COMPUTERIZING HUMAN RESOURCES MANAGEMENT IN RAW MATERIAL RESEARCH AND DEVELOPMENT COUNCIL

BY

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DEDICATION

This project is dedicated to God, who broke my academic stagnancy and to my loving and caring wife Justina (Temi).

CERTIFICATION

This project was supervised by Mrs. Cole a lecturer in the Department of Mathematics/Computer science, Federal University of Technology, Minna Niger State.

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ABSTRACT

The project was basically carried out to transform the manual system of record handling to an authomated one, in order to meet the demand of the present age. This took our case study to Raw Material Research and Development Council (RMRDC), where the present system were scrutinized and appropriate attempt were made in transforming their personnel record into computerized data base system.

To achieve this aim a program was written using Visual Basic Net (VB. NET) programming language an object –oriented high level computer language, which is an evolution of Microsoft Visual Basic (VB) implemented on Microsoft . NET frame work.

At the end of the project work we came out with a well organized data base system where personnel record can be easily located viewed, updated, deleted, sorted and also printed depending on the task before the operator.

At the end useful suggestions were made in implementing the new system and also for further development.

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CHAPTER ONE

1.0   INTRODUCTION

Before now, information handling in most part of the world, especially in the developing nations, in which Nigeria is part of, are mainly manual; and information processing are done mentally.

This method was cumbersome, tasking and characterized with errors and many flaws.

In the recent years, the growth in technology has helped in many areas of information handling especially with the introduction of computers with it supper ability to process information particularly data processing.

With the development of new generation computers, most countries of the world have advanced faster in using computer for data processing. This has brought high growth in public and private sectors, which in turn has improved the economic as a whole.

1.10   RAW MATERIALS RESEARCH AND DEVELOPMENT COUNCIL

The raw materials research and development council is an agency of the Federation Government of Nigeria vested with the mandate to promote the development and utilization of Nigeria's

industrial raw materials. It originated from the recommendations of a workshop on industrial matters, which was organized, by the Manufacturers Association of Nigeria (MAN) and the Nigerian Institute of Social and Economic Research (NISER) in July 1983. It was established by Decree No. 39 of 1987, but commenced operation on February 10, 1988. Among many of it mandate are:

To draw policy guidelines and action programmes on raw materials acquisition, exploration and development.

To review from time to time, raw materials resources available and utilization with a view to advising the Federal Government with a view strategic implication of depletion, conservation or stock-pulling of such resources.

To advise on adaptation of machinery and process of raw materials utilization.

It is believed that no nation can achieve its goal of industrial development without discovering and developing local raw material for its industrial sector. In order for RMRDC to achieve her objective based on mandate, an efficient electronic data base system is needed to manage its human resources that are wide spread over the 36 States of Nigeria.

1.20 HUMAN RESOURCES MANAGEMENT

Among the major available department in the council, namely, Finance and Administration, Research and Development, Purchases and Supplies, Personnel and Administration is the most central processing unit of the organization being responsible for training, welfare, transfer, maintenance and processing of records, appointment, promotion, discipline and other administrative work between the management and staff.

1.30 COMPUTERIZED PERSONNEL RECORDS

In this project, my intention is focused on the system of personnel data based records employed by raw material research and development council, which aim at improving on the present system in order to promote the efficiency in personnel record management.

The electronic database enhances easy retrieval of information, easy to modify on existing data, speedy process of information, easy reference to past data/records. Fast processing of staff salaries, retirement and other benefits, annual budget proposal, easy sorting of records and elimination of duplicate data.

1.40 STATEMENT OF PROBLEMS

The request for the RMRDC electronic database system become very much unavoidable due to her structure, functions and spread over Nigeria, which have the obligation of the management to engage more experience staff in order to accomplish her goals and objective.

The existing manual system, has several flaws, processing of data is tasking and slow, sometimes it leads to lost of data and poor performance in the overall system.

The failure of the management to acquire a microcomputer database program to manage her information will surely affect the council objective, which aims at discovering raw material for local industries and encouraging the uses of the discovered raw material for local production.

1.50 OBJECTIVE OF STUDY

Electronic database management system promotes the efficiency of an organization by using computer to store, organize, access, manipulate and present information in variety of traditions.

The writer of this project looks critically at the problems associating with manual database such as using file cabinet or desk drawer to organize data kept on paper and arranged in file. The

arrangement is slow and risky. Data might easily get missed, the process is cumbersome and boring, the large bulk of files make it difficult to locate a particular record in a jive, thus this system is sluggish and data might perish easily from disaster such as fire and also misplacement. A data on the computer make provision for back-up storage which can be used to replace lost data at any time, at the same time it makes processing, sorting and retrieval of records fact and easy.

CHAPTER TWO

2.0 LITERATURE REVIEW

An organization is a human group that has been deliberately constituted/formed with the aim of meeting specific goals.

Organization needs to be controlled, directed, motivated and also from time to time plan ahead for her future prospect. To achieve this it will need to communicate information and facilities. Computer being the modern method of processing and handling data and information, when it is introduced, it affects the work of staff within the organization. Some jobs are changes, some may be created while some may be lost.

There are many ways of evaluating new methods and technologies. In the area of computerization, the main ways are those used in systems development.

A proposed computer system is evaluated in term of how well it can meet the objectives that will enable the organization to meet goal such as optimum service or optimum use of resources.

With the speed at which information technology is growing it will soon get to a level that any organization, be it private or public,

which is not computerized will be abandoned by the government and even the society.

Computerized database system has the ability to arrange or sort the records in the table according to different field of data, it analyze data and quickly produce records from simple listing to complex, and professional reports.

The 1984 data protection Act was intended to regulate the use of automated processed information relating to individuals and the provision of services in respect of such information but may also be a discouragement to the use of computers for some applications.

C. S. French (1992) noted that data description must be standardized. For this reason, a data description language (DDL) is provided which must be used to specify the data in base. Similarly a data manipulation language (DML) is provided, which must be used to access data. The function of these two languages may be compared to the declarations and process statement in a conventional programming language.

Also, Jackson structured programming (JSP) is a method invented by Michael Jackson in 1983 for the analysis and design of

data processing and real time systems. It emphasizes the need for orderly structure in the development and design systems.

Database Management System constructs expands and maintains the database. It allocates storage to data. It maintains indices so that any required data can be retrieved, and the separate items of data in the base can be cross-referenced. The database system maintains the data in the base by:

(a)   Adding new records

(b)   Deleting outdated records

(c)   Modifying old records

(d)   Accessing or locating records etc

(e)   Storing information

The trend in the advancement of computer system has greatly hastened the effect on data processing in order to make the office function more efficient, reliable and responsibly than before.

2.10   THE MANAGEMENT FOCUS

Considering the vital role in building the economics through the promotion of the industrial sector by discovering local raw material for, the management is ripe for an efficient electronic database, which

aims in assisting the organization to achieve her main objectives some of the management objectives include.

(i)   To encourage the publicity of research findings and other information relevant to local sourcing of raw materials.

(ii)   To provide special research grants for specific objectives and device awards or systems for industries that achieve breakthrough or make innovation and invention.

(iii)   To advise on adaptation of machinery and process of raw materials resources available and utilization, with a view to advising the federal government on the strategic implication of depletion, conservation or stock-piling of such resources.

(iv)   Supporting the field officer (research officer) by providing enough funds for their research work.

In other to achieve the above objectives the management needs a functional computerized database system that will monitor her staff to yield optimum result and the new system should be able to

(i)   Quickly search and locate specific records at any time.

(ii)   Make it easy to add and delete records.

(iii)   Reduce data redundancy.

(iv)   Sorting of records in the table according to different field of data

(v)   Eliminate disk space problem.

(vi)   Analysis and ability to perform some of data in table.

(vii)   Multiple accesses of records by two or more staff at a time.

