina	Asst.Ex.Offr
9	Edward	Samuel	4/23/91	M	Orientation	06/5	9/23/91	Ondo	Asst.Ex.Offr	Akoko East	Asst.Ex.Offr
13	Samson	Nda	6/2/56	M	Personnel	06/5	2/5/96	Benue	Ass.Ex.Offr	Otukpo	Ass.Ex.Offr

2.23 FORMS:

Forms are database objects used primarily for data entry and making changes to existing records. Forms are based on an underlying table and include design elements such as descriptive text, titles, labels, lines boxes, and pictures. Forms often use calculations as well to summarize data that is not listed on the actual table.

Forms make with long lists of data easier. They enable people to use the data in the tables without having to shift through many lines of data to find the exact record.

Forms are linked to the underlying table by using Controls. Controls are items that can be selected; it can be sized or moved. The most common type of control is a textbox. A text box displays data from table. The form usually includes a label with each text. A Form can be display in one of four different Views: Form Design view, Form view, Form Datasheet view, and form Preview.

Example of Data Entry form of Table 1 is given in fig 4.

NATIONAL ORIENTATION AGENCY DATA ENTRY FORM

ID	4	Expr1009	PMO
SURNAME	Attah	LOCAL GOVT AREA	Otukpo
FIRSTNAME	Onoja	POST DESIGNATION	PMO
DATE OF BIRTH	11/25/62		
SEX	M		
POSTING	Apa		
SALARY GL/STEP	12/3		
DATE OF PRESENT AP	3/20/89		
STATE OF ORIGIN	Benue		

ID	3	Expr1009	Asst.Ex.Offr
SURNAME	Okafor	LOCAL GOVT AREA	Ado
FIRSTNAME	Caroline	POST DESIGNATION	Asst.Ex.Offr
DATE OF BIRTH	4/7/67		
SEX	F		
POSTING	Pub. Enl		
SALARY GL/STEP	06/03		
DATE OF PRESENT AP	4/23/90		
STATE OF ORIGIN	Benue		

ID	13	Expr1009	Ass.Ex.Offr
SURNAME	Samson	LOCAL GOVT AREA	Otukpo
FIRSTNAME	Nda	POST DESIGNATION	Ass.Ex.Offr
DATE OF BIRTH	6/2/56		
SEX	M		
POSTING	Personnel		
SALARY GL/STEP	06/5		
DATE OF PRESENT AP	2/5/96		
STATE OF ORIGIN	Benue		

FIG.4

2.24 REPORTS

Reports are the printed output you generate from tables or queries. Records in a report can be grouped into categories to allow you to analyze the data. There are two ways to view the report, as it will appear when printed. You can use print preview to view the entire report page by page because this view displays all the data in the report, it takes longer to generate. The Report for the list of Staff of National Orientation Agency given in table 1 is shown in fig.5.

CHAPTER THREE

SYSTEM DESIGN AND ANALYSIS:

INTRODUCTION

3.0 WHAT IS SYSTEMS DESIGN?

The Oxford Dictionary defines analysis as follows: separation of a substance into parts for study and interpretation; detailed examination.

In the case of system, the "substance" is the business system under investigation and the parts are the various sub-systems which work together to support the business.

Systems analysis and design is an existing, challenging difficult changing, new solutions are discovered everyday. Before designing a computer system, which will satisfy the information requirement of a company, it is important that the nature of the business and the way it currently operates are clearly understood. The detailed examination will then provide the design team with the specific date they require in order to ensure that all the client's requirement are fully met.

The investigation or study conducted during the analysis phase may build on the results of an initial feasibility study and will result in the production of a document, which specifies the requirements for a new

system. This document is usually called the requirements specification or functional specification. A system analyst will be required to perform a number of different tasks in carrying out the analysis phase of a development.

The various phases are discussed below:

3.1 PROGRAM ANALYSIS

The software discussed in this project is termed ELECTRONIC DATABASE OF NATIONAL ORIENTATION AGENCY. The main objective of this package is to process date in basic and some advanced database of the organization. The case study processes the nominal roll, such as, assessing personnel records, appending, retrieving, sorting and searching.

The package consists of main program and several other modules. The programming language used is Visual Basic 6.0. The program package allows the user to input his or her data through the required input unit [either using keyboard or mouse] and the output can be obtained through the visual display unit or printed output in form of hard copy.

