

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 BACKGROUND OF STUDY**

General Hospital calabar. The hospital provide qualitative Health care services but maintains that they do not just heal mere physical illness which attacks the human body, but a much deeper and holistic healing of the entire human person.

These service areas include all the wards (medical and surgical for male and female, pediatrics, chest unit and the maternity section as a whole. Other departments are out patient department (OPD), laboratory department, pharmacy department, central sterling and supply department (C.S.S.D), X-RAY department community medicine and the mobile clinic, and theatre department. The roles of these departments are complementary and depict what they call team-work in patient management, the patient always beings at the center.

The Hospital since its establishment has demonstrated a very keen interest in the staff recruitment and development of highly skilled and very dependable medical and paramedical personnel. Presently, their work force stands at 460.

## **1.2 STATEMENT OF THE PROBLEMS**

Many problems are encountered with the manual method of handling files. It is quite unfortunate that ESUT Teaching Hospital. In spite of her large medical service and recognition still keep her records manually.

The problems associated with this manual system include time wastage, ineffective use of statistical data, and duplication of efforts in records keeping. Delay in decision making, it requires a lot of clerical efforts inability to cope up with daily work load. Slow in responding the queries / enquires, Rodents records, lot of human mistakes, lack of confidentiality of files and high cost of stationary.

This project is aimed at devising a system that will eradicate these above problems and improve medical services to the citizens. This computerization process is believed to be capable of not only solving these problems but many more to be encountered.

## **1.3 AIM/OBJECTIVES OF THE PROJECT**

The main purpose of this project is to investigate and design a computer based medical services, capable of eradicating the above mentioned problems to be speeding up the processing, storing and retrieval of information which greatly assist medical personnel in the performance of their duties. Again, it will provide a means to ease medical laboratory statistics and improve decision making by reducing processing time, as well as reducing the communication gap between the Doctors and other staff still involved in the patient medical care. It will also reduce human errors to the barest minimum and improve

confidentiality of files. In summary, the objective is to set an efficient medical database for the advancement of the medical research and analysis.

#### **1.4 JUSTIFICATION FOR THE PROJECT**

The researcher during the course of this investigation found out that all the medical keeping record are done manually and having seen the problem associated with the manual system, the researcher calls for a new system in patient related services. The new system is justified in many ways.

The design of the new system will eliminate the problems of the system mentioned earlier by providing quick file retrieval and searches. By providing accurate up to date information on demand.

It will minimize redundantly , loss of information will be prevented, the need for volume paper files and unnecessary spending of paper folders, file cabinet will be removed and adequate security will be provided to ensure database system.

Furthermore, the new system is justified when receptionist, medical record clerks in recording would not be our worked again by the implemented of the automatic system.

#### **1.5 OBJECTIVES OF THE STUDY**

The main objective of this study is to develop a computerised management system. Others include;

- i. To provide total asset visibility.
- ii. To allow high levels in giving full patient history.

- iii. To reduce lead time, shelf space, and errors due to damage, fatigue of staff .
- iv. To facilitate “just in time” deliveries.
- v. To provide full process control for the patient.
- vi. To provide higher level security as the system would be passworded to prevent unauthorised access.
- vii. To shorten cross docking time and speeds up sort/pick up rate.
- viii. To help the management plan, monitor, optimize resources and ascertain their financial position at any time.

## **1.6 SCOPE OF THE STUDY**

The scope of the project covers the development of a computer based database application for use by the these sections (patient state of health,bill payment and address ) at the general hospital to replace their old paper notebook recording system.

The requirements include designing a user interface for the application and providing options for a user to log into the application by supplying the correct username and password combination; register new patient and view a list of already registered patient; to keep records of out patient and in-patient in the hospital; view patient registered on the database; admitted, discharge, bill patient etc. It also covers writing the background programming to ensure that the interface works with the database through the underlying codes to perform

the required actions. It also involves the testing, improvement and optimization of the application.

## **1.7 DEFINITION OF TERMS**

**MEDICAL RECORDS:** It is the records that spell out the patient's illness and treatment during a particular period for out patients and inpatients.

**OUT PATIENTS:** Any person who goes to receive treatment in the Hospital but does not stay overnight.

**WARD:** A section in the hospital where inpatient stays and receives treatment on regular bases.

**INPATIENTS:** A patient staying and receiving treatment in the hospital.

## **1.8 PROJECT REPORT ORGANIZATION**

This report is organized into five chapters. The first chapter takes care of introduction: background, aims and objectives, justification and scope of the project. Chapter two surveys the literature review of this work. In chapter three, the project methodology, data collection, analysis, limitations of the existing system, system design, system flowchart and top down design were done. The input, processing and output modules are critically analysed.

In chapter four, system implementation, testing and integration: choice of development tools, system requirements, and testing were carefully done. Finally chapter five closes up with summary, recommendations and

conclusions: limitation, Bill of Engineering Measurement and Engineering (BEME), bibliography, appendices

## **CHAPTER TWO**

### **LITERATURE REVIEW**

Sequel to what other people have been saying and writing about the use of computers in establishments, it is still necessary to bring the suggestions and opinion of these people to our enormous readers. If against this background that this chapter is set aside for analyzing the different vies of these computers users and experts who have previously done a work on the same project topic. The design and implementation of a computerized hospital space management information system.

The computer based information system is of great importance to the growth and survival of the various sectors of the economy because according to JOHNSON B. A. (2003) computers have large storage capacity and besides, the over all cost of computerization is in general less than manual process cost for large jobs.

It should be noted that the main purpose of computerization irrespective of the application is to process data quickly, efficiently and effectively so that information kept is timely, meaningful and accurate.

Timeless is essential in the field of HEALTH SERVICES, for instance, ANUKEN, K (1990) confirmed that as work load in medical laboratory increase day-by-day due to improved method of diagnosis, the time-lag between request and report of analysis will definitely increase, thereby making it cumbersome to the clerical system to cope up with the increase in the area of record keeping which may include features like sex, age record number, address and diagnosis. It may be programmed in a computer. This will

conveniently aid other people who may need the same data about such patient to be retrieved. If in case a note on diagnosis is written by a Doctor and another, Doctor wants to know the condition of particular patient, this of course will cause the attending Doctor to start all over again but if it is programmed, the safety is granted as it is permanently in the storage devices.

In the light of the above, SHANNON M.D (1974) Opted that the computerization of records should be maintained in hospital management to help the updating, storage, and processing the records. From the author's point of view, the updating of the records would be of immediate help in the visiting Doctor making him to know where and how to start treatment of the patient.

In another development, some authors are not of the view that computers should be used owing to the disadvantages ranging from the loss of job by non expert to incomplete record keeping since all these records can not be found at once. CORNELIUS, C. N (1989) disapproved the process of computerization of medical record management system. According to him, it would require summarizing all the old records which may lead to incomplete computerization of the record. When the required records are not to complete, proper, and efficient management of such an organization cannot be done. But seen to nullify his views bearing in mind that no technology or development is without at least a minute disadvantage but regarding the enormous gains that accrue from such computerized and should be encourage.

WEED (1980) stated that the computerization of medical records management information system aids physician by identifying the patient's problems and then out lining the plan for a cause of treatment of the specified problem. To



the author's view a better organized, more rational and more consistent way of gathering medical records about the patients' problems is not available and this will enable the Doctor to know how to prescribe drugs to the patients.

OSCAR, E. (1986) in his own contribution says that if computers should last longer, a budget should be made for that, the author stresses that for only organization to progress, the introduction of computers or rather computerization should be welcomed and considered to services of the computer in any given task, budgeting for it, in all the establishment especially Hospital should not be left out.

For perfection to be actualized, computers should be put in place of human brain. ADENTAL (1998) stated the computerization actually has taken the whole world by storm because of the relief it offers human brains as well as the greater efficiency that it has given to the performance of many activities. Hospitals should not be an exception introduction / Application of computers in Hospital management information system saves, time.

GALLON NENNO (1985) disclosed that computerized management information system in record keeping allows trained medical professional to spend less time practicing medicine.

He further stated that "computers are also assisting in the maintenance of patient laboratory records and Hospitals or clinics". A specimen arrives to be tested, specific test data can be input into computer and once the testing has been completed, the appropriate nurse's station. Thus, keeping a patient's records accurate, up-date and readily available. Many people think that by the introduction of computers to different sectors of the economy like pay roll-unit,

medical record department etc. will make them redundant in their jobs. For instance, AVORN, J. (1974) argued that this process is not accepted because some doctors may not be happy about the fact that computers are being programmed and protocols are being used in ways that will permit trained paramedical personnel to perform the task exclusively meant for them. This misconception about my computer should be disregarded. Rather, it will help in processing their structural data leaving the structured ones, structured data therefore, are data under standardized rules.