2.20   DATABASE SYSTEM STRUCTURE

A database is an organized collection of related information with duplication of data items been minimized.

Database Management System (DBMS) is a database, which is stored on the computer system. In the organization of modern database system there is a DBMS sever, which connect the client application program. The DBMS is a special program, which is able to accept multiple connections from many client programs at same time. The client program sends a request to the DBMS server using a (DSL). Structure Query Language (SQL). SQL statement is treated as a request by the server, which is translated.

Once the DBMS server has translated the SQL statement it them retrieves data from the database into a data cache where it can be accessed and manipulated more quickly and easily.

SOME IMPORTANT DEFINITION

(i)   A computer is an electronic device that accept data, process it and gives the required output according to a giving set of instructions.

(ii)   DATA: These are facts giving to the computer for processing.

(iii)   Information: These are result generated when data are been processed.

(iv)   PROGRAMS: These are the set of instructions that guide the computer in performing its task.

(v)   A field is the smallest item of information about a record.

(vi)   A record is a collection of related fields.

2.40 DATABASE OBJECTIVES

2.41 TABLE

A table is a collection of data that is organized into columns, which is known as fields, and rows, which is also known as records.

A typical table is shown

Fields are classified according to the type of data it holds. In a typical database records, we have the following commons fields; Text, Auto number, Date and Time, Yes/No, OLE object, Currency, Hyperlink, Memo, Look wizard.

(i)   TEXT: Text data type is used to store data such as names, Address and any numbers that do not require calculations, such as Telephone numbers, part numbers or postal codes. A text field can contain up to

255 characters, but the default field size is 50 characters. To control the maximum number of characters that can be entered in a text field set by the default field.

(ii)   MEMO: The memo data type is used if one needs to store more than 255 characters. A memo field can store up to 64,000 characters. If one wants to store formatted text or long documents, one should create an OLE field instead of a memo field. Both text and memo data types store only the characters entered in a field, space characters for unused positions in the field aren't stored.

(iii)   OLE: OLE object field are used to store data such as Microsoft word or Microsoft Excel documents. Pictures sound, and other types of binary data created in other programs.

(iv)   NUMBER: These are numeric data used in mathematical calculations.

(v)   DATE/TIME: Date and Time values are used to declare the format for date and time respectively.

(vi)   CURRENCY: Currency values and numeric data used in mathematical calculations involving data with one to four decimal places. Accurate to 1 5 d igits o n t he l eft s ide o f t he d ecimal p laces separator and to 4 digits on the right side.

(vii) YES/NO: Yes and No values are fields that contain only one of two values e.g. Yes/No, True/False, or On/Off.

(viii) HYPERLINK: Hyperlink is a text or combination of text as a <u>hyperlink address</u>.

Example of fields are surname, first name, date of birth, sex and file no.

2.42 QUERY

A query is a question one asks of the data continued in the database. Query is used to view data in various ways, it could be for data analysis or exchanging existing data since queries are based on tables one can also use a query as the same for forms and reports you can create a query to sort out a group of records with a given condition example is grouping records according to what the share or have in common e.g. sex, town, age

The five types of queries are explained below:

(a) Select Query: Retrieve the specific data from one or more tables, and then display the data in a query datasheet in the order one specifies. This is the most common type of query.

(b) Cross tab query; summarizes large amounts of data in an easy –to-read, row-and-column format.

(c)   Parameter query: Displays a dialog box prompting one for information, such as criteria for locating data. For example a parameter query might request the beginning date and ending date, then display all records matching dates between the two specified values.

(d)   Action query: Makes changes to many records. There are four types of action queries!

-    A-make-table query creates a new table from selected data in one or more tables.

-    An update query makes update changes to records such as when you need to raise salaries of all staff by 70%.

-    An append query adds records from one or more tables to the end of other tables.

-    A delete query – deletes records from a table or tables.

(e)   SQL query: Structured query language created and used in Microsoft Access.

Note example

2.43 FORMS

Forms are database objects used primarily for data entry and making changes to existing records. Forms are based on an underlying

table and include design elements such as descriptive text, titles, labels, lines boxes, and pictures. Forms often use calculations as well to summarize data that is not listed on the actual table.

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

Forms are linked to the underlying table by using controls. Controls are item that can be selected.

It can be sized or moved. The most common type of control is a text box. A text box displays data from table. The form usually includes a label with each text. A form can be display in one of four different views: Form Design view, Form view, Form Datasheet view, and Form preview.

Example of data form

2.44 REPORTS

Reports are the printed output one generates from tables or queries. Records in a report can be grouped into categories to allow you to analyze the data. There are two ways to view the report, as it will appear when you print: One can use the print preview to view the entire report page by page because this view displays all the data in

the report, it takes longer to generate. The report for the list of staff of

RMRDC is given below.

