AUTOMATED DATABASE MANAGEMENT AND INFORMATION SYSTEM FOR PUBLIC ASSETS

A CASE STUDY OF
NIGER STATE GOVERNMENT
QUARTERS

BY

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DECEMBER, 1999.

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A PROJECT SUBMITTED TO THE DEPARTMENT OF MATH AND COMPUTER SCIENCE, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF POST-GRADUATE DIPLOMA IN COMPUTER SCIENCE.

DECEMBER, 1999.

CERTIFICATION.

This is to certify that this project titled "Database Management and Information System for Public Assets (A Case Study of Niger state Government Quarters)" was carried out by Sanusi Umar PGD/MCS/97/293 of the Department of Mathematics and Computer Science, Federal University of Technology Minna.

. . . .
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(PROJECT SUPERVISOR)

. . . .
DR.S.A. REJU   DATE
(HEAD OF DEPARTMENT).

. . . .
EXTERNAL EXAMINER   DATE.

DEDICATION

For the blessed memory of my late parents Mallam Umaru Baba Wachin and Hadiza Umaru. May their gentle souls rest in perfect peace (Amin).

ACKNOWLEDGEMENT.

First and foremost my gratitude goes to Almighty God for the inspiration given me to carry out this study. I am also deeply indebted to my project supervisor Mallam Isah Audu, who despite his tight academic programmes was able to guide me throughout the project.

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I wish to give special thanks to Alhaji Adamu Aliyu, the Director Lands, Niger State Ministry of Works and Housing, Ahmed Ibrahinm Matane and Sule Agbola who have contributed enormously to the success of this study. To all my friends and colleagues in the office, I say thank you.

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ABSTRACT.

Automated database management and information system for public assets is a system that facilitate an effective, efficient and reliable means for managing data and information of Niger State Government quarters through the use of micro-computers using Dbase IV. It is an integrated and structured collection of data and information that allows ease of access, processing and storage of data regarding Niger State Government quarters, such as; House description, House inventory, House maintenance and personal data of the occupants.

The project visualised the history, relevance and development of computer and database management and information system with greater emphasis on property database management.

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CHAPTER ONE

GENERAL INTRODUCTION

1.0 INTRODUCTION.

In this chapter we try to define an asset in the context of this study. We looked at the importance and relevance of these assets to our national life and the manner in which data and information regarding these assets are being handled. This form part of the background of this study.

The chapter also described the function and organisational structure of Niger state Ministry of Works and Housing, the objective, scope and significance of our study. Similarly, the chapter described briefly the historical development of computers.

1.1 BACKGROUND OF THE STUDY:

Assets are materials possessed and not limited to properties alone but of an advantage to which a money value can be attached. Public assets are therefore people's assets entrusted in the hand of the Government for the benefit of the entire people. These could be material of all kinds (movable and unmovable) like; Land, Buildings, Plants, Machinery and Money. Public assets are huge investments made by the Government with the aim of providing social and economic infrastructure for the benefits of the people. These assets have multiplier effect on the life of the people and the nation's economy as a whole.

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For instance, Government develops and provides land for the purpose of constructing buildings for residential, commercial, institutional, industrial estates and also for Agricultural activities. Similarly, roads are constructed to open up for commercial activities and also to provide linkages between towns and villages thereby enhancing social interaction. All these are testimonies on how these assets affect our life and also how they contribute to the nation's socio-economic development.

Unfortunately, data and information regarding these assets (location, physical condition, inventory, maintenance, users and so on) are often treated with laxity. In some cases, data concerning these investments are not available and where they exist, they are often kept haphazardly. This unfortunate situation usually make it difficult to formulate an effective policy or decision concerning these investments and also to monitor activities that take place within them. It is no exaggeration to say that survival of any program or project depends on its management capability resources at its disposal and the quality of management decesion. Good decision can only be achieved when the data needed for making the decision is accurate, reliable and timely available. Unfortunately many of our organisations handle data with great apathy, and do not usually consider it to be a valuable material that may desperately be required by the user or any other person in future.

However, with the introduction of computers in modern information management and the increasing sophistication of data processing system, data is now regarded as a valuable resource in ways that was previously not possible. it is from the manipulation and interpretation of data that information is generated and used for decision making.

1.2 **FUNCTIONS AND ORGANISATIONAL STRUCTURE OF NIGER STATE MINISTRY OF WORKS AND HOUSING.**

Niger State Ministry of Works and Housing is responsible for public works, estate management, institutional work and road network int he State. The Ministry has a Commissioner as the Chief Executive and a Permanent Secretary as the Accounting Officer. The Commissioner is mainly responsible for policy matters while the Permanent Secretary oversees the running of day to day activities of the Ministry.

The Ministry has Eight Departments, Seven of these Departments are Headed by Directors while one is headed by Surveyor-General. The functions of these Departments are as follows:-

i. **Personnel Department:-** This department is concerned with the general administration and other staff matters such as staff recruitment, promotion, welfare and discipline.

ii. **Civil Engineering Department:** The department is responsible for policy formulation and execution on the transport sector, such

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as design, construction, and maintenance of State Road Network, Bridges and other Civil Engineering related work.

iii. **Building & Architectural Department:** The department is charged with the responsibility of designing, preparation of estimate, supervision, furnishing and maintenance of all public buildings in the State.

iv. **Mechanical & Electrical Department:** This department is responsible for all Mechanical and Electrical services in the State. it prepares specifications and bill of quantities for Electrical and Mechanical Works.

v. **Road Traffic Operation:** This department is responsible for road traffic operation, such as issuance of driving license, vehicle inspection for road worthiness and accidents on our roads.

vi. **Land, Survey and Town Planning Department:** These three departments have related functions and are responsible for land management, preparation of grants, certificate of occupancy and valuation of landed properties. They also undertake cadastral and large scale mapping activities and design of layouts for residential, commercial and industrial purpose.

1.3 **NIGER STATE GOVERNMENT QUARTERS.**

Niger State Government Quarters is one of the numerous public assets under the jurisdiction of the Ministry. Others include

Government offices, Guest Houses, Road Network in the State, Machineries, Plants and Lands.

The State Government has a significant number of these houses located in different parts of the State. The houses are classified as Low-Cost, GRA, Type `A', Type `B' etc and are further categorised in to junior, intermediate, Senior and Commissioners Quarters. Similarly, there are other houses located in Camps, Hospitals and Institutions that also belong to the State Government. The former are directly under the control of Ministry of Works and Housing and is the focal point of this project.

These houses are predominantly occupied by State Civil Servants and other agencies owned by Niger State Government. Other occupants include: Private organisations, Federal and Local Governments personnel. These houses are managed and maintained by the Department of Building and Architectural services of the Ministry.

1.4 **HISTORICAL DEVELOPMENT OF COMPUTERS:**

Modern information management tools are constantly being developed. These development started long ago when man used sign to communicate with his fellow human beings and other creatures surrounding him. Speech, Writing and Printing were later discovered as means to store and transmit information. Other devices like telecommunication were later developed to facilitate fast and

distant communication. However, for more efficient means of storing and processing of data causes the choice for an alternative method hence the development of computer.

Computers are electronic machines that accept data, process it and produce an output. Computers were initially developed to carry out mathematical calculations. However, with time they were further developed to carry out other tasks such as making easier, accurate and reliable logical comparism between things. Computer helps in storing, filing and processing of data. It eases the cumbersome inflow and outflow of data in an organisation.

Before the advent of digital computers, the early machines were computers of mechanical type that suffered from serious set backs, such as movement of data by mechanical means, computing speed and size of the peripherals. However with time these machines were developed in to switching and storing mechanism and also made to be more portable.

The first type of calculating device created by man is the Abacus. This device was used mostly by the merchants of the ancient world especially in Asia for thousand of years and mainly for arithmetic purposes. Several calculating devices were later developed but Abacus remain the most ingenuous and is still in use today in some parts of Asia.

The first practical calculating machine that was limited to

performing only addition and subtraction was built by Blase Pascal, a french national. Similarly Leibenitz, a German Mathematician developed an effective calculator that could perform multiplication and division. Charles Xavier Thomas in 1820 built the first machined to perform basic arithmetic operations.

In 1835 Charles Babbage designed an analytical engine which paved way to modern digital computers. Babbage achieved little in practical terms. it was hundred of years later these machines were further developed and made to be more economical and reliable. The punch card equipments used in 1887 by Dr. herman Hollerith to process the 1890 US Census provided an opportunity to develop an electromechanical data processing system.

Between 1847 and 1854, George Boole devised an algebraic system for representing and manipulating logical expression for problems involving statement that require true or false. The concept contributed greatly in developing computer logic.

In the years 1937-1944, an automatic sequence controlled calculator (ASCC) was developed at Harvard University. This large machine also called Mark-1 is electro mechanical device that use program to guide its operation.

The first prototype electronic Computer called (ABC) was built by John V. Atanasoft and Clifford Berry. This is a special purpose computer that was built for a particular purpose, However, in 1946

the first general all purpose computer called electronic Numerical integrator and calculator (ENIAC) was produced. This is the first digital computer to work by electronic means.

A stored program concept by which a read instruction from computer storage can switch to a new program was developed by John Neuman. This development allows modification during program execution and above all data and programmes can be stored for future use as against the usual re-setting each time a program is to be run.

Computer has now developed into such a powerful machine to the extent that some people compare it to human brain. And with the advancement in computer technology, the extent of its power will only be limited by the capability of man to develop the application system.

1.5 **OBJECTIVE OF THE STUDY.**

The objective of this project is to establish a computerized database management and information system for Niger State Government quarters. The aim is to have an efficient and reliable system that will provide a well coordinated, accurate and timely information regarding Niger State Government Quarters at all times. These include detailed information about the physical description of the house, house inventory, maintenance system and personal data of the occupants.

1.6 **SIGNIFICANCE OF THE STUDY**.

This work is of great significance not only because it is suppose to replace the conventional method, but also because the new system adds value to the Ministry's cooperate database by offering data security, data integrity and data independence.

The project also aims at identifying the problems of the existing system and establishing facts on whether there is need for alternative system, write the necessary programme/implementation plan and make appropriate recommendation.

1.7 **SCOPE OF THE STUDY**.

This project is on the establishment of a computersised database management and information system for Niger State Government quarters in Ministry of Works and Housing. It involves setting up a database management system that will house and process all information regarding Niger State Government quarters. This involve detailed information about the physical description of each house, personal record of each occupant, identification of official items available in each house (house inventory) an maintenance that has either been carried out or is required in a particular houses and the cost implication of each repair/renovation work. Nevertheless, other Departments and organizations within or outside the Ministry performing similar functions could make use of the system with little modification.

1.8 **DEFINITION OF TERMS.**

In the opening chapter of a work of this nature, it is essential to define the meaning of some words and phrases used in the study. Such words and phrases include:-

i.   **SYSTEM**: A set of elements (physical and non physical) which are linked together to function as a unit with a c o m m o n purpose or objective.

ii. **COMPUTER SYSTEM**: It is made up of all the components physical and non physical (hardware, software and user) which help to perform the task of data processing.

iii. **COMPUTER SOFTWARE:** These are the sets of programs that control the activities of the computer.

iv. **COMPUTER HARDWARE**: These are the physical components of a computer system made up of mechanical, magnetic, electrical and electronic devices.

v.   **DATA**: This is a collection of information or body of information which include facts and figures from which conclusion can be drawn.

vi. **INFORMATION**: It is a collection of data that have been analyses or processed to meet the need of the user.

vii. **DATABASE**: It is a collection of integrated and structured data which is centrally controlled in a consistent manner.

v.   **DATA PROCESSING:** This is referred to as the collection and

manipulation of items of data in order to extract the required information from them.

vi. **ASSETS**: These are materials possessed and not limited to properties alone but of an advantage to which money value can be attached.

vii. **PUBLIC ASSETS**: These are people's assets entrusted in the hand of Government for the benefits of all.

viii. **PROPERTY**: These are materials of all kinds (movable and unmovable) like land, building, plants, machineries equipment and money.

ix. **INVENTORY:** It is an account of official items owned by Government or private organisation for record purpose.

CHAPTER TWO

2.0   **LITERATURE REVIEW**

2.1 INTRODUCTION

By mid 1930's most organisations are not concerned so much with how to file and store records as with what to throw out. Millions of records no longer used were stored away often in warehouses. Companies and Government Establishments began to establish time table for storing and systematically disposing of records. As space and personnel for handling records became more costly with time, the need for more effective and efficient means of analyzing, developing and coordinating records management increased rapidly.