EZEANO A.N. (1997) Stated that systems that computerized should be well guarded and adequate security strategy and control measures instituted to avoid malicious and disgruntled users access to the computer files, room and system. He further stated that this security strategy could be in form of protection against damage and that it could be achieved through three generation of files dumping techniques instituted to generate files store on magnetic tape or disk.

## **CHAPTER THREE**

### **SYSTEM ANALYSIS AND METHODOLOGY**

#### **3.1 METHODOLOGY**

This involves the specification of procedures for collecting and analyzing data necessary to define or solve the problem for which the research is embarked upon. The scope of this research covers the general hospital Calabar in particular.

##### **3.1.1 Primary Source**

This involves oral interviews conducted with various personnel in the hospital Calabar, review and sharing their experience about the difficulties they undergo in using file methods

##### **3.1.2 Secondary Source**

This includes the use of textbooks, dictionaries, journals, newspapers, electronic books and internet downloads to collect data and aid comprehension of the system.

##### **3.1.3 Observational Method**

This covers my personal visit to the General hospital Calabar during their contact with sick people. I observed the maternity wards, both female and male wards.

### **3.2 DATA COLLECTION**

This is a method of collecting facts about the general administration and how other things like record keeping of the hospital from which relevant data and information concerning the system could be obtained.

It is essential to gather the facts about the existing system as it will aid to discoverer all the strength and weakness of the system. The facts finding technique used includes:

#### **(a) INTERVIEW METHOD**

This is a process by which trained agents known as enumerators collect data by personal interaction with the respondents (or informants). The researcher constructs a number of questions with which the enumerator visit the informant to solicit answers. The information obtained from the respondents are entered informs called schedule. The interview method was used because of the following merits.

- i) It enables the respondent to understand the question properly. Since the numerator will be there to clear any doubts.
- ii) It ensures the collection of reliable data because of the existence of a close contact between the enumerator and the informant.
- iii) This method tends itself to high response rate since an enumerator is place in a better position to convince the respondents to give

responses to certain question which the May, otherwise be unwilling to do.

**(b) OBSERVATION METHOD**

This involves the researcher's personal observation on recording of business operations and system, including the examination of documents and inspection of reports. The researcher also used this method in his findings. This method helps us to gather information about some functions of some of the staff of the hospital.

During the course of this research work, a good number of documents and records were shown to me for thorough examination. Some of the documents includes:

- Out-patient form
- Prescription form
- Registration form
- Laboratory test form etc.
- 

**3.3 ANALYSIS OF THE EXISTING SYSTEM**

System analysis is meant to reveal the current system of administration and record keeping of the hospital which were studied under the system investigation. This analysis meant to propose a well designed computer base

management information system that will take care of the existing problems of the current system.

- The investigation carried out revealed that when a patient visits the hospital, he will first of all obtain a card at the registry, called reference card. Another card Doctor prescription will be given.
- The Doctor diagnoses illness, its causes and prescribes drugs for it treatment. The Doctor will then direct the patients to the O.P.D pharmacy to collect the drugs. The treatment card will be filled at the O.P.D at the end of the day, the treatment card will be collected from the O.P.D filling section and filed according to their registration numbers.
- If the patient comes on the data given to him by the Doctor for checkup, he will still present his reference card to the check who update his files and this is done with the help of the name and registration number. The patient will still be asked to see the Doctor for actual “checkup”.
- But if the patient is on admission, a case note which will contain the Doctor, the patients’ name, Address, Occupation, Date of admission, Religion, Age, Date of discharge index no, the year the patient is admitted to the hospital, the disease, ward or unit prepared.
- After the patient must have been treated and discharged, the case note will be collected from the ward. The medical record officer will know

the total number of patients discharge, the number of days stayed and this diagnosis will then be coded according to the number of the disease falls into.

- For instance the table below

Table 3.1 show the Disease and code No

DISEASE	CODE NO
Typhoid fever	07
Food Poisoning	05
Malaria	022
Tuberculosis of intestine	016

### **3.4 LIMITATIONS OF THE EXISTING SYSTEM**

From the information gathered during the system investigation it was discovered that the existing system operated manually and realied heavily on the ability of the nurses doctors and clerks who keep and collected the medical records for each patient.

The problems encountered by the hospital include the following:

#### **(a) LOSS OF FILES**

The existing system is operating an open shelve filling system, then there is always the possibility of somebody (non-staff) taking a patients record file containing the records of any patients is lost, that means the giving of patient particulars and information over again

**(b) MIS-FILING**

This is the main problem faced by the medical record section of the hospital. The existing system used is referred to as the serial filling system and this type of filling done alphabetically meaning that file number one will appear before file number two, and son on. This method was observed to be tedious and energy sapping, since files are numbered alphabetically. The storage maintains the same order. Mis-filing occurs as a result of wrong positioning of files. This is very dangerous because of a patient may die or develop a more serious and complicated problem while waiting for the retrieval of his / her files.

**(C) LACK OF SPACE**

Space or storage area for the accommodation of ever increasing record is a problem faced by the hospital. And because of this, files that are not useful at the present but might be useful in the nearest future for research purposes are destroyed. Even with the little space available in the record section clerks are unable to utilize it to the maximum because they are not trained as medical record personnel.

**(D) LACK OF BACK -UPS**

There is no provision for a secondary storage in another environment in case of any natural disaster like fire outbreak, earth quake or burglary. Hence if any of the above occurs the hospital will be rendered useless and non-functional without records.



Therefore, if computer based information system is introduced in this regard, these problems associated with the old system will be a thing of the past.

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## **CHAPTER FOUR**

### **IMPLEMENTATION, TESTING AND INTEGRATION**

#### **3.5 SYSTEM DESIGN**

Some factors are considered when designing the new system so as to achieve a good design standard:, among them are:

Designing a system that will capture data faster than the old system thus improves efficiency.

Designing a system that will minimize time-wastage which as a case will lead to quick processing of data collection from various patients.

Designing a system that will eliminate unnecessary long queues of patients in the hospital.

##### **3.5.1 Output Specification and Design**

The output form is designed to generate printable reports from the database. The output is placed on a database grid and contains information on patient's records. The output produced can be printed on a hard copy or viewed on the screen. The output generated includes:

1. Patients File
2. Bill Record
3. Treatment Record.

**List of Patients**

ID	NAME	ADDRESS	SEX	AGE	WARD
1	Peter Bassy	2 Uwani St. Enugu	Male	23	2
3	Sab Odeh	6 Timba Line Enugu	Male	44	2
10	Agatha Okafor	2 Uwani Enugu	Female	24	5
123	David Okeke	3 Agege Rd	Male	21	1

Fig: 3.1 List of admitted patients

**Patients Bill Information**

ID	NAME	BILL	DEPOSIT	BALANCE
1	Peter Bassy	6000	2000	4000
3	Sab Odeh	11000	0	11000
10	Agatha Okafor	10000	6000	4000
123	David Okeke	5000	4000	1000

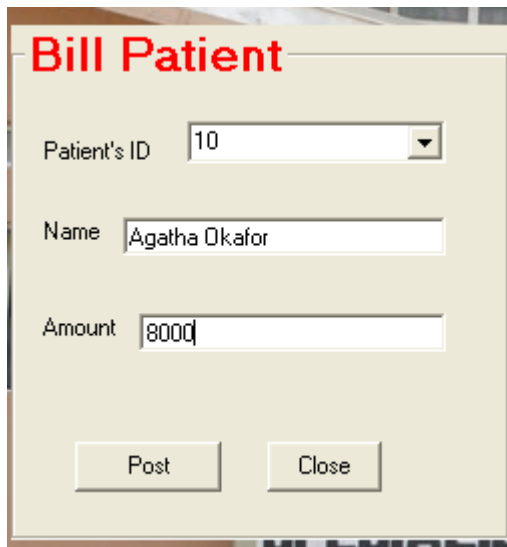
Fig:3.2 Patients Bill Information

The input files will be expected to contain all the necessary data items of the output files.

The input forms and cards will form the source from which all these items will keyed into the system. Having drawn the output form the input records are also designed. A part from other content and format of the output design, the computation system of input include, record number, patient name, address, sex, age. Date of birth.

### 3.3 Input Specification and Design

The input to the new system is the patient's admission form, which is entered through the keyboard. The input form design takes the format bellow.



The image shows a screenshot of a software application window titled "Bill Patient". The window has a light beige background and a title bar. Below the title bar, there are three input fields. The first is labeled "Patient's ID" and is a dropdown menu with "10" selected. The second is labeled "Name" and is a text box containing "Agatha Okafor". The third is labeled "Amount" and is a text box containing "8000". At the bottom of the window, there are two buttons: "Post" and "Close".

