

**COMPUTERIZATION OF
BIRTHRATE AND DEATHRATE**

(A CASE STUDY OF UNIVERSITY OF ILORIN TEACHING HOSPITAL)

UITH.

A THESIS SUBMITTED TO THE SCHOOL OF SCIENCE AND

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APPROVAL PAGE

THIS THESIS HAS BEEN READ AND APPROVED AS MEETING THE REQUIREMENTS OF THE SCHOOL OF SCIENCE AND SCIENCE EDUCATION, DEPARTMENT OF MATHEMATICS/COMPUTER SCIENCE, POST GRADUATE SCHOOL, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA.

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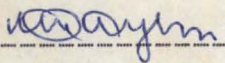
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DEDICATION

This project is dedicated to the ALMIGHTY ALLAH, WHOSE SPECIAL GRACE has made it possible for me to undergo the course.

ACKNOWLEDGEMENT

I heartily express my sincere gratitude to my able supervisor, Mr. Yomi Aiyesimi (a PhD. student), who directed and corrected this work. He was very accessible and friendly in his relation to me while the work was in progress. His suggestions and positive criticisms has no doubt gone a long way in making this project a success.

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ABSTRACT

This project is aimed at using a computer to calculate the Birthrate and Deathrate instead of the cumbersome manual method being used at the statistical and record department of University of Ilorin Teaching Hospital.

(UITH).

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CHAPTER ONE

1.1

INTRODUCTION

HISTORY OF THE HOSPITAL

The University of Ilorin Teaching Hospital (U.I.T.H) formally came into existence on 2nd May, 1980 when the Federal Government set up its first Board of Management. The Board along with those of other eleven Teaching Hospitals was inaugurated in Lagos on 13th June, 1980 by the then Hon. Minister of Health, Mr Daniel Ugwu. The decree establishing the Teaching Hospital then was the reconstitution of Boards Decree No 74 of 1979.

That decree has been repealed and replaced with Decree No 10 of 1985. The inaugurating meeting of the first Board of management was held in Ilorin on 14th and 15th July, 1980, under the chairmanship of Dr. Afolabi Ogunlusi and its first Chief Medical Director was professor Taiwo Daramola.

The objectives of the Teaching Hospital include:

- (1) Training of medical personnel
- (2) Delivering of Health care services
- (3) Serve as reference centre for other Hospitals and
- (4) Conduct Researches.

Departments within the hospital include:-

(a) Directorate of Clinical Affairs and Training. This consist of Anaesthesia, Behavioural sciences, Chemical pathology and immunology, child Health and Paediatrics, Epidemiology and Community Health, General outPatients, Medical Records, Medicine,

microbiology and parasitology, obstetrics and Hematology, Nursing service, Pathology and Hematology, Pharmacy, Physiotherapy, Radiology and Surgery.

(b) Directorate of Administration: this consist of Administration, Audit, Dietetics and Accounts, Finance and accounts, Security, Social services stores and supplies as well as works.

Some of the wards within the hospital are :

1. Labour ward:- this is where pregnant women deliver babies
2. Emergency Ward :- This is where emergency cases like accident victims are treated.
3. Post-Natal Ward :- this ward is used to keep those that are just delivered before they are discharged.
4. Ante-Natal ward :- This is the ward where pregnant women with one problem or the other are treated.
5. Surgical Ward:- This is where surgical operations are perform or takes place. Equally mothers on operations are kept here.
6. Isolated Ward:- This is where infected patients are kept and treated.
7. Neonatal Ward:- This ward is meant for keeping sick babies. However, it should be noted that each ward is headed by a matron and the Hospital as a whole is headed by the chief Medical Director(CMD).

WHAT IS A COMPUTER?

The first computer - Babbage's analytical engine was a mechanical device consisting of many cogs and levers with instructions to be put in the form of punched cards. It wasn't all that different from a piano or some of the mechanical music boxes organs of the nineteenth century. Modern computers based on electronics began during world war II in a few Universities and Government laboratories. Those computers used vacuum tubes were very large physically, generate considerable heat and were relatively unreliable.

the early 1960's saw the entry of computers using smaller, more reliable transistors. the Mid - and - late 1960's saw the development of the first computers using integrated circuits. (ICs), Silicon chips with hundreds of transistorised circuits itched on chips smaller than an inch square. by the early 1970's computers began using large-scale Integration (L S I) with thousands of circuits on chips. the fastest of these use further miniaturisation through Vary Large-Scale-Integration (VLSI) and are orders of magnitude faster than other computers. Each succeeding generation has lead not only to more powerful and faster machines, but also to greater variation in size and dramatic decreases in cost. While the first computers require entire room and large air conditioning equipment and cost in the millions of dollars, today these mainframe computers are joined by desk-size minicomputers, consisting in the tens of thousand. Dollars, some of which are hardly bigger than hand calculators.

the near future also promises continue dramatic decreases in the size and cost of computers along with equally dramatic increases in their power. Broadly speaking, a computer is a device that performs computation or logically processes information. In practice, the computing field defines computer as an electronic, stored program machine. the major function of the computer is to store, process and retrieve Data. Data includes both information to be processed and instructions for the computer to follow. these sets of instructions which are called programs consists of commands to the computer telling it to perform operations such as reading, writing, copying , and arithmetically transforming data. Thus the computer is a logical machine following a given sequence of operations that are specified in commands or program instructions.

1.3 JUSTIFICATION OF STUDY:

It is hoped that at the end of this project, we will be able to see how effective computer is in computing Birthrate and Deathrate.

1.4 ASSUMPTION OF STUDY:

Manual methods for computing Birthrate and Deathrate has been in operation in the Teaching Hospital.

1.5 PURPOSE OF STUDY:

The aim of this project is to use a computer system to find the proportion of livebirth and stillbirth in each year for

male and female deliveries and compute the birthrate and Deathrate for each year.

1.6 **HYPOTHESIS:**

Computerization and manual methods for determining birthrate and Deathrate are equally effective in the teaching Hospital.