Inventory

ID	FILE NO.	SURNAME	FIRST NAME	INITIAL	DOB	SEX	DEPARTMENT	GRADE LEVEL	CONTISS S	SALARY	TOTAL ALL	SOO	DESIGNATI	DOFA
3	RMRDC/120...	ABAH	ANTHONY	D	11/13/1977	M	SECURITY...	7	2	41995	23517	BENUE	SO	3/2/1999 12:...
4	RMRDC/110...	ADAMU	JUSTINAf	E	6/15/1966 1...	F	FIN.AND AD...	8	5	78216	43801	KADUNA	SEO	4/21/2001 1...
5	RMRDC/003...	OKAFOR	PHILOMINA	S	11/13/1970	F	SWT	9	1	85015	47608	ABIA	SAO	10/5/1998 1...
6	RMRDC/011...	ALIMI	IZURE	C	12/19/1964...	M	TD	9	3	85320	47779	EDO	SEO	3/10/2000 1...
7	RMRDC/033...	OJONUGWA	JOSEPH	G	3/25/1958 1...	M	APD	9	5	85668	47974	KOGI	SAO	5/4/1995 12:...
8	RMRDC/021...	AKOR	JOHN	R	10/10/1956...	M	PGR	8	4	78105	43739	KADUNA	AO1	3/16/2004 1...
9	RMRDC/107...	BELLO	YAKUBU	Z	5/21/1961 1...	M	TD	11	2	95450	53422	JIGAWA	PTO	4/1/1994 12:...
10	RMRDC/115...	AGBETILO...	EUNICE	O	6/30/1959 1...	M	SWD	9	3	85320	47779	NASARAWA	PEO11	7/3/1996 12:...
11	RMRDC/103...	OKWUIKE	IJEOMA	S	7/2/1965 12...	F	APD	8	4	78105	43739	EKITI	AO1	6/4/1999 12:...
12	RMRDC/024...	YINUSA	DANIEL		10/8/1968 1...	F	SECURITY	7	2	41870	23447	ENUGU	SO	7/5/1998 12:...
13	RMRDC/103...	OGBECHE	ENEJI	M	4/20/1970 1...	M	STORE UNIT	9	2	85315	47776	KOGI	SEO	10/11/2003...
14	RMRDC/194...	ITODO	JOHN	F	11/3/1967 1...	M	MAINTENA...	8	5	78216	43801	C/RIVER	AO1	5/5/2005 12:...
15	RMRDC/120...	BAWA	IBRAHIM	O	5/15/1972 1...	M	IPD	9	5	85668	47974	KOGI	CAO	5/2/2000 12:...
16	RMRDC/114...	MADAKI	SULEIMAN	Y	6/25/1971 1...	M	FA	13	4	130215	72920	FCT	AEO	6/3/1990 12:...
17	RMRDC/102...	ADESINA	MODUPE	O	3/13/1973 1...	M	APD	12	2	111315	62336	FCT	PEO	9/1/1994 12:...
18	RMRDC/102...	ISIAKA	SALMAT	S	7/5/1966 12...	F	TD	11	1	95415	53432	OYO	PAO	12/4/1993 1...
19	RMRDC/103...	USMAN	MOHAMED	N	6/7/1955 12:...	M	SWT	10	2	90215	50520	NIGER	PEO	3/3/1995 12:...
20	RMRDC/102...	BELLO	ADEMOLA	T	5/27/1961 1...	M	IPD	11	2	95450	53452	KWARAKOGI	AO1	7/5/2001 12:...
21	RMRDC/101...	EJINALE	OLUWASEU...	O	10/19/1959...	F	STORE UNI...	8	2	75005	42003	OSUN	SAO	6/13/2001 1...
22	RMRDC/100...	EZE	MERY	B	5/18/1964 1...	F	FD	9	5	85668	47974	ENUGU	PEO	5/3/1999 12:...
23	RMRDC/101...	OLUGBEN...	MERCY	K	3/9/1969 12:...	F	SERVICOM	10	4	90814	50856	OYO	PEO	12/3/1995 1...
24	RMRDC/132...	NOH	GLORIA	S	4/29/1958 1...	F	SECURITY	9	5	85668	47974	ENUGU	PEO11	2/2/1995 12:...
25	RMRDC/002...	OLURE	MICHELLE	Y	7/16/1954 1...	M	COMPUTER	10	2	90215	50520	KOGI	PAO	5/5/1994 12:...
26	RMRDC/100...	ADEFIRAN	VERONICA	T	12/12/1967...	F	COMPUTER	11	2	95450	53452	ONDO	PEO	10/11/1988...
27	RMRDC/002...	OJENIYI	OLUWAFEMI	J	8/26/1971 1...	M	TD	10	3	90705	50795	OSUN	SAO	12/6/1989 1...
28	RMRDC/100...	OKITOH	VICTORIA	M	1/22/1974 1...	F	RD	10	1	90105	50459	DELTA	SAO	10/6/1988 1...
29	RMRDC/002...	ELONU	OYINYE	R	4/6/1963 12...	F	STORE UNIT	7	5	42005	23523	IMO	SO11	1/2/1995 12:...
30	RMRDC/007...	OLABINTAN	BIODUN	O	8/8/1968 12...	M	PPD	7	8	42420	23755	OSUN	HEO	5/2/1999 12:...
31	RMRDC/103...	ORAKPU	CONSTANC...	I	7/17/1960 1...	F	IPD	7	2	41870	23447	ANAMBRA	AO11	7/15/1997 1...
32	RMRDC/009...	DANJUMA	MAGAGI	E	5/21/1962 1...	M	RD	9	1	85015	47608	PLATEAU	SRO	6/16/1998 1...
33	RMRDC/079...	SUNDAY	KAYODE	Y	7/20/1959 1...	M	MAINTENA...	6	2	36460	20412	ONDO	MO	11/19/2001...
34	RMRDC/107...	ANADOKUN	FUNMILAYO	L	11/9/1965 1...	F	AF	8	4	78105	43739	OYO	AO1	3/25/2002 1...
35	RMRDC/015...	IBRAHIM	YINUSA	D	2/25/1966 1...	M	AF	7	6	42105	23579	FCT	HEO	6/25/1989 1...
36	RMRDC/105...	HARUNA	DAVID	H	4/21/1968 1...	M	SWT	8	4	75105	42059	FCT	AO1	2/5/1992 12:...
37	RMRDC/010...	OKEREKE	EUGENE	A	6/5/1958 12...	F	TECHNOL...	8	2	75005	42003	IMO	AO1	5/11/1...

ID	FILE NO	SURNAME	FIRST NAME	INITIAL	DOB	SEX	DEPARTM	GRADE LE	CONTISS S	SALARY	TOTAL ALL	SOO	DESIGNATI	DOFA
38	RMRDC/106...	WILLIAMS	INNOCENT	L	6/18/1955 1...	M	IPD	9	1	85015	47608	EDO	SAO	9/2/19 98 12:...
39	RMRDC/107...	PAUL	MERCY	M	11/13/1969...	F	TECHNOL...	8	4	78105	43739	EDO	SEO	10/6/2 001 1...
40	RMRDC/103...	ADEBONO...	OLUWAKEMI	V	12/18/1970...	F	MEDICAL	10	2	90215	50520	KOGI	PAO	2/2/2002 12:...
41	RMRDC/104...	AINA	AKINOLA	K	12/5/1971 1...	M	STORE UNIT	9	3	85320	47779	OGUN	PEO11	4/4/2003 12:...
42	RMRDC/016...	MANASSEH	JAMES	D	9/13/1975 1...	M	IPD	10	5	93206	52195	KADUNA	PEO	1/2/19 97 12:...
43	RMRDC/110...	ESINAME	ADEKUNLE	F	6/6/1960 12:...	M	AF	11	4	95620	53547	OGUN	PAO	3/6/19 95 12:...
44	RMRDC/107...	UCHECHU...	NWANKPA	S	7/8/1959 12:...	M	PS	12	2	111315	62336	ABIA	ACAO	2/3/19 89 12:...
45	RMRDC/106...	OJOMA	OWUNEBE	N	4/14/1958 1...	M	MEDICAL	11	3	95520	53491	BENUE	ACNO	4/13/1991 1...
46	RMRDC/100...	CHIWAR	JOHN	T	3/15/1964 1...	M	PGRR	7	7	42208	23636	BORNO	HEO	7/16/1995 1...
47	RMRDC/103...	AGBARA	VICTORIA	I	6/29/1963 1...	F	SWT	9	5	85668	47974	BENUE	SAO	3/8/19 99 12:...
48	RMRDC/009...	EZEOBA	THERESA	P	11/5/1961 1...	F	PGRR	8	5	78216	43801	ENUGU	AO1	5/10/2 005 1...
49	RMRDC/100...	ADENIJI	ABOSEDE	J	8/8/1962 12:...	F	TD	11	2	95450	53452	ENUGU	ACTO	3/9/19 96 12:...
50	RMRDC/100...	AMEDU	OYIGONA	G	12/15/1969...	F	STORE UNIT	8	5	78216	43801	OYO	AO1	5/10/1 998 1...
51	RMRDC/107...	JULIUS	FEMI	T	4/22/1969 1...	M	MAINTENA...	10	4	90814	50856	BENUE	AEO	2/5/19 97 12:...
52	RMRDC/100...	OKPAD	PATIENCE	O	8/16/1964 1...	F	IPD	10	2	90215	50520	OSUN	PAO	1/5/20 01 12:...
53	RMRDC/100...	ABU	JOSEPHINE	E	8/11/1975 1...	F	AF	8	5	78216	43801	BENUE	AO1	12/2/2 002 1...
54	RMRDC/006...	JOHN	STEPHEN	D	9/13/1981 1...	M	AF	9	2	85130	47673	BENUE	PEO11	5/5/20 03 12:...
55	RMRDC/100...	IBEMERE	ELIZABETH	V	7/7/1964 12:...	F	MEDICAL	12	5	114250	63980	PLATEAU	CMO	7/11/2 002 1...
56	RMRDC/009...	JEMILIA	YUSUF	C	5/4/1970 12:...	M	RD	11	3	95520	53491	IMO	ACRO	5/4/19 96 12:...
57	RMRDC/102...	OSO	OLAWUMI	H	3/23/1980 1...	F	RD	10	1	90105	50459	OYO	PRO	3/6/19 94 12:...
58	RMRDC/045...	DARAMOLA	RACHEAL	I	5/14/1973 1...	F	MEDICAL	10	5	93206	52195	EKITI	SNS	6/3/19 95 12:...
59	RMRDC/100...	UDOH	IBAHA	P	4/1/1968 12:...	M	RD	11	2	95450	53452	EKITI	ACRO	9/7/19 96 12:...
60	RMRDC/100...	SEGUN	OYEDIRAN	Y	3/3/1965 12:...	M	RD	9	3	85320	47779	A/IBOM	SRO	4/2/19 95 12:...