Fig: 3.4 Bill input form

The image shows a software window titled "Treatment" with a light beige background. It contains four input fields and two buttons. The "Patient's ID" field is a dropdown menu with the value "3". The "Name" field is a text box containing "Sab Odeh". The "Symptoms" field is a text box containing "Fever". The "Treatment" field is a text box containing "Chloroquine injection". To the right of the "Symptoms" field is a "Save" button, and to the right of the "Treatment" field is a "Close" button.

Fig: 3.5 Treatment form

### 3.5 File Design

In any good database design, effort should be made to remove completely or at worst reduce redundancy. The database design in the software is achieved using Microsoft access database. Bellow is the structure of the file designed in the database.

**Table 3.2 PATIENTS TABLE**

FIELD	FIELD TYPE	FIELD SIZE
Card No	Text	15
Patients Name	Text	20
Address	Text	30
Age	Integer	2
Sex	Text	8
Ward	Text	20
Bill	Single	4
Date admitted	Date/time	8
Treatment	Text	100

### **3.6 DATA BASE DESIGN**

Files used in this project are made up of different data types. Some of the files are designed and linked with database. There are several advantages of storing data in database and Microsoft Access database was used in this project design.

- All data is stored at one location when a database is used, all tables are stored in a single file thus, and we need not deal with separate buttons using the single database file. Though all data is stored in a single file, distinctions exist because tables are used since each table is stored as a separate entity in the file.

- It is possible to define relationship between tables and these are also stored in the database.
- It is possible to define validation at fields as well as table level and this ensures accuracy of data being stored.
- Query, report, sorting etc. are also used The proprietor is the overseer of all the affairs of the hospital and receives reports from various management sections of the hospital.



### 3.7 System Flowchart

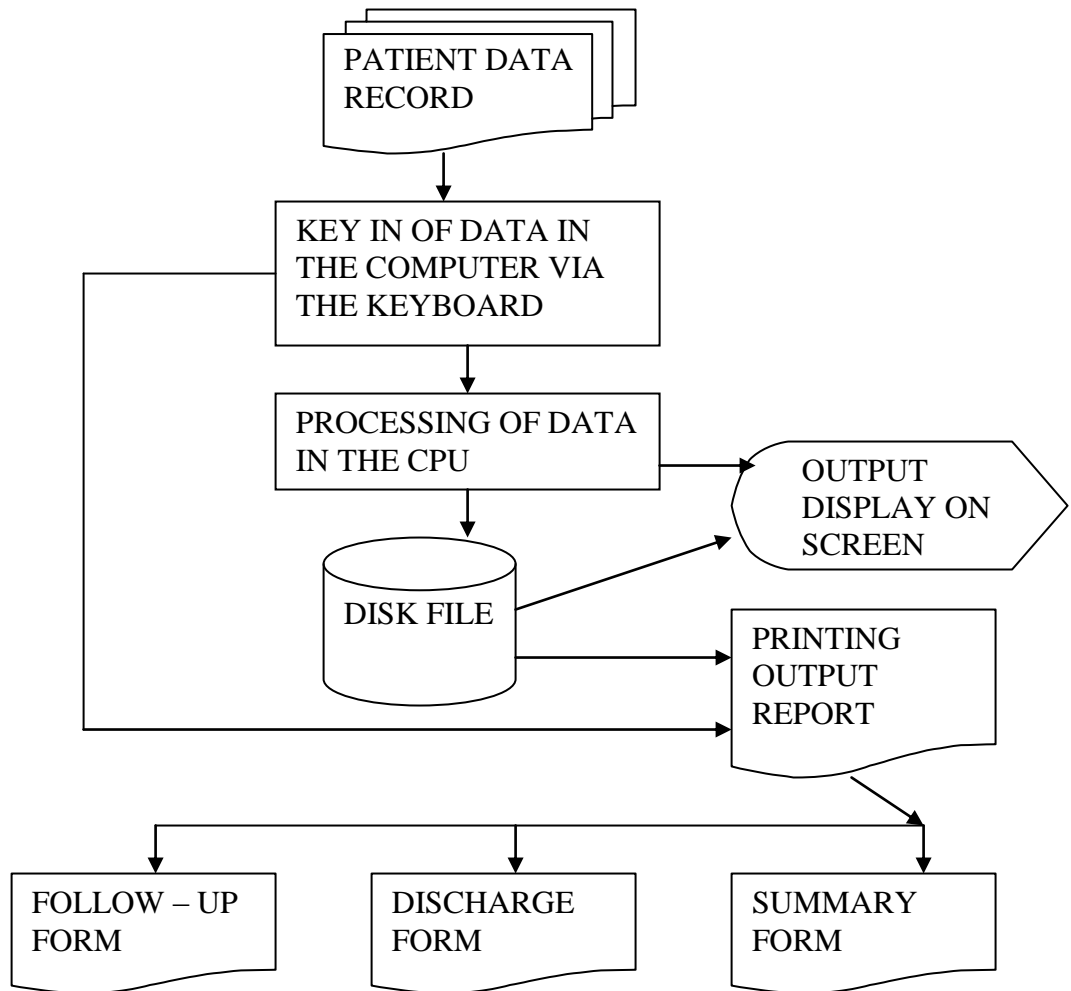
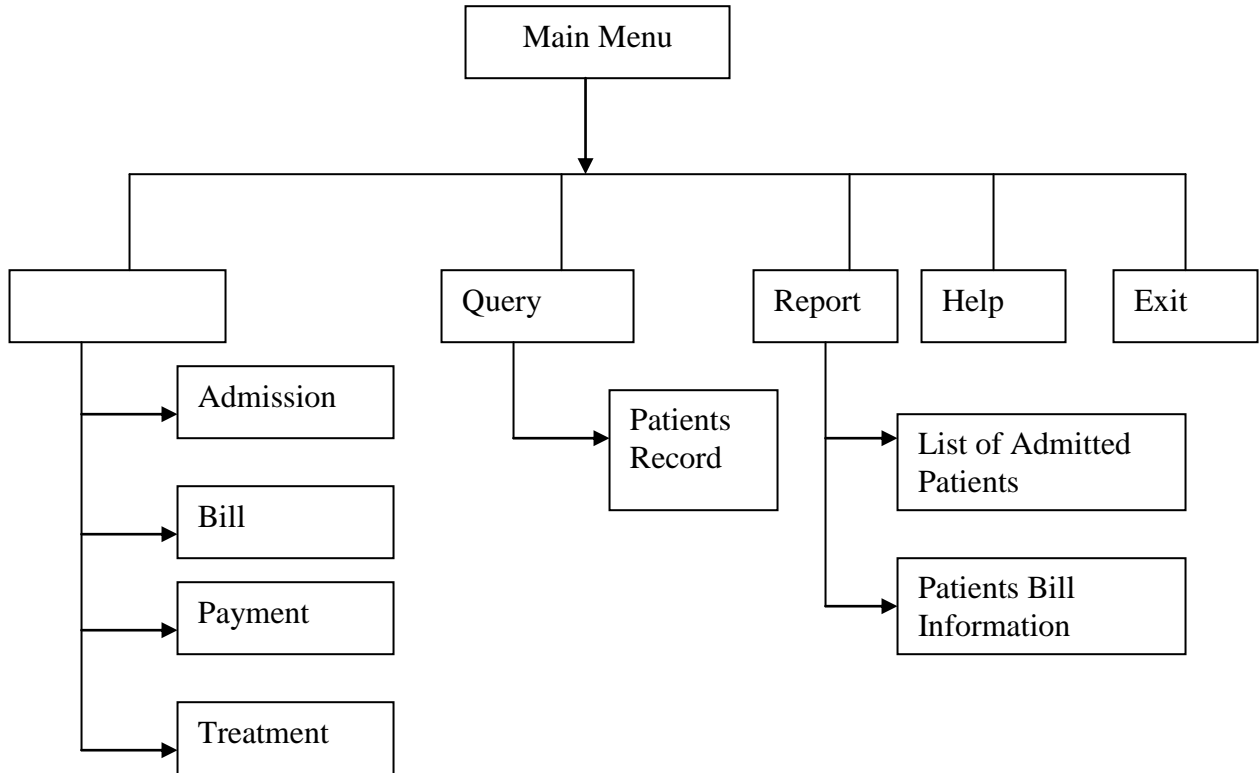


Fig 3.6 System flowchart

### 3.8 TOP DOWN DESIGN



**Fig 3.7 Top down design**

This diagram breaks down what is contained in the software .when the software is run, the login form appears and the user must input the information required by the software to allow access to all its features which are; username and password. Once information is inputted, the user can finally gain access to its features (i.e. software). After passing through the login form, you find the customer maintenance button which contains two forms, the register new customer form and edit customer record form. The next button you'll see is the

stock button which carries also two forms; the register product and edit product form. The next button that you'll see is the transaction button that houses two forms; the supply and view transaction form. Another button you'll see is the security button which carries only one form; the user form. Next button is the summary button which also carries only one form; summary records form. The next feature to be seen is the logout button, when clicked takes the user back to the login form thereby putting the system on some sort of lock mode. The next feature to be seen is the exit button, when clicked on, closes the entire software. The next button seen is the help button which contains only one form; about IVS.