1.7 **DELIMITATION AND SCOPE OF THE STUDY**

The scope of this research is limited to finding how effective it is to use a computer system to determine the Birthrate and Deathrate of male and female deliveries in the university of Ilorin Teaching hospital. (UITH).

1.8 **LIMITATION OF THE STUDY:-**

Inability to determine Livebirth and still birth of male and female deliveries due to occasional strike action of Hospital staff, lack of deliveries of some babies of the teaching Hospitals as some deliveries are done at home and other private Hospitals because of high bills of the teaching Hospital.

1.9 **DEFINITION OF TERMS:**

The following terms are defined as follows as used in the study:

Birthrate: Measures the number of Births per 1000 of population

Deathrate: Measures the numbers of Death per 1000 of population.

Livebirth: This is a condition in which a child is delivered with all condition of health.

StillBirth: This is the act of giving birth to young ones without respiratory organ and pulse . In this condition, a child is born without life.

Computer: An electronic device capable of receiving an input data, process it and output the resultant information.

Program: Series of instructions which tell a computer how to perform a task.

Computer system: This is a collection of hardware, software, peripherals and humanbeing interacting with each other for the purpose of solving a problem.

Software: Set of instructions or programs that can be temporarily stored within the computer.

Hardware: Physical equipment and electronic circuitry that make up a computer.

Printer: Used by computers to print an entire line of text at a time. this printed text is called Hardcopy.

Input Unit: this is where both program and data enters the computer.

Output Unit: the final result of the computer are produced inside the computer. If the result is to be seen, it must be outputted from the computer by means of the printer.

Magnetic tape: Used for external memory in both large and small computers. They have the advantage of providing large amount of storage.

Floppy Disks: Small Box like device which records information from computer on thin magnetic diskettes.

They are bend easily and are therefore enclosed in a plastic cases to prevent damage.

External memory storage: Central memory of a computer is often too small to handle all the data needed for large programs. It is also volatile and its contents are lost when the machine is turned off. Most computers therefore have an external memory also called auxiliary memory where programs and information can be stored for later use.

Central memory: Also called main memory or internal memory or core memory is used as part of the CPU to transfer and store both instructions and data.

Central Processing Unit (CPU): This is the heart of the computer where information processing takes place.

Arithmetic and logical Unit: This is the part of the computer that performs Arithmetical and logical operations.

Control Unit: Every operation on information including the movement of information from one place to another is directed by the control unit. This is the part that directs and governs what other parts do.

CHAPTER TWO

REVIEW OF RELEVANT LITERATURE

This chapter is devoted to reviewing of relevant literature on the origin and application of computer.

The chapter is broken down into introduction and various researches on application of computer.

2.1 INTRODUCTION

The computer is a machine endowed with the ability to carry out arithmetic operations and simple logical instructions which obeys 'blindly' as a result of human guidance. This complex electronic device machine which can perform basic arithmetic operations at a speed of light or electric current was first conceived in 1820 by an English Mathematician, Charles Babbage; Fatunla (1985). Though the idea of such a machine was first conceived by Charles Babbage the first electronic digital computer called Numerical Integrator and calculator (ENIAC) was invented in 1940 by professor J.P. Eckert and Dr J.W Mouchly at the University of Peninsula, USA. If the computer is properly instructed, it can perform in few seconds what will take human hand calculation weeks to accomplish. Computers can store a thousand or tens of thousands of results in its memory and recall them in a microsecond. It can be programmed to examine its results and make decisions and so can be given a superficial appearance of intelligence. In Wisconsin, USA for instance, a computer has been used to store the result of some 200,000

citations from the Wisconsin supreme Court decisions and it is kept completely up to date.

The computer can also help a state house of Assembly in its legislation. For Example, the Iowa legislators in USA, now use an IBM 360 to see some eight million words of Iowa law together with the thirty-page state constitution and print out pertinent section for the enquirer at the rate of one typewritten page per second. The key to the eight million word electronic bank is a 250-word index of words and phrases. Computer simulations have also been utilised to introduce new concepts effectively especially if accompanied by some tutorial materials to provide explanation in order to assure the students understanding and mastery of material.

Simulated experiments were used by students in physics (Benette 1972) and Biology (Hyatta etal, 1972).

And in America, computers are being used to speak to telephone operator giving them immediate information on the appropriate charges for connecting calls to thousands of telephone exchanges in the U.S.A. and Canada. The operator can interrogate the computer about charges and can receive a spoken reply from the computer in about fifteen seconds. In Kaduna NITEL exchange, computers are used as the controlling element of a telephone exchange or a telegraphy switching centre; (Oyedokun 1985). Digital electronic computers were also invented and became commercially available in the late 1940's. these electronic brains become a new tool for management and nontechnically

trained executives began to look for help in the selection and utilization of computer. (Dandson 1968) affirmed that routine accountancy and payroll are the main areas of computer applications the computer is used as well to reduce the burden of work involved in processing cheques. Charles Babbage's perception of the computer in 1820 was to use it to compute premiums of insurance in order to eliminate the burden imposed on human beings in performing the menial jobs of computing premiums manually. Today, many insurance companies carry out this task using the computer. Though the invention of printing press in 1440 and the use of aids such as chalkboards, projector, tape recorders, Tv equipment in many school systems have improved the quality of Education, the use of digital computer for delivering education brought about further improvement in the educational sector. This has been described by Rubinoff and Yavits (1976) as the most challenging application of computer since it requires sophisticated interaction with the student at an economical price. A lot of early projects in computer-based education have been cited in Zinn (1967). In Advanced Countries, computers are used to forecast the weather for a period of time ahead. The National meteorological centre in U.S.A also uses computer to monitor the constant changes in wind, pressure, temperature, humidity etc. from over 300 weather service stations located both in U.S.A. and other parts of the World, Fatunla (1985) installed in the naval hardware resources to diagnose the equipments and predict the outcome of certain movements by