Traditionally, Data and information management have been predominantly paper based. However, the advancement in computing and telecommunication system have led to the development of computer based information system. Within such system, the flow, storage and processing of information is predominantly undertaken by electronic computer. Initially the high cost of acquiring and maintaining computers made it impossible for their wide spread. However, Computers can now be found everywhere and in different application, because of the reduction int heir cost. Computers are now used in property management, physical and environmental management of Buildings. Commercial buildings, retail buildings, office buildings, Residential buildings, Hotels, Institutional buildings and so on use computers to control and monitor their

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environment and also carry out some specialised tasks.

It was however due to problem inherent in the traditional system of data and information management that led to the development of Data base management system. This is a radically different approach to data and information management.

In some parts of Western Europe, local authorities have exerted a lot of efforts to develop this technique. for instance, in the 1960's the local Government Treasury department and the Planning and housing Departments in these areas exploited the data processing facilities provide by the first generation main frame computers to provide an effective and efficient local service to enhance public accountability. These development, however, caused some doubts within the local Government, because they viewed the system of centrally controlled data with suspicious and distrust. However, with the introduction of mini computers which allow various departments to control more closely both the system and the system's staff allays these fears.

The development recorded in data and information processing system was received with enthusiasm by those who wanted to see local problems tackled in a multi-disciplinary basis. It was also appreciated not only because the problem of traditional handling of data and information has been alleviated, but also for the first time, information and data could be treated as corporate resource. This idea paved way for what came to be known as Management Information Systems (MIS's).

As time passed on, various concepts of MIS's were developed which made the users to understand more the complexity of information and data flow in an organisation especially the larger ones. This complexity was accompanied by some disillusionment that nearly hampered the system's development. Incidentally, the benefits that can be derived from the system were apparent. Even though the idea was to be dropped due to the disillusionment, however, the then financial stringency and the realism from the experience (realisable benefits) led the local authority to develop the system in a better way, hence there was a shift on emphasis from general purpose MIS's towards more modest system based upon property information.

2.2 PROPERTY DATABASE AND INFORMATION SYSTEM.

In practice, quite a number of different property information systems have been developed and adopted. Some of them include; International Computer Limited (ICL); Local Authority Management Information System (LAMIS); Transport Reference and Mapping System (TRAMS) and Gazetteer approach by Tyne and Wear. LAMIS was the pioneer and was proposed at the time when emphasis was still on comprehensive systems. However, this has now been tailored to meet a more modest set of objectives.

2.2.1 TRANSPORT REFERENCE AND MAPPING SYSTEM (TRAMS).

The TRAMS approach was developed by ken perorett of the transport road research laboratory. It has been described as a locational referencing system based on computer record of an

authority's highway network using ordinance and survey maps. Using this method, the highway network is represented as series of straight lines. This framework is then recorded into computer and then other data such as street names, house numbers etc can be attached to each line. This system approach can form useful basis for both information system.

2.2.1.   MERSEYSIDE ADDRESS REFERENCING SYSTEM (MAR'S)

Merseyside property database, referred to as Merseyside Address Referencing System (MARS) was developed from TRAMS following Studies of American and European Systems. It is a highly modern approach and it allows information to be presented in different ways and different level of details. MARS has also been linked to other packages such as SASPAC to allow plotting of statistical information. Finally, MARS can be used to generate maps of any area and at any scale.

2.2.3   THE GAZETTEER APPROACH.

The Gazetteer approach to recording land and property information was pioneered in Britain by the Tyne and Wear metropolitan country. Unlike the TRAMS approach of constructing a general framework on to which more and more properties can be attached, a Gazetteer is an attempt to reference every street and every property and the changes that effect them. Eventhough this system is time consuming and costly, it has a considerable benefits and many new opportunities sprang from the use of Gazetteer.

2.2.4 LOCAL AUTHORITY MANAGEMENT INFORMATION SYSTEM (LAMIS).

Leeds was the first local authority council to establish a comprehensive property information system in early 70's and is commonly referred to as (LAMIS). This concepts have been adopted and developed by various local authorities in Britain. In addition, LAMIS Software has been used to establish property database in Sydney, Australia.

2.2.5. THE WARWICKSHARE SYSTEM.

The Warwickshare system is an adopted but improved version of LAMIS System. The warwickshare system is supported by wide range of software that allow users to extract and manipulate data in a number of different ways. This include Generalised information system (GIS) that enable user to create their own reports and extract files without disrupting any security provision. It also has a Graphic Facilities.

It is therefore clear from these development that many local authorities in these areas have recognised the value of introducing database property information system. however, there are those that still doubt whether the benefits are sufficient to justify the initial cost. But experience has shown that lots of benefit can be derived from establishing a Database system especially in large organization. This is because of the complexity of the system which often justify the expensive nature of their development.

In recent years large number of micro-Computer database packages have been developed and marketed in an effort to exploit

the capabilities and the rapidly expanding use of small computers. These include Database II, DatabaseIII, Database III plus, condo III profile, foxpro oracle and so on. Many of these Database softwares provide very powerful data handling facilities. However, one has to be cautious when selecting a Database package because, they all possessed varying degree of all the essential features of Database management system. and they should be judged according to what they can do (Capabilities) and not what they are called.

CHAPTER THREE

3.1.0   SYSTEM ANALYSIS AND DESIGN.

3.1.1   INTRODUCTION.

System analysis basically involves studying the existing system operation in an attempt to discover the strength and weakness of the system. In this regard, the system analyst uses all facts gathered in order to make proper assessment of the existing system and establish the fact on whether there is the need for an alternative system. The analysis also enable us to determine possible alternative that will meet the information need of the organisation and over come the shortcoming of the existing system.

System analysis entails going through the following stages:

i. Situation analysis;

ii. Problem definition;

iii. Feasibility study;

iv. System analysis; and

v. System design.

The design stage of this project focused ont he full description of the new system which involves the system specification and system requirement.

3.1.2 SITUATION ANALYSIS.

Here we are interested in studying the existing practice through investigation. The idea is to find facts about the existing system. however, it is important to clearly define the objective of the proposed new system before embarking on the project.

There are various methods of investigation, the choice of approach of any investigation depends on the type of information needed. Some of these methods are:

i.   Observation;

ii.   Interview;

iii. Questionnaire and

iv.   Record searching.

Whichever method used, it is important that the approach should always be appropriate to the situation under consideration. Personal interview and record searching techniques were used for the purpose of this project.

The personal interview method involves the interviewer and the respondent coming in close contact, converse with the purpose of eleciting information from the respondent. The record searching technique on the other hand is a method where information is generated from day to day activities of public or private organizations, such as Government Ministries, Departments, Banks, Industries and son on. The choice of these two methods was based on the fact that the number of interviewers are few, easily accessible and are in the same organsiation. These methods have a high response rate and also enable us to contact the right person.

3.1.3 **PROBLEM DEFINITION.**

Analysis of the existing system would enable us to clearly understand the nature of the system problem. It will also enable us to set our objective and priorities. Failure to do this may lead to

addressing the wrong issue.

Problems identified with the existing system include:

i.   Absence of articulate system of record management in respect of Niger State Government quarters that led to non-standardization and disintegration of records;

ii.   Delay in providing adequate and accurate information as of the time it is most needed;

iii. Difficulties in retrieving records;

iv.   Pilferation of records; and

v.   Problem of assessing and collecting of revenue accruing from government quarters.

3.1.4 **EXISTING PRACTICE.**

Our investigation revealed that the present method of record management in respect of Niger State Government quarters is the conventional filling system (office flat files) located in various units of the Building and Architectural Department of the Ministry. For instance, the Allocation Unit keeps records of occupants such as name of occupant, address, house number, rent and so on. The Furniture Unit keeps records on house inventory, and building unit handles records of maintenance. These information are treated and stored in different files and kept in various shelves, cabinets and drawers of various units and towns.

This method has a number of problems which include:

i.   **Bulkness**:- files are used in large numbers and therefore require large space and facilities to store and move

them.

ii. **Security of record:-** Vital information and files are

sometimes lost or altered.

iii. **Retrieval of information:-** Since information on a

particular house are stored in several files, retrieval of

information is cumbersome and time consuming. This is because

one has to search through large volume of files to obtain

information on one or more houses,.

iv. **Updating of Record:-** Updating records through the

conventional filling system is time consuming and

uneconomical, because changes occur very frequently

especially with regards to the occupants and inventory.

3.1.5 **FEASIBILITY STUDY**.

The term feasibility means possibility that is based on an

idea which simply ask the fundamental questions on whether the

proposed system will work or not, its desirability, viability (cost

and benefits) or practicability (operational and technical). We are

also interested in exploring every alternative available through

pre-feasibility and the best among them is selected for detail

analysis.

An objective feasibility enable us to understand clearly the

project request such as what to do and why?. It allow us to

determine the size of the project so as to estimate the amount of

time and personnel required to develop the system.

3.1.6   __THE PROJECT FEASIBILITY.__

The principle of procedure was adopted during the project feasibility to determine the strength and weakness of both the old and the proposed system. The new system proved more efficient, economical, reliable and flexible as against the old system. the analysis also revealed the following:-

i.   **Operational Feasibility:-** Acceptance of the new system by management and majority members of staff.

ii.   **Technical Feasibility:-** All hardware components and software technology requirements are available in the market and are also adequate for the proposed system.

iii.   **Cost and Benefits Analysis:-** Although the initial cost of the system may appear very high, the benefits the Ministry stand to derive from the system both in the short and long term are enormous and far outweigh the cost as indicated in the advantages of the new system below.

3.1.7 __ADVANTAGES OF THE NEW SYSTEM.__

The new system offers the following advantages:-

i.   **Automation:** the new system provide an integrated, structured and automatic database as against random collection of separate pieces of data previously done. The system also allow ease of access, flexibility and processing   of data.

ii.   **Accuracy:** Computer executes exactly the instructions given   to   it. Once valid data is entered in to the

system, it will do the intended work with high degree of accuracy.

iii. **Speed:** The new system can perform calculations, manipulate and process data with higher speed than the old system. it can accomplish job accurately in a minute or second which would have normally taken the old system several days or months. The system therefore provides instant information to the use when it is most needed.

iv. **Economy:** The efficiency of the system in terms of speed, accuracy and storage can be related to and translated into money savings. Furthermore, other departments in the ministry can make use of the system thereby saving the ministry the efforts and expenses of incurring another system.

v. **Reliability:** Modern computers perform at high level of reliability with minimal equipment failure. The new system can therefore work efficiently for the whole hours in a day and for several years with little time-out for maintenance.

vi. **Security:** The integrity and the accessibility of the corporate information database is well protected.

vii. **Retention and Economy of Space:** The system can accept, store and search massive data and programs and the contents of the files do not fade provided it is handled property. The usual large space and materials required for storage are no longer needed.

viii. Wide Applicability: The new system can be used not only for

the management of records regarding government quarters, but
can also be used to solve problems in engineering, science and
administration.

3.2.0   **SYSTEM DESIGN LIFE CIRCLE**: the analysis of the problems
inherent to the current system may lead to a number of possible
alternative designs. Once a suitable alternative is selected
(bearing in mind users requirement), detail design is then embarked
upon. This involves working from the requirement specification to
produce system specification. The system specification will be a
detailed set of input documents, forms and report layout which
provide detailed features of the system.

Apart from considering users requirements, detailed
specification such as flexibility, user friendliness, ease of
maintenance and efficiency of the system were born in mind.

3.2.1   **SYSTEM   REQUIREMENT**:   The   following   requirement
specification are needed for the integrated system:

3.2.2   **HARDWARE   REQUIREMENT**:   This   refers   to   the   physical
components for the computer system. it is the electronic devices or
otherwise used to input, store, process and output data. For the
purpose of this project, the following system specification is
made:-

-    2No. IBM Compatible (PC)

-    Main Memory: 32 MHZ;

-    Disk Drive: Two disk drives: 3½ drive/CD drive;

-    VDU: Visual Graphical Adaptor (VGA)

- Stabilizer: 250V

- UPS: 500 Volts

- 2No Printer: 1No Epson 2170 LQ/1No Laser Jet 6t

3.2.3 **SOFTWARE REQUIREMENT:-**

The software refers to all forms of programs that control the operation of the computer. In addition to the operating system, two other softwares are required viz:

i. Application Packages;

ii. User Application.

Application Packages:- This is a collection of fully documents programs designed to perform particular data processing task in more than one organisation or instalment. It is therefore made up of a pre-written and tested program design by experts to perform one or more specific purposes. The application packages required for this project are:

1. Database management system - Database IV

2. Word Processing Package - Micro Software 97

3. Operating system

4. Window 98

USER APPLICATION SOFTWARES.