# Program Flowchart Procedure Chart

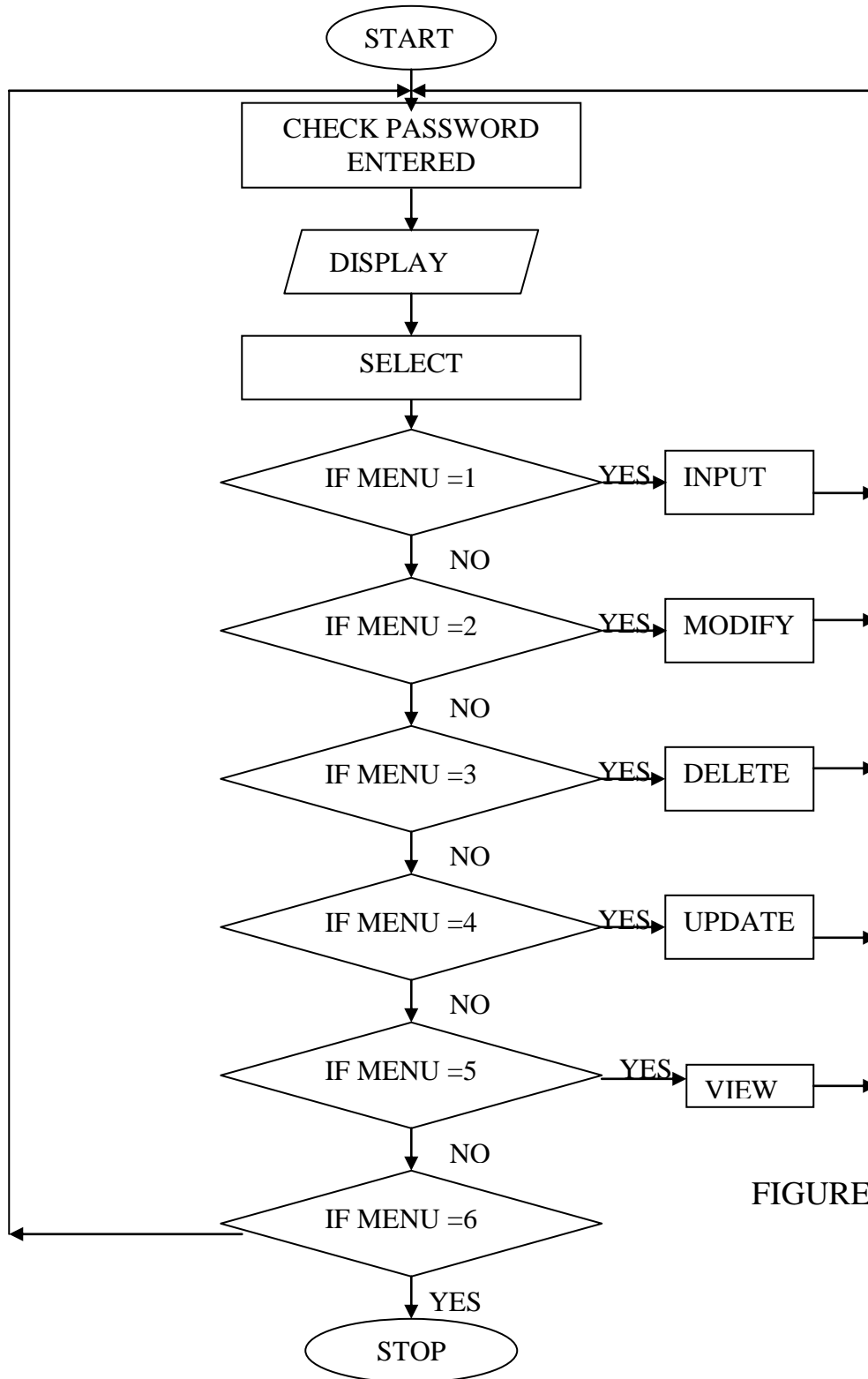
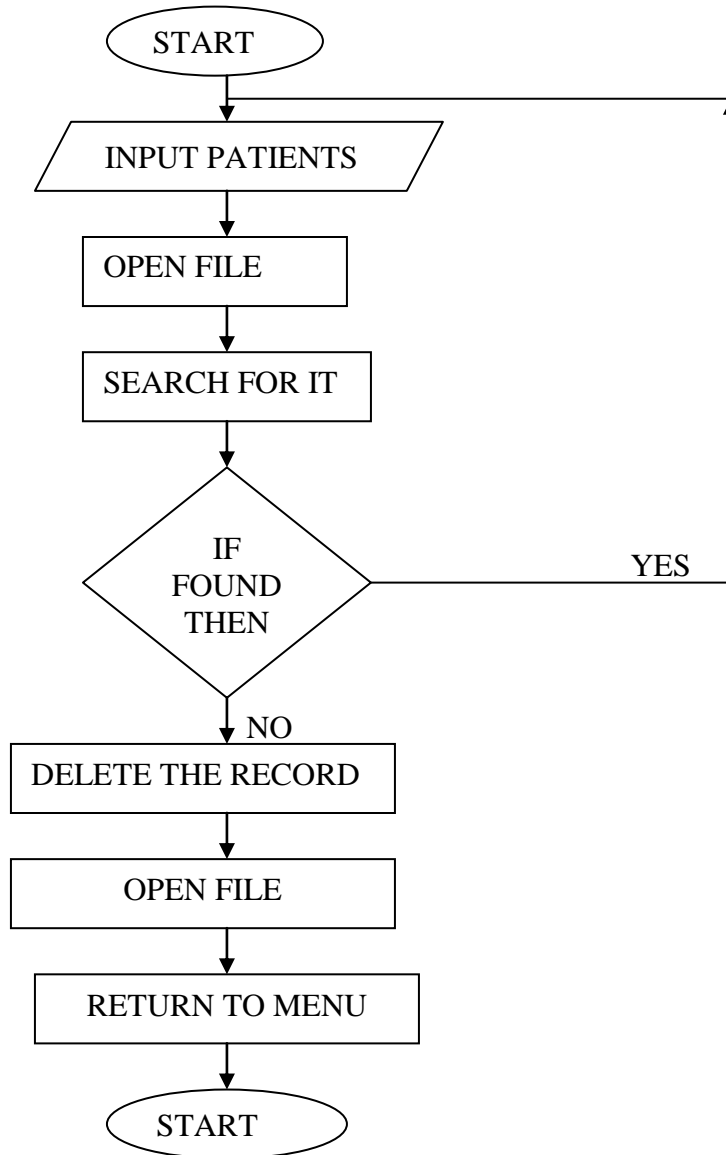