detecting obstacle positions in the water. They are also used in the airforce to display information on warning, surveillance and predict the results of certain maneuvered and project them on graphics display. In advanced countries, computers are installed in police posts and stations to keep records of criminals. Information on name, sex, age, height, complex and criminal history of lawbreakers are kept and communicated to all stations to assist in the checking and investigation of crimes. Professor John V. Lombardi in his book titled "computer literacy" (1983) states that "computer literacy means that the ability to recognize problems for which the computer may be a useful part of solution" Lombardi like most other authors of computer literacy texts claims that everyone needs such as ability. One of the major debates in education today concerns how to prepare students for a society that is increasingly computerised. According to Seidel, Anderson and Hunter (1982)" students should have computer skills which will presumably increase their chances of effective functioning in an information age". Fry (1979) in his contribution claimed that "an industrial machinery can be regarded as an extension of human hands, while the computer represents an extension of the human minds". Electronic computers have outstripped the human mind in speed with which they absorb information, process it and communicate the result. They carried our repetitive operations with greater reliability and store vast quantities of information. Computers are also influencing the existing content of the curriculum. For instance,

the word 'numeric' is acquiring new meaning. This now seem to mean the ability to use computers/calculators and to interpret the output in a manner which is consistent with the terms of problem (Girling 1977).

To Yates (1966), "calculators are the first revolution; computers the second". Computers are capable of storing vast amount of information and acts on instructions very fast. Only when wrongly programmed will it produce wrong results. Before computers become available, the convience approaches to many practical applications were to be outdated with the arrival of computers. Evans used to generate statistical tables rather than the exact method before the arrival of computers.

Mead, stern (1973) and pike (1976) are to mention a few others who have discussed the effect of computers on statistics. Their work considers as impropriety of the continual use of some formulae for descriptive statistics in this computers era. Kerride (1973) agrees that " the most important thing that computers can do for us is to clear away unnecessary rubbish" however it is surprising that even recently published books still include these formulae, Croxton etal (1988) and according to Omotosho (1990). " In academic institutions, these formulae are still being taught to students".

CHAPTER THREE

3.1 INTRODUCTION

This chapter explains the designs of the study in detail; the selection of the sample population and the presentation of the data collected.

SAMPLES AND SAMPLING TECHNIQUES.

The project was carried out at the University of Ilorin Teaching Hospital (UITH), Kwara state. In order to choose the Hospital where the research is to be carried out" the names of all the twelve (12) teaching Hospitals in the country were written on separately pieces of paper and thrown down. University of Ilorin Teaching Hospital was then picked at random. Also the choice of a teaching hospital was initially decided because, teaching Hospitals are the largest public end most standard Hospitals in the country usually with sufficient manpower and standard equipments in their use especially in health delivery.

3.2 SOURCE AND DATA COLLECTION

All the data used in this project were collected at the University of Ilorin Teaching Hospitals Record and statistical section where all the daily entries are being updated and kept. however the deliveries of babies are done at the maternity wing of the teaching Hospital. the data were collected through

personal interview of the officers incharge of the record and statistical department of the hospital. Data were collected for male and female livebirth and still births for the year 1992, 1993 and 1994 as well as the manual computation of Birthrate and Deathrate per year for the three years. These facts were then used to prepare a software (program) which can be used easily and accurately in a computer to compute the Birthrate and Deathrate of deliveries by the section in future. These data aid manual computation are attached as appendices.

Distribution of Life And Still Birth for Year 1992

MONTHS	MALE		FEMALE		TOTAL
	LIVEBIRTH	STILL BIRTH	LIFE BIRTH	STILLBIRTH	
JANUARY	236	4	233	4	477
FEBRUARY	192	12	399	16	619
MARCH	212	6	242	3	463
APRIL	218	4	216	5	443
MAY	227	1	193	2	423
JUNE	177	6	153	5	341
JULY	189	3	176	7	375
AUGUST	225	7	179	10	421
SEPTEMBER	226	9	220	8	463
OCTOBER	137	2	102	1	242
NOVEMBER	192	5	196	4	397
DECEMBER	50	3	66	0	119
TOTAL	2281	62	2375	65	4783

SOURCE: RECORD AND STATISTICAL SECTION (UITH)

Press Any key to See Summary

Distribution of Life And Still Birth for Year 1993

MONTHS	MALE		FEMALE		TOTAL
	LIVEBIRTH	STILL BIRTH	LIFE BIRTH	STILLBIRTH	
JANUARY	131	5	129	2	267
FEBRUARY	7	1	2	0	10
MARCH	59	1	45	0	105
APRIL	64	3	70	2	139
MAY	2	0	6	0	8
JUNE	49	1	52	1	103
JULY	92	3	76	7	178
AUGUST	90	5	107	2	204
SEPTEMBER	109	4	83	6	202
OCTOBER	173	3	152	2	330
NOVEMBER	105	3	96	5	209
DECEMBER	162	7	133	6	308
TOTAL	1043	36	951	33	2063

SOURCE: RECORD AND STATISTICAL SECTION (UITH)

Press Any key to See Summary

Distribution of Life And Still Birth for Year 1994

MONTHS	MALE		FEMALE		TOTAL
	LIVEBIRTH	STILL BIRTH	LIFE BIRTH	STILLBIRTH	
JANURY	157	5	125	7	294
FEBRUARY	138	2	110	7	257
MARCH	117	3	89	6	215
APRIL	94	0	78	0	172
MAY	114	0	89	2	205
JUNE	65	0	82	0	147
JULY	0	0	0	0	0
AUGUST	0	0	0	0	0
SEPTEMBER	64	5	60	5	134
OCTOBER	72	5	72	7	156
NOVEMBER	78	3	58	2	141
DECEMBER	62	0	65	0	127
TOTAL	961	23	828	36	1848

Press Any key to See Summary

MANUAL COMPUTATION OF BIRTHRATE AND DEATHRATE FOR 1992

$$\text{BIRTHRATE} = \frac{\text{TOTAL LIVEBIRTH}}{\text{TOTAL BIRTH}} \times 1000$$

$$= \frac{2281 + 2375}{4783} \times 1000$$

$$= 973$$

$$\text{DEATHRATE} = \frac{\text{TOTAL STILLBIRTH}}{\text{TOTAL BIRTH}} \times 1000$$

$$= \frac{65 + 62}{4783} \times 1000$$

$$= 27$$

ANALYSIS OF BIRTHRATE AND DEATHRATE FOR THE YEAR 1992

BIRTHRATE:

In every 1000 birth registered in 1992, 973 are born alive.

