

**KAMPALA INTERNATIONAL UNIVERSITY**

**DESIGN AND IMPLEMENTATION OF A PAYROLL SYSTEM**

**CASE STUDY: NATIONAL ENTERPRISE CORPORATION (NEC)**

**BY**

**BAVUGA BENON MUGISHA D**

**DCS/16395/71/DU**

**A GRADUATION PROJECT REPORT SUBMITTED TO THE  
SCHOOL OF COMPUTER STUDIES  
IN PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF  
THE AWARD OF THE DIPLOMA OF COMPUTER SCIENCE OF  
KAMPALA INTERNATIONAL UNIVERSITY**

**NOVEMBER 2009**

## DECLARATION

I BAVUGA BENON MUGISHA D, hereby declare that the information given in this report is of my own findings and efforts, neither the less has it been duplicated from the source not submitted to any institution for any academic award.



Signed .....

Date 18/09/2009 .....

BAVUGA BENON MUGISHA D

(Researcher)

## APPROVAL

This graduation project report has been submitted for examination with my approval.

Date .....17/09/09.....

Signed ..........

NAME: MR. ASIIMWE JOHN PATRICK

(Supervisor)

## DEDICATION

This book is dedicated to the entire family of MR AND MRS NZABANDORA PAUL who assist, encourage, and comfort me and all those who have contributed towards my academic success.

## ACKNOWLEDGEMENT

This work would not have been possible without the individuals, materials, financial and moral support rendered to me during the course of the project.

My first and foremost gratitude goes to my supervisor Mr. ASIIMWE JOHN PATRICK Whose positive guidance and criticism made this research possible. In a special way I thank all the staff of Kampala International University in the school of computer science for the assistance given to me during the course of the project.

I can not forget Mugabe Ronald, Nakasujja Miracle, Matovu Jamal Din Shiba, Nsubuga Moses and the entire diploma 2007/2009 class who played a vital role during the course of the project. Lastly I am highly indebted by my mother and the entire family of Mr. and Mrs. Nzabandora Paul for the moral and financial support rendered to me

Thanks go to God the Almighty.

# TABLE OF CONTENTS

Item	Page
DECLARATION.....	ii
APPROVAL .....	iii
DEDICATION.....	iv
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS.....	vi
LIST OF FIGURES.....	ix
LIST OF ABBREVIATIONS.....	x
ABSTRACT.....	xi
<b>CHAPTER ONE: INTRODUCTION.....</b>	<b>1</b>
1.1 BACKGROUND OF THE STUDY.....	1
1.2 PROBLEM STATEMENT.....	1
1.3 OBJECTIVES OF THE STUDY.....	2
1.3.1 General objective.....	2
1.3.2 Specific objectives.....	2
1.4 SCOPE OF STUDY.....	2
1.5 SIGNIFICANCE OF STUDY.....	2
<b>CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>3</b>
2.1 PAYROLL STRUCTURE.....	3
2.2 INFORMATION SYSTEMS REVIEW.....	3
2.3 DATA.....	4
2.4 MANAGEMENT.....	4
2.5 SYSTEMS ANALYSIS AND DESIGN.....	4
2.6 DATABASE MANAGEMENT SYSTEM.....	4
<b>CHAPTER THREE: METHODOLOGY.....</b>	<b>5</b>
3.1 OVERVIEW OF METHODOLOGY.....	5
3.2 FEASIBILITY STUDY.....	5
3.3 METHODS OF DATA COLLECTION.....	5
3.3.1 Reading documentation.....	5
3.3.2 Interviewing NEC concerned system users.....	5
3.3.3 Observing the system users in operation.....	6
3.3.4 Questionnaires.....	6
3.4 System software design.....	7
3.5 Implementation and testing.....	7

<b>CHAPTER FOUR: SYSTEMS ANALYSIS, IMPLIMETATION AND TESTING.....</b>	<b>8</b>
4.0 Overview .....	8
4.1 REQUIREMENT DEFINITION.....	8
4.1.1 Functional requirements.....	8
4.1.2 Non-functional requirements.....	10
4.2 Software requirements.....	11
4.2.1 Investigation of the system.....	11
4.2.2 Background of the project.....	12
4.2.3 Proposed system.....	13
4.2.4 The menu design.....	14
4.2.5 Data input and out put.....	14
4.3 Hardware requirements.....	14
4.4 Security requirements.....	15
4.4.1 Security Controls.....	15
4.4.1.1 Login Control.....	15
4.4.1.2 Permissions.....	16
4.5 Implementation Tools.....	16
4.5.1 User Interface.....	16
4.5.2 Database.....	16
4.6 Forms .....	18
4.6.1 Navigation and Editing.....	18
4.6.2 Validation controls.....	18
4.6.3 Programming execution implementation.....	18
4.6.4 The actual appearance of the form.....	18
4.6.5 The actual appearance of the report.....	19
4.6.6 User Help.....	20
4.7 Management Reports.....	20
4.8 Deployment Diagram.....	20
4.8.1 The Forms/ Interfaces.....	22
4.8.2 Application Server.....	22
4.8.3 The Database Server.....	22
4.9 Use Case in the System.....	22
4.10 State Diagrams .....	25
4.11 Sequence Diagram.....	26

**CHAPTER FIVE: EVALUATION, CONCLUSION AND RECOMMENDATION...30**

5.0 introduction .....30

6.1 evaluation.....30

6.2 future improvements.....30

6.4 The maintenance of the system.....32

6.5 HARDSHIPS DURING THE RESEARCH PROGRESS .....32

    6.5.1 Limitations.....32

    6.5.2 Delimitation.....33

6.6 CONCLUSION .....33

**REFERENCE: ..... 34**

APPENDIX A.....35

APPENDIX B.....38

APPENDIX C (SOURCE CODE).....39

APPENDIX D (FORMS).....50



## LIST OF FIGURES

Items	pages
Fig 1.0	plan of the main form .....12
Fig 1.1	design view for the table.....13
Fig 1.2	flow chart of a proposed system.....13
Fig 1.3	flow chart of how to access forms and reports.....14
Fig 1.4	login form.....15
Fig 1.5	design view for the payroll.....16
Fig 1.6	payroll table.....17
Fig 1.7	employee details form.....18
Fig 1.8	salary earners' report.....19
Fig 1.9	deployment diagram for the payroll management system.....21
Fig 1.10	use case diagram for the payroll system.....23
Fig 1.11	state diagram of the employee object.....25
Fig 1.12	sequence diagram for the 'pay employee' flow.....26

## ABSTRACT

In modern complex organization, the need for using information in an organized manner can hardly be gained said particularly when all such organizations are suffused with enormous amount of staff data. This project of a payroll system presents a solution to the need for the entire payment of all the staff members of National Enterprise Corporation.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the study**

With increased popularity of computers and computerized system, the world has undergone many changes in the information technology and more so in the field of computer science.

Due to man wanting to live a less complicated life, computer systems have been developed to automate business, accounting and many others.

National enterprise corporation was established on 10<sup>th</sup> march 1989 by an act of parliament chapter 312, after NRA liberation war as the commercial arm of the Army, with view of re-deploying and providing gainful employment to soldiers, who are involved in the war, and produce goods and services for the army, with profits being used to improve the welfare of the soldiers. In 1995 parliament passed a new statute, which mandated NEC to produce goods and services for the forces on consumption. This is in conformity with the constitutional of requirement of creating a productive force.

NEC has its headquarters located at plot 58,6<sup>th</sup> Street, industrial area as a holding company, which acts as a coordinating unit for various subsidiaries that include; Luwero industries, NEC farm katonga Ltd, NEC construction works and engineering Ltd, NEC pharmaceuticals Ltd. Due to the fact that NEC has alot of subsidiaries that means it has very many employees. The information system used in NEC is manual, there is use of paper files which are bulky sometimes, this leads to delays of payment, some times with errors in salaries and thus putting the employees at risk of failing to get their salaries.

#### **1.2 Problem statement**

The major problem is delay of salaries, which is caused by computations that are manually done. These computations are also prone to errors. The whole process is tiresome and takes long. All this can be solved by automating the system.

### **1.3 Objectives of the study**

#### **1.3.1 General objective.**

To computerize a system which can speed up the process to enable employees get their salaries in time.

#### **1.3.2 Specific objectives.**

The objectives are as follows:

1. To determine the requirements needed.
2. To design the software.
3. To install the designed software on a computer.
4. To test and implement the system for users.

### **1.4 Scope of study**

The project was to cover the entire payment procedures of staff members of NEC and a lot of information was to be got from the system administrators' office at NEC headquarters plot 58,6<sup>th</sup> street, industrial area as a holding company. The study of the system was limited to the information availed about NEC payroll. These categories of people were interviewed, the cashier, chief accountant, accountant, two accounts clerks.

### **1.5 Significance of study**

After identifying the problems in the underlying system, an automated computerized system was developed, to curb the loopholes or weaknesses in the manual payroll system. This system is speedy in the calculations of the net salaries and no errors in the salaries. It also stores the NEC payroll information very well.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Payroll structure

Most computer payroll system keeps track of details like computer payroll numbers, tax identification numbers, district code, department or institution, county, bank code, sub county code, name of employee, paying code, title of employee, run date, date of payment, gross pay, P.A.Y.E., graduated tax, N.S.S.F., taxable amount, free pay, basic pay, salary scale among other things. The payroll also keeps track of ghost workers.

#### 2.2 Information system review

Earlier research by (Quazi, 2002) indicates that information systems have taken a long time to incubate and develop the world over. This can be traced back into the 1960's when information systems were beginning to be considered an important component in information handling.