These are programs written with a view of solving a problem. This may appear in a standard application packages or in form of program written by the user or programme for specific application or local use. The user application are the main task of this project.

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3.2.4 **INPUT SPECIFICATION:**

The choice of input media is determine by the type of output needed. However the following consideration are always made when choosing input media; type of input media, data collection method and validation, design of input layout and volume of input documents.

For the purpose of this project, the input layout design will be grouped under three major headings. These are:-

1.   **Master File Named Master BDF**: This file will contain current information relating to all quarters in the State.   Such as the house description, personal data of the present and last occupants, house inventory and the maintenance activities. It will also be used to generate annual reports.

2.   **Inventory File Named INV BDF**: The inventory file will house all the official items provided in a house such a s furniture and equipments.

3.   **Maintenance file Named Maint DBF**: The maintenance file will have all the information on maintenance activities. It reflect the maintenance that have taken place, nature of the maintenance and its cost. Current maintenance requirement and its estimates will also be available in this file. All the   three files are more of a permanent and reference.

3.2.5   **OUTPUT SPECIFICATION:**

It is absolutely necessary at the beginning of any design to consider the output expected from the system before embarking on

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how to produce it. The main issues to be addressed here are: how often are the outputs required, who need the output and in what form? are multiple copies needed within and outside the organisation.

The required output here are the annual report of all the government quarters in the State, monthly and quarterly reports on maintenance activities, mid-year and annual inventory report and reports on the personal data of all the occupants of these quarters. All the above mentioned reports will be generated from the input files. Thus input file will serve as the output files. The important files are:-

1. Master file;

2. The inventory file;

3. Maintenance file.

3.2.6   **COST ANALYSIS.**

The estimated cost of the entire system is given in two categories viz:-

a.   Development Cost and

b.   Operational Cost.

The developmental cost covers the cost of system analysis and design, software development, implementation, hardware components and installation. The operating cost also refer to as running cost, include salary and wages, stationeries, equipments and miscellaneous. The total cost of the entire system is given below:-

a. **DEVELOPMENT COST.**

ITEMS	COST (=N=)
i. System analysis and design	50,000.00
ii. Software Development	200,000.00
iii. 2No. IBM Compatible (PC)	400,000.00
iv. 2No. Printer: Laser Jet/Epson 2170 LQ	100,000.00
v. UPS	30,000.00
vi. Stabilizer	25,000.00
vii. Installation	40,000.00
viii. Staff Training (4 Staff for 6 weeks)	24,000.00
ix. Window 98	15,000.00
TOTAL =	=N=884,000.00

B. OPERATING COST	(MONTHLY)	ANNUAL
i. Materials	5,000.00	60,000.00
ii. Salary/Wages (for 3 Operators)	2,000.00	24,000.00
iii. Equipment Maintenance	2,000.00	24,000.00
iv. Miscellaneous	1,000.00	12,000.00
TOTAL =	=N=10,000.00	=N=120,000.00

CHAPTER FOUR

SOFTWARE DEVELOPMENT AND IMPLEMENTATION

4.1.0. INTRODUCTION.

This section of the project is dedicated to software development and implementation. It focused on the choice of software package, programming language, program development, testing and evaluation. Also provided in the chapter is the change over procedure which form the implementation aspect of this project.

4.1.1 CHOICE OF SOFTWARE PACKAGE AND ITS FEATURES.

In a system development the choice of programming language is very important. Dbase IV was chosen as the programming language to be used in the development of this project. This is predicated to the fact that it has most of the features of the many competing database products available in the market. Dbase IV has among others the following features.

(i)   Dbase IV allow data to be entered and stored in a

predetermined format which is in the form of row and column. Each column represent a field and each row represent a record. (A record is a combination of related fields). Dbase IV can accept up to 255 fields per record. In this regard Dbase IV provide a full relational database environment for users.

(ii) Different users can manipulate the same data in different ways to suit individual requirement. Furthermore it can be related to two or more databases.

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(iii)   Dbase IV has facilities that allow records to be entered, modified or filtered out from the stored records. It also has some in-built functions for mathematical and string manipulation.

(iv) Dbase IV allow commands to be supplied to Dbase IV by

selecting an option available in the menu provided by the control centre mode. Also through the programming or application generator mode, Dbase IV allow the user to specify his need or design the various objects needed for the application and latter the program codes needed to run the application are automatically generated in Dbase IV.

(v) Dbase IV allow user to interact with the program in most areas where necessary to design, analyse and mould data output in to presentable reports.

4.2.0   SOFTWARE DEVELOPMENT AND TESTING.

Here we are concern with the formation of logical database structures and translating the structure in to a design for physical file organisation. This involve defining object and establishing relationship between objects in order to capture their meaning. Changes are made where necessary during the design process to allow formation of a perfect logical database structure. The main consideration here is to provide facility that will allow data integration, data integrity, ease of access and also to avoid too many fields and complex relationships.

4.2.1.   IDENTIFICATION OF NAMES AND VARIABLES:

This involve identifying names and other items to be captured

in the database. It also involve separating them in groups for recording in different files. These include:

(i) **House description:** These are information relating to each house, such as the house number, Town, location, Number of bedrooms, and year of construction.

(ii) **Occupant's Personal Record:** These are information concerning the occupants, such as Name, address, rank, rent payment and so on.

(iii) **House Maintenance:** This referred to type of repairs and renovation work required or undertaken in a particular house.

(iv) **House Inventory:** These are the description of items available in a particular house.

4.2.2 **NORMALISATION:**

It is necessary to ensure that each group of item has a unique name (field key) that identify the item the data described, and relationship between field and fields should be established. A set of related fields called records from part of database structure. below are the data structures for the proposed system,:

(i) **DATA STRUCTURE FOR MASTER. DBF.**

F/NO	FIELD DESCRIPTION	FILED NAME	FILED TYPE	FILED WIDTH	DEC.
1	TOWN	TOWN	C	9	-
2	LOCATION	LOCT	C	9	-
3	TYPE	TYPE	C	12	-
4	HOUSE NUMBER	H-NO	C	5	-
5	YEAR OF CON-STRUCTION	Y-CONST.	D	8	-
6	NO OF LIVING RMS	NO-LRM	N	1	-
7	NO OF KITCHENS	NO-KTCH.	N	1	-
8	NO OF BEDROOMS	NO-BRM	N	1	-
9	NO OF ANNEX RMS	NO-ARM	N	1	-
10	NO OF ROOMS IN BOYS QTRS	NO-BQRM	N	-	-
11	LIST OF INVEN-TORY	LIT-INV	C	-	50
12	DATE OF INVEN-TORY TAKING	INDATE	D	-	8
13	NAME OF LAST OCCUPANT	LNAME	C	-	20
14	DATE VACATED	VDATE	D	-	8
15	NAME O PRESENT OCCUPANT	PNAME	C	-	20
16	DATE OCCUPIED	OCDATE	D	8	-
17	EMPLOYER	EMPL	C	12	-
18	DEPARTMENT	DPT	C	12	-
19	RANK	RANK	C	8	-
20	GRADE LEVEL	GLEVEL	C	5	-
21	BUSINESS-ADDRESS	ADD	C	20	-
22	RENT	RENT	C	10	-
23	DATE OF LAST PAYMENT	LPDATE	D	8	-
24	NATURE OF LAST MANITAINED	LMDATE	D	8	-
25	NATURE OF LAST MANIT.	NLMAIT	C	50	-
26	LAST MAINT COST	LMCOST	N	12	2
27	CURRENT MAINT REQUIREMET	CMRQMT	C	50	-
28	CURRENT MAIN-TENANCE ESTIMATE	CMEST	N	12	2
29	ACTUAL MAINTE-NANCE COST	CMCOST	N	12	2
30	CURRENT MAIN-TENANCE DATE	CMDATE	D	8	-

(ii) DATA STRUCTURE FOR INVENT-DBF (INVENTORY FILE).

F/NO	F/DESCRIPTION	F/NAME	F/TYPE	F/WIDTH	DEC.
1.	TOWN	TOWN	C	9	
2	LOCATION	LOCT	C	9	
3	TYPE	TYPE	C	12	
	HOUSE NO	H-NO	C	5	
5	NAME OF OCCUP	NAME	C	15	
6	DEPARTMENTS	DEPT	C	12	
7	RANK	RANK	C	8	
8	BUS. ADDRESS	ADD	C	15	
9	LIVING ROOM 1	LRM1	C	30	
10	LIVING ROOM 2	LRM2	C	30	
11	KITCHEN	KRM	C	25	
12	MASTER BEDROOM	MBRM	C	25	
13	BEDROOM 1	BRM1	C	20	
14	BEDROOM2	BRM2	C	20	
15	BEDROOM3	MRM3	C	20	
16	BEDROOM 4	MRM4	C	20	
17	BEDROOM5	MRM5	C	20	
18	ANNEX 1	ANX 1	C	20	
19	ANNEX 2	ANX 2	C	20	
20	ANNEX 3	ANX 3	C	20	
21	BOYS QTR RM1	QTRM1	C	10	
22	BOYS' QRT RM2	QTRM2	C	10	
23	BOYS KITCHEN	BOK	C	15	
24	DATE OF INVENTORY TAKING	INVDATE	D	8	

(iii) DATA STRUCTURE FOR MAINT. DBF (MAINTENANCE FILE).

F/NO	DESCRIPTION	F/NAME	F/TYPE	F/WIDT
1	TOWN	TOWN	C	9
2	LOCATION	LOCT	C	9
3	TYPE	TYPE	C	12
4	HOUSE-NO	H-NO	C	5
5	YR OF CONST	Y-CONST	C	8
6	LAST MAINT DATE	LMDATE	D	
7	NATURE OF LAST MAINT	NLMANT	C	
8	LAST MAINT COST	LMCOST	N	
9	CURRENT MAINT RQMT	CMREQ	C	
10	CURRENT MAINT EST	CMEST	N	
11	INSPECTION DATE	INDATE	D	
12	CURRENT MAINT DATE	CMDATE	D	
13	ACTUAL MAINT COST	AMCOST	N	
14	AMOUNT EXPENDED	MON		

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4.3.0 **PROGRAM AND PROGRAMMING.**

As earlier mentioned, Application Software (user's program) is our main task in this part of the project. it is one of the most important segment of the integrated system.

However, only the operational procedure and the description of the modular programs is dealt with in this section, while the program codes are provided int he appendix.