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CHAPTER FOUR

4.0 SYSTEM IMPLE METATION:

This involves the coordination of the entire task, which is necessary in ensuring the operation of the new system. System implementation comprises of two major tasks; Programming and Staff Training.

Programming is the act of setting up well defined and constructed instructions, which direct the activities of the computer system.

Staff Training involves practically showing to the staff the layed down procedure for effective operation and use of the new system.

4.1 PROGRAMMING LANGUAGE

The programming language used in designing this project is Visual Basic (version 6.0). In the analysis Microsoft Access is used. Visual Basic is interesting and fun because it enables you to write sophisticated professional programs for windows in a very short time.

There are several reasons for Visual Basic; it was specially designed to promote an orderly disciplined approach to computer programs. Its use therefore encourages the development of programs that are logical, well organized, clearly written and relatively free of errors. Moreover, the language is available for particularly on any computer, these might include mainframe, minicomputer and microcomputers. The

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characteristics are summarized as Clarity, Simplicity, Efficiency, Modularity and Generality.

Visual Basic uses Microsoft Windows as its operating system. Microsoft Windows is a very popular operating system; this is because it is a device-independent operating system i.e. no matter what printer you are using, as long as Windows accepted the printer at the time you installed the printer, the printer will work fine with every program you design. At the same, Window is so popular because the user interface is the same for all Windows applications; you don't have to tell your user how to operate your programs. So the user can use the clipboard to cut, copy,, and paste text and graphics; minimize and maximize the Windows of your programs; and complete other conventional windows operations. Windows also provide for sound, sprite Animation creating your OLE objects.

4.2 PROGRAM CODING

This consists of the actual program codes for NOA database package. The entire code programming is giving below. Writing the programs involves two steps:

(i) The visual programming step

(ii) The code Programming step

During the visual programming step, the are design by using tools, that comes with the Visual Basic programming packages.

In the code programming step hence text editor is used to programs. The programs are composed of statements written in the Visual Basic programming language.

Other steps involve:

The summary of the program coding is given below:

(i) Creating your working directory

(ii) Creating your new project

(iii) Creating your form and declaring the form properties

(iv) Creating objects and the objects' codes

(v) Creating an Executable file

(vi) Executing your program codes

4.3 PROGRAM TESTING

Having written the program coding and generate your executable files, to make the program ready for use, the program has to undergo various tests to check that it is well coded and transcribed correctly and does what it is supposed to do. These tests aim at detecting any error, which have to be corrected. Hence this program has been subjected to the following tests and they are all correct:

(i) Unit Testing: This tests the various program modules individually

(ii) Integration Testing: This involves testing the separate components as they are put together.

(iii) System Testing: This is final testing of the whole program together

(iv) User Acceptance Testing: This allows the user of the program to see that the program has achieved the purpose to which it is design.

Anybody who can operate any windows application program can use this application database. This system is protected to disallow any intruder having access to the program.

T operate the software:

STEPS

(i) Click on start button

(ii) Select program

(iii) Click on NOA electronic database

(iv) The computer will request for your passwords before you can be allow access to the system; this disallows intruder from accessing the system. Enter your correct password. (The program will be loaded into the memory of the computer)

You can perform any of the following tasks:

a. Viewing your records

b. Locate and fetch a particular record or group of records

c. Adding new records and updating

d. Delete invalid records

e. Use input form to enter new records and use professional reports to generate the hard copy for groups of records.

4.4 PROGRAM DEBUGGING

Program debugging is some how similar to program testing in that it relies on test output to signify the presence of errors. Debugging is the process of identifying those areas of the program which are in error and modifying them to correct the error.

The process of debugging involves:

1. Locating those parts of the program code which are incorrect at which causes some specification not to be met.
2. Correcting error or modifying the program so that it meets its requirements. After modification program testing must be repeated to ensure that the change has been carried out correctly.

4.5 SYSTEM HADWARE

As earlier stated, the high-level language used for this Electronic Database is VISUAL BASIC 6.0. Any 32 or 64 bits computer machine that is purely software compatible should be able to run the program.

This 4 bytes computer must be using Windows 95, Windows 98, Windows 2000, Windows NT.

The size of the computer memory should at least vary from 560MB to 20GB or higher. The computer system may have one or two $3^{1/2}$ floppy disks drive with CD ROM.