This research began on the term information, which may be defined as,

A system designed to lower costs, increase productivity and improve customer awareness of the products.

Additional research by (Soergel, 1995) indicates that an information management system is a system, which identifies problems, acquires helpful information, entities and delivers them to those who need it as follows;

- Information must be provided in a timely manner and readily available to the user to enhance timely decision-making.
- Information has to be accurate and free from human and computer related errors.
- Good information reduces uncertainty.

Further research by (Ranjay and Garino, 2000) says that effective information can have a major impact on corporate strategy and success. It could lead to:

- (i) more efficient and effective control mechanisms
- (ii) reduction in work force requirement
- (iii) accuracy in methods
- (iv) reduction in operational costs
- (v) computer based information systems

These are information systems, which include a computer system. A complete computer system will be made up of people, procedures, input data, software and hardware.

Information technology and information systems have a role of helping to transform data and knowledge into information, which is useful for decision making, organizing and planning businesses.

### **2.3 Data**

(Geddes and Grosset, 1998) defined data as a jargon for information which can be groups of facts, concepts, symbols, numbers, letters or instructions that can be used to communicate and make decisions.

### **2.4 Management**

(Nisar, 1997) defines management as a process in the sense of a sequence of operations or functions necessary to achieve certain end results. He outlines the characteristics of a good and successful management information system which includes flexibility, reliability, economy, helpfulness, consistency, management oriented, integrated, sub-system concept, common database, relevance, brevity and accuracy.

### **2.5 System Analysis and Design**

(Owler and Brawl, 1993) explained the decision to introduce a computer system as a serious one and the process on which such a decision is based is referred to as “system analysis, design and implementation”. And the person responsible for that task is a “system analyst”.

(Fits Gerald and Fist, 1987) defined system analysis as a process of analyzing a system with a potential goal of improving it.

### **2.6 Database Management System**

(Data, 2000) says a database management system, as a computerized information system is far more superior over any manual system because it's fast, effective and reliable, consistent and dependable source of information.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Overview of methodology**

This chapter presents the methods that were used to gather data such as interviews, observation, reading manuals and questionnaires and studies that were taken to ascertain the viability of this project like, technological, economical, schedule and operational feasibility.

#### **3.2 Feasibility study**

This was done by visiting the company headquarters and finding out if the conditions on the ground are conducive and favorable to the development of this system. The areas that were analyzed are the technological feasibility, economic feasibility and schedule feasibility. After having the discussion with the executive they accepted the researcher to go on and research about their company.

##### **3.2.1 Technological feasibility**

The company has got 12 computers with specifications that can run the software to be developed:-

- Pentium 4 processor
- Average RAM of 128Mb
- Processor speed of 900MHz
- There's internet provided by INFOCOM and it means if need be for networking it will be very easy to implement.
- There are many printers that are shared on the network

##### **3.2.2 Operational feasibility**

Out of the 10 available staff, four of them are computer literate and these will be in charge of operating the system on a daily basis, however the Director promised to create a post specifically for managing employee's payment data. The other staffs that are not computer literate will be tasked with training the other users that are illiterate.

##### **3.2.3 Economical feasibility**

The system was deemed to be of great importance to the company and these are the benefits that are expected from it.

- The system should also be able to cater for payment of some workers on contract basis and such workers should be deleted from Database when their respective contract cease or expire and payment done.

- The system should at the end of every month and year print out reports of how much money has been spent on employees' salaries and these reports should be submitted to the top Administrators for decision making purposes.
- Accomplishment of tasks by staff promptly since the system will be properly organized.

The above benefits are expected 6 months after installation of the system as it may take this time for everyone involved to adapt to the changes brought about by the system.

### **3.3 Methods of data collection**

The researcher intends to use the following methods to collect data. Document review, interview method, observation method, and questionnaires.

#### **3.3.1 Document review.**

Several documents about the current system were collected and read to give a clear picture about the background of the organization and the current payroll system being used. In some documents read that when the accounts clerks were entering and computing employee's gross and net pay numerous arithmetic errors were involved. This gave a clear picture that the current is tedious and inefficient.

#### **3.3.2 Interview method.**

The researcher had to convince the management and hold talks with senior managers to really convince or help then accept the new system. The interviewing method was chosen because of the following.

- Its serious approach by respondent resulting in accurate information.
- Its good response rate.
- The researcher can get classifications where he/she does not understand.

A copy of all these questions has been attached as part of the appendix B in the project.

#### **3.3.3 Observation method.**

This was achieved through study and observation of the existing system used by the organization to achieve their objectives. The researcher further gathered the user requirements and problems in the existing system and finally what users preferred.

#### **3.3.4 Questionnaires.**

A set of questionnaires was designed and distributed among NEC staff with the aim of collecting general information about the current system. After thorough analysis, the researcher will start to come up with the design models on how the data will flow and how other parts of the system will interact with one another. This will be used because;



- It's relatively cheap.
- It can cover reasonably large numbers of people or organizations.
- It has high response rate – keep going till the required number.

### **3.4 System software design.**

After thorough analysis, the researcher came up with the design models on how the data will flow and how other parts of the system will interact with one another.

This has involved drawing up unified model language (UML) diagrams.

The Unified Modeling Language (UML) is an open method used to specify, visualize, modify, construct and document the artifacts of an object-oriented software intensive system under development.

### **3.5 Implementation and testing.**

Implement the detailed design in code.

Code review; the programmer explains the code to the review team.

Testing is an activity performed throughout software production; it's performed at the end of each phase, also performed before delivering the product to the client.

## **CHAPTER FOUR:**

### **SYSTEMS ANALYSIS, IMPLEMENTATION AND TESTING**

#### **4.0 Overview.**

In this chapter all the requirements needed for the system to be implemented which included hardware, software and security, are looked upon. Implementation deals with the process of converting the system specifications into executable program. System specification involves processes of software design and programming.

#### **4.1 REQUIREMENT DEFINITION**

This defines what is needed and not needed in the process of developing the project. This is divided into two, functional and non-functional requirements.

##### **4.1.1 Functional requirements**

This entail what the users of the system want it to do for them, that is. What the system should do in order to achieve the desired objective, they don't care when the system does whatever it does or how it does whatever it does.

1. The system should be able to capture and store all employees' records and details about them, such even in case of reference purposes beside the intended payment role; it can help as evidence against something, that is. Generally it should also serve as a company database.
2. The system should also be able to cater for payment of some workers on contract basis and such workers should be deleted from the database when their respective contract cease or expire and payment done.
3. Given NSSF, PAYE and any other taxes or allowances by percentage of which they are to be charged, the system should indicate first, how much the company spends on these taxes and allowances each month for the entire staff members, this is for accounting and administrative purposes to help in the decision making process of the organization.

4. After computing the necessary taxes, the system should be able to list all the people who have staff loans, staff sales (employee buying an asset and pay in equal installments) and advance payments such that they have specific deductions made from their salaries as agreed by their transaction partners.
5. Computation should be carried out at departmental level, that is, the system should evaluate the net salaries of employees department after department for the entire company.
6. System should be able to establish connections (should be networked and distributed) with other banks and necessary tax bodies like NSSF, Banks with which employees have accounts, loans, such that the necessary deductions are automatically deposited at the corresponding employees' or bank accounts.
7. The system should at the end of every month and year print out reports of how much money has been spent on employees' salaries and these reports should be submitted to the top administrators for decision making purposes.
8. Backing up of the system is mandated, at the end of every week, replicated to all other member servers in the network.
9. Backing up and replication intervals can be made automatic (during system development) or manual.
10. The system has physical and non physical security measures like log in passwords, access rights, strong locks, and guards.
11. The system has physical and non physical security measures like log in passwords, access rights, strong locks, and guards.

#### 4.1.2 Non-functional requirements

This may include ways of trying to limit the system or scope of users' access to the system, they also involve how well the system should work. Since such computerized systems take a lot of time and effort by the developers to come up with, the system should be available to only those users trained to use it for effective output of the system.

This will avoid erroneous data entry or wrong input values by non-system users.

1. The system should not be installed on all computers but use the network group policy objects to assign or publish the software to only a group of users who will need to use the software. This means the software will only be installed when those users log on to any machine in the same network segment with their network credentials and when they log off, the software is uninstalled. This should be implemented by a Microsoft certified systems Engineer.
2. Security is a priority for such payment systems as any manipulation by unauthorized users renders data insecure leading to wrong outputs. Managers, Accountants and Human Resource Department heads should be the only ones with access to the system and other their privileges should not be same on the system. That is, it is only the Human resource Managers of Departments, chief Accountants who will have write attribute applied to them or the add new objects attribute and changing anything in the existing database.  
  
The rest should have read permissions only. Only the IT Manager should have the full control attribute applied to the Payment system.
3. The system should also be developed with a user friendly interface i.e. graphical user interface, easy to maneuver, should have the company flag, logo and motto or any other information relevant as regards the services offered.

4. The system should include a help facility to provide for reference notes about the general procedures of operations of the application. However, the help facility should have a limit to its scope as errors propagated in the system but not due to data entry or manipulation (say logical or run time errors not identified during the testing and debugging process) should be logged some where in a log file and the size of the log file should have a limit, such that once the log file is full, this will mean the error has been persistent and some technical assistance is needed.
5. To cater for situations where the company has no IT manager, the system should provide for automatic backing up and replication at a specified interval. You can schedule the replication and backup interval to take place over the weekend.
6. The system should be installed on a network server since it should be available all the time to a specific group of users. Also, for emergency cases where a user need access to the system temporarily or for reference purposes, the system should be able to run remotely by accessing using terminal services configuration. This should be done by a Microsoft certified systems Engineers.