The following design shows a simple flow chart of the 19 modular programs written for this project.

```
                    ┌──────────────┐
                    │  MAIN TITLE  │
                    └──────┬───────┘
                           │
                    ┌──────┴───────┐
                    │  MAIN MENU   │
                    └──────┬───────┘
         ┌─────────────────┼─────────────────────────┬──────────
         │                 │                          │
   ┌───────────┐    ┌───────────┐            ┌───────────────┐
   │  Append   │    │  Modify   │            │  Enquiries    │
   └─────┬─────┘    └─────┬─────┘            └───────┬───────┘
     ┌───┼───┐        ┌───┼───┐            ┌─────────┼─────────┐
     │   │   │        │   │   │            │         │         │
   Appn Apdin Apprant  Moom  Moain Moomnt  Enqm    Enqin     Enqa
```
```
                                              ┌──────────┐
                                              │  Report  │
                                              └────┬─────┘
                                        ┌──────────┼──────────┬────────┐
                                        │          │          │        │
                                      Reppni    Reppini    Reppq    Repp..
```
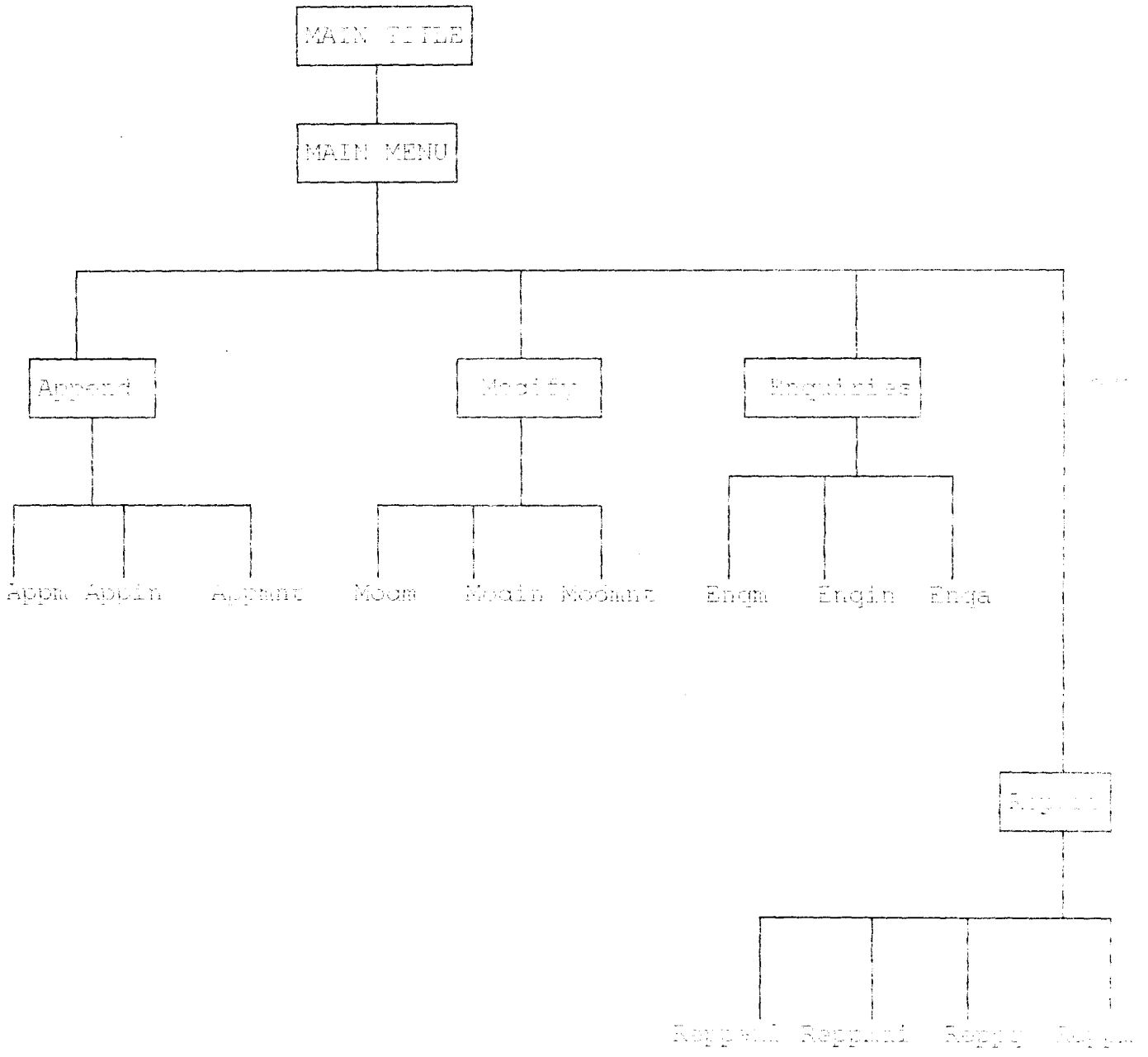
(i)   **Main Title Program (Mtitle):** This program display the title,
the programs and the project supervisor on the screen and also lead
the user to the main menu.

(ii)**Main Menu Program (Mmenu):-** The function of this program is to
display the main menu of the project which contain the masterfile,

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inventory file and maintenance file and the operations to be performed. These are:

a. Data entering

b. Data modification

c. Data viewing

d. Report generation.

a. **DATA ENTERING PROGRAM (APP PROG).**

The data interring program also called append program enable the user to enter new records in to any of the three files in the main menu. Screen designs for the files are in appendix.

b. **ENQUIRIES OR VIEW PROGRAM (ENQPROG).**

This program on execution will enable the user to view records of his choice in any of the three files.

c. **DATA MODIFICATION PROGRAM (MODPROG)**

This program will enable the user to modify record already entered in the system. This will enable user to change or up-date his record in any of the files.

d. **REPORT PROGRAM (RP PROG).**

This program is mainly for report generation. When the program's run, it allow the user to generate report of his need in any of the Dbasefiles.

4.3.1 **OPERATIONAL MANUAL.**

As already mentioned Dbase IV programming environment is used for this project. However, it is pertinent to mention that the program can still run in other version of Dbase.

Below are the users guide on how to operate the system:

Step I: Booting the system from the harddisk.

A successful booting will lead the user to C prompt C\:

Step II: At C: prompt type cd Dbase IV. This will lead the user to control panel.

Step III: Press ESC key and you are at the dot prompt.

Step IV: At this point insert the follopy diskette that contain the project programs in to A drive of the computer and type 'SET DEFAULT TO A' and press Enter key.

Step V: for the user to execute the programs sequentially, starting from the main Title program, simply type Do Title and press enter key. The main title of the project will be displayed on the screen and at the bottom, an instruction PRESS ANY KEY TO CONTINUE' will appear. From the what the user needs to do is to simply continue to execute the instructions given on the screen. If the user prefer to run the program directly at the dot prompt, type DIR and press Enter Key. The directories of all the programs files will appear on screen then you can select any of the file and program you intend to work on.

Exit Program.

This program will enable the user to leave the environment. The procedure is simply described below.

Step I: press Exit in the main menu, it takes the use to maint screen.

Step II: Press any key to continue. The message to continue will

the main program will appear on the screen (Y/N).

Step III: Press 'N' key to discontinue. The user quit the environment.

4.4.0 SYSTEM TESTING AND EVALUATION.

System testing involving code testing and specification test was undertaken. The test examined what is expected from the program how it should do it in line with the result obtained using both artificial and life data. The result of our findings are compared with the objectives stated previously.

Similarly, the system evaluation is carried out with the view to determine whether;

i.   The system is working effectively and efficiently and actually delivering the expected benefits.

ii. The users are satisfied with the system or having difficulties in working with it.

iii. The system control set up are functioning properly.

iv. Whether the project was completed within the budgeted amount and finally determine the system's operating cost.

4.5.0 SYSTEM CHANGE OVER

After the implementation activities have been completed including staff training, the conversion from the old to the new system can commence.

There are several methods of change over. They include: Direct, Pilot and Parallel change over. All these methods have their merits and demerits. However, parallel conversion is

suggested for this project. By this method both the old and the new system are run side by side for a period of time and the old system is phased out gradually. This method also provides the opportunity of comparing the old system with the new one and therefore automatically serve as backup in case of system breakdown. However, this method has the disadvantage of being costly because of the job duplication and employment of extra staff.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION.

5.1 INTRODUCTION

The concluding chapter of this project summarizes the objectives of the project work, the findings, Documentation, limitation and appropriate recommendation for the sustainability of the system.

5.2 SYSTEM DOCUMENTATION.

The project (Automated database management and information system for Niger State Government quarters) has the following modular programs; Title program (Title.prg), Main menu program (Menu.prg), Data entry program (Epg.prg), Enquiry program (Enq.prg), Modify or Up-dating program (Mod.prg) and Report program (Rep.prg).

The system could be run sequentially from the main title program through the main menu or call the program of your choice independently from the dot prompt.

5.2.1 SYSTEM INSTALLATION

This refers to the process of preparing the system for use. It involves installation of both hardware and software components. A check list that will guide the installation process is often necessary. Preferably an expert in computer should be employed to install the computer hardware and the software products. It is also very necessary to provide security for the system by means of

physical safeguards and procedural control.

5.2.2 **SYSTEM MAINTENANCE**

This include changes and enhancement that might be made after the system is up and running. Program tend to be dynamic and may therefore require periodic revisions. The programs in this project are constructed with modular sub-programs and logic flow that allow modifications when the need arise. Sometimes when revisions are extensive, a complete reprogramming of the job might be necessary. Hence, specific programmer could be assigned to do the job of program maintenance.

The hardware equipment require regular maintenance. This maintenance may be carried out each day or at a specific time allocated for this purpose. Hence, a maintenance personnel may be assigned to the system on full time basis or on call basis. However, because of the small size of our installation the former is recommended for this project.

5.3 **CONCLUSION.**

The Principal goal of this project is to undertake a study on the existing system (with the view of identifying its problems and to establish facts on whether there is need for an alternative system and also write the necessary programs/implementation plan of the alternative system).

The new system was therefore designed, developed, debugged and tested with life data and found to be working fine.

5.3.1 SYSTEM LIMITATION

This project design and development was based on information gathered from Niger State Ministry of Works and Housing. Similarly, the design and testing of the system was carried out on IBM Compatible, although it is hoped that the system will work on other brands of PCs with similar computer architecture.

As earlier mentioned, the State Government has other government quarters located in some institutions, like schools, hospitals and project sites in other parts of the State. However, due to time and financial constraints we shall not dwell into this in this project. Hence this project is limited to only government quarters that are directly under the control of Ministry of Works and Housing.

However, organizations performing similar functions could make use of the system with some modifications.

5.4 RECOMMENDATION.

Considering the role public asset play in the socio-economic development of any nation, the increasing complexities and difficulties in handling records regarding these assets and the numerous advantages database management and information system can offer in this regard, the following recommendations are suggested:

(i) That Niger State Ministry of Works and Housing and indeed any other public organization performing similar function should endeavor to establish a Database management and information system for their assets;

(ii) It is advisable for any organization willing to establish a computer system to employ the service of a system analyst. The system analyst is in a better position to determine how best to use computer with other resources to perform task which will meet the information need of an organization;

(iii) Extend the computer services to other activities in the Ministry; and

(iv) Comprehensive and consistent training program should be formulated and be given priority for the computer staff in order to enhance their performance and keep them abreast with the rapid development of the Computer world.

Finally, it is imperative to mention at this point that this project has helped me to know what system design and development entails and how to go about it, not only for academic exercise but also for future need.

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A P P E N D I X 'A'