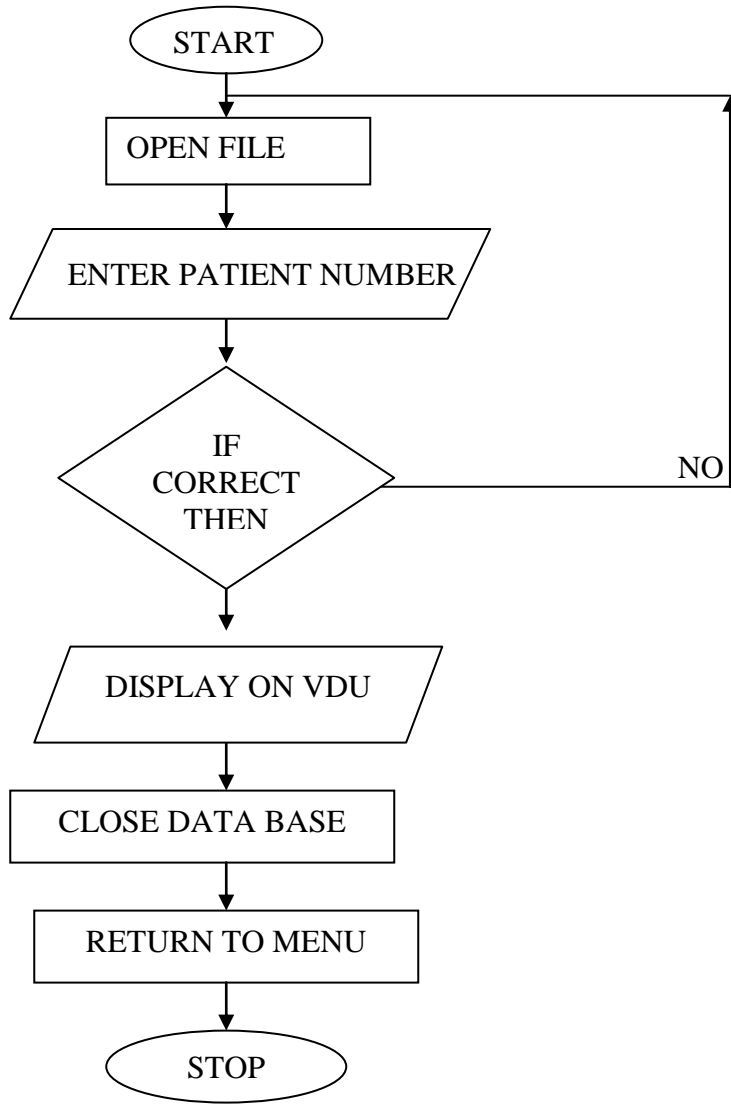
FIGURE 3.8

# DELETE



**FIGURE 3.9**

# INPUT



**FIGURE 4.0**

# UPDATE

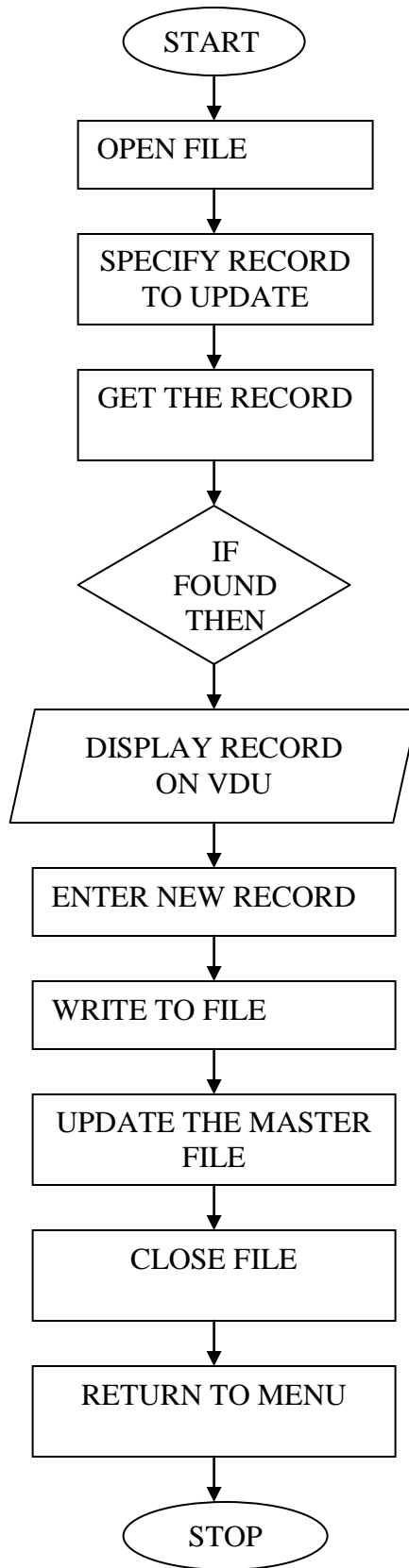
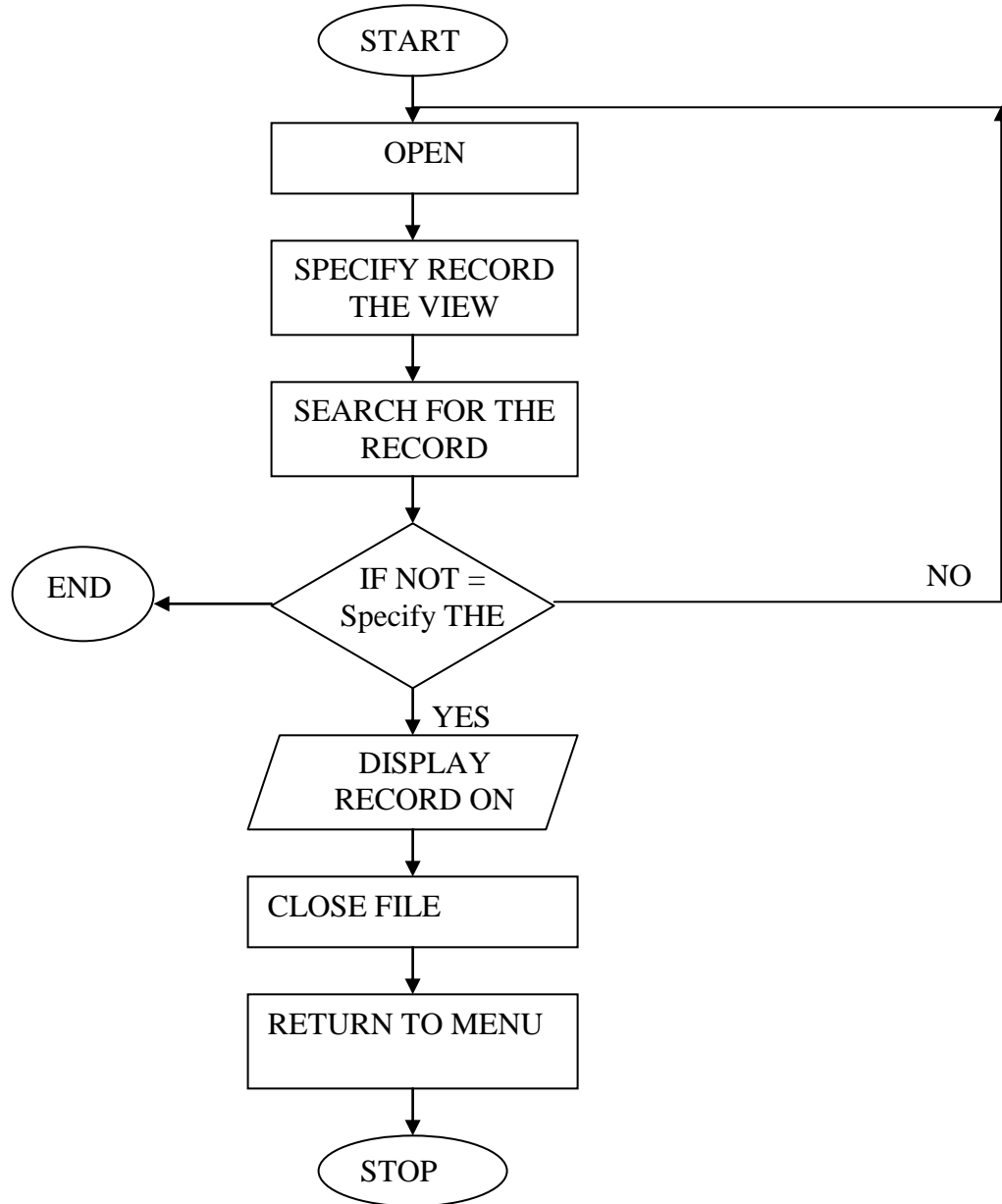


FIGURE4.1

# VIEW



**FIGURE 4.2**



## **4.1 CHOICE OF DEVELOPMENT TOOLS**

The new system is implemented using Microsoft Visual Basic programming language. This is because the programming language has the advantage of easy development. Flexibility and it has the ability of providing the developer/programmer with possible hints and it produces a graphical user interface.

## **4.2 SYSTEM REQUIREMENTS**

The requirements for the implementation of this system are as follows;

- ❖ Software requirement.
- ❖ Hardware requirement.
- ❖ Functional requirement.
- ❖ Non-functional requirement.

### **4.2.1 Software Requirement**

Computer system is made up of units that are put together to the work as one to achieve a common goal. There are two parts of the computer system, namely.

- ❖ The Hardware
- ❖ The Software

#### **Hardware Requirement**

The program for this project is written in Visual Basic Programming Language. 6.0. it is designed to run on an IBM personal computer. The following minimum hardware specification is needed

Intel Pentium 1.MMX technology

14" VGA or SVGA Monitor

16 MB RAM

3.5 Floppy Drive

24 x CD ROM Drive

2.1 GB Hard Drive

Keyboard

Printer

### **Software Requirement**

The following minimum software specification is needed:

Microsoft windows 98 or later versions

Microsoft Access 97

Visual basic 6.0

The Back end- Microsoft Access 2007

Some additional features of VB like Datagrind, DataReport.

## **4.2.2 Hardware Requirements**

For effective operation of the newly designed system, the following minimum hardware specifications are recommended:

- a) The computer system to use should be 100% IBM compatible since they are considered done systems.
- b) The computer system processor to be used should be Intel Pentium technology.
- c) The minimum Random Access Memory (RAM) should be 128MB.
- d) The system should have a hard disk of at least 20GB, 3.5 floppy drive and CD-ROM drive.
- e) The system to use should be equipped with 14" VGA or SVGA monitor (colored).
- f) The mouse, keyboard and printer are also required.