## **4.2 Software requirements**

The software system is easy to install on any computer set, by simply running the set executable file. Microsoft access 2000 and visual basic 6.0 as the software package tools with windows XP or windows 2000 as the operating system.

### **4.2.1 Investigation of the system.**

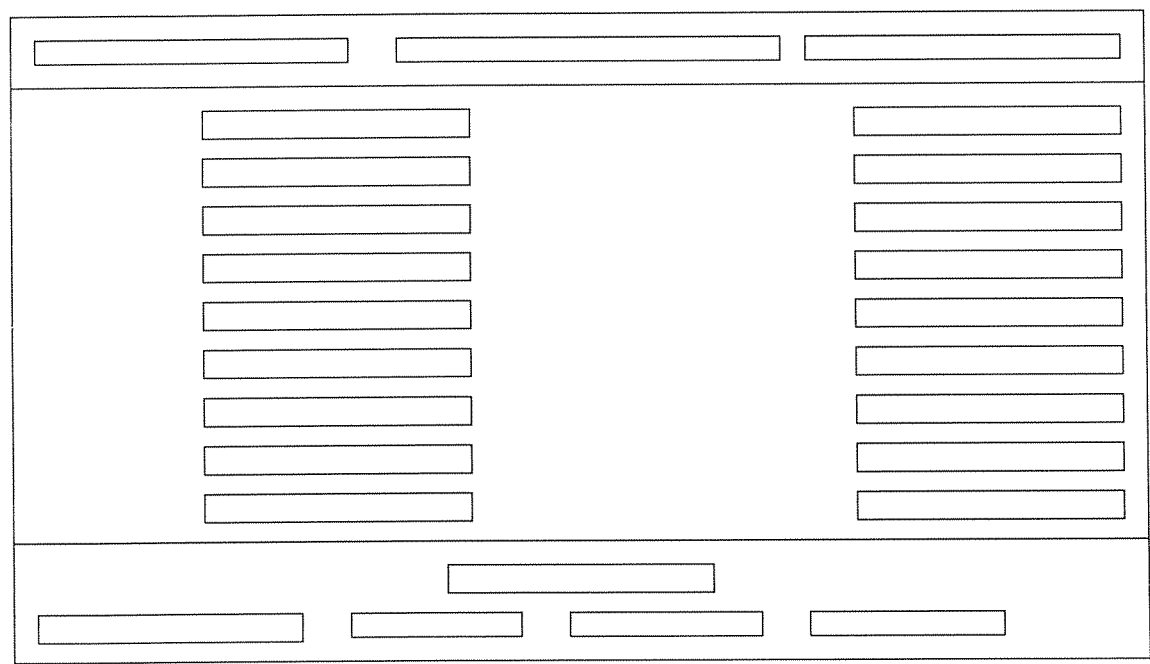
With specification and design, we look at the principles and guidelines that the system design is to operate efficiently. The design involves creating objects in forms indicating the names, captions, and settings.

The design puts up the interface picture and also the diagrammatic representation of the data flow in the system.

4.2.2 Background of the project

The project is composed of a number of designs and documentation tools which include the forms that consist of the labels, frames, command buttons and Ado data control. The plan of one of the main forms is shown below and it can be implemented in visual basic language with he tools mentioned above.

Fig 1.0A plan of the main form



*M*

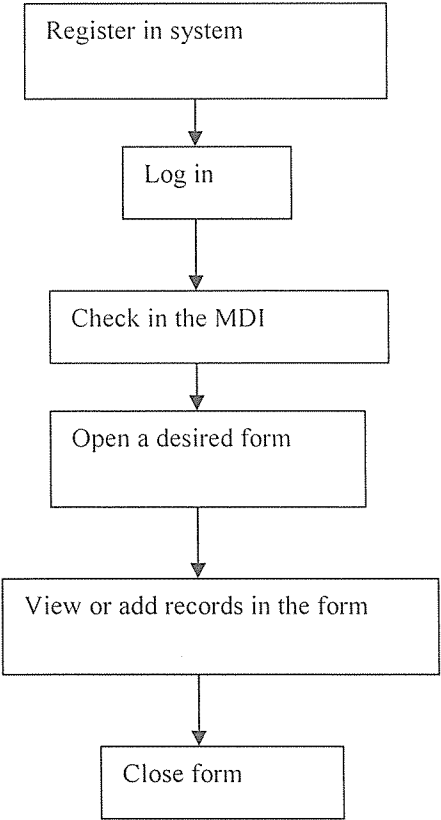
Below is a design view for the one of the tables and the same format was used for the rest of the tables.

FIG 1.1 Design of the main table:

Field name	Data type	Description
First name	Text	
Last name	Text	
Emp ID	Text	
Designation	Text	
Gender	Text	
Tel Num	Text	
DOB	Date/time	
DOJ	Date/Time	
History	Text	

4.2.3 Proposed system

With the advent flow chart of the proposed system, the data to the automation and organization of the system is as shown below. FIG 1.2 a flow chart of the proposed system

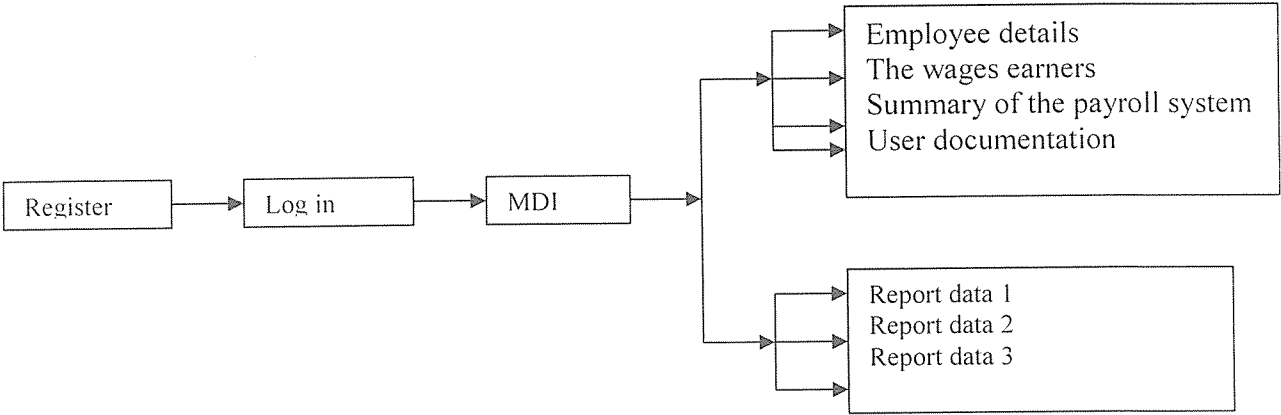


4.2.4 The menu design

The main menu was created using visual basic’s MDI form feature which collects all the smaller forms and provides a way of accessing them individually. There is a menu for reports and another for entry forms. These menus give access to a form or report and after return control to the main interface.

The figure below shows the flow chart of how the user can have access to the forms and reports.

FIG 1.3A flow chart of how the user can have access to the forms and reports.



4.2.5 Data input and out put

This comprises of all the in fro input that I correct and well built into the case of the computer to produce report. The system is linked to database tables where it stores data and keeps updating the data in case of any change and more so to remove invalid data for employees.

4.3 Hardware requirements

During hardware evaluation it was found that the machines in use were not enough. This meant that all the necessary hardware was needed. The hardware requirements included;

- Eight computer sets, including, mice, keyboards and monitors
- Pentium IV processor with processing speed of 2.4GHz.
- CD-Rom drive
- 128-256 MB RAM
- 40-80 GB Hard disk

All the computers were are to be networked, with one of them serving as a central server.

Other necessary peripherals include UPS, photocopier, network cables and a switch.



Judging from the activities within the Company, large amounts of data have to be captured. It therefore needs hardware that can handle large volumes of data at fast rates to ensure efficiency and effectiveness.

4.4 Security requirements

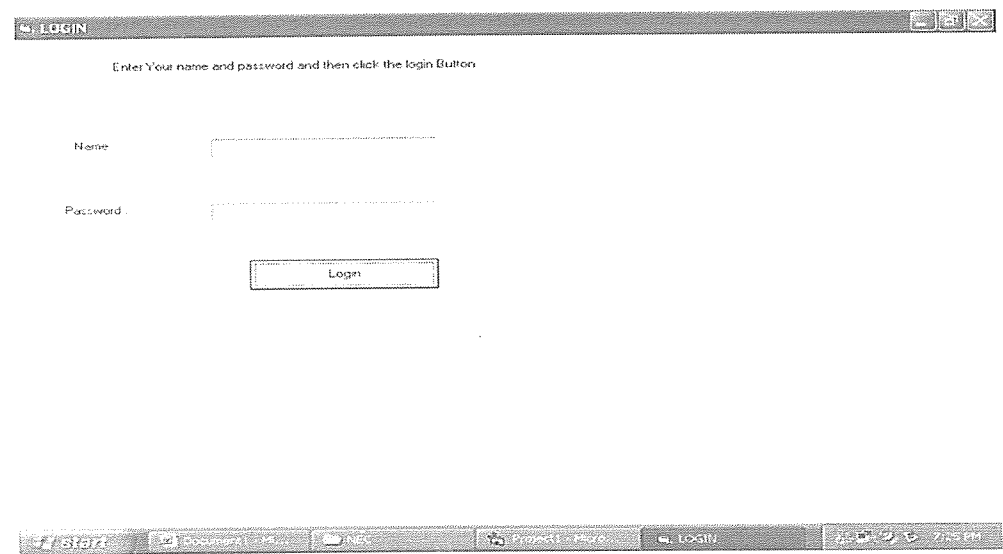
- The use of passwords to prevent unauthorized persons from gaining access to information.
- The use of antivirus to guard your PC from viruses and worms
- Safeguarding of rooms where computers are by locking them when not in use and use of identification badges for anyone who wants to enter.