PROGRAM CODES.

```
********************************************************
* Prog. name: Title                                    *
* Function: Program to display the project title        *
* Author: Mal. Sanusi                                   *
* Date:    12TH DEC. 1998                               *
********************************************************
      Set talk off
      Set scoreboard off
      Set status off
      Set color to W/R+
      @ 0,22 say "DBMIS FOR NIG. STATE GOV'T. QUARTERS"
      @ 1,22 say replicate ("_",37)
      Set color to W/b+
DO WHILE .T.
      @ 4,25 say "AUTOMATED DATABASE MANAGEMENT"
      @ 5,38 say "AND"
      @ 6,31 say "INFORMATION SYSTEM"
      @ 7,38 say "FOR"
      @ 8,33 say "PUBLIC ASSETS"
      @ 11,39 say "BY"
      @ 14,34 say "SANUSI UMAR"
      @ 15,33 say "PGD/MCS/97/293"
      @ 17,35 say "SUPERVISED"
      @ 18,39 say "BY"
      @ 19,33 say "MAL. AUDU ISAH"
      @ 3,20 TO 22,58 double
          wait
          @ 3,0 clea to 23,70
              ch = space(1)
      @ 10,15 say "PRESS Y FOR MAIN MENU AND N FOR EXIT"
      @ 10,55 get ch pict "@!"
      read
          Do case
              case ch = "Y"
              do menu
              case ch = "N"
              quit
          Endcase
ENDDO
RETURN
```

```
********************************************************
* Prog. Name: Menu                                     *
* Function: Program to display the Main Menu           *
* Author:  Mal. Sanusi                                 *
* DAte: 12TH DEC. 1998                                 *
********************************************************
     Set echo off
     Set scoreboard off
     Set status off
     Set color to W/R+
     @ 0,22 say "DBMIS FOR NIG. STATE GOV'T. QUARTERS"
     Set color to W/N+
DO WHILE .T.
        @ 3,10 clea to 22,70
     @ 2,31 say "M A I N   M E N U"
     @ 4,10 say "FILE" + space(3) + "APPEND"
     @ 4,27 say "MODIFY" + space(3) + "ENQUIRY"
     @ 4,46 say "REPORT" + space(3) + "QUIT"
     ch = space(1)
     @ 21,10 say "ENTER THE FIRST LETTER OF TASK"
     @ 21,45 get ch pict "@!"
     read
       Do case
         case ch = "F"
             do file
         Case ch = "A"
             do app
         Case ch = "M"
             do mod
         Case ch = "E"
             do Enq
         Case ch ="R"
             do Rep
         Case ch = "Q"
             Quit
       Endcase
ENDDO
RETURN
```

```
*************************************************
* Program: App                                 *
* Function: Display Append sub-menu             *
* Author: Mal. Sanusi                           *
* Date: 12TH DEC. 1998                          *
*************************************************
Set echo off
Set status off
Set scoreboard off
Set color to w/r+
@ 0,22 say "DBMIS FOR NIG. STATE GOV'T. QUARTERS"
Set color to w/n+
DO WHILE .T.
        @ 3,0 clea to 22,70
    @ 3,28 say "A P P E N D   M E N U"
    @ 4,28 say replicate ("_",20)
    @ 5,23 to 18,55
    @ 6,25 say "TASK CODE" + space(5) + "TASK"
    @ 7,25 say replicate ("=",18)
    @ 8,27 say "M" + space(8) + "Append Master"
    @ 10,27 say "A" + space(8) + "Append maintenance"
    @ 12,27 say "I" + space(8) + "Append Inventory"
    @ 14,27 say "E" + space(10) + "Exit"
    Ch = space(1)
    @ 16,25 say "ENTER CHOICE CODE"
    @ 16,45 get ch pict "@!"
    read
        Do case
            case ch = "M"
                do appm
            case ch = "A"
                do appa
            case ch = "I"
                do appi
            case ch = "E"
                exit
        Endcase
ENDDO
    Clea
RETURN
```

```
*****************************************************
* Program: Appi                                     *
* Function: Add new record to Inventory file        *
* Author: Mal. SAnusi                               *
* DAte: 12TH DEC. 1998                              *
*****************************************************
Set echo off
Set status off
Set scoreboard off
Set color to w/r+
@ 0,22 say "DBMIS FOR NIG. STATE GOV'T. QUARTERS"
    Select A
    use invent
    Select B
    use master
mlitem = space(75)
mh_no = space(7)
Set color to w/n+
    Select A
DO WHILE .T.
    Select A
    @ 3,0 clea to 22,79
@ 3,17 say "DATA ENTERING SCREEN FOR INVENTORY FILE"
@ 4,17 SAY REPLICATE ("_",39)
 Append blank
@ 6,5 say "TOWN" get town
@ 6,22 say "LOCATION" get loct
@ 6,45 say "TYPE" get type
@ 8,3 say "HOUSE NO." get h_no
@ 8,23 say "NAME OF OCCUP." get name
@ 8,58 say "DEPARTMENT" get dept
@ 10,5 say "RANK" get rank
@ 10,25 say "BUS. ADDRESS" get add
@ 12,5 say "ITEMS IN L/RM1" get lrm1
@ 13,5 say "ITEMS IN L/RM2" get lrm2
@ 14,5 say "ITEMS IN KITCHEN" get krm
@ 15,5 say "ITEMS IN M/RM" get mbrm
@ 16,5 say "ITEMS IN B/RM1" get brm1
@ 17,5 say "ITEMS IN B/RM2" get brm2
@ 18,5 say "ITEMS IN B/RM3" get brm3
@ 19,5 say "ITEMS IN B/RM4" get brm4
@ 20,5 say "ITEMS IN ANNEX1" get anx1
@ 22,5 say "ITEMS IN ANNEX2" get anx2
read
@ 6,0 clea to 23,79
@ 6,5 say "ITEMS IN ANNEX3" get anx3
@ 8,5 say "ITEMS IN BOYS'QTR RM1" get QTRM1
@ 10,5 say "ITEMS IN BOYS' QTR RM2" get qtrm2
@ 12,5 say "ITEMS IN BOYS' QTR KIT." get bqk
@ 14,5 say "LIST OF ALL ITEMS IN THE HOU." get litem
```

```
            read
            mlitem = litem
            mh_no = h_no
            Select B
            Locate for h_no = mh_no
            repl litem  with mlitem
        wait
        @ 6,0clea to 23,79
        ch = space(1)
        @ 10,10 say "ANY OTHER DATA TO BE ENTERED? (Y/N)"
        @ 10,55 get ch pict "@!"
        read
            do case
                case ch = "Y"
                loop
                case ch = "N"
                exit
            Endcase
ENDDO
        close all database
        RETURN


        ****************************************************
        * Program: Appm                                   *
        * Function: Add new record to Master file         *
        * Author: Mal. Sanusi                             +
        * DAte: 12TH DEC. 1998                            +
        ****************************************************
    Set echo off
    Set status off
    Set scoreboard off
    Set color to w/r+
    @ 0,22 say "DBMIS FOR NIG. STATE GOV'T. QUARTERS"
    @ 1,22 SAY replicate ("_",37)
    SET COLOR TO W/N+
        Use master
  DO WHILE .T.
        @ 3,0 clea to 23,79
        @ 3,17 say "DATA ENTERING SCREEN FOR MASTER FILE"
        @ 4,17 say replicate ("_",36)
        Append blank
        @ 6,5 say "TOWN" get town
        @ 6,22 say "LOCATION" get loct
        @ 6,45 say "TYPE" get type
        @ 8,5 say "HOUSE NO." get h_no
        @ 8,22 say "YR OF CONST." get y_const
        @ 8,45 say "NO. OF LIVING RMS" get no_lrm
        @ 10,5 say "NO. OF KITCHENS" get no_krm
```

```
@ 10,35 say "NO. OF BEDROOMS" get no_brm
@ 12,5 say "NO. OF ANNEX ROOMS" get no_arm
@ 12,35 say "NO. OF RMS IN BOYS' QTR" get no_bqrm
@ 14,5 say "LIST OF ITEMS" get litem
@ 16,5 say "LAST INVENTORY DATE" get indate
@ 16,35 say "NAME OF LAST OCCUP." get lname
@ 18,5 say "VAC. DATE" get vdate
@ 18,25 say "NAME OF PRES. OCCUP." get pname
@ 20,5 say "DATE OCCUPED" get ocdate
@ 20,28 say "EMPLOYER" get empl
@ 20,54 say "DEPARTMENT" get dept
read
clea
@ 6,5 say "RANK" get rank
@ 6,35 say "G/LEVEL" get glevel
@ 8,5 say "BUSINESS ADDRESS" get add
@ 8,45 say "RENT" get rent
@ 10,5 say "DATE OF LAST PAYMENT" get lpdate
@ 10,45 say "LAST MAINT. DATE" get lmdate
@ 12,5 say "NATURE OF LAST MAINT." get nlmaint
@ 14,5 say "LAST MAINT. COST" get lmcost
@ 16,5 say "CURRENT MAINT. REQT" get cmreq
@ 18,5 say "CURRENT MAINT COST" get cmost
read
wait
clea
ch = space(1)
@ 10,10 say "ANY OTHER DATA TO BE ENTERRED? (Y/N)"
@ 10,55 get ch pict "@!"
read
        Do case
             case ch = "Y"
             loop
             case ch = "N"
             Exit
        Endcase
ENDDO
    Close all database
RETURN
```

```
*******************************************************
* Program: Appmnt                                     *
* Function: Add new record to maintenance file        *
* Author: Mal. Sanusi                                 *
* Date:  12TH DEC. 1998                               *
*******************************************************
Set echo off
Set status off
Set scoreboard off
Set color to w/r+
@ 0,22 say "DBMIS FOR NIG. STATE GOV'T. QUARTERS"
Set color to w/n+
mh_no = space(7)
Store space(75) to mnlmaint,mcmreq
Store 0 to mlmcost,mcmest,mamcost
 mindate = ctod("/ /")
 mlmdate = ctod("/ /")
 mcmdate = ctod("/ /")
Select A
use maint
Select B
use master
Select A
DO WHILE .T.
    Select A
    clea
@ 3,17 say "DATA ENTERING SCREEN FOR MAINTENANCE FILE"
@ 4,17 say replicate ("=",41)
    Append blank
@ 6,3 say "TOWN" get town
@ 6,22 say "LOCATION" get loct
@ 6,45 say "TYPE" get type
@ 8,3 say "HOUSE NO." get h_no
@ 8,22 say "YR OF CONST." get y_const
@ 10,3 say "LAST MAINT DATE" get lmdate
@ 10,30 say "NATURE OF LAST MAINT" get nlmaint
@ 12,3 say "LAST MAINT. COST" get lmcost
@ 14,3 say "CURRENT MAINT. RQMT" get cmreq
@ 16,3 say " ESTIMATED COST" get cmest
@ 18,3 say "INSPECTION DATE" get indate
@ 18,35 say "CURRENT MAINT. DATE" get cmdate
@ 20,3 say "AMOUNT EXPENDED" get amcost
read
        mlmdate = lmdate
        mnlmaint = nlmaint
        mcmreq = cmreq
        mcmest = cmest
```

```
***************************************************
* Program: Appmnt                                *
* Function: Add new record to maintenance file   *
* Author: Mal. Sanusi                            *
* Date:  12TH DEC. 1998                          *
***************************************************
Set echo off
Set status off
Set scoreboard off
Set color to w/r+
@ 0,22 say "DBMIS FOR NIG. STATE GOV'T. QUARTERS"
Set color to w/n+
mh_no = space(7)
Store space(75) to mnlmaint,mcmreq
Store 0 to mlmcost,mcmest,mamcost
 mindate = ctod("/ /")
 mlmdate = ctod("/ /")
 mcmdate = ctod("/ /")
Select A
use maint
Select B
use master
Select A
DO WHILE .T.
Select A
clea
@ 3,17 say "DATA ENTERING SCREEN FOR MAINTENANCE FILE"
@ 4,17 say replicate ("=",41)
Append blank
@ 6,3 say "TOWN" get town
@ 6,22 say "LOCATION" get loct
@ 6,45 say "TYPE" get type
@ 8,3 say "HOUSE NO." get h_no
@ 8,22 say "YR OF CONST." get y_const
@ 10,3 say "LAST MAINT DATE" get lmdate
@ 10,30 say "NATURE OF LAST MAINT" get nlmaint
@ 12,3 say "LAST MAINT. COST" get lmcost
@ 14,3 say "CURRENT MAINT. RQMT" get cmreq
@ 16,3 say " ESTIMATED COST" get cmest
@ 18,3 say "INSPECTION DATE" get indate
@ 18,35 say "CURRENT MAINT. DATE" get cmdate
@ 20,3 say "AMOUNT EXPENDED" get amcost
read
         mlmdate = lmdate
         mnlmaint = nlmaint
         mcmreq = cmreq
         mcmest = cmest
```

```
              mindate = indate
              memdate = cmdate
              mamcost = amcost
          Select B
          locate for h_no = mh_no
          If found()
              Repl lmdate with mlmdate
              Repl nlmaint with mnlmaint
              Repl cmreq with memreq
              Repl cmost with memost
              Repl indate with mindate
              Repl cmdate with memdate
              Repl amcost with mamcost
      wait
       clea
      ch = space(1)
      @ 10,10 say "ANY OTHER DATA TO BE ENTERED? (Y/N)"
      @ 10,55 get ch pict "@!"
      read
          Do case
              case ch = "Y"
              loop
              Case ch = "N"
              exit
          Endcase
     ENDDO
      Close all database
RETURN



          *+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*+*
          * Program: Enq                                        *
          * Function: Display the enquire sub-menu              *
          * Author: Mal. Sanusi                                 *
          * Date: 12TH DEC. 1998                                *
          *******************************************************
          Set echo off
          Set status off
          Set scoreboard off
          Set color to w/r
        DO WHILE .T.
          @ 3,0 clea to 23,79
          @ 3,28 say "E N Q U I R Y   M E N U"
          @ 4,28 say replicate ("=",22)
          @ 5,18 to 16,55
          @ 6,20 say "TASK CODE" + space(5) + "TASK"
```

```
     @ 7,25 say "M" + space(6) + "VIEW MASTER"
     @ 9,25 say "A" + space(6) + "VIEW MAINTENANCE"
     @ 11,25 say "I" + space(6) + "VIEW INVENTORY"
     @ 13,25 say "E" + space(6) + "EXIT"
     CH = SPACE(1)
     @ 15,25 say "ENTER CHOICE CODE"
     @ 15,45 get ch pict "@!"
read
     Do case
         case ch = "M"
             do enqm
         case ch = "A"
             do enqa
         case ch = "I"
              do enqin
         case ch = "E"
              exit
     Endcase
ENDDO
     clea
RETURN




     **********************************************************
     * Program: Enqa                                         *
     * Function: Display any record in the maint. file *
     * Author: Mal. Sanusi                                   *
     * Date: 12TH DEC. 1998                                  *
     **********************************************************
        Set echo off
        Set status off
        Set scoreboard off
use maint
mh_no = space(7)
DO WHILE .T.
   @ 2,0 clea to 23,79
   @ 2,5 say "ENTER HOUSE NO." get mh_no
   read
   Locate for h_no = mh_no
     If found()
@ 3,5 say "VIEWING SCREEN FOR MAINTENANCE FILE"
@ 4,5 say replicate ("=",34)
@ 5,5 say "TOWN" get town
@ 5,22 say "TYPE" get type
@ 7,5 say "LAST MAINT. DATE" get lmdate
@ 9,5 say "NATURE OF LAST MAINT." get nlmaint
```

```
*****************************************************
* Program: Mod                                      *
* Function: Display the Modify Sub-menu             *
* Author: Mal. SAnusi                               *
* Date: 12TH DEC. 1998                              *
*****************************************************
    Set echo off
    Set status off
    Set scoreboard off
    Set color to w/r+
    @ 0,15 say "S A N U S I   C O M P U T E R"
    Set color to w/n+
DO WHILE .T.
        @ 3,0 clea to 23,79
        @ 3,28 say "M O D I F Y   M E N U"
        @ 4,18 to 16,50
    @ 5,20 say "TASK CODE" + SPACE(5) + "TASK"
    @ 6,25 say "M" + SPACE(6) + "MODIFY MASTER"
    @ 8,25 say "A" + SPACE(6) + "MODIFY MAINTENANCE"
    @ 10,25 say "I" + SPACE(6) + "MODIFY INVENTORY"
    @ 12,25 say "E" + SPACE(10) + "EXIT"
    ch = space(1)
        @ 14,25 say "ENTER CHOICE CODE"
        @ 14,45 get ch pict "@!"
        read
    Do case
        case ch = "M"
        do modm
        Case ch ="A"
        do moda
        case ch = "I"
        do modin
        case ch = "E"
        Exit
    Endcase
ENDDO
RETURN


*****************************************************
* Program: Modmnt                                   *
* Function: Modify maintenance file                 *
* Author: Mal. Sanusi                               *
* Date: 12TH DEC. 1998                              *
*****************************************************
    Set echo off
    Set status off
    Set scoreboard off
    Select A
```

```
@ 6,40 say "DATE OCCUPED" get ocdate
@ 8,3 say "EMPLOYER" get empl
@ 8,40 say "DEPARTMENT" get dept
@ 10,3 say "RANK" get rank