DEATHRATE: *In every 1000 birth registered in 1992, 27 are born dead.*

CHAPTER FOUR

SYSTEM ANALYSIS AND DESIGN

This chapter examine the existing manual operation and the problem associated with it, with a view to providing solution to the problem using computer as well as the implementation of this new computerised system.

4.1 **SYSTEM ANALYSIS:** This is the method of determining how best to use computers with other resources to perform tasks which meet the information needs of an organization. It is concerned with converting the objectives of the management as far as information and data are concerned into methods that are amenable processing by a computer. It is the link between management and software/hardware computing. It therefore involves the examination of each component parts of a system both as separate entity and in relation to the whole. System analysis consists of a series of stages. These are what is often called system life cycle. These stages are problem definition, feasibility study, investigation and fact recording as well as Analysis.

PROBLEM DEFINITION / PRELIMINARY SURVEY: This enable us to establish whether there is a need for a new system or not and if so to specify the objectives of the system or to clearly define the problem to be solved or the new system to be designed.

FEASIBILITY STUDY: Here we investigate the problem and look at all the possible alternative solutions. We also compile the actual cost and do a cost benefit analysis for each alternative solution proposed. We then recommend what we consider 'Best' for the establishment.

INVESTIGATION AND FACTS RECORDING: Here, a more detailed study is conducted. The purpose is to fully understand the existing system and to identify the basic information requirements e.g the range of data types, volumes of data that are to be processed and exceptional conditions as well as problems associated with the present working method.

ANALYSIS: Analysis of the full description of the existing system and of the objectives of the proposed system should lead to a full specification of the users requirements. The following questions are asked here like why did problem occur? Why were the present methods adopted? And what are the alternative methods? This analysis should be able to help us to spells out the strength and weakness of the existing system. It should be obvious at this stage whether or not it would be feasible and sensible to proceed with computerization.

4.2 SYSTEM DESIGN

The analysis above may lead to a number of possible alternative designs. For example different combination of manual

and computerized element may be considered or only a computerized method may be considered. Once one alternative has been selected, the purpose of the design stage is to work from the requirement specification to produce a new system specification.

the system specification will be a detailed set of document which provide details of all features of the proposed system. It serves as communication to management, programmers, operating staff and user. It also provide complete record of the system used for evaluation, modification and training purpose. The system should therefore be well documented as analyst who design it can go to other project or change employment. Contents of system specification should include preliminary information contents, names of those who can change files, programs etc, objectives of the system ie depth involve and benefit, system description ie detail procedure both clerical and consulting using flowcharts where applicable, detail specification of input files, output files, master files, source document and output document, time scale for getting the system working, and plans to enable a smooth change over from the old system to the new one.

4.3 INPUT AND OUTPUT SPECIFICATION

In this section, detail documentation for this new system is examined. The entire design could be divided into coding, output, file design and input.

Coding: This refers to the program code; the entire program code

consist of introductory part and subroutine sub program. The subroutine is used to handle file processing operation like creation of file, updating, deleting of records, deletion of file (s) . At least a subroutine subprogram is assigned to an operation. The introductory part introduces the user to what the project is to handle, it is also in this part that the user is asked to supply a valid password for trails and if he is able to supply correct and valid password before or at the end of the trial, access is granted otherwise he would be denied access and ask to put off the system. In the main program, there is the main menu that display all the file processing operation that could be handled by the program including registration of birth, death as well as Birthrate and Deathrate and an option is chosen out of which the user select his choice.

Once a file has been created, it could be updated on a regular basis to show a valid and current status. If either a record or a whole file is no longer required, it could be erased, but once a record/file is erased, it cannot be restored again.

OUTPUT SPECIFICATION: It is always necessary to consider what is required from the system before dealing how to set about producing it. The output is produced during ants after running the program. For instance error message encountered are displayed when the program encounter mistake in the data or in the processing of data. The error message are all defined and explanatory enough for a user to run the system. Also the content

of a file can be viewed in two ways; ie on the screen or on a paper (hard copy) through the printer. If a hard copy is needed, paper not less than 50 column in width should be used for adjustment reason. The address for the source of registration of Birth and Death as well as Birthrate and Deathrate should not be longer than 24 characters. The data run could usually and automatically be generated by the computers. The system requirement include:

1. Year of distribution of Deathrate and Birthrate
2. Year of distribution of Livebirth and Still birth
3. Months of the Year
4. Number of male Livebirth and stillbirth per month
5. Number of female Livebirth and Stillbirth per month.

The expected output from the system should look like as in Appendix A and D for the year 1992.

INPUT SPECIFICATION: The input or data required for running the system is the same as those used in the manual operation except the password to be supplied when the system is booted. All inputs to the data were done via the console written. This include the year of Birth, Deathrate and Birthrate, the month on each year of both Birthrate and Deathrate, number of male and female Livebirth and Stillbirth, total number of male and female per month as below:

DATA ITEM	DATA NAME	FIELD LENGTH	DATA TYPE
YEAR	YEAR	1-8 characters	Numeric

MONTH	MONTH	1-10 characters	Alphabetic
SEX	MALE&FEMALE	1-6 characters	Alphabetic

TYPE OF BIRTH:

STILLBIRTH & LIVEBIRTH	1-6 characters	Alphabetic
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1.4 **PROGRAMMING PRESENTATION:** The following program can be used to computerise the Birthrate and Deathrate without much due effort.