4.4.1 Security Controls

4.4.1.1Login Control

Security was mainly enforced at the entry level that requires registration into the system by acquiring a username and password before gaining access to the system. This was implemented to prevent unauthorized persons from manipulating the company data and also stealing vital information from the system. Below is the form for logging in for the administrator or a user get into the payroll system.

FIG1.4The figure below is the login form



4.4.1.2 Permissions

It was also enforced at the managerial access level where buttons were disabled to prevent other users other than the manager from accessing managerial functions.

4.5 Implementation Tools

4.5.1 User Interface

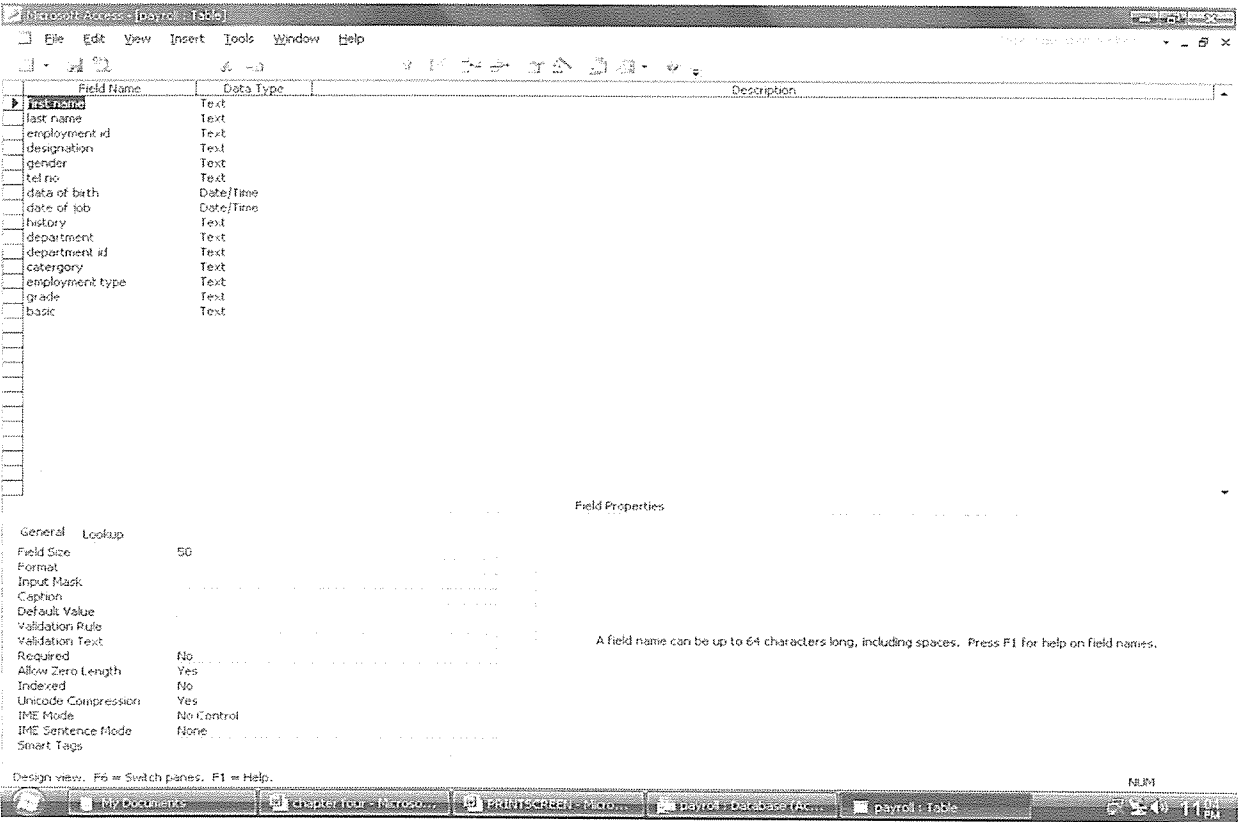
The user interface was developed using Visual Basic using the forms function and toolbox to draw the control buttons ad coding them to function as required. Visual basic was chosen because of the simplicity with which it works in interface designing and also because the designer had in –depth knowledge of the programming language.

4.5.2 Database

The backend was developed in Ms Access because the data stored is that much and it did not require a more advanced database application like oracle. Just like visual basic, access was also chosen because of its simplicity in operation.

Below is the figure showing the implementation of the design view of the payroll table one main of the tables.

FIG 1.5 Design view figure for the payroll table



The design view shows how data is first planned before being implemented. Here we need the data type and description of the records in the database.

Database provides a wide space for all the tables you need to store product information. A table in a database is a correction of rows and columns.

Below is an implementation of the pay roll table record details.

FIG 1.6 the figure of payroll table

The screenshot shows the Microsoft Access interface with the 'payroll' table open in Datasheet View. The table structure is as follows:

first name	last name	employment id	designation	gender	tel no	data of birth	date of job
oger	tinkamanyiire	NEC82	Accountant	male	0771545454	2/7/1975	2/7/201
mugisha	denis	NEC78	sales manager	male	07152434	3/6/1972	2/6/201

The status bar at the bottom indicates 'Record: 1 of 2' and 'Datasheet View'.

The same case forms such as Registration for the payroll system, employee details, and the wage earners have their own table that is log in table, pay roll table, and wage respectively.

4.6 Forms

4.6.1 Navigation and Editing

The forms, were designed using the company colors and contain buttons for navigation such as next, previous, last and editing buttons for purposes of adding, deleting , canceling and also retrieving functions in form of searchers using the primary key.

4.6.2 Validation controls

The entry forms were implemented with user controls that prevent the users from entering data that does not match the required one either in terms of data types, size or even content. They either display error messages to the user or simply do not accept the entry by a particular.

4.6.3 Programming execution implementation

The most part of the coding is explained as follow:  
The researcher has used ADO data control to over come some limitations when you use data control. The name of the general form is employee details. The code for the whole project is in the Appendix C.

4.6.4 The actual appearance of the form

The actual appearances of the employee details form one of the forms.

FIG 1.7 the figure above is employee details form.

The screenshot shows a Windows application window titled "MDIForm1 [PAYMENT DETAILS]". The window has a menu bar with "FILE" and a toolbar with standard window controls. The main area contains a form with several tabs: "Employee bio data", "Dept information", "Payment Information", and "PAYMENTS REPORT". The "Payment Information" tab is active, displaying a form titled "NEC PAYSIP".

The form has two main sections: "Employee's details" and "Deductions".