@ 10,40 say "G/LEVEL" get glevel
@ 12,3 say "BUS. ADDRESS"  get add
@ 14,3 say "DATE OF LAST PAYMENT" get lpdate
@ 16,3 say "LIST OF ITEMS" get litem
@ 18,3 say "LAST MAINT. DATE" get lmdate
@ 18,3 say "NATURE OF LAST MIANT." get nlmaint
@ 20,3 say "LAST MAINT. COST" get lmcost
@ 22,3 say "CURRENT MAINT REQT" get cmreq
 READ
clea
@ 6,3 say "INSPECTION DATE" get indate
@ 8,3 say "CURRENT MAINT EST." get cmest
@ 10,3 say "ACTUAL MAINT COST" get amcost
read
Else
@ 10,10 say "RECORD NOT FOUND"
Endif
ch = space(1)
@ 23,5 say "VIEWING ANOTHER RECORD? (Y/N)"
@ 23,45 get ch pict "@!"
read
     If ch = "Y"
          loop
     Else
          exit
     Endif
ENDDO
close all database
Clea
RETURN

     ********************************************************
     * Program: Engin                                      *
     * Function: Display any record in the Invent. file    *
     * Author: Mal. Sanusi                                 *
     * Date: 12TH DEC. 1998                                *
     ********************************************************
Set echo off
Set status off
Set scoreboard off
Use INVENT
mh_no = space(7)
DO WHILE .T.
     @ 2,0 clea to 23,79
```

```
@ 2,5 say "ENTER HOUSE NO." get mh_no
read
Locate for h_no = mh_no
     If found()
@ 3,5 say "VIEWING SCREEN FOR INVENTORY FILE"
@ 4,5 say replicate ("=",31)
@ 5,5 say "TOWN" get town
@ 5,25 say "TYPE" get type
@ 7,5 say "NAME OF OCCUP." get name
@ 7,40 say "DEPARTMENT" get dept
@ 9,5 say "RANK" get rank
@ 9,25 say "BUS. ADDRESS" get add
@ 11,5 say "LIST OF ITEMS IN L/RM1" get lrm1
@ 13,5 say "LIST OF ITEMS IN L/RM2" get lrm2
@ 15,5 say "LIST OF ITEMS IN M/RM" get mbrm
@ 17,5 say "LIST OF ITEMS IN B/RM1" get brm1
@ 19,5 say "LIST OF ITEMS IN B/RM2" get brm2
@ 21,5 say "LIST OF ITEMS IN B/RM3" get brm3
read
@ 5,0 clea to 23,79
@ 7,5 say "LIST OF ITEMS IN B/RM4" get brm4
@ 9,5 say "LIST OF ITEMS IN KICHEN" get krm
@ 11,5 say "LIST OF ITEMS IN B/RM5" get brm5
@ 13,5 say "LIST OF ITEMS IN ANNEX1" get anx1
@ 15,5 say "LIST OF ITEMS IN ANNEX2" get anx2
@ 17,5 say "LIST OF ITEMS IN BOY QTR1" get qtrm1
@ 19,5 say "LIST OF ITEMS IN BOYS' QTR2" get qtrm2
@ 21,5 say "LIST OF ALL ITEMS" get litem
read
Else
@ 10,10 say "RECORD NOT FOUND"
Endif
CLEA
ch = space(1)
@ 15,5 say "VIEWING ANOTHER RECORD? (Y/N)"
@ 15,45 get ch pict "@!"
read
     If ch = "Y"
          loop
     Else
          exit
     Endif
ENDDO
     close all database
RETURN
```

```
    use maint
      Select B
           use master
      mh_no = space(7)
Store 0 to mlmcost,mcmest,mamcost
Store space(75) to mnlmaint,mcmreq
mlmdate = ctod("/ /")
mcmdate = ctod("/ /")
        Select A
DO WHILE .T.
         Select A
           clea
      @ 2,5 say "ENTER HOUSE NO." get mh_no
      read
      Locate for h_no = mh_no
          If found()
      @ 3,5 say "MODIFY SCREEN FOR MAINTENANCE FILE"
      @ 4,5 say replicate ("=",34)
      @ 5,3 say "TOWN" get town
      @ 5,22 say "TYPE" get type
      @ 7,5 say "LAST MAINT. DATE" get lmdate
      @ 9,5 say "NATURE OF LAST MAINT." get nlmaint
      @ 11,5 say "LAST MAINT. COST" get lmcost
      @ 13,5 say "CURRENT MAINT. RQMT" get cmreq
      @ 15,5 say "CURRENT MAINT EST." get cmest
      @ 15,35 say "CURRENT MAINT DATE" get cmdate
      @ 17,5 say "INSPECTION DATE" get indate
      @ 19,5 say "ACTUAL MAINT. COST" get amcost
      read
             mlmdate = lmdate
             mnlmaint = nlmaint
             mlmcost = lmcost
             mcmreq = cmreq
             mcmest = cmest
             mcmdate = cmdate
             mamcost = amcost
         Select B
             Locate for h_no = mh_no
             If found()
                Repl lmdate with mlmdate
                Repl nlmaint with mnlmaint
                Repl lmcost with mlmcost
                Repl cmreq with mcmreq
                Repl cmest with mcmest
                Repl cmdate with mcmdate
                Repl amcost with mamcost
         Else
              @ 10,10 say "RECORD NOT FOUND"
         Endif
```

```
      ch = space(1)
        @ 20,5 say "ENTER ANOTHER RECORD? (Y/N)"
        @ 20,40 get ch pict "@!"
        read
            If ch = "Y"
                loop
            Else
                exit
            Endif
    ENDDO
        close all database
        clea
    RETURN

            ***********************************************
            * Program: Modin                             *
            * Function: Modify Invent. file              *
            * Author: Mal. Sanusi                        *
            * Date: 12TH DEC. 1993                       *
            ***********************************************
            Set echo off
            Set status off
            Set scoreboard off
    Select A
    Use INVENT
    Select B
    Use MASTER
    Store space(75) to mlitem
    mh_no = space(7)
    Select A
DO WHILE .T.
        Select A
          clea
    @ 2,5 say "ENTER HOUSE NO." get mh_no
    read
    Locate for h_no = mh_no
        If found()
    @ 3,5 say "MODIFY SCREEN FOR INVENTORY FILE"
    @ 4,5 say replicate ("=",31)
    @ 5,5 say "TOWN" get town
    @ 5,25 say "TYPE" get type
    @ 7,5 say "NAME OF OCCUP." get name
    @ 7,40 say "DEPARTMENT" get dept
    @ 9,5 say "RANK" get rank
    @ 9,25 say "BUS. ADDRESS" get add
    @ 11,5 say "LIST OF ITEMS IN L/RM1" get lrm1
    @ 13,5 say "LIST OF ITEMS IN L/RM2" get lrm2
```

```
@ 15,5 say "LIST OF ITEMS IN M/RM" get mbrm
@ 17,5 say "LIST OF ITERMS IN B/RM1" get brm1
@ 19,5 say "LIST OF ITEMS IN B/RM2" get brm2
@ 21,5 say "LIST OF ITEMS IN B/RM3" get brm3
read
 clea
@ 7,5 say "LIST OF ITEMS IN B/RM4" get brm4
@ 9,5 say "LIST OF ITEMS IN KICHEN" get krm
@ 11,5 say "LIST OF ITEMS IN B/RM5" get brm5
@ 13,5 say "LIST OF ITEMS IN ANNEX1" get anx1
@ 15,5 say "LIST OF ITEMS IN ANNEX2" get anx2
@ 17,5 say "LIST OF ITEMS IN BOY QTR1" get qtrm1
@ 19,5 say "LIST OF ITEMS IN BOYS' QTR2" get qtrm2
@ 21,5 say "LIST OF ALL ITEMS" get litem
read
    mlitem = litem
    Select B
    Locate for h_no  = mh_no
    If found()
        Repl litem with mlitem
Else
@ 10,10 say "RECORD NOT FOUND"
Endif
CLEA
ch = space(1)
@ 15,5 say "MODIFY ANOTHER RECORD? (Y/N)"
@ 15,45 get ch pict "@!"
read
    If ch = "Y"
        loop
    Else
        exit
    Endif
ENDDO
    close all database
RETURN
```

```
************************************************
* Program: Modm                               *
* Function: Modify Master file                *
* Author: Mal. Sanusi                         *
* Date: 12TH DEC. 1998                        *
************************************************
Set status off
Set echo off
Set scoreboard off
Set color to w/r+
MH_NO = space(7)
Use master
DO WHILE .T.
        @ 1,0 clea to 23,79
      @ 1,5 say "ENTER HOUSE NO." get MH_NO
      read
      Locate for H_NO = MH_NO
      If found()
      @ 2,5 say "MODIFY SCREEN FOR MASTER FILE"
      @ 3,5 say replicate ("=",29)
   @ 4,3 say "MANE OF LAST OCCUP." get lname
   @ 4,52 say "VACATION DATE" get vdate
   @ 6,3 say "NAME OF PRES. OCCUP." get pname
   @ 6,52 say "DATE OCCUPIED" get ocdate
   @ 8,3 say "EMPLOYER" get empl
   @ 8,40 say "DEPARTMENT" get dept
   @ 10,3 say "RANK" get rank
   @ 10,40 say "G/LEVEL" get glevel
   @ 12,3 say "BUS. ADDRESS"  get add
   @ 14,3 say "DATE OF LAST PAYMENT" get lpdate
   @ 16,3 say "LIST OF ITEMS" get litem
   @ 18,3 say "LAST MAINT. DATE" get lmdate
   @ 18,3 say "NATURE OF LAST MIANT." get nlmaint
   @ 20,3 say "LAST MAINT. COST" get lmcost
   @ 22,3 say "CURRENT MAINT REQT" get cmreq
    READ
   clea
   @ 6,3 say "INSPECTION DATE" get indate
   @ 8,3 say "CURRENT MAINT EST." get cmest
   @ 10,3 say "ACTUAL MAINT COST" get amcost
   read
   Else
   @ 10,10 say "RECORD NOT FOUND"
   Endif
   ch = space(1)
   @ 23,5 say "MODIFY ANOTHER RECORD? (Y/N)"
   @ 23,45 get ch pict "@!"
```

```
read
        If ch = "Y"
            loop
        Else
            exit
        Endif
    ENDDO
    close all database
    Clea
    RETURN


        **********************************************
        * Program: Rep                               *
        * Function: Display Report Sub-menu          *
        * Author:  Mal. Sanusi                       *
        * Date: 12TH DEC. 1998                       *
        **********************************************
    Set echo off
    Set status off
    Set scoreboard off
    Set color to w/r+
  DO WHILE .T.
    @ 3,0 clea to 23,79
    @ 3,28 say "R E P O R T   M  E N U"
    @ 4,28 say replicate ("=",22)
    @ 6,20 say "TASK CODE" + space(5) + "TASK"
    @ 5,18 to 18,58
@ 7,25 say "Q" + space(6) + "QUARTERLY MAINT EEPORT"
@ 9,25 say "M" + space(6) + "MID YEAR INVENTORY REPORT"
@ 11,25 say "A" + space(6) + "ANNUAL HOUSING REPORT"
@ 13,25 say "E" + space(10) + "EXIT"
    ch = space(1)
    @ 17,25 say "ENTER CHOICE CODE"
    @ 17,45 get ch pict "@!"
    read
        Do case
            case ch = "Q"
            do repq
            case ch = "M"
            do repm
            case ch = "A"
            do repa
            case ch = "E"
            exit
        Endcase
ENDDO
RETURN
```

```
**********************************************
* Program: Repanl                            *
* Function: Print Annual Housing report       *
* Author: Mal. Sanuzi                          *
* Date: 12TH DEC. 1998                         *
**********************************************
Set status off
Set scoreboard off
Set echo off
     USE MASTER
mtown = space(9)
myear = space(4)
@ 2,28 say "TOWN" get MTOWN
@ 3,28 say "YEAR"  get myear
read
clea
Set device to printer
@ 2,39 say "ANNUAL HOUSING REPORT FOR"
@ 2,66 say myear
@ 3,39 say replicate ("=",34)
@ 4,5 say "TOWN" +SPACE(5) + "TYPE"
@ 4,24 say "HOUSE NO.  YR OF CONST."
@ 4,51 say "B/RMS"
@ 4,57 say "NAME OF OCCUP."
@ 4,76 say "EMPLOYER"
@ 4,91 say "DEPARTMENT"
@ 4,103 say "RANK"
@ 4,113 say "RENT"
@ 4,122 say "PAYMENT DATE"
row = 5
go top
DO WHILE .NOT. EOF()
    row = row + 1
      @ row,5 say town
      @ row,14 say type
      @ row,24 say h_no
      @ row,38 say y_const
      @ row,51 say no_brm
      @ row,55 say pname
      @ row,76 say empl
      @ row,91 say dept
      @ row,103 say rank
      @ row,113 say rent
      @ row,122 say lpdate
   Skip
ENDDO
    close all database
    Set device to screen
RETURN
```

```
    *****************************************
    * Program: Repmai                       *
    * Function: Print Mid & Annual Inventory *
    * Author: Mal. Sanusi                    *
    * Date: 12TH DEC. 1998                   *
    *****************************************
Set status off
Set scoreboard off
Set echo off
    USE INVENT
mtown = space(9)
mid = space(10)
ymon = space(13)
@ 1,5 say "TOWN" get mtown
@ 2,5 say "PERIOD" get mid
@ 3,5 say "MONTH & YEAR" get ymon
read
clea
    IF mid = "MID YEAR"
    Set device to printer
@ 2,47 say "MID-YEAR INVENTORY REPORT AS AT"
@ 2,79 say ymon
@ 3,47 say replicate ("=",11)
    ENDIF
     IF mid = "ANNUAL"
Set device to printer
@ 2,49 say "ANNUAL INVENTORY REPORT AS AT"
@ 2,79 say ymon
@ 3,49 say replicate ("=",12)
    ENDIF
@ 4,5 say "TOWN" + space(5) + "TYPE"
@ 4,23 say "HOUSE_NO."
@ 4,33 say "NAME OF OCCUP"
@ 4,56 say "LIST OF ALL ITEMS"
@ 4,116 say "INVENT. DATE"
prow = 1
go top
DO WHILE .NOT. EOF()
    prow = prow + 1
    @ prow,5 say town
    @ prow,11 say type
    @ prow,23 say h_no
    @ prow,33 say name
    @ prow,56 say litem
    @ prow,116 say indate
  Skip
ENDDO
    close all database
    Set device to screen
RETURN
```

```
**********************************************
* Program: Repmon                            *
* Function: Print Monthly Maintenance report *
* Author: Mal. Sanusi                        *
* Date: 12TH DEC. 1998                       *
**********************************************
Set status off
Set scoreboard off
Set echo off
Use maint
mtown = space(9)
mmon = space(19)
Store 0 to estotal,extotal,mcmest,mamcost
@ 1,5 say "TOWN" get mtown
@ 2,5 say "MONTH" get mmon
read
 CLEA
Set device to printer
@ 2,25 say "MONTHLY MAINTENANCE REPORT FOR THE MONTH OF"
@ 2,70 say mmon
@ 3,25 say replicate("=",57)
@ 4,5 say "TOWN"
@ 4,14 say "TYPE"
@ 4,24 say "HOUSE NO."
@ 4,34 say "NAT.OF MAINT."
@ 4,84 say "MAINT. DATE"
@ 4,96 say "MAINT. EST."
@ 4,108 say "AMOUNT EXPENDED"
 ROW = 4
go top
DO WHILE .NOT. EOF()
    mcmest = cmest
    mamcost = amcost
    estotal = estotal + mcmest
    extotal = extotal + mamcost
    row = row +1
    @ row,5 say town
    @ row,14 say type
    @ row,24 say h_no
    @ row,34 say nlmaint
    @ row,84 say cmdate
    @ row,94 say cmest
    @ row,108 say amcost
    skip
ENDDO
    row = row + 1
    @ row,94 say replicate ("=",30)
    @ row + 1,94 say estotal
```

```
        @ row + 1,108 say extotal
        @ row + 2,94 say replicate ("=",30)
        Set device to screen
        Close all database
RETURN


        *****************************************************
        * Program: Repq                                     *
        * Function: Print Quarterly maintenance report      *
        * Author: Mal. Sanusi                               *
        * Date: 12TH DEC. 1998                              *
        *****************************************************
        Set status off
        Set scoreboard off
        Set echo off
        Use maint
        mtown = space(9)
        qua = space(13)
        Year = space(4)
        Store 0 to estotal,extotal,mcmest,mamcost
        @ 1,5 say "ENTER TOWN" get mtown
        @ 2,5 say "ENTER QUARTER" get qua
        @ 3,5 say "ENTER YEAR" get year
        read
        @ 1,0 clea to 3,79
        If qua = "1ST QUARTER"
        Set device to printer
        @ 2,44 say "1ST QUARTER MAINTENANCE REPORT"
        @ 2,75 say year
        @ 3,44 say replicate("=",35)
        endif
        If qua = "2ND QUARTER"
        Set device to printer
        @ 2,44 say "2ND QUARTER MAINTENANCE REPORT"
        @ 2,75 say year
        @ 3,44 say replicate ("=",35)
        Endif
        If qua = "3RD QUARTER"
        Set device to printer
        @ 2,44 say "3RD QUARTER MAINTENNCE REPORT"
        @ 2,75 say year
        @ 3,44 say replicate("=",35)
        Endif
        If qua = "4TH QUARTER"
        Set device to printer
        @ 2,44 say "ANNUAL MAINTENANCE REPORT"
        @ 2,75 say year
```

```
    @ 3,44 say replicate ("=",30)
    Endif
    @ 4,4 say "TOWN" + space(5) + "LOCATION"
    @ 4,23 say "TYPE" + space(5) + "HOUSE NO."
    @ 4,49 say "CURRENT MAINT REQT"
    @ 4,91 say "MAINT. DATE"
    @ 4,104 say "ESTIMATED COST"
    @ 4,121 say "AMOUNT EXPENDED"
    row = 4
        go top
DO WHILE .NOT. EOF()
        mcmest =cmest
        mamcost = amcost
        estotal = estotal + mcmest
        extotal = extotal + mamcost
        row = row +1
    @ row,4 say town
    @ row,14 say loct
    @ row,24 say type
    @ row,36 say h_no
    @ row,46 say cmreq
    @ row,93 say cmdate
    @ row,105 say cmest
    @ row,120 say amcost
    skip
ENDDO
    row = row + 1
    @ row,105 say replicate ("=",30)
    @ row + 1,105 say estotal
    @ row + 1,120 say extotal
    @ row + 2,105 say replicate ("=",30)
    Set device to screen
    close all database
  RETURN
```