4.4 SYSTEM CONSTRAINTS

This application program is design for Windows 98,2000 and NT Windows. One common disadvantage of any Windows application programs is subjection to modification from time to time. This is due to review of Windows operating system frequently. The cost of maintenance and time of review thus constitute the constraint.

4.5 STAFF TRAINING

Computer manager and Staff operators are responsible for the coordination of all machine-processing operations and for ensuring a smooth flow of work through the operations department.

These staff are to undergo training to allow them acquire the knowledge thy require in operating the system. They should be able to control data so as to prevent loss of data, misuse or disclosure, and at the same time for security alert.

The followings aids would be provided along with the training:

(a) Handbooks:. These would be provided as part of or as development from the system specification.

(b) Courses:. Depends on the management opinion, part-time and full-time provision will be made available to provide a conducive and convenient medium.

(c) Lectures:.- General background of computer knowledge and necessary areas will be discussed in detail.

CHAPTER FIVE

SUMMARY, RECOMMENDATION AND CONCLUSION

5.0 SUMMARY

This project aims at designing an electronic Database system for processing personnel records of National Orientation Agency so as to replace the existing manual system, which is boring, cumbersome and difficult to maintain.

Chapter one described the computer age preview, electronic database and statement of problems. Chapter two discussed the literature review, database Architecture and database objects including, table, queries, forms and reports. Chapter three covers the system analysis and design. In Chapter four, system Implementation including programming language overview were discussed. This last Chapter gives the summary and the recommendation note and the conclusion.

5.1 RECOMMENDATIONS

Electronic database remains the most effective method for processing data and managing information in any organization. In view of this good planning must be undertaken before embarking on laborious project of computerization.

A through planning and appraisal would involve the following:

a. Establish the aims and setting goal for the project.

b. Determine the main activities and events to attain the required goal.

c. Specify the manpower requirement and resource to achieve the set goals

d. Define the proper sequencing of these activities.

All these have to be thoroughly planned and proper controls put in place to ensure reliability of results, a good audit procedure to be applied to guarantee prompt detection and correction of errors to eradicate or minimize official abuses. Also developing a computerized information network which every organization should look forward to. In view of the successful conversion of the manual datable to electronic database the writer which to employ the management for quick implementation of this project.

5.2 CONCLUSION

The purpose of this project is strictly limited to the use of educational research work only. It should therefore not to be used as measure to access the efficiency of National Orientation Agency programs. However the result of the should not be overlook.

The project work itself is not a means to an end but could be reviewed by the National Orientation Agency management from time to allow further improvements as more resources are allocated and reallocated from. time to time.

4.4 PROGRAM DEBUGGING

Program debugging is some how similar to program testing in that it relies on test output to signify the presence of errors. Debugging is the process of identifying those areas of the program which are in error and modifying them to correct the error.

The process of debugging involves:

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4.4 SYSTEM CONSTRAINTS

```
n Compare Database


te Sub Form_Current()
f IsNull(Me![AttendeeID]) Then
  DoCmd.GoToControl "CompanyName"
nd If
ub
te Sub Form_Activate()
ror GoTo Err_Form_Activate
e![Attendees Subform].Requery

_Form_Activate:
Exit Sub

Form_Activate:
MsgBox Err.Description
Resume Exit_Form_Activate
Sub
ate Sub Register_Click()
rror GoTo Err_Register_Click
If IsNull(Me![AttendeeID]) Then
    MsgBox "Enter attendee information before registering for an event."
Else
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    DoCmd.OpenForm "Registration"
End If

_Register_Click:
Exit Sub

Register_Click:
MsgBox Err.Description
Resume Exit_Register_Click
Sub
vate Sub Payments_Click()
rror GoTo Err_Payments_Click
If Me![Attendees Subform].Form.RecordsetClone.RecordCount = 0 Then
    MsgBox "Register attendee for an event before viewing payments form."
Else
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    DoCmd.OpenForm "Payments", , , "[Payments]![RegistrationID] = Forms![Attendees]![A
Subform].form![RegistrationID]"
End If

t_Payments_Click:
Exit Sub

_Payments_Click:
MsgBox Err.Description
Resume Exit_Payments_Click
Sub
vate Sub PreviewInvoice_Click()
Error GoTo Err_PreviewInvoice_Click
If Me![Attendees Subform].Form.RecordsetClone.RecordCount = 0 Then
    MsgBox "Enter attendee and registration information before previewing the invoice.
Else
    DoCmd.DoMenuItem acFormBar, acRecordsMenu, acSaveRecord, , acMenuVer70
    DoCmd.OpenReport "Invoice", acPreview, , "[RegistrationID]=" & Forms![Attendees]![
Subform].Form![RegistrationID]
End If

t_PreviewInvoice_Click:
Exit Sub

_PreviewInvoice_Click:
If Err <> 2501 Then
    MsgBox Err.Description
End If
Resume Exit_PreviewInvoice_Click
Sub
```