**Employee's details:**

- SERIAL NO: 5001
- NAMES: ALINDA
- SALARY SCALE: US
- BASIC PAY: 600000

**Deductions:**

- N.S.S.F: 150000
- PAY.E: 20000
- ADVANCE: 300000

**Allowances:**

- HOUSING: 100000
- C.O.L.A: 50000
- UTILITIES: 50000
- calculate N.S.S.F 10%: 60000
- CONSOLIDATED MONTHLY: 200000

**Calculated net pay:**

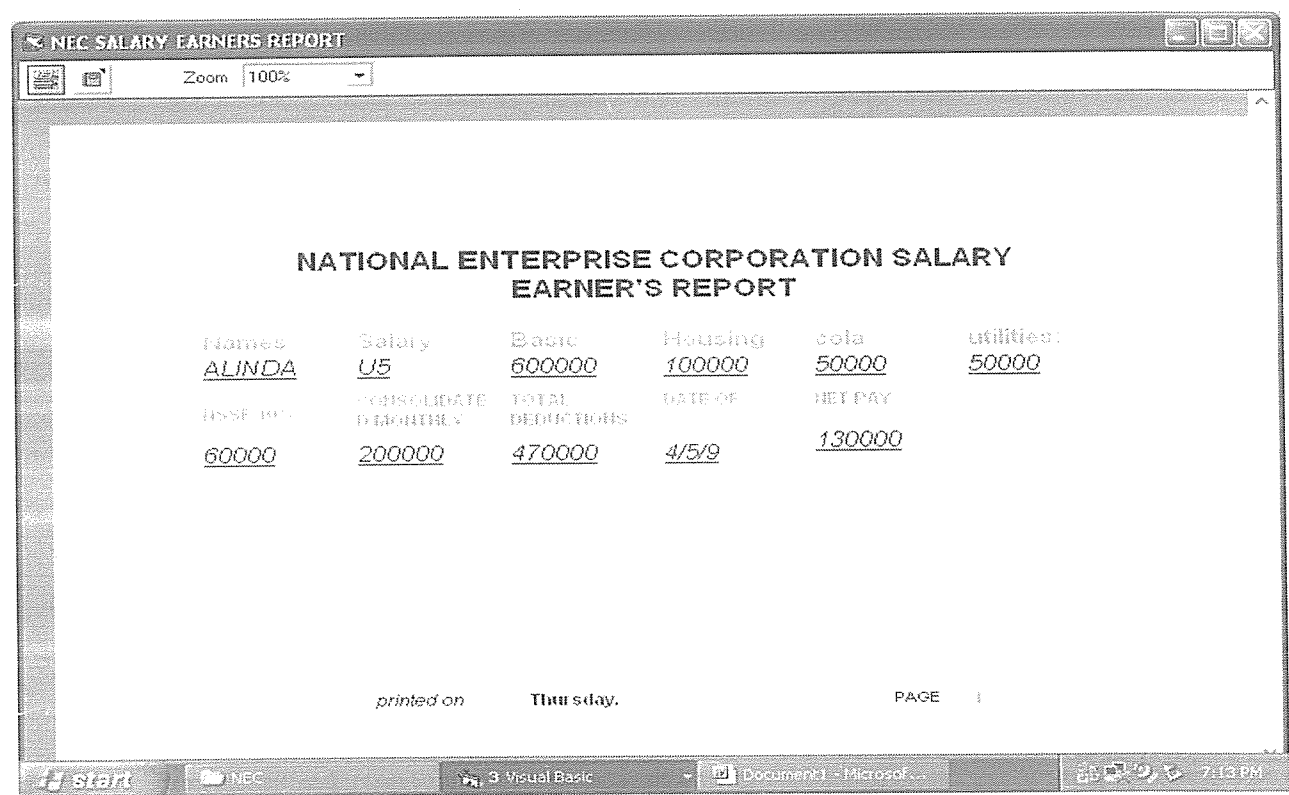
- TOTAL DEDUCTIONS: 470000
- COMPUTE NET PAY: 130000

At the bottom of the form, there are buttons for "add record", "Save data", "Delete record", and "CLOSE FORM". Below these buttons are labels for "First record", "Next record", "Previous record", and "Last record".

The above form is used for capturing employee's details into the system. After filling in the details in the text boxes, the system will demand of you to click on the employee's bio details button, another form will be displayed for inputting the employee's bio data. After filling it, the system will demand of you to click on the Department information button, another form will be displayed for inputting information about the employee in the department he/ she works in. the there after the system will demand of you to click payment information where in this form data about payments is captured and finally you click compute and it displays the net pay of the employee. These forms are shown in the Appendix C.

4.6.5 The actual appearance of the report.

Reports are used to print information from a number of records. Reports show the data from the table. In addition to records, they may show summary information relating to the records displayed. For example the. FIG 1.8 figures below shows a report for SALARY Earners.



Reports for employees from payroll and wage earners forms can be created giving summary information related to the records displayed.

#### **4.6.6 User Help**

They have help (tool tips) that appear when the user points to a given text box with the mouse and guides the user in what is required of them. This was meant to reduce the errors in data entry.

#### **4.7 Management Reports**

The reports are to aid management in decision making and analyzing staff performance as well. The reports are accessed through menus on the main interface and can be printed out or simply viewed on the screen.

They were created from the most commonly sought queries made at the company and are therefore limited to listing out the customer and staff debtors, tasked accomplished by the staff and also details about staff and customer in regards to place of residence, next of kin and others.

The reports we implemented using visual basic's project designers feature and it involved querying individual tables in the database.

#### **4.8 Deployment Diagram**

After we have modeled the static and dynamic aspects of the pay roll system, we need to define how we plan to deploy the application components of the system.

So we need to identify the component that needs to be deployed then we can identify the deployment environment we need.

Assumption is that the system has been portioned on the lines of the model view controller architecture. The pay roll system will also interact with a database to store and retrieve the data manipulated by the application.

The components of the pay roll system will be primary elements represented in the deployment diagram. These components include;

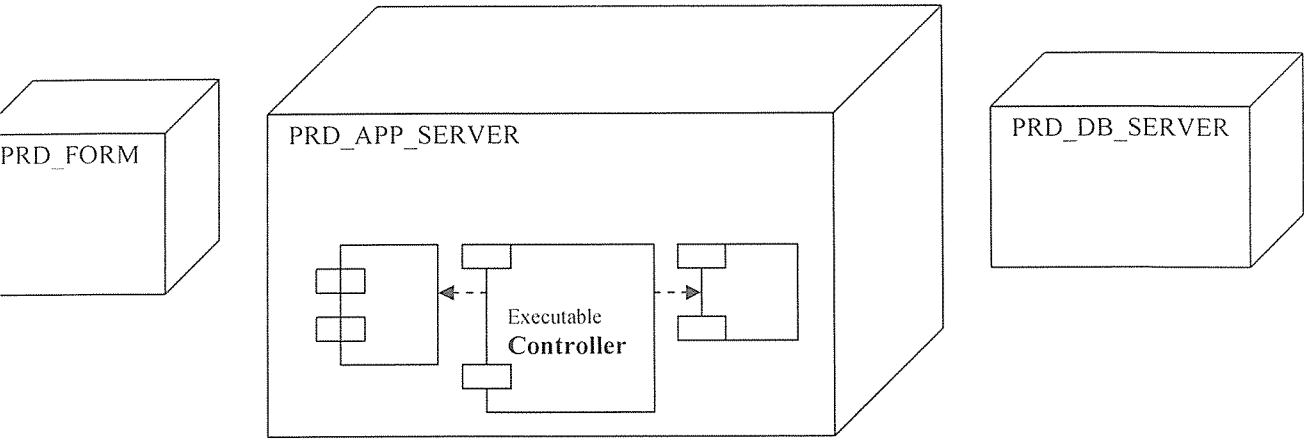
- The view

- The controller

- The database access.

Then after identifying the primary elements for the payroll system, we will identify the deployment environment, which is normally well portioned to ensure that the application components have proper resource s in their execution environments. So below are the nodes of our deployment environment.

Fig1.9 Deployment Diagram for the Payroll Management System



The figure above shows the deployment diagram for the payroll management system. The figure shows three nodes PRD – FORMS, PRD- APP-SERVER, PRD-DB\_SERVER that represents the nodes for the Forms for interfaces, Application server and database server respectively.

The view, model and controller components are depicted in the Application server node and the three are interconnected to denote association between the achieved security to a certain level, the developer puts up login dialogue boxes at the start up of the system,, and privileges were catered for to required level such that every one must first register for an account t use the system. It is only administrator on the system that can add accounts to the system and give users what permissions.

The payroll management system is concerned with the addition, updating and general management of employees’ records and their payment.

The pay payroll requires that every employee whether salaried or wage earner to be registered by the system including all their bio data and their employment details.

After registration, the person in charge of the system or the system developer manages the payment of employees at they end of the month or when need rises. The system is made up of a number of forms to achieve the above tasks. For security purposes, the system requires the user to first have an account, or to register to be able to use the system

At logon, the user is prompted for their user name, password and profile, which dictates the privileges or permissions they have on the system.

Depending on the tasks to be performed by a user, users can have rights to read only, write only, read and write, or full control of them in the payroll management system.

#### **4.8.1 The Forms/ Interfaces.**

This node represents the interfaces that are to be viewed by the user of the system. They present the user with only data they need to see or that data relevant to the particular user.

The user makes requests for the data using interfaces and responses might be through these interfaces, reports or through the error messages. Visual basic interfaces have been employed to achieve this.

#### **4.8.2 Application Server**

This node will process user requests from the forms or interfaces and send application responses back to the forms.

The application server therefore processes these requests on behalf of the database for quicker and more secure retrieval of data.

The application server node will host the different components like view, controller, model and data base access. In built visual basic components like the ADO data control and ODBC or OLEDB technologies are deployed to achieve the design.

#### **4.8.3 The Database Server**

The database server node will host the database server used by the components in the application server node to store and retrieve the data used by the pay roll management system.

Database management systems like Microsoft Access have been deployed to achieve the task at hand.

### **4.9 Use Case in the System**

The potential business processor flows in the payroll management system through:

- Manage Payroll System.
- Accounts clerks
- Employee
- Bank

As we analyze the problem statement further, we can determine some discrete processes within this business flow. To pay employee, the actor needs to have the ability to some functions. So within the 'Pay Employee' use case, we can identify the following sub processes;

#### **Determine Salary Grade.**

Every employee in the Organization is associated with a Salary Grade depending of their job descriptions or their responsibilities in the Organization.

#### **Ascertain Basic Salary**



They are therefore assigned to a salary grade at the time of employment. So whenever information is collected about an employee, we ascertain their basic salary from their salary grade.

#### **Ascertain Gross Pay**

This is as a result of all Allowances (say transport, lunch, housing, overtime plus any other allowances allowed) that the Employee is entitled to; summed up and added to the employee's basic salary.

#### **Ascertain Net Pay.**

The employee's net pay is a sum of all the deductions ( like Advances , mortgage loans., pay as you earn, NSSF plus a lot of other taxes or deductions incurred), which are then subtracted from the Gross Pay ascertained above.

#### **Issue Pay Slips**

This is the task of the Accounts Clerk who after the necessary calculations involved in ascertaining the Net Pay deposits the Employee's cheques in their respective Banks.

The bank then guarantees the receipt of these cheques by issuing the Accounts Clerk pay slips who then delivers these pay slips to the corresponding employees to guarantee that their salaries have been deposited.

The employee presents this pay slip at the bank to withdraw their payments and there accounts are credited accordingly.

Similarly, the 'Manage Payroll System' use case can be refined into smaller discrete processes like; However, an employee is not a very active participant in the system as they only receive Pay slips from the Accounts Clerk and receive payments from the Bank. But we shall still record them in our use case model since we do not want to lose this business information. So our primary list of Primary Actors has come down to;

- Bank
- Accounts Clerk

#### **Store Payments/ deposits made**

After the accounts Clerk has deposited the Employee's cheques in their Banks and given pay slips by the bank, they need to record the payments made in the system for decision – making purposes and generation of monthly and annual reports.