A P P E N D I X 'B'

PROGRAM OUTPUT.

AUTOMATED DATABASE MANAGEMENT
AND
INFORMATION SYSTEM
FOR
PUBLIC ASSETS

BY

SANUSI UMAR
PGD/MCS/97/293

SUPERVISED
BY
MAL. AUDU ISAH

1y key to continue...

DBMIS FOR NIG. STATE GOV'T. QUARTERS

M A I N   M E N U

FILE   APPEND   MODIFY   ENQUIRY   REPORT   QUIT

ENTER THE FIRST LETTER OF TASK

```
        A P P E N D    M E N U
  _____

 |---------------------------------------|
 | TASK CODE        TASK                 |
 |-------------------------------------- |
 |      M           Append Master        |
 |                                       |
 |      A           Append maintenance   |
 |                                       |
 |      I           Append Inventory     |
 |                                       |
 |      E              Exit              |
 |                                       |
 | ENTER CHOICE CODE                     |
 |                                       |
 |_____|
```

```
        M O D I F Y    M E N U
 |---------------------------------------|
 | TASK CODE        TASK                 |
 |      M           MODIFY MASTER        |
 |                                       |
 |      A           MODIFY MAINTENANCE   |
 |                                       |
 |      I           MODIFY INVENTORY     |
 |                                       |
 |      E              EXIT              |
 |                                       |
 | ENTER CHOICE CODE                     |
 |                                       |
 |_____|
```

ENQUIRY MENU

```
| TASK CODE        TASK                    |
|         M        VIEW MASTER             |
|                                          |
|         A        VIEW MAINTENANCE        |
|                                          |
|         I        VIEW INVENTORY          |
|                                          |
|         E        EXIT                    |
|                                          |
|         ENTER CHOICE CODE                |
```

REPORT MENU

```
| TASK CODE        TASK                       |
|         Q        QUARTERLY MAINT REPORT      |
|                                             |
|         M        MID YEAR INVENTORY REPORT   |
|                                             |
|         A        ANNUAL HOUSING REPORT       |
|                                             |
|         N        MONTHLY MAINT. REPORT       |
|                                             |
|         E              EXIT                  |
|                                             |
|         ENTER CHOICE CODE                    |
```

```
E N Q U I R Y   M E N U
========================

+------------------------------------------+
| TASK CODE        TASK                     |
|        M         VIEW MASTER              |
|                                           |
|        A         VIEW MAINTENANCE         |
|                                           |
|        I         VIEW INVENTORY           |
|                                           |
|        E         EXIT                     |
|                                           |
| ENTER CHOICE CODE                         |
+------------------------------------------+
```

```
R E P O R T   M E N U
=====================

+---------------------------------------------+
| TASK CODE        TASK                        |
|        Q         QUARTERLY MAINT EEPORT      |
|                                              |
|        M         MID YEAR INVENTORY REPORT   |
|                                              |
|        A         ANNUAL HOUSING REPORT       |
|                                              |
|        N         MONTHLY MAINT. REPORT       |
|                                              |
|        E              EXIT                   |
|                                              |
| ENTER CHOICE CODE                            |
+---------------------------------------------+
```

DATA ENTERING SCREEN FOR MASTER FILE

TOWN   LOCATION   TYPE

HOUSE NO.   YR OF CONST.   /   /   NO. OF LIVING RMS

NO. OF KITCHENS   NO. OF BEDROOMS

NO. OF ANNEX ROOMS   NO. OF RMS IN BOYS' QTR

LIST OF ITEMS

LAST INVENTORY DATE   /   /   NAME OF LAST OCCUP.

VAC. DATE   /   /   NAME OF PRES. OCCUP.

DATE OCCUPED   /   /   EMPLOYER   DEPARTMENT

RANK   G/LEVEL

BUSINESS ADDRESS   RENT

DATE OF LAST PAYMENT   /   /   LAST MAINT. DATE   /   /

NATURE OF LAST MAINT.

LAST MAINT. COST   .

CURRENT MAINT. REQT

CURRENT MAINT COST   .

DATA ENTERING SCREEN FOR INVENTORY FILE

_____

TOWN   LOCATION   TYPE

HOUSE NO.   NAME OF OCCUP.   DEPARTMENT

RANK   BUS. ADDRESS

ITEMS IN L/RM1
ITEMS IN L/RM2
ITEMS IN KITCHEN
ITEMS IN M/RM
ITEMS IN B/RM1
ITEMS IN B/RM2
ITEMS IN B/RM3
ITEMS IN B/RM4
ITEMS IN ANNEX1

ITEMS IN ANNEX2

DBMIS FOR NIGER STATE GOV'T. QUARTERS

ITEMS IN ANNEX3

ITEMS IN BOYS'QTR RM1

ITEMS IN BOYS' QTR RM2

ITEMS IN BOYS' QTR KIT.

LIST OF ALL ITEMS IN THE HOU.