Table Records (MAS.DBF)

E	bunmi ojo
ANISA	prestige
E	12/05/98
EADM	12/05/98
EDIS	12/17/98
RD	
	male
SCR	omega H3
GDIS	maloxin,paracetamol,fergonate
T	5463.00
MENT	condition is better
PNO	253
EVIS	12/03/98
GN	malaria
	28

CHAPTER FIVE

5.0 SYSTEM SPECIFICATION

5.1 HARDWARE SPECIFICATION

Hardware is the physical part of a Computer that one can fell, see or touch. It comprises of central processing unit (CDU) and the peripheral devices for input and output operations. The hardware component of the computer system is classified in many ways as in nature. However the minimum system specification or requirement to run the program will be the following:-

1. Intel 486 Sx2
2. Co-proceessor (recommended but essential)
3. 4MB RAM
4. 500 MB Harddisk
5. 1.44 MB floppy Disk drive (FDD)
6. Mouse (recommended but not essential)
7. Monitor (CRT)
8. Keyboard
9. Printer.

5.2. SOFTWARE SPECIFICATION

Software, which is the non-physical part differs significantly from hardware. Software is thus another term for the programs that tell the hardware what to do. Without software hardware is useless to anyone.

The system software specification to run this program will be the Dbase IV Program Software/Package.

The Dbase IV package is a powerful database management package in use today to create and maintain database files. It helps to maintain a large volume of records, allows for constant manipulation of records either by adding new records, to the existing ones or changing the already existing ones.

5.3 RECOMMENDATIONS AND SUGGESTION

For the continued smooth running of the computer system, the following recommendations and suggestions are made:-

i. ACCIDENTAL DELETION OF DATA

This is the most common cause for the loss of valuable data so always ensure that only unwanted files are marked for deletion. And unauthorised persons or a computer illiterate should not be allowed to operate the computer it is also necessary to keep a back-up copy.

ii. HARD DISK FAILURE

This can be very disastrous as all the data and programs stored on the harddisk can be lost. So always ensure that the computer system is not overworked or get heated up. That suggests that the computer must always be Installed in an air- conditioned room and desk free environment. It is also very important that the power supply to the system should pass through an external voltage regulator. (Ups)

iii. UPGRADING THE SYSTEM

It is necessary to regularly upgrade the system with the current versions of software (i.e. Installing recent version of operating system and application packages) it is also necessary to upgrade the hardware in order to meet the present needs (e.g. Increasing the RAM capacity).

iv. PERIODIC SERVICING OF THE SYSTEM

It is also important to invite a qualified hardware specialist once in a whole to check the computer system and service it.

5.4. SUMMARY/CONCLUSION

The advantage of a computerised patient medication profile records system over a manual one has been demonstrated. Little wonder why companies and Industries today are all opting for computerising system in almost all cases of operation. This project work also demonstrated that a manually handed patient record operation and infact any system that involves taking of records and accounting can be fraught with a lot of short comings if not computerised.

It is hoped that this work will benefit those concerned. Though there are several limitations in the project work. If, however, serves as an impetus for further research and especially to those serving the application of computer in related fields.