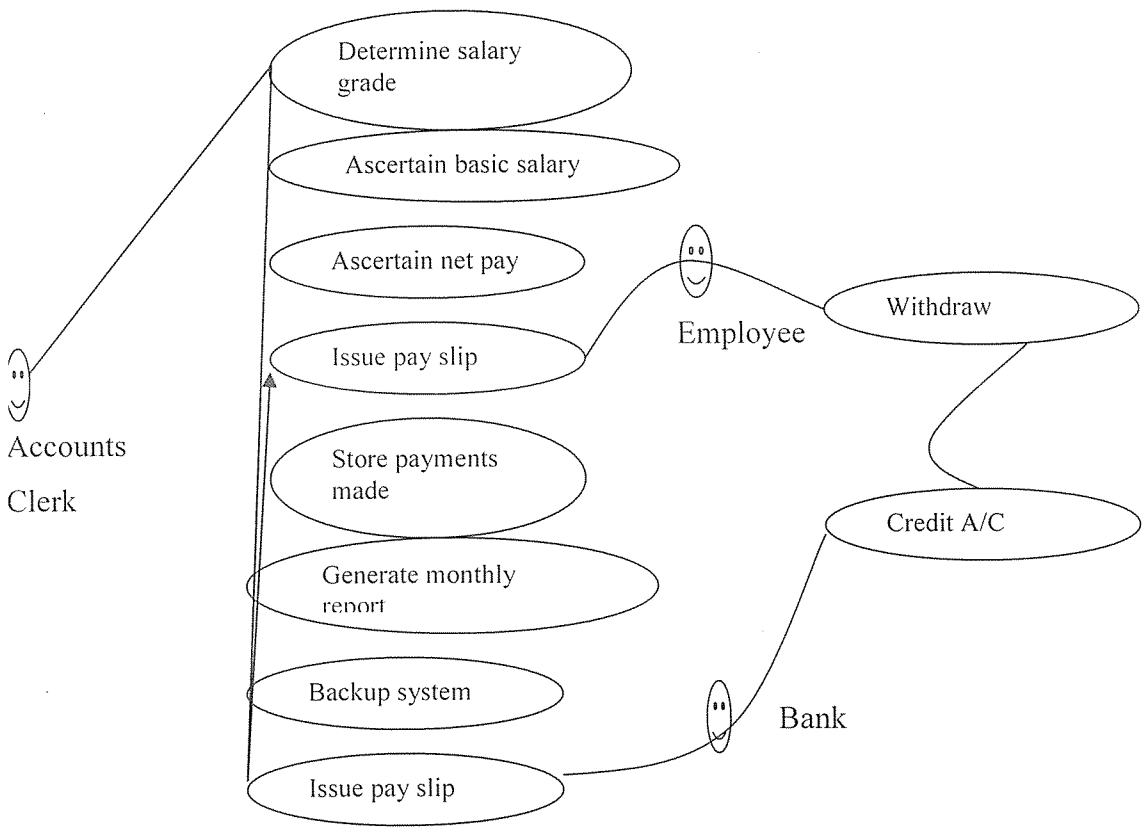
#### **Generate Monthly Report**

The accounts Clerk has the task of generating monthly reports and annual reports to be presented to senior managerial staff.

**Backup system**

He also has to back up the system has to be scheduled at the end of every month since normal interaction is critical at the end of the month.

The diagram figure 1.1O below is for use cases for the payroll system.



**The main roles of the actors**

- 1. MANAGER PAYROLL SYSTEM
  - He or She has the overall rights to the system.
  - He or she registers the accounts clerks
  - He can delete or add an accounts clerk
  - He also installs the payroll system software
- 2. ACCOUNTS CLERKS
  - To enter and delete employees' information.
  - The manipulate the payroll system
  - They also issue pay slips to the employees and the bank
- 3. Employee
  - He or she gets a pay slip from the accounts clerk

- He or she withdraws the salary from the bank

#### 4. BANK

- Gets the pay slip from the accounts clerk
- Gives the employees their salary and wages

### 4.10 State Diagrams

The pay roll management system undergoes a number of noticeable state changes; we will concentrate on the employee object which undergoes the greatest number of states in the system. A state diagram can therefore be defined for the entire system, a sub system or simply an object.

The employee object undergoes a number of noticeable changes in the system right from the employee creation to the deleting of the employee.

The events that occur in the lifecycle of the employee object are depicted using the State Diagram.

These events include;

- Add new employee
- Ascertain their salary grade
- Ascertain their salary scale
- Calculate gross pay
- Calculate net pay
- Generate pay slips
- Update employee records
- Delete employee

Considering the event of ascertaining the Net pay of an employee, if an employee is new to the organization, then their details have to be added to the system and stored.

They are associated to a salary grade, which is used to ascertain their basic salary.

Depending on the type of employee, whether wage earner or salary earner, we can ascertain their net pay accordingly.

The pay employee event kicks off other events that are needed to achieve the task at hand. These events include first of all ascertaining the employee's net pay, writing the cheques, depositing the employee's cheques in their respective bank accounts.

The bank object is involved to make the necessary transaction to take place.

After which the bank object issues a pay slip to the accounts clerk object in each employee's name which he (Accounts Clerk) records down in his Accounting books to allow for future references and any company decisions.

The accounts clerk object then gets associated with the employee object to which he issues the pay slip presented to the bank for payment.

This is supposed to be the flow of activities in take cycle of the employee object. So the figure below depicts the changes in the state of the employee object as it transits through the lifecycle.

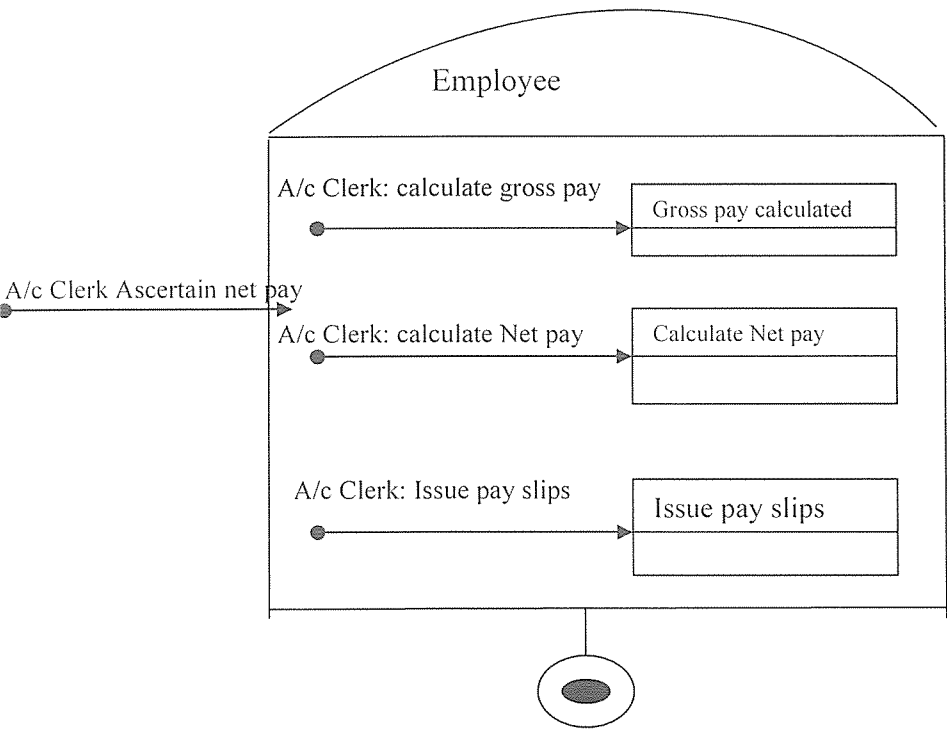
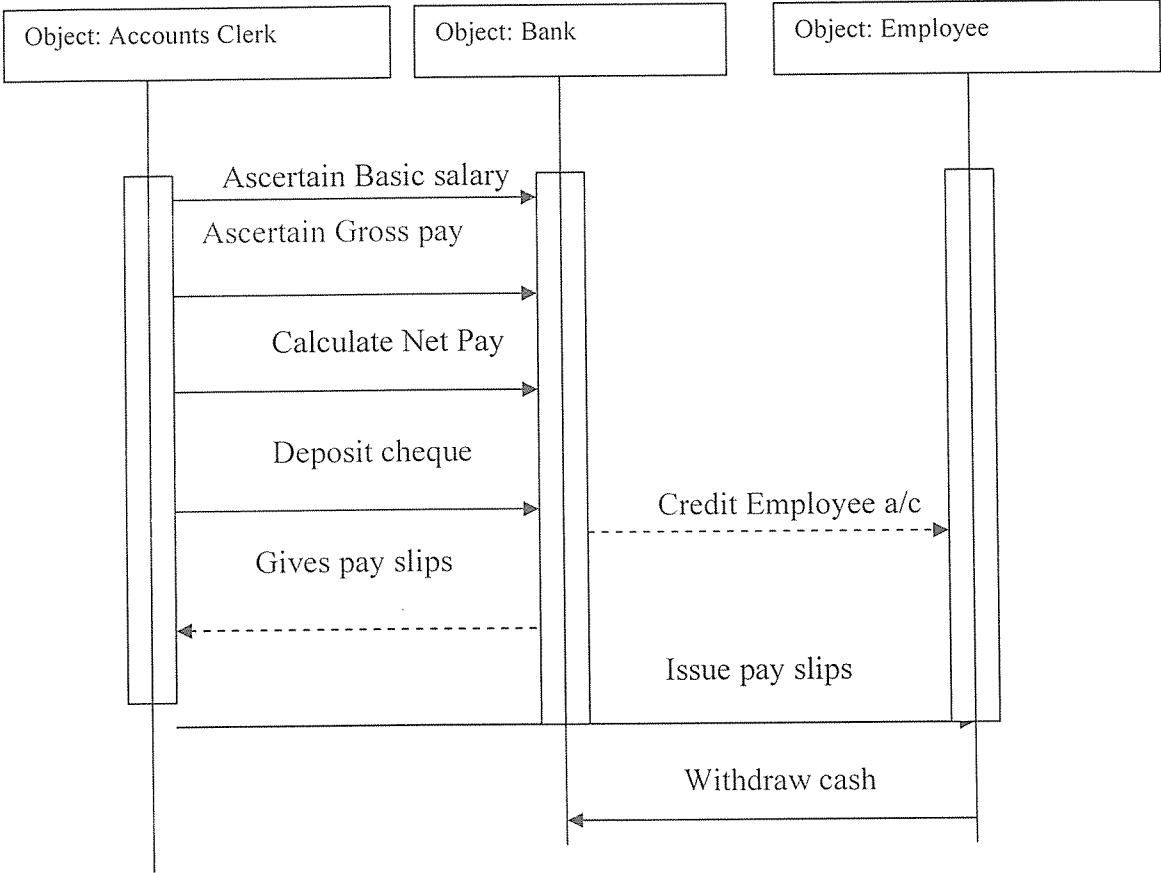