4.4 IMPLEMENTATION OF THE COMPUTERIZED SYSTEM

This is the co-ordination of efforts of the user department and data processing department in getting the new system into operation. A co-ordinating committee is formed with some staff from user department, staff from computer department (Analysts, programmers) as members. Details of the implementation would have been stipulated in the system specification. This involves:

- (i) *Design, write and test computer program*
- (ii) *Train users*
- (iii) *Test clearable ie manual for staff/users*
- (iv) *Produce documentation*
- (v) *Create master file for the program*
- (vi) *Changeover to new system through any of the following methods:*

- (a) **Parallel:** Here, the old and new system are run

concurrently, using the same inputs - the inputs are compared and reasons for differences resolved. Outputs from the old system continue to be distributed until the new system has proved satisfactorily. At this point, the old system is discontinued and the new one takes its place.

(b) Direct or one for one change: Here the old system is discontinued altogether and the new one becomes operational immediately.

(c) Pilot: This is a variation of the two basic methods mentioned above where for example if a Bank start computerization from one branch to another, the organization gradually computerise each branch so as to spread the workload and to enable one team of specialists to carry out the implementation strongly.

4.5 MAINTENANCE AND REVIEW

Once a system is implemented and is in full operation, it is examined to see if it has met the objectives set out in the original specification. From time to time, the requirement of the organization will change and the system will have to be examined to see if it can cope with the new charges. At some stage the system life cycle will be repeated again and yet again.

CHAPTER FIVE

5.1 CONCLUSION, RECOMMENDATION AND SUGGESTIONS

As it has been seen in this project, the advantage of computerizing a system cannot be overemphasised.

Apart from the different utilities provided for in the program which obviously provide automation in the system, the following are highlighted:

(a) ACCURACY: The accuracy of processing Birthrate and Deathrate are guaranteed, once the input data supplied to the system are correct and the rate of processing is also very fast as urgency and need arise as compared to the manual method.

(b) RELIABILITY: the computer is also very reliable in carrying out long and tedious calculations without errors which are hardly achieved using manual method especially when the management of the hospital want to access its success in healthcare delivery through the determination of many years childbirth (Livebirth, Stillbirth) and improve upon its services. the information in the system is also reliably secured as users cannot get access into it without using identification password.

(c) STORAGE: Computerization also allow a lot of storage for statistical data records in Hard disk, diskettes and secondary storage materials such as Disc, tape, Drum etc which can daily be used whenever need arise instead of keeping these facts in files at the statistical section which may be lost or difficult to

produce after several years when the need arise for their use.

(d) STAFF STRENGTH :Using computer for calculating Birthrate and Deathrate reduces the number of personnel usually involve in manual methods where little jobs are spread for many Staff. Though this may be seen as causing unemployment which is a disadvantage but the efficiency of computer in processing data couple with speed, accuracy and reliability of results produced overweighed this disadvantage and apart form this, other department which have manpower shortage can redeploy the staff reduced or send them for training to be able to occupy other useful positions in the same hospitals. It is therefore suggested and recommended that the statistical section of the Teaching hospital should be computerised to enhance their efficiency in the processing both Deathrate and Birthrate.

5.2 USERS MANUAL

This program is written in Data base management program (iv) programming language. To run the program:

- (a) Change directory to Dbase4 and press enter key
- (b) Type Dbase to take you to the software environment and press enter key
- (c) Type Do Diploma and press enter key, this will display the main menu as:

1. PROJECT HEADING
2. PROCESS
3. RESET
4. EXIT.

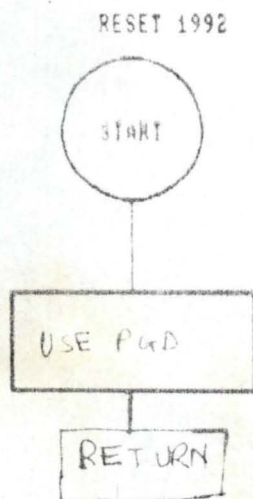
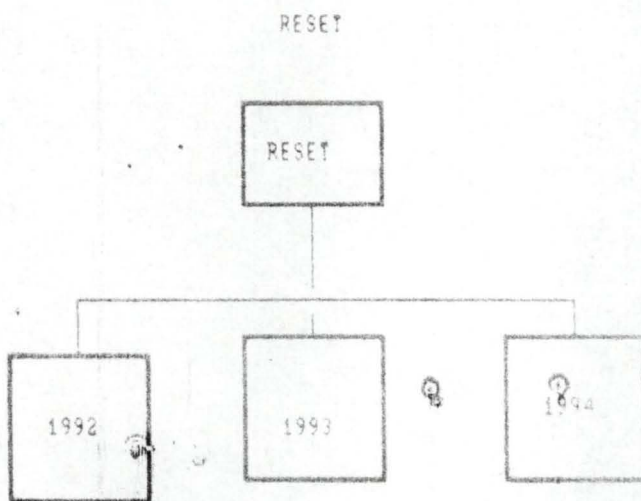
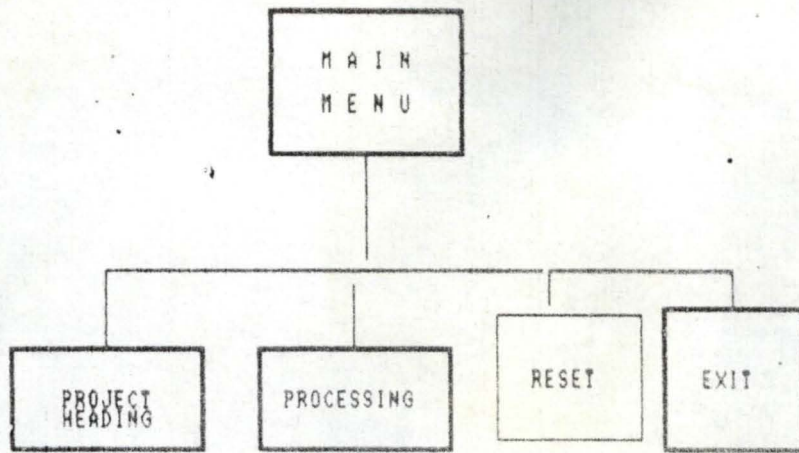
The project heading displays the project title i.e. the computerization of Birthrate and Deathrate. A case study of University of Ilorin teaching hospital (UITH). The process consist of processing of Birthrate and Deathrate for the years, 1992, 1993 and 1994. The reset is used for taking the process to the beginning. The exit number when prossed take you out of the program.