CHAPTER THREE

SYSTEM DESIGN AND ANALYSIS

INTRODUCTION

3.0   WHAT IS SYSTEM DESIGN AND ANALYSIS

In system analysis and design. The concern is usually with man-made systems involving input, process and output.

A system can be defined as a set of interacting elements responding to inputs to produce outputs.

Whereas, system analysis is the methods of determining how best to use computer with other resources to perform tasks, which meet the information needs of an organization. It was developed, initially, as a specialized branch of Organization And Method (O & M), which is a general approach to solving procedural problems.

Analysis of a system is the procedural study of its operations with an attempt to discover what are basic problems is. The analyst must examine all the facts he has gathered in order to make a proper assessment of the existing system. He must resist the temptation to include ideas in the new system, which has not been fully worked out.

The aim of analysis is to ensure that all feasible alternatives are eventually produced the present system must be criticized against the

principles of procedure after which the strengths and weakness of the system should be apparent. The detailed examination will them provide the **design team** with the specific date they require in order to ensure that all the client's requirement are fully met. The requirements specification should be in an acceptable form, estimates for alternative designs should be prepared, and decisions to process with a particular design can be made.

In the design, the system analyst by applying his judgment, skill and knowledge, can interpret the requirement specification to create one or more system specification of the entire system. It serves as:

(a)   Communication to management, programmers, operating staff and user.

(b)   Provide complete record of the system used for evaluation, modification and training purpose. The system should be well documented as analysts who design it can go to other projects or change employment.

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

specification or functional specification. As system analyst will be required to perform a number of different task in the analysis stage. The tasks are discussed below.

3.10 PROGRAM ANALYSIS

The software discussed in this project is termed electronic database of RMRDC. The main objective of this package is to process in basic and some advanced database of the organization. The case study processes the nominal roll, in a way of assessing personnel records, appending, retrieving, sorting and searching.

The package consists of main program and several other modules. The programming language used is **Visual Basic Net** The program package allows the user to input his or her data through the required input unit e.g. the keyboard or mouse and the output can be obtained through the Visual display unit or print out in form of hard copy.

3.11 SYSTEM OPERATING PROCEDURE

The operating procedure of the modules in the electronic database of RMRDC is as follows

At the top of the menu we have electronic database. The screen has the following options.

(i)   Accessing record

(ii) Searching for record

(iii) Appending record

(iv) Querying records

(v)   Generalizing a summary report

(vi) Other task

(vii) Exist

After the user has clicked his/her option, each option consists of submenu, for option.

In accessing record, you have to select general record or specific record.

Next option is searching for record; this allows you to locate a specific record at a time.

Appending record allows for adding new records and at the same time makes alternation on any of the old records.

The next is querying a record which allows for selection of a particular set of records that met a given criteria, for example one can select a female list, determine the number of staff from a particular state among other things.

3.20 QUERYING A SET OF RECORDS

Open the database of RMRDC and perform the following operations.

1.   Click on query

2.   Click on design

3.   At the design view, look for criteria from the title row, then type, the query criteria e.g. Male, Age (> 45 or < 25), state (Lagos, Enugu, Kano, Edo) etc.

4.   Click on run from the menu bar or press enter key.

The summary option will allow you to generate a summary report of given set of records that meet specified criteria.

3.30 THE FILTER A SET OF RECORDS

To filter a set of records, open the RMRDC's database, click on staff list table. Then select or highlight a record field to signify the criteria you want to use for your filtration, e.g. select personnel to filter the personnel records then click on record from the menu bar, select filter and click on filter by selection, all the personnel records will be displayed out, this can be saved or print out as one desires.

3.40 PRINTING THE OUTPUT

To print the output, after opening the document one desires to print, click on file menu or right click on the document page then click

on print, the print dialog box will be displayed, complete the fillings and click on ok. But make sure that the print folder installed on the system is selected i.e. the default, one can click on carried to stop the print command.

CHAPTER FOUR

4.0 SYSTEM IMPLEMENTATION

This involves the coordination of the entire task, which is necessary in ensuring the operation of the new system. System implementation comprises of two major tasks: programming and staff training.

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

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

4.10 PROGRAMMING LANGUAGE

the programming language used in designing this project is VB. NET (Visual Basic .NET). it is an object-oriented computer language that can be viewed as an evolution of microsoft's Visual Basic (VB) implemented on the Microsoft. NET framework.

For the purpose of reinforcing Visual Basic.NET's focus as a rapid application development platform, the following functions were the features included.

- Edit and continue - Probably the biggest "missing feature" form Visual Basic.NET, allowing the modification of code access and immediate resumption of execution.

- Designing –time expression evaluation

- The (*my*) pseudo – namespace (overview, details), which provides:

  - Easy access to certain areas of the .NET framework that order wise require significant code to access.

  - Dynamically-generated classes (notably my forms).

- Improvement to VB – to VB.NET converter.

- The using key word, simplifying the use of subjects that require the dispose pattern to the sources.

- *Just my code*, which hides boilerplate code written by the visual studio. NET IDE.

- Data source binding, easing database client/server development. Interestingly, Visual Basic 2005 introduced features meant to fill in the gaps between itself and other "more powerful" . NET languages adding:

- NET 2.0 language features such as:

  - Generics

- Partial classes, a method of defining some parts of a class in one file and then adding more definitions later; particularly useful for integrating user code with auto-generated code.

- Nullable types

- XML comments that can be processed by tools like NDOC to produce "automatic" documentation

- Operator overloading

- Support for unsigned integer data types commonly used in other languages

These and many more are what made VB.NET a more interesting and fun in writing sophisticated professional programmes.

One of the major features of Visual Basic 2005 is the 'ISNOT" operator patented. It has to do with the convention of 'if not X is Y' to if X isnot Y' which is gained notoriety when it was found to be the subject of a Microsoft patent application.

In fact there are many versions of VB.NET such as: Visual Basic.NET (VB7, Visual Basic.NET 2003 (VB7.1), Visual Basic 2005 (VB8.0), Visual Basic 2008 (VB 9.0), Visual Basic 'VBX' (VB10.0).

Two important data type changes occurred with the move to VB.NET, compared to VB6, the integer data type has been doubled in length from 16 bits to 32 bits, and the long data type has been doubled in length from 32 bits to 64 bits. This is true of all versions of VB.NET. A 16 bits integer in all versions of VB.NET is now known as short. Similarly, the windows forms GUI editor is very similar in style and function to the Visual Basic form editor

In spite of the improvement recorded in VB.NET, let it is not free from criticism.

Microsoft supplies an automated VB 6 to VB.NET converter with Visual studio. NET, which has improved overtime, but it cannot convert all code. Tools like .NET reflector can provide a class approximation to the original code due to the large amount of metadata provide in CIL.

Microsoft's response to developer dissatisfaction has focused avoid making it easier to move new development and shift existing code base from VB 6 to VB. NET. Example are:

- Completing common tasks in VB 6, like creating a printing preview.
- Integrating VB 6 and VB. Net solutions (dubbed VB fusion).

4.20 PROGRAM CODING

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

(i)   The visual Basic. NET programming

(ii)   The code programming

At the visual Basic. NET programming step, there are designed in which we use tool. These tools always come with the Visual Basic. NET programming packages.

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

The summary of the program coding is given below:

(i)   Creating your working directory

(ii)   Creating your new project

(iii)   Creating your form and declaring its properties

(iv)   Creating the objects and the objects code

(v)   Creating an executable file

(vi)   Executing your program code.

4.30 PROGRAM TESTING

Having written the program coding and generate your executable files, to make the program ready for use, the program has to under go various tests, to check that it is well coded and transcribed correctly and does what it is meant to do. These tests aim at deleting any error, which has to be corrected.