FIG 1.11 State Diagram of the Employee object

4.11 Sequence Diagram

In the pay roll system, we will use the 'pay employee' procedure. The pay employee flow includes one main participant in the system; the accounts clerk. This aside, there are other entity that accounts clerk interacts with to achieve the task required, that is the bank and the employee. The sequence of steps involved in the 'pay employee' flow is; The accounts clerk uses the pay roll system to invoke the ascertain basic salary functionality. The ascertain basic salary functionality of the accounts clerk invokes the ascertain gross pay functionality of an employee. After the gross pay is ascertained, the ascertain gross pay functionality invokes the ascertain net pay functionality of an employee.

The ascertain net pay functionality invokes the write cheques functionality, the deposit cheque functionality of the accounts clerk, credit employee's account and issue pay slips functionality of the bank. The issue pay slip functionality of the accounts clerk object initiates the withdraw cash functionality of the employee object. FIG 1.12 Sequence Diagram for the 'pay employee' Flow



The figure above shows the sequence Diagram for the 'pay employee' flow. The diagram uses the accounts clerk, employee and bank classes that we identified in the earlier in the class diagram of the pay roll management system.

**The verification and the validation of the system**

At this stage the system undergoes various testing so that whichever error is detected is fixed debugging. The system internal logic was to test to confirm that all branches and modules function effectively. This is structure or white box testing. There is also testing against the specification attending much on how its functions are executed. Though a lot remains to be supplemented to the system to make self-based against hard copy, it is considered that the system has carried out most of the operations, which it was intended for.

## Quality Assurance Procedures

For the delivered product to meet its specifications and proper implementation of the requirements, quality procedures and standards have to be set up and ensure that they are followed.

The quality of a developed product is influenced by the quality of the production process. Care must therefore be taken not to impose inappropriate process standards, which could reduce rather than improve the product quality.

On agreement with the NEC (customer), the researcher continued with the architectural design of the system using the UML notation.

Different design models were used to come up with the general system flows and procedures.

These helped the researcher to have thorough understanding of the process flow in the system.

Balancing the procedures or standards of the organization with those required for the software development process was not such an easy task. Say, the organization wanted a system that could immediately be used by the intended users without unduly efforts or the need for advanced training in a short period of time.

At the same time, the team had to use the best practices involved in software development process to avoid any past mistakes.

The organization also required an evolving system that could be updated with ease, affordably to meet the growing needs of the organization.

To achieve the requirement the researcher had to take time to assume the possible future enhancements such that there room could be catered for during the implementation of the designs into code.

The determination and commitment to achieve a common objective were pillars for the success of this project.

Because the system was separated into modules developed individually, each module had to be individually tested by the developer. Bugs and syntax errors were all removed during the coding and each component was tested for logical errors.

These modules were integrated one at a time and tested first for any interface interaction problems or any logical errors that could compromise functionality.

Other modules were then added one at a time to the subsystem, tested for individual module or component interactions, errors and until the final system was constructed.

After proper integration, the system was tested as a whole by the researcher and then other users that did not participate in the coding process to help uncover any system weaknesses and risks.

Different test cases were done by the system with incorrect inputs and general operational behavior, how meaningful the error messages are to the user.

Responsiveness, memory utilization and CPU access times were checked, exception handling capabilities to avoid breakdowns.

The system was further tested for overflows, functionality of logical expressions and bound operations in looping structures.

Concurrency control is the process where two or more users can access a system and carry out any operations simultaneously without interferences or loss of data by the system.

However, due to constraints associated with project, to certain level, the concurrency control functionality was not properly implemented.

## **CHAPTER FIVE**

### **EVALUATION, CONCLUSION AND RECOMMENDATION**

#### **5.0 INTRODUCTION**

This chapter looks at the final phase of the system development. At this stage the system has undergone several stages such as design specification and implementation.

The chapter presents the evaluation on the work done, future work prospects, recommendations, the system verification and validation, maintenance, limitations and delimitations.

#### **5.1 EVALUATION**

Software Engineering is concerned with solving customer's problems through systematic development of large and complex systems given the time, budget and any other constraints. Ascertaining the results of the system developed, it was a good inspiration. The researcher has utilized the time that was set to do whatever was possible to ensure the objectives that were required.

All the codes of the system development connection activated successfully apart from the few that did not contain the required output.

The researcher could not avoid to mention how difficult and tiresome for the system's development because of the complexity and over ambitious project objectives.

Because it was difficult, the evaluation of the output of the system developed is also of high quality and once the board of examiners has satisfied itself that the researcher's effort is reasonably successful, to appreciate to estimate the degree of its success.

#### **5.2 Future improvements.**

The payroll system at the moment is using a Microsoft access database connected to the interfaces using object database connectivity (ODBC) technologies.

There is a limit on the number of users all Microsoft access databases can store.

As the organization grows, there's need to change the DBMS to a more reliable and scalable DBMS.



Microsoft Access also has a problem with concurrent Database access. This is a situation where the database management system can allow more than two users to carry out operations on the same Database without interfering with the data or overwriting the already existing data. Say use of Oracle DBMS, Sybase, and SQL Server 2005 etc.

The Payroll System also has to be evolved to meet the heterogeneity challenge.

A scenario where the system has to run as a distributed system running on a network that supports many types of computers and support systems.

The challenge is to therefore evolve this system to be more dependable with cross platform capabilities.

The developed Payroll system should be portable.

Most visual basic applications require a lot other libraries to be running on the machine on which it is going to be deployed.

Visual basic applications cannot run effectively on Linux or UNIX system without the necessary libraries. So there is need for a more portable environment.

Security was not also implemented to the expected level; this was due to the scope required of the project and the time expectations.

The system should be evolved to provide for a way of the system getting direct interaction with the banking system to totally phase out the Accounts clerk movements in depositing the cheques.

For quite some time the project was complex and over ambitious compared to how the researcher had thought or planned for a fully functioning system to be produced due to some few sub connections that are non functional and some data that is supposed to be contained in the system. Unfortunately the complexity of the project in relation to what was required could not be achieved. It will therefore be necessary to upgrade the system so as to cater for all classes for a whole duration of the programmed.

It is my prayer that in a near future more organization will invest in electronic system to enhance the dream of computer science.

## **5.4 The maintenance of the system**

Maintenance is the modification of a software system after delivery to the user. The programmer is required to ensure that she or he has got editors that can be able to amend any of the system through the object.

## **5.5 Hardships during the research progress**

Time was such a factor that was a great challenge to the researcher in order to achieve the required system.

Balancing the little time between the regular school time with the time for information collection and reconciliation was a big sacrifice to the researcher. Information collection cost the researcher a lot of time due to a lot of turndowns, failure of management to respond to meeting in time combined with the rigidity in organizations made the task a bit hard.

The implementation of the interfaces was done concurrently with the analysis and design phase.

Another problem was availability or access to information.

Organizations consider their company vulnerable to risks making their data readily available to outsiders.

Political and company policies associated with the National Enterprise Corporation made it hard to get the information, like salary grades, responsibilities in the organization, etc; it was normally after continued persistence.

The costs incurred by the researcher were a personal sacrifice because he had to cater for his transportation costs to the required information. As writing and typing the dissertation was relatively demanding in terms of time and energy which arose as a fact of sharing limited resources.

The researcher had to foot all the bills involved in this project like stationery costs, printing costs and a lot other costs in this regard.

Lastly it was a tiresome process in design analysis and coding.

### **5.5.1 Limitations**

Due to several situations, time and finances limited the researcher's abilities to an extent. These two seemed to be a major cause of hindrance for the researcher from achieving full project goals. The project was costly as in terms of funds to enable the researcher acquire hard copies.

The project was much ambition however most of the system was functioning by the time of submission.

### **5.5.2 Delimitation**

Due to the fixed area of research the researcher centered on, explains why the information expected by the users could not be included however the system was in position to give solutions.

### **5.6 Conclusion**

The development of the system was the major achievement in the field of the computer science and information technology. Within the limited period of time, I came up with a system to meet information requirements of many users in the organization.