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```
lure bunmi
 temp,MHOSPNO,MNAME,MORGANISA,MDATEVIS,MDATEADM,MDATEDIS,MWARD,MSEX,MAC
 MDIAGN,MPRESCR,MDRUGDIS,MCOST,MCOMMENT,ANS
LK OFF
OREBOARD OFF
HO OFF

 1
S
ON HOSPNO TO MAS

SPACE(10)   TO MHOSPNO
SPACE (20) TO MNAME
SPACE (10) TO MORGANISA
CTOD('   /   /   ')   TO MDATEVIS
CTOD('   /   /   ')   TO MDATEADM
CTOD('   /   /   ')   TO MDATEDIS
SPACE (3) TO MWARD
SPACE (7) TO MSEX
 0
SPACE (35) TO MDIAGN
SPACE (35) TO MPRESCR
SPACE (35) TO MDRUGDIS
= 0
SPACE (35) TO MCOMMENT
SPACE (2) TO OK


OLOR TO B+
SAY "PATIENT DATA ENTRY"
SAY "==================="
OLOR TO R+/G+
ay "HOSPITAL NO"
AY "PATIENT NAME"
SAY "ORGANISATION"
SAY "DATE OF VISIT"
SAY "ADMISSION DATE"
SAY "DISCHARGE DATE"
SAY "WARD"
SAY "SEX"
SAY "AGE"
SAY "DIAGONOSIS"
 SAY "DRUG DISPENSED"
 SAY "COST"
 SAY "COMMENT"
 SAY "PRESCRIPTION"
 SAY "DATE = "+DTOC (DATE())
CREEN TO TEMP

LE .T.
SPACE(10) TO MHOSPNO
SPACE (20) TO MNAME
SPACE (10) TO MORGANISA
CTOD('   /   /   ')   TO MDATEVIS
CTOD('   /   /   ') TO MDATEADM
CTOD('   /   /   ') TO MDATEDIS
SPACE (3) TO MWARD
SPACE (7) TO MSEX
 0
```

```
 SPACE (35) TO MDIAGN
 SPACE (35) TO MPRESCR
 SPACE (35) TO MDRUGDIS
= 0
 SPACE (35) TO MCOMMENT
 SPACE (2) TO OK
 ' '

RE SCREEN FROM TEMP
 GET MHOSPNO

STKEY() = 27 .OR. EMPTY(MHOSPNO)
IT


MHOSPNO
UND()
T COLOR TO GR+
 LD_DT
 SY_DT
3,14 SAY "RECORD ALREADY EXIST <A>DD  <C>HANGE" GET ANS PICT "@!"
AD
 ANS = 'A'
 LOOP
SEIF ANS = 'C'
 DO GET_DT
 DO REPL_DT2
 LOOP
DIF

T_DT
PL_DT

 DATABASES
 ALL
N

********** END OF MAIN PROGRAM **********************************

DURE LD_DT
 HOSPNO TO MHOSPNO
 NAME TO MNAME
 ORGANISA TO MORGANISA
 DATEVIS TO MDATEVIS
 DATEDIS TO MDATEDIS
 DATEADM TO MDATEADM
 WARD TO MWARD
 SEX TO MSEX
 AGE TO MAGE
 DIAGN TO MDIAGN
 PRESCR TO MPRESCR
 DRUGDIS TO MDRUGDIS
 COMMENT TO MCOMMENT
 COST TO MCOST
N

URE SY_DT
 SAy MHOSPNO
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,18 SAY MORGANISA
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,18 SAY MDATEADM
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,18 SAY MWARD
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,18 SAY MDIAGN
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,45 SAY MCOST
,45 SAY MCOMMENT
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URN

OCEDURE GET_DT
18 GET MNAME
0,18 GET MORGANISA
1,18 GET MDATEVIS
2,18 GET MDATEADM
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OCEDURE REPL_DT
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PLACE HOSPNO WITH MHOSPNO
PLACE NAME WITH MNAME
PLACE ORGANISA WITH MORGANISA
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PLACE SEX WITH MSEX
PLACE AGE WITH MAGE
PLACE DIAGN WITH MDIAGN
PLACE PRESCR WITH MPRESCR
PLACE DRUGDIS WITH MDRUGDIS
PLACE COST WITH MCOST
PLACE COMMENT WITH MCOMMENT
TURN

OCEDURE REPL_DT2
PLACE HOSPNO WITH MHOSPNO
PLACE NAME WITH MNAME
PLACE ORGANISA WITH MORGANISA
PLACE DATEVIS WITH MDATEVIS
PLACE DATEDIS WITH MDATEDIS
PLACE SEX WITH MSEX
PLACE AGE WITH MAGE
PLACE DIAGN WITH MDIAGN
PLACE PRESCR WITH MPRESCR
PLACE DRUGDIS WITH MDRUGDIS
PLACE COST WITH MCOST
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URN
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