Have this program has been subjected to the following tests and they are correct.

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

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

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

(iv)   User acceptance testing: This allows the user of the program to see that the program has achieved the purpose to which it is designed.

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

To operate the software

STEPS

(i) Click on start button

(ii) Select program

(iii) Click on RMRDC electronic database

(iv) The computer will request for the password before one can be allowed access to the system; this check unauthorized person from accessing the system. Entering the correct passwords, the program will be loaded into the memory of the computer.

The following activities can be performed while you are in the program.

(i) Viewing the records

(ii) Delete invalid record

(iii) Locate a record or group of records

(iv) Add new records

(v) Updating all or parts of the records

(vi) Print a record

(vii) Sorting

4.40 PROGRAM DEBUGGING

Program debugging testing are somehow debugging relies on testing output to detect the presence of errors. Debugging simply means identifying the error point and making appropriate correction.

The two major of debugging are:

(a)   Locate the problem area or error point.

(b)   Correct the error and repeat the test again to ensure proper correction has been made.

4.50   SYSTEM HARDWARE

Visual Basic. NET is a high level language, which is used for the project Database. Any computer of 32 or 64 bits, which is software compatible, should be able to run the program. This 4 bytes computer must be using Windows 95, Windows 98, Windows 2000, or Windows NT.

The size of the computer memory should at least vary from 560 MB to 20 GB or higher.

4.60   SYSTEM CONSTRAINTS

This application programs is design for Windows 98, 2000 and NT. One common disadvantage of any Windows application programs is that it is subject to modification from time to time. This is due to review of Windows operating system frequently.

The cost of review constitutes the constraint. e.g. (the recent window 2006 has many changes in its operation.)

4.70 STAFF TRAINING

Computer department is responsible for handling of all machine-processing operations and ensure a smooth running of work through the operation line.

Proper training must be given to the concerned staff to enable them perform the operation well. Training in how to control data to prevent loss or disclosure of information and also for security alert.

To assist in training, the following aids must be provided:

(i)   Lecturers: Staff must be lectured on the fundamental of computer and its operations.

(ii)   Courses: Short or long-term courses and full or part time course. Depending on the management policy.

(iii)   Handouts/Handbooks: To provide as part of or as development from the system specification.

CHAPTER FIVE

SUMMARY, RECOMMENDATION AND CONCLUSION

5.0 SUMMARY

This project aims at designing an electronic database system for processing personnel records of RMRDC so as to replace the existing manual system, which makes processing of data tasking and slow.

Chapter one described the historical background and development of computer, electronic database and statement of problems.

Chapter two discussed the literature review, database architecture and database objects including, table, queries, forms and reports.

Chapter three covers the system analysis and design

Chapter four also cover system implementation including programming language overview were discussed. This last chapter gives the summary and the recommendation note and the conclusion.

5.10 RECOMMENDATION

Electronic database remains the most effective method for process data and managing information in any organization. In view

of this, good planning must be undertaken before embarking on laborious project of computerization.

Although planning and appraisal would involve the following:

(a)   Establish the aims and set goal for the project.

(b)   Determine the main activities and events to attain the require goal.

(c)   Specify the manpower requirement and resources to achieve the set goals.

(d)   Define the proper sequencing of these activities

All these have to be through planning and a proper control machinery put in place to ensure reliability of result, a good audit procedure to be applied to guarantee prompt deletion and correction of errors to eradicate or minimize official abuses. Also developing computerized information network, which every organization should work forward.

In view of the successful conversion of the manual database to electronic database the writer wish to employ the management for quick implementation of the project.

5.20 CONCLUSION

The purpose of this project is strictly limited to the use of educational research work only. It should therefore not to be used as a

measure to access the efficiency of RMRDC programs. However the result should not be overlooked.

The project itself is not a mean to an end but could be reviewed by the management of RMRDC from time to time to allow further improvements as more resources are allocated and reallocated in the future.

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Inventry Table

File   Task

New Entry

File Number	
Surname	
First Name	
Initials	
Date of Birth	mm: [▾] dd: [▾] yy: [▾]
Sex	[▾]
Department	
Grade Level	[▾]
Contiss Step	[▾]
Salary	
Total Allowance	
State of Origin	[▾]
Designation	
DOFA	mm: [▾] dd: [▾] yy: [▾]

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Inventry Table

New Entry

File Number	
Surname	
First Name	
Initials	
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Sex	[⌄]
Department	
Grade Level	[⌄]
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Salary	
Total Allowance	
State of Origin	[⌄]
Designation	
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57	RMRDC/10233	OSO	OLAWUMI	H	3/23/1980 12:00:00...	F	RD	10	1	90105	50459	OYO	PRO	3/6/1994 12:00:00...
55	RMRDC/10032	IBEMERE	ELIZABETH	V	7/7/1964 12:00:00...	F	MEDICAL	12	5	114250	63980	PLATEAU	CMO	7/11/2002 12:00:00...
53	RMRDC/10054	ABU	JOSEPHINE	E	8/11/1975 12:00:00...	F	AF	8	5	78216	43801	BENUE	AO1	12/2/2002 12:00:00...
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39	RMRDC/10771	PAUL	MERCY	M	11/13/1969 12:00:00...	F	TECHNOLOGY	8	4	78105	43739	EDO	SEO	10/6/2001 12:00:00...
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Inventory

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33	RMRDC/079...	SUNDAY	KAYODE	Y	7/20/1959 1...	M	MAINTENA...	6	2	36460	20412	ONDO	MO	11/19/2001...
35	RMRDC/015...	IBRAHIM	YINUSA	D	2/25/1966 1...	M	AF	7	6	42105	23579	FCT	HEO	6/25/1989 1...
36	RMRDC/105...	HARUNA	DAVID	H	4/21/1968 1...	M	SWT	8	4	75105	42059	FCT	AO1	2/5/1992 12:...
38	RMRDC/106...	WILLIAMS	INNOCENT	L	6/18/1955 1...	M	IPD	9	1	85015	47608	EDO	SAO	9/2/1998 12:...
41	RMRDC/104...	AINA	AKINOLA	K	12/5/1971 1...	M	STORE UNIT	9	3	85320	47779	OGUN	PEO11	4/4/2003 12:...
42	RMRDC/016...	MANASSEH	JAMES	D	9/13/1975 1...	M	IPD	10	5	93206	52195	KADUNA	PEO	1/2/1997 12:...
43	RMRDC/110...	ESINAME	ADEKUNLE	F	6/6/1960 12:...	M	AF	11	4	95620	53547	OGUN	PAO	3/6/1995 12:...
44	RMRDC/107...	UCHECHU...	NWANKPA	S	7/8/1959 12:...	M	PS	12	2	111315	62336	ABIA	ACAO	2/3/1989 12:...
45	RMRDC/106...	OJOMA	OWUNEBE	N	4/14/1958 1...	M	MEDICAL	11	3	95520	53491	BENUE	ACNO	4/13/1991 1...
46	RMRDC/100...	CHIWAR	JOHN	T	3/15/1964 1...	M	PGRR	7	7	42208	23636	BORNO	HEO	7/16/1995 1...
51	RMRDC/107...	JULIUS	FEMI	T	4/22/1969 1...	M	MAINTENA...	10	4	90814	50856	BENUE	AEO	2/5/1997 12:...
54	RMRDC/006...	JOHN	STEPHEN	D	9/13/1981 1...	M	AF	9	2	85130	47673	BENUE	PEO11	5/5/2003 12:...
56	RMRDC/009...	JEMILIA	YUSUF	C	5/4/1970 12:...	M	RD	11	3	95520	53491	IMO	ACRO	5/4/1996 12:...
59	RMRDC/100...	UDOH	IBAHA	P	4/1/1968 12:...	M	RD	11	2	95450	53452	EKITI	ACRO	9/7/1996 12:...
60	RMRDC/100...	SEGUN	OYEDIRAN	Y	3/3/1965 12:...	M	RD	9	3	85320	47779	A/IBOM	SRO	4/2/1995 12:...