The listed configurations are the minimum requirements, but if the configurations are of higher versions, the processing derived will definitely be better and the program will run faster.

## **4.2.3 Functional Requirements**

### **A. INPUT/OUTPUT**

- i. System shall have a form to accept the customer details.
- ii. System shall have a form to accept customer order.
- iii. System shall display transaction details.

- iv. System should provide facility for change in address/ name.
- v. System should maintain details about placing order/ dispatch or order status.

### **B. ERROR HANDLING**

- i. System should report any errors on duplicate primary keys.
- ii. System should report out of range values on numeric fields.
- iii. System should report data type mismatches on fields on the form.
- iv. System should report invalid dates.
- v. System should report violation of rights authorization.
- vi. System should report invalid login errors.

#### **4.2.4 Non- Functional Requirements**

- i. All user manuals should be provided in the necessary format.
- ii. Application should support 5 simultaneous users.
- iii. Transaction should be completed within seconds.
- iv. There will be backup procedure to maintain records.

#### **4.3.1 SYSTEM CONVERSION**

System conversion examines the pros and cons of various approaches to system change over from the old to the new system and recommends which is the most suitable for the present study. It also goes further to plan a course of action for the conversion. In this project work, the researcher adopted the parallel change over procedures. It is a situation where the old system processes data alongside with the new system.

### **4.3.2 CHANGE OVER PROCEDURE**

Change over implies that conversion from the manual record keeping system of the hospital to new computerized based system. Without the analyst, programmers and operating staff, this change over from clerical procedure to computer procedure will not be achieved thus; their services are highly needed for the new system to work effectively.

The developed system can also be installed using various method of change over listed below.

#### **DUAL SYSTEM METHOD**

This method requires that the existing system be gradually phased out as the new system is gradually introduced.

#### **INVENTORY METHOD**

This is the process whereby the old system is abandoned completely and the one is taken up immediately. This is as a result of the need to familiarize and impose users with the new computer based system.

#### **PILOT SYSTEM METHOD**

In this method, a small portion of the new system is being installed and evaluated while the existing system is then in use, if the small portion succeeds, then the old will installed.

### **4.3 IMPLEMENTATION**

The new system is designed to be put into efficient use. Here, we will look into the various technical aspects that influenced the successful implementation of

this system and determine the effective operation of the system. System implementation follows the approval of the system proposals and its objectives, thus it is to arrive at a satisfactory, implemented, completed, and function evaluated automated system. It also embodies the preparation of resources including equipments and personnel.

The supplier login password and identification is entered, he checks, tracks order, dispatch order on customer and sends invoice after which he updates records. The customer studies and makes a list of requirement, places the order, makes payment and receives his invoice.



Fig 4.1 Patients File Processing Interface

## 4.4 TESTING

Testing presents an interesting anomaly for the software engineer where he attempts to build software from an abstract concept to a tangible product. During testing, the engineer creates series of test cases to discard preconceived notions of the “correctness” of software just developed and overcome a conflict of interest that occur when errors are uncovered. As a secondary benefit, testing demonstrates that the software functions appear to be working according to specification, that behavioural and performance requirements appear to have been met. In addition, data collected as testing is conducted provide a good indication of software reliability and quality as a whole.

Testing should begin “in the small” and progress toward testing “in the large”. 80 percent of all errors uncovered during testing will likely be traceable to 20 percent of all program components. The components would be isolated and thoroughly tested. Testing ensures that internal operations are performed according to specifications and all internal components have been adequately exercised.

#### 4.4.1 Unit Testing

**Table 4.1 the Test Data, Expected Data, and Actual Result**

The Test Data	Expected Tested Result	Actual Test Result
Login Form	Expected to see the login form immediately the software is run	When the software is run, a form now appears where you supply your username and password
Main Form	Contain 8 buttons, 6 are expected to drop down a menu and the remaining are not expected to. 1 <sup>st</sup> button: <b>Customer maintenance</b> drops down <b>New customer</b> and <b>Edit new customer</b> . 2 <sup>nd</sup> button: <b>Stock</b> drops down <b>Register stock</b> and <b>Edit stock</b> . 3 <sup>rd</sup> button: <b>Transaction</b> drops down <b>Supply</b> and <b>View transaction</b> . 4 <sup>th</sup> button: <b>Security</b> drops down <b>User account</b> . 5 <sup>th</sup> button: <b>summary</b> drops down Summary records. 6 <sup>th</sup> button: <b>logout</b> 7 <sup>th</sup> button: <b>Exit</b>	After login, 8 buttons appear. 6 drop down menus while the remaining 2 don't.



	8 <sup>th</sup> button: Help	
Main customer form	Expected to enable user to register new customers	Allows the user to register new customers
Edit customer form	Expected to enable user to edit registered customer information if necessary	Allows the user to edit registered customer information if necessary
Register stock form	Expected to enable user to register new products brought to be put in the ware house	Allows the user to register new products brought to be put in the ware house
Edit stock form	Expected to enable the user to edit registered product information if necessary	Allows the user to edit registered product information if necessary
Supply form	Expected to enable user to make supplies of registered products to registered customers	Allows the user to make supply of registered products to registered customers

View transaction form	Expected to enable the user to view the transactions to perform at a particular period in time	Allows the user to view the transactions to perform at a particular period in time
User account form	Expected to allow user add new users and also delete unwanted users	Allows user to add new users and also delete unwanted users
Summary form	Expected to allow the user to get a total of the sales made for a particular period	Allows the user to get a total of the sales made for a particular period
Invoice form	Expected to allow the user print out an invoice to the customer after a supply is made	Allows the user to print out the invoice to the customer after supply is made
Logout module	When clicked, it is expected to carry the user back to the login form thereby placing the software on a stand-by mode	Allows the user to be carried back to the login form when clicked, therefore placing the software on a stand-by mode

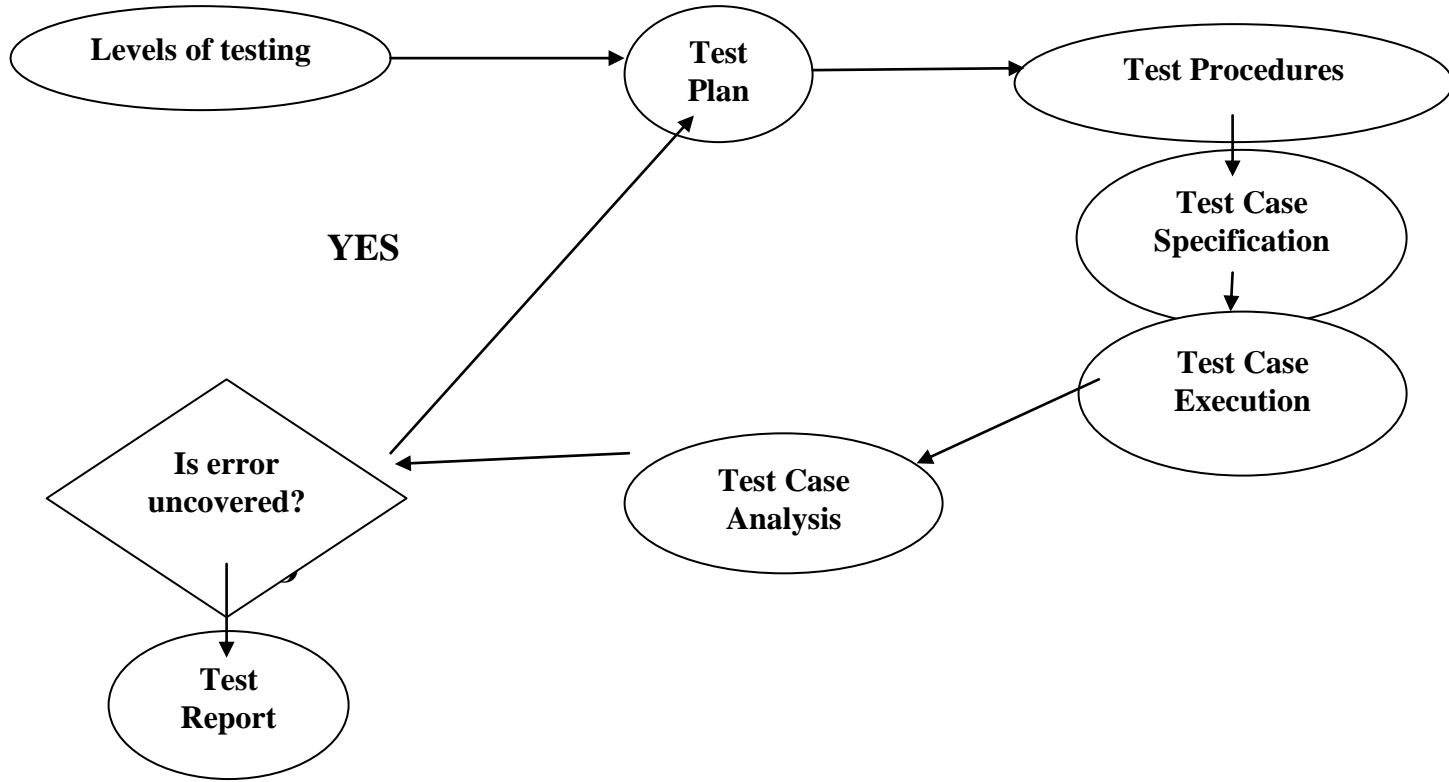
Exit module	When clicked is expected to close the entire software	Allows the entire software to be closed when clicked
Help form	It is expected to see some information about the developer here	Information about the developer is found here.