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PROGRAM FLOWCHART



PROCESSING

START

ENTER MONTH
NO OF LIFEBIRTH (MALE) LIBM
NO OF LIFEBIRTH (FEMALE) LIBF
NO OF STILLBIRTH (MALE) STBM
NO OF STILLBIRTH (FEMALE) STBF

$$TTMAF = LIBF + STBM + LIBM + STBF$$

SUM LIBM TO SLBM
SUM STBM TO SSBM
SUM LIBF TO SLBF
SUM TTMAF TO TOTAL
 $TTLB = SLBM + SLBF$
 $TTSB = SSBM + SSBF$

$$BRATE = (SLB/TOTAL) \times 1000$$

$$DRATE = (SSB/TOTAL) \times 1000$$

PRINT
TOTAL LIFEBIRTH MALE (SLBM)
TOTAL STILLBIRTH MALE (SSBM)
TOTAL LIFEBIRTH FEMALE (SLBF)
TOTAL STILLBIRTH FEMALE (SSBF)

TOTAL BIRTHRATE FOR THE YEAR (TOTAL)
BIRTHRATE (BRATE)
DEATHRATE (DRATE)

END


```
*****DIPLOMA.PRG*****
SET TALK OFF
SET BELL OFF
SET STAT OFF
SET SCOR OFF
do while .t.
set colo to r+
S = 1
DO WHILE S <= 23
@S,1 SAY REPLI(CHR(178),70)
S=S+1
LOOP
ENDD
set colo to
@5,20 TO 20,50 DOUB
@5,20 CLEA TO 20,50
set colo to g+/r+,b
@7,30 say "MAIN MENU"
@8,30 say "*****"
set colo to
@10,30 say "1. Project Heading"
@12,30 say "2. Record Processing"
@14,30 say "3. Reset"
@16,30 say "4. Exit"
stor space(1) to opt
set colo to r+
@19,25 say "Select Option (1...4)" get opt pict "9"
set colo to
read
do case
  case opt $"1"
    do head
  case opt $"2"
    do process
  case opt $"3"
    do reset
  case opt $"4"
    clear
  QUIT
endc
loop
endd
```

*****HEAD.PRG*****

TEXT

COMPUTERIZATION OF

BIRTHRATE AND DEATHRATE

A CASE STUDY OF

UNIVERSITY OF ILORIN TEACHING HOSPITAL (UITH)

ILORIN

SOFTWARE DESIGNED BY

BABATUNDE, A.O.

PGD/110/MCS/93-94

DEPARTMENT OF MATHS/COMPUTER

POST GRADUATE SCHOOL.

FEDERAL UNIVERSITY OF TECH., MINNA

ENDT

set colo to r+

@24,20 SAY "Press Any Key To Return to The Main Menu"

set colo to

wait ""

clea

retu

*****PROCESS.PRG*****

do while .t.

CLEA

S = 1

DO WHILE S <= 23

@S,1 SAY REPLI(CHR(178),70)

S=S+1

LOOP

ENDD

@5,20 TO 20,50 DOUB

@5,20 CLEA TO 20,50

@7,30 say "Process Menu"

@8,30 say "*****"

@10,30 say "1. Process 1992"

@12,30 say "2. Process 1993"

@14,30 say "3. Process 1994"

@16,30 say "4. Exit To Main Menu"

stor space(1) to opt

set colo to r+

@19,25 say "Select Option (1...4)" get opt pict "9"

set colo to

read

do case

case opt \$"1"

do 1992

case opt \$"2"

do 1993

case opt \$"3"

```

do 1994
case opt $"4"
do diploma
endc
loop
endd
*****1992.PRG*****
do while .t.
use pgd
store " Please Enter Y or N" to pl
store space(9) to mon
stor 0 to ttmaf,birtr,detrtr,ttlib,ttstb,totb,pata
store 0 to libm,stbm,libf,stbf,tota,TOTMSB
@8,8 say "Enter the Month" get mon pict "@"
@10,8 say "Enter Number of Life Birth (Male)" get libm pict "999"
@12,8 say "Enter Number of Still Birth(Male)" get stbm pict "99"
@14,8 say "Number of Life Birth (Female)" get libf pict "999"
@16,8 say "Enter Number of Still Birth(Female)" get stbf pict
"99"
read
append blank
ttmaf = libf + stbm + libm + stbf
replace month with mon, lbm with libm, sbm with stbm
replace lbf with libf, sbf with stbf
replace ttmf with ttmaf
stor spac(1) to go
set colo to r+
@18,8 say "More Month to Process ? [Y/N]" get go pict "@"
set colo to
read
if go $"Y"
clea
loop
ENDI
exit
endd
if go $"N"
sum LBM to SLBM
SUM SBM TO SSPM
SUM LBF TO SLBF
SUM SBF TO SSBF
SUM TTMF TO TOTAL
ttlb = slbm + slbf
replace ALL ttmsb with pata
@20,20 say "Press Any Key For Analysis"
wait ""
clear
*****
CLEA
use pgd
DELETE FOR RECNO()>=13
PACK
set colo to r+
? "Distribution of Life And Still Birth for Year 1992"