Key to Abbreviations on Tables

AEO	=	Assistant Executive Officer
EO	=	Executive Officer
AOII	=	Admin Officer II
AOI	=	Admin Officer I
SAO	=	Senior Admin Officer
PAO	=	Principal Admin Officer
ACAO	=	Assistant Chief Admin Officer
CAO	=	Chief Admin Officer
HEO	=	Higher Executive Officer
SEO	=	Senior Executive Officer
PEOII	=	Principal Executive Officer II
PEOI	=	Principal Executive Officer I
ACEO	=	Assistant Chief Executive Officer
CEO	=	Chief Executive Officer
SCO	=	Senior Chief Officer
CO	=	Chief Officer

NOTE

SWF	=	Staff Welfare and Training
IPD	=	Investment Promotion Department
TDD	=	Technology Department
APD	=	Appointment, Promotion and Discipline
PGRR	=	Pension and Gratitude, Record and Registry

```vb
Imports System.Data.OleDb

Public Class Form1

    Private oStringFormat As StringFormat
    Private oStringFormatComboBox As StringFormat
    Private oButton As Button
    Private oCheckbox As CheckBox
    Private oComboBox As ComboBox

    Private nTotalWidth As Int16
    Private nRowPos As Int16
    Private NewPage As Boolean
    Private nPageNo As Int16
    Private Header As String = "Inventory"
    Private sUserName As String = "Ayodele"

    ''''''''''''''''''''''''''''''''''''''''' Print
functions'''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''''

    Private Sub PrintDocument1_BeginPrint(ByVal sender As Object, ByVal e As
System.Drawing.Printing.PrintEventArgs) Handles PrintDocument1.BeginPrint

        oStringFormat = New StringFormat
        oStringFormat.Alignment = StringAlignment.Near
        oStringFormat.LineAlignment = StringAlignment.Center
        oStringFormat.Trimming = StringTrimming.EllipsisCharacter

        oStringFormatComboBox = New StringFormat
        oStringFormatComboBox.LineAlignment = StringAlignment.Center
        oStringFormatComboBox.FormatFlags = StringFormatFlags.NoWrap
        oStringFormatComboBox.Trimming = StringTrimming.EllipsisCharacter

        oButton = New Button
        oCheckbox = New CheckBox
        oComboBox = New ComboBox

        nTotalWidth = 0
        For Each oColumn As DataGridViewColumn In DataGridView1.Columns

            nTotalWidth += oColumn.Width

        Next
        nPageNo = 1
        NewPage = True
        nRowPos = 0

    End Sub
```

```vb
    Private Sub PrintDocument1_PrintPage(ByVal sender As Object, ByVal e As
System.Drawing.Printing.PrintPageEventArgs) Handles PrintDocument1.PrintPage

        Static oColumnLefts As New ArrayList
        Static oColumnWidths As New ArrayList
        Static oColumnTypes As New ArrayList
        Static nHeight As Int16

        Dim nWidth, i, nRowsPerPage As Int16
        Dim nTop As Int16 = e.MarginBounds.Top
        Dim nLeft As Int16 = e.MarginBounds.Left

        If nPageNo = 1 Then

            For Each oColumn As DataGridViewColumn In DataGridView1.Columns

                nWidth = CType(Math.Floor(oColumn.Width / nTotalWidth * nTotalWidth * (e.MarginBounds.Width
/ nTotalWidth)), Int16)

                nHeight = e.Graphics.MeasureString(oColumn.HeaderText, oColumn.InheritedStyle.Font,
nWidth).Height + 11

                oColumnLefts.Add(nLeft)
                oColumnWidths.Add(nWidth)
                oColumnTypes.add(oColumn.GetType)
                nLeft += nWidth
            Next

        End If

        Do While nRowPos < DataGridView1.Rows.Count - 1

            Dim oRow As DataGridViewRow = DataGridView1.Rows(nRowPos)

            If nTop + nHeight >= e.MarginBounds.Height + e.MarginBounds.Top Then

                DrawFooter(e, nRowsPerPage)

                NewPage = True
                nPageNo += 1
                e.HasMorePages = True
                Exit Sub

            Else

                If NewPage Then
                    ' Draw Header
```