#### **4.4.2 System Testing**

After test running was varied data, which is after running the program, the output was shown on the monitor. The output can also be printed on paper. This shows that the new system was perfect and effective.

### 4.4.3 Testing Process

The testing process can be shown as;



**Fig 4:2 System Testing Process**

### 4.5 INTEGRATION.

System integration is the successful putting together of the various components, assemblies, and subsystems of a system and having them work together to perform what the system was intended to do. After successfully designing my **LOGIN** form, **CUSTOMER MAINTENANCE** form, **STOCK** form, **TRANSACTION** form, **SECURITY** form, **SUMMARY**

form, **LOGOUT** form, **EXIT** form and **HELP** form and tested them to make sure that they are working properly; I merged them together to make up the complete system. Integration follows the coding phase in the development life cycle, as shown in below and is intertwined with the testing.



**Fig4:3 Integration's Place in the Development Life Cycle**

## **CHAPTER FIVE**

### **SUMMARY, RECOMMENDATIONS AND CONCLUSION**

#### **5.1 SUMMARY OF FINDINGS**

Without the use of computerized system for medical system, I wonder what will be the stand of our economy today. Since, the implementation of this system does more good than harm in our country especially health sector. Hence not only does it provide good health with the help of the following factors, accuracy, flexibility, and speedy treatment. But, also it will be a big relief for medical doctors and nurses when attending to patients.

This project is well designed with reliability and efficiency as our mainstay, have come just in time to correct those weaknesses and anomalies, which exist in the existing manual method. The achievements made up this design can be summarized

- a. Result of high processing speed of the computerize system
- b. Patient's records can now be retrieved easily.
- c. Billing system in the hospital will be more effective.
- d. Similarly there is also an easy accesses to clinical reports for research purpose and decision making

## **5.2 LIMITATIONS OF THE PROJECT.**

This work is limited to the teaching hospital Enugu due to time and resource constraint.

## **5.3 RECOMMENDATIONS.**

The objective of the project will be fulfilled if the following recommendations are adopted.

### **TRAINING**

The key personnel and staff of the ESUT teaching Hospital selected from the related department involved should be enrolled in computer training school for awareness course. This will enable them to know the following.

- (1) What is a computer?
- (2) The role computer plays in medicine
- (3) The need for computer in modern society
- (4) The duties of system analyst, programmer and computer operators
- (5) Data preparation methods and programming
- (6) The personnel to be employed for the new system.

### **OTHER RECOMMENDATION INCLUDES:**

- An establishment of medical record department
- Medical record administrator who should report to the chief matron
- Efficient computerized medical record. System with time-sharing data processing.

## 5.4 BEME (Bill of Engineering Measurement & Engineering)

Table 5.1 Total cost of the project

ITEM	ITEM PRICE( ₦ )
COMPACT DISK	400
MODEM	6000
TRANSPORT	2000
VB 10 TUTORIALS	20,000.00
COMPUTER OPERATOR	2,000.00
COMPUTER SYSTEM	110,000.00
PRINTING	2,000.00
BINDING	500.00
TOTAL	142,900.00

## 5.5 CONCLUSION

Coming to the end of this project work the researcher is concluding with the following points.

A close investigation and analysis of the manual record keeping system of the Enugu State University of Science and Technology teaching Hospital Enugu reveals so many problems and loop holes.



To overcome these problems of the manual system, computer based system have been designed the design provides a system specification and clearly pointing out the requirement specification for the system.

In all, the project equally provided and efficient working program for the effective operation of the computer base system.

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## APPENDIX

Option Base 1

Private reclenght, reci, recindex, I, t As Integer

Option Explicit

Private Sub Combo2\_Change()

End Sub

Private Sub Command1\_Click()

Form2.Data1.Recordset.AddNew

Form2.Data1.Recordset.Fields("id") = Form2.Text1.Text

Form2.Data1.Recordset.Fields("name") = Form2.Text2.Text

Form2.Data1.Recordset.Fields("sex") = Form2.Combo1.Text

Form2.Data1.Recordset.Fields("age") = Form2.Text4.Text

Form2.Data1.Recordset.Fields("address") = Form2.Text6.Text

Form2.Data1.Recordset.Fields("symptoms") = "-"

Form2.Data1.Recordset.Fields("ward") = Form2.Text7.Text

Form2.Data1.Recordset.Fields("date admitted") = Form2.Text5.Text

Form2.Data1.Recordset.Fields("bill") = 0

Form2.Data1.Recordset.Fields("amount paid") = 0

Form2.Data1.Recordset.Fields("balance") = 0

```
Form2.Data1.Recordset.Fields("date discharged") = "-"
Form2.Data1.Recordset.Fields("treatment") = "-"
Form2.Data1.Recordset.Fields("dept") = Form2.Text12.Text
Form2.Data1.Recordset.Fields("Remark") = "Admitted"
Form2.Data1.Recordset.Fields("view") = "Yes"
Form2.Data1.Recordset.Update
Form2.Text1.Text = ""
Form2.Text12.Text = ""
Form2.Text2.Text = ""
Form2.Text3.Text = ""
Form2.Text4.Text = ""
Form2.Combo1.Text = ""
Form2.Text5.Text = ""
Form2.Text6.Text = ""
Form2.Text7.Text = ""
Form2.Text8.Text = ""
```

End Sub

```
Private Sub Command2_Click()
```

```
Command1.Enabled = False
```

```
Command4.Enabled = False
```

```
Form2.Hide
```

```
End Sub
```

```
Private Sub Command3_Click()
Form2.Data1.Recordset.MoveFirst
Do Until Form2.Data1.Recordset.EOF
If frmDataEnv.Combo2.Text = Form2.Data1.Recordset.Fields("id") Then
Form2.Data1.Recordset.Edit
Form2.Data1.Recordset.Fields("date discharged") = Date
Form2.Data1.Recordset.Fields("Remark") = "Discharged"
Form2.Data1.Recordset.Update
Form2.Text1.Text = ""
Form2.Text12.Text = ""
Form2.Text2.Text = ""
Form2.Text3.Text = ""
Form2.Text4.Text = ""
Form2.Combo1.Text = ""
Form2.Text5.Text = ""
Form2.Text6.Text = ""
Form2.Text7.Text = ""
Form2.Text8.Text = ""

Exit Do
Else
Form2.Data1.Recordset.MoveNext
End If
```