INVENTORY DATE   / /

DATA ENTERING SCREEN FOR MAINTENANCE FILE

===

TOWN   LOCATION   TYPE

HOUSE NO.   YR OF CONST.   / /

LAST MAINT DATE   / /   NATURE OF LAST MAINT

LAST MAINT. COST   .

CURRENT MAINT. RQMT

ESTIMATED COST   .

INSPECTION DATE   / /   CURRENT MAINT. DATE   / /

ACTUAL MAINTENANCE COST   / /   INVENTORY DATE

MODIFY SCREEN FOR MASTER FILE

MANE OF LAST OCCUP. MR. PIUS K.   VACATION DATE 10/05/95

NAME OF PRES. OCCUP. MAL. AUDU A.   DATE OCCUPIED 10/05/95

EMPLOYER NIG. ST. GOV   DEPARTMENT ADMIN.

RANK P.P.O.   G/LEVEL 12

BUS. ADDRESS MIN. OF WORKS.

DATE OF LAST PAYMENT 10/26/98

LIST OF ITEMS 1 SET OF CUSH. CHAIR AND 3 BEDS, 1FRIDGE

NATURE OF LAST MIANT. MINOR REPAIRS OF DOORS.

LAST MAINT. COST   3000.00

CURRENT MAINT REQT REPAIRS OF WINDOWS & FLOOR

INSPECTION DATE 10/04/95

CURRENT MAINT EST.   15000.00

ACTUAL MAINT COST   10000.00

ord =   3

MODIFY SCREEN FOR MAINTENANCE FILE

TOWN MINNA   TYPE LOW COST

   LAST MAINT. DATE 04/15/95

   NATURE OF LAST MAINT. REPAIR OF BROKEN GLASSES

   LAST MAINT. COST   3000.00

   CURRENT MAINT. RQMT CONSTRUCTION OF DISCHARGE CHAMBERS.

   CURRENT MAINT EST.   10000.0CURRENT MAINT DATE 04/25/97

   INSPECTION DATE 04/15/97

   ACTUAL MAINT. COST   10000.00

MODIFY SCREEN FOR INVENTORY FILE

TOWN MINNA   TYPE LOW COST

NAME OF OCCUP. MR. ADE   DEPARTMENT FINNANCE

RANK C. ACCT.   BUS. ADDRESS MIN. OF FINANCE

LIST OF ITEMS IN L/RM1 1SET OF DINNING SET AND CUSH. CHAIRS

LIST OF ITEMS IN L/RM2 -

LIST OF ITEMS IN M/RM 1SET OF BED AND READN. TABL.

LIST OF ITEMS IN B/RM1 BED

LIST OF ITEMS IN B/RM2 BED

LIST OF ITEMS IN B/RM3 -

LIST OF ITEMS IN B/RM4 -

LIST OF ITEMS IN KICHEN 1 ELECT. COOKER

LIST OF ITEMS IN B/RM5

LIST OF ITEMS IN ANNEX1 -

LIST OF ITEMS IN ANNEX2 -

LIST OF ITEMS IN BOY QTR1

LIST OF ITEMS IN BOYS' QTR2 -

LIST OF ALL ITEMS 1SET OF DIN., CUSH. SET, ELECT. COOKER & 2BEDS

ENTER HOUSE NO. M123002
VIEWING SCREEN FOR MASTER FILE

NAME OF LAST OCCUP. ABUBAKAR M.   VACATION DATE 11/30/95

NAME OF PRES. OCCUP. B. MUSA   DATE OCCUPIED 12/02/95

EMPLOYER NIG ST.GOVT.   DEPARTMENT ACCT.

RANK PRIN. ACCT   G/LEVEL 12

BUS. ADDRESS MIN. OF EDUCT.

DATE OF LAST PAYMENT 02/19/98

LIST OF ITEMS 1SET OF CUSH. CHAIRS, BEDS

NATURE OF LAST MAINT. REPAIRS OF TOILET AND ROOF

LAST MAINT. COST   10000.00

CURRENT MAINT REQT REPAIRS OF FLOOR,DOORS AND PAINTING

Record :

INSPECTION DATE 11/24/95

CURRENT MAINT EST.   85000.00

ACTUAL MAINT COST

ENTER HOUSE NO. M123002
VIEWING SCREEN FOR MAINTENANCE FILE

TOWN MINNA   TYPE LOW COST

LAST MAINT. DATE 05/25/92

NATURE OF LAST MAINT. REPAIR OF DOORS & TOILETS

LAST MAINT. COST   4000.00

CURRENT MAINT. RQMT COMPLETE REPAIRS

CURRENT MAINT EST.   100000.0CURRENT MAINT DATE 05/20/98

INSPECTION DATE 05/25/97

ACTUAL MAINT. COST   80000.00

Record :   2

HOUSE NO. M123001
VIEWING SCREEN FOR INVENTORY FILE
=====================================
TOWN MINNA   TYPE L/COST

NAME OF OCCUP. JIBRIN NDAKO   DEPARTMENT AGRIC

RANK PAO   BUS. ADDRESS MIN. OF AGRIC

LIST OF ITEMS IN L/RM1 1 SET OF BED

LIST OF ITEMS IN L/RM2 1 SET OF BED AND MTRS

LIST OF ITEMS IN M/RM NIL

LIST OF ITERMS IN B/RM1 NIL

LIST OF ITEMS IN B/RM2 NIL

LIST OF ITEMS IN B/RM3 NIL

HOUSE NO. M123001
VIEWING SCREEN FOR INVENTORY FILE
=====================================

LIST OF ITEMS IN B/RM4 NIL

LIST OF ITEMS IN KICHEN NIL

LIST OF ITEMS IN B/RM5 NIL

LIST OF ITEMS IN ANNEX1 NIL

LIST OF ITEMS IN ANNEX2 NIL

LIST OF ITEMS IN BOY QTR1 NIL

LIST OF ITEMS IN BOYS' QTR2 NIL

LIST OF ALL ITEMS 2NO BED AND MTRS

ANNUAL HOUSING REPORT FOR 1998

TOWN	TYPE	HOUSE NO.	YR OF CONST	B/RMS	B/QTRS	NAME OF P/OCCUP.	DATE OCPD.	EMPLOYER	DEPARTMENT	RANK	RENT	PAYMENT DATE
MINNA	L/COST	M123001	01/10/77	3	0	JIBRIN NDAKO	01/10/79	NIG.ST.GOVT.	AGR.DEPT.	P.A.O.	N50/SUB.	12/31/98
MINNA	L/COST	M123002	06/01/77	3	0	UMARU JIYA	10/02/80	NIG.ST.GOVT.	C.A.O.	C.A.O.	N50/SUB	12/31/98
MINNA	L/COST	M123003	06/01/77	3	0	MRS. AISHATU ADEJO	01/25/79	NIG. ST. GOV	NURSING.	N.O.	N50/SUB	12/31/98
MINNA	L/COST	M123004	06/01/77	3	0	MOHAMMED BABA	01/20/79	NIG.ST.GOVT.	ENGINEERING.	B.E.S.	N50/SUB	12/31/98
MINNA	L/COST	M123005	06/01/77	3	0	JOHN KOLO	05/20/85	NIG.ST.GOVT.	FORESTRY	C.F.O.	N50/SUB	12/31/98
MINNA	NHS	NHB001	05/07/79	4	0	CANA A. MOHAMMED	05/14/82	NIG.ST.GOVT.	L.G.EDUC.AUT	H.O.D.	50/SUB	12/31/98
MINNA	NHS	NHB002	05/07/79	4	0	STADO MICHEL AHMED	06/18/88	NIG. ST. GOV	EDUCATION	E.O.	N50/SUB	12/31/98
MINNA	NHS	NHB003	05/07/79	4	0	MOHAMMED KAWTUI	01/07/89	NIG.ST.GOVT.	PATHOLOGY	A.C.L.S.	N50/SUB	12/31/98
MINNA	NHS	NHB004	05/07/79	4	0	HASSAN GIMBA	05/08/92	NIG.ST.GOVT.	PRODUCE	P.P.O.	N50/SUB	12/31/98
MINNA	NHS	NHB005	05/07/97	4	0	USMAN IBRAHIM	03/21/95	NIG.ST.GOVT.	FORESTRY	A.C.F.O.	N50/SUB	12/31/98
MINNA	GRA	MGRA001	08/08/88	3	2	ABDULLAHI B. B.	08/08/73	NIG.ST.GOVT.	JUDICIARY	REGISTRAR	N50/SUB	12/31/98
MINNA	GRA	MGRA002	08/08/88	3	2	MOHAMMED IBRAHIM	01/09/95	NIG. ST. GOV	INFORMATION	P.T.O.	N50/SUB	12/31/98

MONTHLY MAINTENANCE REPORT FOR THE MONTH OF JANUARY 1998

TOWN	TYPE	HOUSE NO.	NAT.OF MAINT.	MAINT. DATE	MAINT. EST.	AMOUNT EXPENDED
MINNA	L/COST	M123001	MINOR REPAIRS OF TOILET	06/21/98	100000.00	80000.00
MINNA	123	M123002	MINOR REPAIR	06/21/98	100000.00	70000.00
MINNA	L/COST	M123003	COMPLETE RE-ROOFING	06/21/98	100000.00	80000.00
MINNA	NHS	NHB001	MINOR REPAIRS	04/25/98	80000.00	35000.00
MINNA	NHS	NHB002	MINOR REPAIRS	04/25/98	80000.00	45000.00
MINNA	NHS	NHB003	MINOR REPAIRS	04/26/98	100000.00	50000.00
MINNA	NHS	NHB004	COMPLETE REPAIRS	06/26/98	20000.00	30000.00
MINNA	NHS	NHB005	COMPLETE REPAIRS	06/25/98	15000.00	10000.00
MINNA	NHS	NHB006	MINOR REPAIRS	08/25/98	100000.00	10000.00
MINNA	NHS	NHB007	MINOR REPAIRS	06/24/98	100000.00	85000.00
					795000.00	495000.00

1ST QUARTER MAINTENANCE REPORT 1998

TOWN	LOCATION	TYPE	HOUSE NO.	CURRENT MAINT REQT	MAINT. DATE	ESTIMATED COST	AMOUNT EXPENDED
MINNA	123	L/COST	M123001	COMPLETE RENOVATION/REPAIRS	06/21/98	100000.00	80000.00
MINNA	123	123	M123002	COMPLETE REPAIRS/RENOVATION	06/21/98	100000.00	70000.00
MINNA	123	L/COST	M123003	COMPLETE RENOVATION	06/21/98	100000.00	80000.00
MINNA	BOSSO	NHS	NHB001	COMPLETE RENOVATION	04/25/98	80000.00	35000.00
MINNA	BOSSO	NHS	NHB002	COMPLETE RENOVATION	04/25/98	80000.00	45000.00
MINNA	BOSSO	NHS	NHB003	COMPLETE REPAIRS AND RENOVATION	04/26/98	100000.00	50000.00
MINNA	BOSSO	NHS	NHB004	MINOR REPAIR	06/26/98	20000.00	30000.00
MINNA	BOSSO	NHS	NHB005	MINOR RENOVATION	06/25/98	15000.00	10000.00
MINNA	BOSSO	NHS	NHB006	COMPLETE RENOVATION	08/25/98	100000.00	10000.00
MINNA	BOSSO	NHS	NHB007	COMPLETE RENOVATION	06/24/98	100000.00	85000.00
						795000.00	495000.00

MID-YEAR INVENTORY REPORT AS AT JUNE, 1998

TOWN	TYPE	HOUSE_NO.	NAME OF OCCUP	LIST OF ALL ITEMS	INVENT. DATE
MINNA	L/COST	M123001	JIBRIN NDAKO	2NO BED AND MTRS	04/06/96
MINNA	L/COST	M123002	UMARU JIYA	2 NO MATRS & 1 NO. FRIDGE	04/06/96
MINNA	L/COST	M123003	MRS. AISHETU ADEJO	NIL	04/06/96
MINNA	L/COST	M123004	MOHAMMED BABA	NIL	04/06/96
MINNA	NHS	NHB001	GANA A. MOHAMMED	1NO. BED & 1NO. MATRS	04/06/96
MINNA	NHS	NHB002	TSADO MICHEAL	1NO. FRIDGE & 1NO. MATRS	04/06/96
MINNA	NHS	NHB003	MOH'D KAWTI	NIL	04/06/96
MINNA	NHS	NHB004	HASSAN GIMBA	NIL	04/06/96
MINNA	NHS	NHB005	USMAN IBRAHIM	1 CUSHION SET & 1NO. BED	04/06/96
MINNA	GRA	MGRA001	ABDULLAHI B.B.	1 CUSHION SET & 1NO. FRIDGE	04/06/96