Form1 Source Code

```vb
                e.Graphics.DrawString(Header, New Font(DataGridView1.Font, FontStyle.Bold),
Brushes.Black, e.MarginBounds.Left, e.MarginBounds.Top - e.Graphics.MeasureString(Header, New
Font(DataGridView1.Font, FontStyle.Bold), e.MarginBounds.Width).Height - 13)

                ' Draw Columns
                nTop = e.MarginBounds.Top
                i = 0
                For Each oColumn As DataGridViewColumn In DataGridView1.Columns

                    e.Graphics.FillRectangle(New SolidBrush(Drawing.Color.LightGray), New
Rectangle(oColumnLefts(i), nTop, oColumnWidths(i), nHeight))
                    e.Graphics.DrawRectangle(Pens.Black, New Rectangle(oColumnLefts(i), nTop,
oColumnWidths(i), nHeight))
                    e.Graphics.DrawString(oColumn.HeaderText, oColumn.InheritedStyle.Font, New
SolidBrush(oColumn.InheritedStyle.ForeColor), New RectangleF(oColumnLefts(i), nTop, oColumnWidths(i),
nHeight), oStringFormat)
                    i += 1
                Next
                NewPage = False

            End If

            nTop += nHeight
            i = 0
            For Each oCell As DataGridViewCell In oRow.Cells

                If oColumnTypes(i) Is GetType(DataGridViewTextBoxColumn) OrElse oColumnTypes(i) Is
GetType(DataGridViewLinkColumn) Then

                    e.Graphics.DrawString(oCell.Value.ToString, oCell.InheritedStyle.Font, New
SolidBrush(oCell.InheritedStyle.ForeColor), New RectangleF(oColumnLefts(i), nTop, oColumnWidths(i),
nHeight), oStringFormat)

                ElseIf oColumnTypes(i) Is GetType(DataGridViewButtonColumn) Then

                    oButton.Text = oCell.Value.ToString
                    oButton.Size = New Size(oColumnWidths(i), nHeight)
                    Dim oBitmap As New Bitmap(oButton.Width, oButton.Height)
                    oButton.DrawToBitmap(oBitmap, New Rectangle(0, 0, oBitmap.Width, oBitmap.Height))
                    e.Graphics.DrawImage(oBitmap, New Point(oColumnLefts(i), nTop))

                ElseIf oColumnTypes(i) Is GetType(DataGridViewCheckBoxColumn) Then

                    oCheckbox.Size = New Size(14, 14)
                    oCheckbox.Checked = CType(oCell.Value, Boolean)
                    Dim oBitmap As New Bitmap(oColumnWidths(i), nHeight)
                    Dim oTempGraphics As Graphics = Graphics.FromImage(oBitmap)
                    oTempGraphics.FillRectangle(Brushes.White, New Rectangle(0, 0, oBitmap.Width,
```

```
oBitmap.Height))
                    oCheckbox.DrawToBitmap(oBitmap, New Rectangle(CType((oBitmap.Width -
oCheckbox.Width) / 2, Int32), CType((oBitmap.Height - oCheckbox.Height) / 2, Int32), oCheckbox.Width,
oCheckbox.Height))
                    e.Graphics.DrawImage(oBitmap, New Point(oColumnLefts(i), nTop))

                ElseIf oColumnTypes(i) Is GetType(DataGridViewComboBoxColumn) Then

                    oComboBox.Size = New Size(oColumnWidths(i), nHeight)
                    Dim oBitmap As New Bitmap(oComboBox.Width, oComboBox.Height)
                    oComboBox.DrawToBitmap(oBitmap, New Rectangle(0, 0, oBitmap.Width, oBitmap.Height))
                    e.Graphics.DrawImage(oBitmap, New Point(oColumnLefts(i), nTop))
                    e.Graphics.DrawString(oCell.Value.ToString, oCell.InheritedStyle.Font, New
SolidBrush(oCell.InheritedStyle.ForeColor), New RectangleF(oColumnLefts(i) + 1, nTop, oColumnWidths(i) - 16,
nHeight), oStringFormatComboBox)

                ElseIf oColumnTypes(i) Is GetType(DataGridViewImageColumn) Then
                    Dim oCellSize As Rectangle = New Rectangle(oColumnLefts(i), nTop, oColumnWidths(i),
nHeight)
                    Dim oImageSize As Size = CType(oCell.Value, Image).Size
                    e.Graphics.DrawImage(oCell.Value, New Rectangle(oColumnLefts(i) +
CType(((oCellSize.Width - oImageSize.Width) / 2), Int32), nTop + CType(((oCellSize.Height -
oImageSize.Height) / 2), Int32), CType(oCell.Value, Image).Width, CType(oCell.Value, Image).Height))
                End If
                e.Graphics.DrawRectangle(Pens.Black, New Rectangle(oColumnLefts(i), nTop,
oColumnWidths(i), nHeight))
                i += 1
            Next
        End If
        nRowPos += 1
        nRowsPerPage += 1
    Loop
    DrawFooter(e, nRowsPerPage)
    e.HasMorePages = False

End Sub

    Private Sub DrawFooter(ByVal e As System.Drawing.Printing.PrintPageEventArgs, ByVal RowsPerPage As
Int32)

        Dim sPageNo As String = nPageNo.ToString - " of " + Math.Ceiling(DataGridView1.Rows.Count /
RowsPerPage).ToString

        ' Right Align - User Name
        e.Graphics.DrawString(sUserName, DataGridView1.Font, Brushes.Black, e.MarginBounds.Left +
(e.MarginBounds.Width - e.Graphics.MeasureString(sPageNo, DataGridView1.Font, e.MarginBounds.Width).Width),
e.MarginBounds.Top + e.MarginBounds.Height - 7)
```

```vb
        ' Left Align - Date/Time
        e.Graphics.DrawString(Now.ToLongDateString + " " + Now.ToShortTimeString, DataGridView1.Font,
Brushes.Black, e.MarginBounds.Left, e.MarginBounds.Top + e.MarginBounds.Height + 7)

        ' Center  - Page No. Info
        e.Graphics.DrawString(sPageNo, DataGridView1.Font, Brushes.Black, e.MarginBounds.Left -
(e.MarginBounds.Width - e.Graphics.MeasureString(sPageNo, DataGridView1.Font, e.MarginBounds.Width).Width) /
2, e.MarginBounds.Top + e.MarginBounds.Height + 31)

    End Sub


    '''''''''''''''''''''''''''''''''''''''''''''''''''''''''End print
functions'''''''''''''''''''''''''''''''''''''''''''''''''''''''''

    '''''''''''''''''''''''''''''''''''''''''''''''''''''''''When Form
Loads'''''''''''''''''''''''''''''''''''''''''''''''''''''''''

    Private Sub Form1_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load
        DataGridView1.Visible = False
        SelectComboBox.SelectedText = "Select option"

        PrintMenuItem.Enabled = False
        printPreviewMenuItem.Enabled = False
        pageSetupMenuItem.Enabled = False

        newPanel.SetBounds(0, 25, Me.Width, 500)
        queryPanel.SetBounds(0, 25, Me.Width, 600)

        Me.Height = 500
        Me.MaximizeBox = False
        Me.SetDesktopLocation(200, 50)
        GroupBox3.SetBounds(5, 5, Me.Width - 20, 430)

        ExitButton.SetBounds(600, 580, 60, 25)

    End Sub


    '''''''''''''''''''''''''''''''''''''''''''''''''''''''''End Form
Load'''''''''''''''''''''''''''''''''''''''''''''''''''''''''

    '''''''''''''''''''''''''''''''''''''''''''''''''''''''''Query Button
Clicked'''''''''''''''''''''''''''''''''''''''''''''''''''''''''


    Private Sub QueryButton_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles
QueryButton.Click
```

```vb
        Try
            PrintMenuItem.Enabled = True
            printPreviewMenuItem.Enabled = True
            pageSetupMenuItem.Enabled = True

            Dim selection As String = SelectComboBox.SelectedItem.ToString
            Dim queryFemale As String = " SEX = 'F' "
            Dim queryLevelAbove10 = " GRADE_LEVEL >= 10 "

            If selection = "Female Workers" Then
                request(queryFemale, "")
                statusLabel.Text = " All female workers."
            ElseIf selection = "Level 10 and above" Then
                request(queryLevelAbove10, "")
                statusLabel.Text = " All staff with levels above 10."
            End If
            DataGridView1.Visible = True
        Catch ex As Exception
        End Try
        Me.Height = 605
    End Sub


    ''''''''''''''''''''''''''''''''''''''''''''''''''''''End Query Button
Clicked''''''''''''''''''''''''''''''''''''''''''''''''''''

    ''''''''''''''''''''''''''''''''''''''''''''''''''''''Query databse
function'''''''''''''''''''''''''''''''''''''''''''''''''''''

  Private Sub request(ByVal query As String, ByVal sortOrder As String) 'ByVal ids As String)
        Try
            Dim strConn As String = "Provider=Microsoft.Jet.OLEDB.4.0;Data Source=Inventory.mdb" & ";"
            'Dim query As String
            Dim cnn As OleDbConnection = New OleDbConnection(strConn)
            cnn.Open()
            Dim cmd As OleDbCommand = New OleDbCommand()
            cmd.Connection = cnn
            cmd.CommandText = "select * from PROJECT where" & query & sortOrder 'Sql select
            Dim adp As OleDbDataAdapter 'Data Adapter
            Dim ds As New DataSet  'Data Set
            adp = New OleDbDataAdapter(cmd)
            adp.Fill(ds, "PROJECT")
            Me.DataGridView1.DataSource = ds   'The source of data for the grid view control is the dataset
            Me.DataGridView1.DataMember = "PROJECT" 'Specify data from which table is needed
            cnn.Close()
        Catch ex As Exception
        End Try
```

```vb
    End Sub

    '''''''''''''''''''''''''''''''''''''''''''''''''''''End Query Database
Function''''''''''''''''''''''''''''''''''''''''''''''''''''''

    '''''''''''''''''''''''''''''''''''''''''''''''''''''Sort Function using DataGridView
Sorting''''''''''''''''''''''''''''''''''''''''''''''''''''''

 Private Sub sortButton_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles
sortButton.Click
        Dim queryFemale As String = " SEX = 'F' "
        Dim queryLevelAbove10 = " GRADE_LEVEL = '10'"

        If ascRadioButton.Checked Then
            DataGridView1.Sort(DataGridView1.Columns(0), System.ComponentModel.ListSortDirection.Ascending)
            statusLabel.Text = " Sort ID in ascending order."
        ElseIf DescRadioButton.Checked Then
            DataGridView1.Sort(DataGridView1.Columns(0), System.ComponentModel.ListSortDirection.Descending)
            statusLabel.Text = " Sort ID in descending order."
        End If
    End Sub

    '''''''''''''''''''''''''''''''''''''''''''''''''''''End Sort
Function''''''''''''''''''''''''''''''''''''''''''''''''''''''

    '''''''''''''''''''''''''''''''''''''''''''''''''''''Exit  Button
Clicked''''''''''''''''''''''''''''''''''''''''''''''''''''''

    Private Sub ExitButton_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles
ExitButton.Click
        Me.Close()
    End Sub

    '''''''''''''''''''''''''''''''''''''''''''''''''''''End Exit Button
Clicked''''''''''''''''''''''''''''''''''''''''''''''''''''''

    '''''''''''''''''''''''''''''''''''''''''''''''''''''Page Print
Function''''''''''''''''''''''''''''''''''''''''''''''''''''''

Private Sub printMenuItem_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles
PrintMenuItem.Click
        If PrintDialog1.ShowDialog = DialogResult.OK Then
            'showDialog method makes the dialog box visible at run time
            PrintDocument1.Print()
        End If
    End Sub

    '''''''''''''''''''''''''''''''''''''''''''''''''''''End Print Function
```

```
''''''''''''''''''''''''''''''''''''''''''''''''''
                ''''''''''''''''''''''''''''''''''''''''''''Page Setup Function (Before Printing
Document)'''''''''''''''''''''''''''''''''''''''''''''''''''''''

Private Sub pageSetupMenuItem_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles
pageSetupMenuItem.Click
        With PageSetupDialog1
            .PageSettings = PrintDocument1.DefaultPageSettings
        End With
        Try
            If PageSetupDialog1.ShowDialog = DialogResult.OK Then
                PrintDocument1.DefaultPageSettings = PageSetupDialog1.PageSettings
            End If
        Catch es As Exception
            MessageBox.Show(es.Message)
        End Try
    End Sub


                ''''''''''''''''''''''''''''''''''''''''''''''End Page Setup Function (Before Printing
Document)'''''''''''''''''''''''''''''''


                ''''''''''''''''''''''''''''''''''''''''''''''Print Preiview Function (Before Printing
Document)'''''''''''''''''''''''''''''''

  Private Sub printPreviewMenuItem_Click(ByVal sender As System.Object, ByVal e As _
    System.EventArgs) Handles printPreviewMenuItem.Click
        Try
            PrintPreviewDialog1.ShowDialog()
        Catch es As Exception
            MessageBox.Show(es.Message)
        End Try
    End Sub


                ''''''''''''''''''''''''''''''''''''''''''''''End Print Preview Function (Before Printing
Document)'''''''''''''''''''''''''''''''


                ''''''''''''''''''''''''''''''''''''''''''''''Exit MenuItem Function (Before Printing
Document)'''''''''''''''''''''''''''''''

 Private Sub ExitMenuItem_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles
ExitMenuItem.Click
        Me.Close()
    End Sub
```