Loop

End Sub

```
Private Sub Command4_Click()
```

```
Form2.Data1.Recordset.MoveFirst
```

```
Do Until Form2.Data1.Recordset.EOF
```

```
If frmDataEnv.Combo2.Text = Form2.Data1.Recordset.Fields("id") Then
```

```
Form2.Data1.Recordset.Edit
```

```
Form2.Data1.Recordset.Fields("id") = Form2.Text1.Text
```

```
Form2.Data1.Recordset.Fields("name") = Form2.Text2.Text
```

```
Form2.Data1.Recordset.Fields("sex") = Form2.Combo1.Text
```

```
Form2.Data1.Recordset.Fields("age") = Form2.Text4.Text
```

```
Form2.Data1.Recordset.Fields("address") = Form2.Text6.Text
```

```
Form2.Data1.Recordset.Fields("symptoms") = Form2.Text3.Text
```

```
Form2.Data1.Recordset.Fields("ward") = Form2.Text7.Text
```

```
Form2.Data1.Recordset.Fields("date admitted") = Form2.Text5.Text
```

```
Form2.Data1.Recordset.Fields("treatment") = Form2.Text8.Text
```

```
Form2.Data1.Recordset.Fields("dept") = Form2.Text12.Text
```

```
Form2.Data1.Recordset.Update
```

```
Form2.Text1.Text = ""
```

```
Form2.Text12.Text = ""
```

```
Form2.Text2.Text = ""  
Form2.Text3.Text = ""  
Form2.Text4.Text = ""  
Form2.Combo1.Text = ""  
Form2.Text5.Text = ""  
Form2.Text6.Text = ""  
Form2.Text7.Text = ""  
Form2.Text8.Text = ""
```

```
Exit Do
```

```
Else
```

```
Form2.Data1.Recordset.MoveNext
```

```
End If
```

```
Loop
```

```
End Sub
```

```
Private Sub Command5_Click()
```

```
Form2.PrintForm
```

```
Printer.EndDoc
```

```
End Sub
```

```
Private Sub Combo1_Click()
```

```
Form2.Data1.Recordset.MoveFirst
```

```
Do Until Form2.Data1.Recordset.EOF
```

```
If frmDataEnv.Combo1.Text = Form2.Data1.Recordset.Fields("id") Then
frmDataEnv.Text1.Text = Form2.Data1.Recordset.Fields("name")
Exit Do
Else
Form2.Data1.Recordset.MoveNext
End If
Loop
End Sub
```

```
Private Sub Combo3_Click()
Form2.Data1.Recordset.MoveFirst
Do Until Form2.Data1.Recordset.EOF
If frmDataEnv.Combo3.Text = Form2.Data1.Recordset.Fields("id") Then
frmDataEnv.Text3.Text = Form2.Data1.Recordset.Fields("name")
Exit Do
Else
Form2.Data1.Recordset.MoveNext
End If
Loop
End Sub
```

```
Private Sub Command1_Click()
Form2.Data1.Recordset.MoveFirst
Do Until Form2.Data1.Recordset.EOF
```



```

If frmDataEnv.Combo1.Text = Form2.Data1.Recordset.Fields("id") Then
Form2.Data1.Recordset.Edit
If frmDataEnv.Option1.Value = True Then
Form2.Data1.Recordset.Fields("bill") = Form2.Data1.Recordset.Fields("bill")
+ Val(frmDataEnv.Text2.Text)
Form2.Data1.Recordset.Fields("balance") =
Form2.Data1.Recordset.Fields("balance") + Val(frmDataEnv.Text2.Text)
Else

Form2.Data1.Recordset.Fields("amount          paid") =
Form2.Data1.Recordset.Fields("amount paid") + Val(frmDataEnv.Text2.Text)
Form2.Data1.Recordset.Fields("balance") =
Form2.Data1.Recordset.Fields("balance") - Val(frmDataEnv.Text2.Text)
End If
Form2.Data1.Recordset.Update
Exit Do
Else
Form2.Data1.Recordset.MoveNext
End If
Loop
frmDataEnv.Text1.Text = ""
frmDataEnv.Text2.Text = ""
End Sub
Private Sub Command2_Click()

```

```

frmDataEnv.Frame1.Visible = False
End Sub
Private Sub Command3_Click()
On Error Resume Next
Form2.Data1.Recordset.MoveFirst
Do Until Form2.Data1.Recordset.EOF
If frmDataEnv.Combo2.Text = Form2.Data1.Recordset.Fields("id") Then

Form2.Text1.Text = Form2.Data1.Recordset.Fields("id")
Form2.Text2.Text = Form2.Data1.Recordset.Fields("name")
Form2.Combo1.Text = Form2.Data1.Recordset.Fields("sex")
Form2.Text4.Text = Form2.Data1.Recordset.Fields("age")
Form2.Text6.Text = Form2.Data1.Recordset.Fields("address")
Form2.Text3.Text = Form2.Data1.Recordset.Fields("symptoms")
Form2.Text7.Text = Form2.Data1.Recordset.Fields("ward")
Form2.Text5.Text = Form2.Data1.Recordset.Fields("date admitted")
Form2.Text9.Text = Form2.Data1.Recordset.Fields("bill")
Form2.Text10.Text = Form2.Data1.Recordset.Fields("amount paid")
Form2.Text11.Text = Form2.Data1.Recordset.Fields("balance")
Form2.Text8.Text = Form2.Data1.Recordset.Fields("treatment")
Form2.Text12.Text = Form2.Data1.Recordset.Fields("dept")

Form2.Show

```

```
frmDataEnv.Frame2.Visible = False
Form2.Command1.Enabled = False
Form2.Command3.Enabled = True
Form2.Command4.Enabled = True
```

```
Exit Do
Else
Form2.Data1.Recordset.MoveNext
End If
Loop
```

```
End Sub
```

```
Private Sub Command4_Click()
frmDataEnv.Frame2.Visible = False
```

```
End Sub
```

```
Private Sub Command5_Click()
Form2.Data1.Recordset.MoveFirst
Do Until Form2.Data1.Recordset.EOF
If frmDataEnv.Combo3.Text = Form2.Data1.Recordset.Fields("id") Then
Form2.Data1.Recordset.Edit
Form2.Data1.Recordset.Fields("symptoms") = frmDataEnv.Text4.Text
```

```
Form2.Data1.Recordset.Fields("treatment") = frmDataEnv.Text5.Text
Form2.Data1.Recordset.Update
Exit Do
Else
Form2.Data1.Recordset.MoveNext
End If
Loop
frmDataEnv.Text3.Text = ""
frmDataEnv.Text4.Text = ""
frmDataEnv.Text5.Text = ""

End Sub

Private Sub Command6_Click()
frmDataEnv.Frame3.Visible = False

End Sub

Private Sub dpr_Click()
On Error Resume Next
frmDataEnv.Combo1.Clear
Form2.Data1.Recordset.MoveFirst
Do Until Form2.Data1.Recordset.EOF
frmDataEnv.Combo1.AddItem Form2.Data1.Recordset.Fields("id")
```

```
Form2.Data1.Recordset.MoveNext
Loop
frmDataEnv.Option1.Value = True
frmDataEnv.Frame1.Visible = True
frmDataEnv.Frame1.Caption = "Bill Patient"
```

```
frmDataEnv.Text1.Text = ""
frmDataEnv.Text2.Text = ""
```

```
End Sub
```

```
Private Sub ex_Click()
```

```
End
```

```
End Sub
```

```
Private Sub Form_Load()
```

```
frmDataEnv.Hide
```

```
frmLogin.Show
```

```
End Sub
```

```
Private Sub inr_Click()
```

```
DataEnvironment1.Connection1.Open
```

```
DataEnvironment1.Command1
```

```
DataEnvironment1.Connection1.Close
```

DataEnvironment1.Connection1.Open

DataEnvironment1.Command1

DataReport2.Show

End Sub

Private Sub list\_Click()

DataEnvironment1.Connection1.Open

DataEnvironment1.Command1

DataEnvironment1.Connection1.Close

DataEnvironment1.Connection1.Open

DataEnvironment1.Command1

DataReport1.Show

End Sub

Private Sub par\_Click()

On Error Resume Next

frmDataEnv.Combo2.Clear

Form2.Data1.Recordset.MoveFirst

Do Until Form2.Data1.Recordset.EOF

frmDataEnv.Combo2.AddItem Form2.Data1.Recordset.Fields("id")

Form2.Data1.Recordset.MoveNext

Loop

```
frmDataEnv.Frame2.Visible = True
```

```
End Sub
```

```
Private Sub pay_Click()
```

```
On Error Resume Next
```

```
frmDataEnv.Combo3.Clear
```

```
Form2.Data1.Recordset.MoveFirst
```

```
Do Until Form2.Data1.Recordset.EOF
```

```
frmDataEnv.Combo3.AddItem Form2.Data1.Recordset.Fields("id")
```

```
Form2.Data1.Recordset.MoveNext
```

```
Loop
```

```
frmDataEnv.Frame3.Visible = True
```

```
frmDataEnv.Text3.Text = ""
```

```
frmDataEnv.Text4.Text = ""
```

```
frmDataEnv.Text5.Text = ""
```

```
End Sub
```

```
Private Sub payment_Click()
```

```
On Error Resume Next
```

```
frmDataEnv.Combo1.Clear
```

```
Form2.Data1.Recordset.MoveFirst
```

```
Do Until Form2.Data1.Recordset.EOF
```

```
frmDataEnv.Combo1.AddItem Form2.Data1.Recordset.Fields("id")
```

```
Form2.Data1.Recordset.MoveNext
```

```
Loop
```

```
frmDataEnv.Option2.Value = True
```

```
frmDataEnv.Frame1.Visible = True
```

```
frmDataEnv.Frame1.Caption = "Bill Payment"
```

```
frmDataEnv.Text1.Text = ""
```

```
frmDataEnv.Text2.Text = ""
```

```
End Sub
```

```
Private Sub usr_Click()
```

```
Dim htAs String
```

```
ht = MsgBox("This software is developed for Packlane Hospital", vbOKOnly,  
"Users Guide")
```

```
End Sub
```