```

```

? "*****"
set colo to
? "          MALE                      FEMALE          "
? "*****"
? "MONTHS  LIVEBIRTH STILL BIRTH  LIFE BIRTH STILLBIRTH  TOTAL"
?
GO TOP
DO WHILE .NOT. EOF()
? MONTH, "", LBM, "          ", SEM, "          ", LBF, "          ", SBF, "
  ", TIME
SKIP
ENDD
slb = slbm + slbf
ssb = ssbm + ssbf
brate = (slb / total) * 1000
Drate = (ssb /total) * 1000
?
? "*****"
? "TOTAL", SLBM, SSBM, SLBF, "", SSBF, TOTAL
?
? "*****"
? " SOURCE: RECORD AND STATISTICAL SECTION (UITH) "
?
set colo to r+
? " Press Any key to See Summary"
set colo to
wait""
clea
dirate = round(drate,0)
birate = round(brate,0)
@0,1 to 2,75 doub
set colo to r+
@1,11 say "ANALYSIS OF BIRTH AND DEATH RATE IN THE YEAR 1992"
set colo to
@3,8 say "Total Life Birth Male"
@3,29 say slbm
@5,8 say "Total Still Birth MALE"
@5,30 say ssbm
@7,8 say "Total Life Birth Female"
@7,32 say slbf
@9,8 say "Total Still Birth Female"
@9,33 say ssbf
@11,8 say "Total Life Birth"
@11,25 say slb
@13,8 say "Total Stii Birth Female"
@13,28 say ssbf
@15,8 say "Total Birth for The Year"
set colo to r+
@15,33 say total
@17,8 say "Birth Rate"
@17,20 say birate
@17,40 say "Death Rate"
@17,50 say dirate
set colo to

```

```

@18,1 TO 21,75
@19,8 say "In every 1000 registered in 1992,"
@19,42 say birate
@19,58 say "are born alive"
@20,8 say "In every 1000 registered in 1992,"
@20,42 say dirate
@20,58 say "are born dead"
set colo to r+
? "Press Any Key to Return to the MAIN Menu"
set colo to
wait ""
do diploma
endi
*****1993.PRG*****
do while .t.
use pgd93
store space(9) to mon
stor 0 to ttmaf,birtr,detr,t,ttlib,ttsb,totb,pata
store 0 to libm,stm,libf,stbf,tota,TOTMSB
@8,8 say "Enter the Month" get mon pict "@"
@10,8 say "Enter Number of Life Birth (Male)" get libm pict "999"
@12,8 say "Enter Number of Still Birth(Male)" get stm pict "99"
@14,8 say "Number of Life Birth (Female)" get libf pict "999"
@16,8 say "Enter Number of Still Birth(Female)" get stbf pict
"99"
read
append blank
ttmaf = libf + stm + libm + stbf
replace month with mon, lbm with libm, sbm with stm
replace lbf with libf, sbf with stbf
replace ttmf with ttmaf
stor spac(1) to go
set colo to r+
@18,8 say "More Month to Process ? [Y/N]" get go pict "@"
set colo to
read
if go $"Y"
clea
loop
ENDI
exit
endd
if go $"N"
sum LBM to SLBM
SUM SBM TO SSBM
SUM LBF TO SLBF
SUM SBF TO SSBF
SUM TTMF TO TOTAL
ttlb = slbm + slbf
replace ALL ttmsb with pata
@20,20 say "Press Any Key For Analysis"
wait ""
clear
*****

```

```

CLEA
use pgd93
DELETE FOR RECNO(>)=13
PACK
? "Distribution of Life And Still Birth for Year 1993"
? "*****"
? "
? "          MALE                                FEMALE
? "*****"
? "MONTHS  LIVEBIRTH STILL BIRTH    LIFE BIRTH STILLBIRTH    TOTAL"
?
GO TOP
DO WHILE .NOT. EOF()
? MONTH, "",    LBM, "          ", SBM, "          ", LBF, "          ", SBF, "
  ", TTMF
SKIP
ENDD
slb = slbm + slbf
ssb = ssbm + ssbf
brate = (slb / total) * 1000
Drate = (ssb /total) * 1000
?
*****
? "TOTAL", SLBM, SSBM, SLBF, "", SSBF, TOTAL
?
*****
? " SOURCE: RECORD AND STATISTICAL SECTION (UITH) "
set colo to r+
? " Press Any key to See Summary"
set colo to
wait""
clea
dirate = round(drate,0)
birate = round(brate,0)
@0,1 to 2,75 doub
set colo to r+
@1,11 say "ANALYSIS OF BIRTH AND DEATH RATE IN THE YEAR 1993"
set colo to
@3,8 say "Total Life Birth Male"
@3,29 say slbm
@5,8 say "Total Still Birth MAle"
@5,30 say ssbm
@7,8 say "Total Life Birth Female"
@7,32 say slbf
@9,8 say "Total Still Birth Female"
@9,33 say ssbf
@11,8 say "Total Life Birth"
@11,25 say slb
@13,8 say "Total Stii Birth Female"
@13,28 say ssbf
@15,8 say "Total Birth for The Year"
set colo to r+
@15,33 say total
@17,8 say "Birth Rate"
*birate = round(brate.0)

```

```

@17,20 say birate
@17,40 say "Death Rate"
@17,50 say dirate
set colo to
@18,1 TO 21,75
@19,8 say "In every 1000 registered in 1993,"
@19,42 say birate
@19,58 say "are born alive"
@20,8 say "In every 1000 registered in 1993,"
@20,42 say dirate
@20,58 say "are born dead"
?
set colo to r+
? "Press Any Key to Return to the MAIN Menu"
set colo to
wait ""
do diploma
endi
*****1994.PRG****
do while .t.
use pgd94
set colo to r+,gb,g+,rb
store space(9) to mon
stor 0 to ttmaf,birtr,detrtr,ttlib,ttsb,totb,pata
store 0 to libm,stbm,libf,stbf,tota,TOTMSB
@8,8 say "Enter the Month" get mon pict "@"
@10,8 say "Enter Number of Life Birth (Male)" get libm pict "999"
@12,8 say "Enter Number of Still Birth(Male)" get stbm pict "99"
@14,8 say "Number of Life Birth (Female)" get libf pict "999"
@16,8 say "Enter Number of Still Birth(Female)" get stbf pict
"99"
read
append blank
ttmaf = libf + stbm + libm + stbf
replace month with mon, lbm with libm, sbm with stbm
replace libf with libf, sbf with stbf
replace ttmf with ttmaf
stor spac(1) to go
@18,8 say "More Month to Process ? [Y/N]" get go pict "@"
read
if go $"Y"
clea
set colo to ,,r+
loop
ENDI
exit
endd
if go $"N"
sum LBM to SLBM
SUM SBM TO SSBM
SUM LBF TO SLBF
SUM SBF TO SSBF
SUM TTMF TO TOTAL
ttlb = slbm + slbf