Form1 Source Code

```
'''''''''''''''''''''''''''''''''''''''' End Exit MenuItem Function (Before Printing
Document)'''''''''''''''''''''''''''

                '''''''''''''''''''''''''''''''''''''''''Query Panel MenuItem Function (Before Printing
Document)'''''''''''''''''''''''''''

    Private Sub QueryToolStripMenuItem1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles QueryToolStripMenuItem1.Click
        newPanel.visible = False
        queryPanel.Visible = True
    End Sub

                '''''''''''''''''''''''''''''''''''''''''End Query MenuItem Function (Before Printing
Document)'''''''''''''''''''''''''''

                '''''''''''''''''''''''''''''''''''''''''New Panel MenuItem Function (Before Printing
Document)'''''''''''''''''''''''''''

    Private Sub QueryToolStripMenuItem_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles QueryToolStripMenuItem.Click
        newPanel.Visible = True
        queryPanel.Visible = False
        Me.Height = 500
    End Sub

                '''''''''''''''''''''''''''''''''''''''''End New Panel MenuItem Function (Before Printing
Document)'''''''''''''''''''''''''''

                '''''''''''''''''''''''''''''''''''''''''Insert SQL Function (Before Printing
Document)'''''''''''''''''''''''''''


    Private Sub Insert(ByVal fileNo As String, ByVal surname As String, ByVal firstName As String, ByVal
initial As String, ByVal dob As String, ByVal sex As String, ByVal dept As String, ByVal grade As String,
ByVal contiss As String, ByVal salary As String, ByVal totalAllowance As String, ByVal stateOfOrigin As
String, ByVal designation As String, ByVal dofa As String)
        Dim strConn As String = "Provider=Microsoft.Jet.OLEDB.4.0;Data Source=Inventory.mdb" & ";"
        Dim myConnection As OleDbConnection
        Dim myCommand As OleDbCommand
        Dim ra As Integer
        Dim insertSql As String = "INSERT INTO PROJECT
(FILE_NO,SURNAME,FIRST_NAME,INITIAL,DOB,SEX,DEPARTMENT,GRADE_LEVEL,CONTISS_STEP,SALARY,TOTAL_ALLOWANCE,SOO,D
ESIGNATION,DOFA) VALUES ('" & fileNo & "','" & surname & "','" & firstName & "','" & initial & "','" & dob &
"','" & sex & "','" & dept & "','" & CType(grade, Integer) & "','" & contiss & "','" & salary & "','" &
totalAllowance & "','" & stateOfOrigin & "','" & designation & "','" & dofa & "')"
        myConnection = New OleDbConnection(strConn)
```

```vb
            myConnection.Open()
            myCommand = New OleDbCommand(insertSql, myCom
            ra = myCommand.ExecuteNonQuery()
            MessageBox.Show("New record has been entered" & ra)
            myConnection.Close()
    End Sub

        ''''''''''''''''''''''''''''''''''''''''''End Insert SQL Function (Before Printi
Document)'''''''''''''''''''''''''''

        ''''''''''''''''''''''''''''''''''''''''''New entry entered Button Function (Before Printing
Document)'''''''''''''''''''''''''''

    Private Sub enterButton_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles
enterButton.Click
        Try
            Dim fileNo As String = fileNoTextBox.Text
            Dim surname As String = surnameTextBox.Text
            Dim firstname As String = firstNameTextBox.Text
            Dim initials As String = initialsTextBox.Text
            Dim mm As String = mm1ComboBox.SelectedItem.ToString
            Dim dd As String = dd1ComboBox.SelectedItem.ToString
            Dim yy As String = yy1ComboBox.SelectedItem.ToString
            Dim mm1 As String = mm1ComboBox.SelectedItem.ToString
            Dim dd1 As String = dd1ComboBox.SelectedItem.ToString
            Dim yy1 As String = yy1ComboBox.SelectedItem.ToString
            Dim dob As String = mm & "/" & dd & "/" & yy
            Dim sex As String = sexComboBox.SelectedItem.ToString()
            Dim dept As String = deptTextBox.Text
            Dim grade As String = gradeComboBox.SelectedItem.ToString
            Dim contiss As String = contissComboBox.SelectedItem.ToString
            Dim salary As String = salaryTextBox.Text
            Dim allowance As String = allowanceTextBox.Text
            Dim stateOfOrigin As String = sooComboBox.SelectedItem.ToString
            Dim designation As String = designationTextBox.Text
            Dim dofa As String = mm1 & "/" & dd1 & "/" & yy1

            Insert(fileNo, surname, firstname, initials, dob, sex, dept, grade, contiss, salary, allowance,
stateOfOrigin, designation, dofa)
        Catch ex As Exception
            MsgBox(ex.ToString)
        End Try
    End Sub

        ''''''''''''''''''''''''''''''''''''''''''End New entry entered Button Function (Before Printing
Document)'''''''''''''''''''''''''''
```

Flowchart 1

START → INPUT DATA → IF FEMALE?

YES → OUTPUT FEMALE → STOP

Flowchart 2

START → INPUT PERSONNEL WERMIHAL ROW → IF MALE

NO

YES → OUTPUT MALE → STOP

```
START
  │
  ▼
INPUT PERSONNEL
HOURLY RATE
  │
  ▼
IF
CONTISS > 10
  │ NO ──────────┐
  │              │
  │ YES          │
  ▼              │
OUTPUT           │
CONTISS > 10     │
  │              │
  ▼              │
  ●◄─────────────┘
  │
  ▼
STOP
```