```

```

replace ALL ttmsb with pata
set colo to r+
@20,20 say "Press Any Key For Analysis"
set colo to
wait ""
*****
CLEA
use pgd94
DELETE FOR RECNO(>=13
PACK
set colo to r+
? "Distribution of Life And Still Birth for Year 1994"
? "*****"
set colo to
? "          MALE          FEMALE          "
? "*****"
? "MONTHS  LIVEBIRTH STILL BIRTH  LIFE BIRTH STILLBIRTH  TOTAL"
?
GO TOP
DO WHILE .NOT. EOF()
? MONTH, "", LBM, "          ", SBM, "          ", LBF, "          ", SBF, "
  ", TTMF
SKIP
ENDD
slb = slbm + slbf
ssb = ssbm + ssbf
brate = (slb / total) * 1000
Drate = (ssb /total) * 1000
?
*****
? "TOTAL", SLBM, SSBM, SLBF, "", SSBF, TOTAL
?
*****
?
set colo to r+
? " Press Any key to See Summary"
set colo to
wait ""
clea
set colo to ,b
dirate = round(drate,0)
birate = round(brate,0)
@0,1 to 2,75 doub
set colo to r+
@1,11 say "ANALYSIS OF BIRTH AND DEATH RATE IN THE YEAR 1994"
set colo to
@3,8 say "Total Life Birth Male"
@3,29 say slbm
@5,8 say "Total Still Birth MALE"
@5,30 say ssbm
@7,8 say "Total Life Birth Female"
@7,32 say slbf
@9,8 say "Total Still Birth Female"
@9,33 say ssbf

```



```

@11,8 say "Total Life Birth"
@11,25 say slb
@13,8 say "Total Still Birth Female"
@13,28 say ssbf
@15,8 say "Total Birth for The Year"
@15,33 say total
set colo to r+
@17,8 say "Birth Rate"
@17,20 say birate
@17,40 say "Death Rate"
@17,50 say dirate
set colo to
@18,1 TO 21,75
@19,8 say "In every 1000 registered in 1994,"
@19,42 say birate
@19,58 say "are born alive"
@20,8 say "In every 1000 registered in 1994,"
@20,42 say dirate
@20,58 say "are born dead"
?
?
set colo to r+
? "Press Any Key to Return to the MAIN Menu"
set colo to
wait ""
Endi
*****RESET.PRGM*****
do while .t.
clea
set colo to r+
S = 1
DO WHILE S <= 23
@S,1 SAY REPLI(CHR(177),70)
S=S+1
LOOP
ENDD
set colo to
@5,20 TO 20,50 DOUB
@5,20 CLEA TO 20,50
@7,30 say "Reset Year Menu"
@8,30 say "*****"
@10,25 say "1. Reset 1992"
@12,25 say "2. Reset 1993"
@14,25 say "3. Reset 1994"
@16,25 say "4. Exit to the Main Menu"
stor space(1) to opt
set colo to r+
@19,25 say "Select Option (1...4)" get opt pict "9"
set colo to
set colo to r+*
@22,3 say "Note that Reset will Delete all Records in the Year
selected"
set colo to
read

```

```

do case
  case opt $"1"
    do reset92
  case opt $"2"
    do reset93
  case opt $"3"
    do reset94
  case opt $"4"
  clea
  return
  exit
endc

loop
endd
*****RESET92.PRG***
use pgd
delete for recno()>=1
pack
stor space(1) to res
@8,20 say "Records in the Year 1992 had been deleted"
@17,3 to 20,55
@18,5 say "Press any Key to return to Process Menu"
@19,5 say "and start the Processing of the year 1992" get res
pict "!"
read
on key
  do Process
  ****RESET93.PRG****
  use pgd93
  delete for recno()>=1
  pack
  stor space(1) to res
  @8,20 say "Records in the Year 1993 had been deleted"
  @17,3 to 20,55
  @18,5 say "Press any Key to return to Process menu "
  @19,5 say "and start the Processing of the year 1993" get res
  pict "!"
  read
  on key
    do process
  *****RESET94.PRG*****
  use pgd94
  delete for recno()>=1
  pack
  stor space(1) to res
  @8,20 say "Records in the Year 1994 had been deleted"
  @17,3 to 20,55
  @18,5 say "Press any Key to return to Process Menu"
  @19,5 say "and start the Processing of the year 1994" get res
  pict "!"
  read
  on key
    do process

```

Distribution of Life And Still Birth for Year 1992

MONTHS	MALE		FEMALE		TOTAL
	LIVEBIRTH	STILL BIRTH	LIFE BIRTH	STILLBIRTH	
JANUARY	236	4	233	4	477
FEBRUARY	192	12	399	16	619
MARCH	212	6	242	3	463
APRIL	218	4	216	5	443
MAY	227	1	193	2	423
JUNE	177	6	153	5	341
JULY	189	3	176	7	375
AUGUST	225	7	179	10	421
SEPTEMBER	226	9	220	8	463
OCTOBER	137	2	102	1	242
NOVEMBER	192	5	196	4	397
DECEMBER	50	3	66	0	119
TOTAL	2281	62	2375	65	4783

SOURCE: RECORD AND STATISTICAL SECTION (UITH)

Press Any key to See Summary

ANALYSIS OF BIRTH AND DEATH RATE IN THE YEAR 1992

Total Life Birth Male	2281		
Total Still Birth MAle	62		
Total Life Birth Female	2375		
Total Still Birth Female	65		
Total Life Birth	4656		
Total Still Birth Fem	65		
Total Birth for The Year	4783		
Birth Rate	973	Death Rate	27

In every 1000 registered in 1992,	973	are born alive
In every 1000 registered in 1992,	27	are born dead

Press Any Key to Return to the MAIN Menu