As time goes by, more ideas come up, some of which can make the system more efficient. Non-the less, am so happy the system was a success.

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**APPENDIX A**  
**KAMPLA INTERNATIONAL UNIVERSITY**  
**SCHOOL OF COMPUTER AND INFORMATION TECHNOLOGY**  
**QUESTIONNAIRE**

Dear Respondent, I am carrying out a research on NEC PAYROLL SYSTEM as part of the academic requirements for the award of the diploma in computer science. Please take a few minutes of your precious time and answer these questions. The study is entirely academic and will only serve academic purposes while your answer will be treated with utmost confidentiality.

**PART 1: INFORMATION ABOUT THE EMPLOYEE**

1. First name.....other names.....
2. Place of residence.....Tel office.....mobile.....
3. Designation.....
4. Name of your department.....
5. How long have you been working in this department? (please tick the appropriate box)  
  
<6months ☐      1year ☐      2-5years ☐      over 5 years ☐
6. Do you have any accounting knowledge?, if yes, to what level?  
.....  
.....
7. Do you have any computer knowledge?. If yes, to what level?  
.....  
.....

**PART 2: INFORMATION ABOUT YOUR COMPANY**

8. What is the name your company?  
.....
9. What is the location of your company?  
.....
10. How many departments do you have at Headquarter?  
.....
11. How many employees belong to each department?  
.....
12. List the names of the department(s) if any.  
.....  
.....  
.....
13. How many subsidiary companies do you have?  
.....
14. List the names of subsidiary companies if any.  
.....  
.....  
.....

**PART 3: INFORMATION ABOUT THE CURRENT SYSTEM.**

15. What is the name of the current system?  
.....

16. What kind of system do you have? (please tick the appropriate box)

- Manual system ☐
- Computerized system ☐
- None ☐

17. Who makes the payroll?

- Accounts assistant ☐
- Cashier ☐
- Accounts clerk ☐
- Accountant ☐

18. How often do you pay your employees?

- Weekly ☐
- Monthly ☐

19. How long do you take to make a payroll.(please tick the appropriate box)

- <2 days ☐      3-5 days ☐      5-10 days ☐

20. How do you complete your Gross pay and net pay?

.....

.....

.....

21. What is the mode of payment?

- Cash ☐
- Cheque ☐

22. Do employees sign any where after receiving their salary?

- Yes ☐
- No ☐

23. list the problems you face when preparing a payroll

.....  
.....  
.....

24. Suggest solutions to the above listed problems

.....  
.....  
.....

**PART 4: INFORMATION ABOUT NEW SYSTEM.**

25. Do you think that a new computerized system may solve some of your problems?

Yes ☐

No ☐

26. If yes list some of the problems that may be solved by the computerized system

.....  
.....  
.....

27. What are your expectations about the new computerized system?

.....  
.....  
.....

28. How many computers do you have in your department

1 ☐

2-5 ☐

6-10 ☐

29. Do you have an IT department in your company?

Yes ☐

No ☐

Thank you

## APPENDIX B

### KAMPALA INTERNATIONAL UNIVERSITY

#### SCHOOL OF COMPUTER SCIENCE INTERVIEW GUIDE

1. What is the name of your company?  
.....
2. What is the location of your company?  
.....
3. How many employees are on your payroll?  
.....
4. How many departments do you have in your company?  
.....
5. Rate the knowledge of users on IT skills.  
  
Ordinary level      ☐  
  
Intermediate level      ☐  
  
Advanced level      ☐
6. Rate the knowledge of users on accounting skills.  
  
Ordinary level      ☐  
  
Intermediate level      ☐  
  
Advanced level      ☐
7. Do you have an IT department in this company?  
.....
8. If yes how many computers do you have?  
.....
9. If yes are your computers networked?  
.....
10. What are some of the problems you face with the current system?  
.....  
.....  
.....
11. How do you try to over come such problems?  
.....  
.....  
.....
12. What are some of the security feathers does your system have?  
.....  
.....  
.....

.....END.....



## APPENDIX C (SOURCE CODE)

### Flash form

Option Explicit

```
Private Sub Form_KeyPress(KeyAscii As Integer)
```

```
    Unload Me
```

```
    frmmainmenu.Show
```

```
End Sub
```

```
Private Sub Form_Load()
```

```
    lblVersion.Caption = "Version " & App.Major & "." & App.Minor & "." &
```

```
App.Revision
```

```
    lblProductName.Caption = App.Title
```

```
End Sub
```

```
Private Sub Frame1_Click()
```

```
    Unload Me
```

```
End Sub
```

Mdi form code

```
Private Sub MNUBIODATA_Click(Index As Integer)
```

```
Biodata.Show
```

```
End Sub
```

```
Private Sub MNUCLOSE_Click(Index As Integer)
```

```
Unload Me
```

```
End
```

```
End Sub
```

```
Private Sub MNUDEPT_Click(Index As Integer)
```

```
dept_details.Show
```

```
End Sub
```

```
Private Sub MNUPAYMENTS_Click(Index As Integer)
```

```
payments.Show
```

```
End Sub
```

```
Private Sub MNUWAGES_Click(Index As Integer)
```

```
wages.Show
```

```
End Sub
```

Payment form code

```
Dim NSSF As Double
```

```
Dim NNSF As Double
```

```
Dim PAYE As Double
```

```
Dim ADVANCE As Double
```

```
Dim TOTAL As Double
```

```
Dim basic As Double
```

```
Private Sub cmdadd_Click()
```

```
Dim intAdd As Integer
```

```
intAdd = MsgBox("Are You sure you want to add a new record?", vbYesNo,  
"Attention")
```

```

If intAdd = vbYes Then
Adodc1.Recordset.AddNew
Else
MsgBox ("Record is Not Added")
End If
End Sub
Private Sub cmddelete_Click()
Dim intdelete As Integer
intdelete = MsgBox("Are you sure you want to delete", vbYesNo, "Confirm")
If intdelete = vbYes Then
Adodc1.Recordset.Delete
Text9.Text = ""
Text8.Text = ""
Text7.Text = ""
Text6.Text = ""
MsgBox ("Record deleted")
Else
MsgBox ("Record not deleted")
End If
End Sub
Private Sub cmdexit_Click()
Unload Me
End Sub
Private Sub cmdfirst_Click()
If Adodc1.Recordset.BOF = True Then
MsgBox ("already on the fisrts record")
Else
Adodc1.Recordset.MoveFirst
End If
End Sub
Private Sub cmdlast_Click()
If Adodc1.Recordset.EOF = True Then
MsgBox ("this is the last record")
Else
Adodc1.Recordset.MoveLast
End If
End Sub
Private Sub cmdnetpay_Click()
NNSF = Val(T3.Text)
PAYE = Val(T4.Text)
ADVANCE = Val(T5.Text)
TOTAL = NNSF + PAYE + ADVANCE
basic = Val(T1.Text)
T6.Text = Str(TOTAL)
T7.Text = Str(basic - TOTAL)

```

```

End Sub
Private Sub cmdnext_Click()
If Adodc1.Recordset.EOF = False Then
Adodc1.Recordset.MoveNext
Else
MsgBox "already at the table", vbInformation
Adodc1.Recordset.MoveLast
End If
End Sub
Private Sub cmdprevious_Click()
If Adodc1.Recordset.BOF = False Then
Adodc1.Recordset.MovePrevious
' iblrecno.Caption = Val(iblrecno.Caption) - 1
Else
MsgBox "already at the end of the table", vbInformation
Adodc1.Recordset.MoveFirst
End If
Exit Sub
End Sub

```

#### **Registrar form code**

```

Private Sub cmdcancel_Click()
End
End Sub
Private Sub cmdclear_Click()
txtname.Text = ""
txtpassword.Text = ""
End Sub
Private Sub cmdconfirm_Click()
Userinfo.Recordset.Fields("USERNAME") = txtname.Text
Userinfo.Recordset.Fields("PASSWORD") = txtpassword.Text
Userinfo.Recordset.Update
Register.Hide
Form1.Show
End Sub
Private Sub Form_Load()
Userinfo.Recordset.AddNew
End Sub
Private Sub cmdsave_Click()
Dim intsave As Integer
intsave = MsgBox("Are you sure you want to save", vbYesNo, "Confirm")
If intsave = vbYes Then
Adodc1.Recordset.Save
MsgBox ("Record has been saved")
Else

```

```

MsgBox ("Record not saved")
End If
End Sub
Private Sub cmdsearch_Click()
Dim strsearch As String
strsearch = InputBox("Enter the DEPARTMENT ID here")
Adodc1.Recordset.MoveFirst
While Not Adodc1.Recordset.EOF
If LCase(strsearch) = LCase(Adodc1.Recordset.Fields(0)) Then
MsgBox ("search successful")
Exit Sub
Else
Adodc1.Recordset.MoveNext
End If
Wend
MsgBox ("record not found")
Adodc1.Recordset.MoveFirst
End Sub
Private Sub Command1_Click()
Biodata.Show
End Sub
Private Sub Command2_Click()
dept_details.Show
End Sub
Private Sub Command3_Click()
payments.Show
End Sub
Private Sub Command4_Click()
NSSF = Val(T1.Text) * 0.1
T2.Text = Str(NSSF)
End Sub
Private Sub Command5_Click()
DataReport1.Show
End Sub

```

#### **Wage form code**

```

Private Sub cmdadd_Click()
Dim intAdd As Integer
intAdd = MsgBox("Are You sure you want to add a new record?", vbYesNo,
"Attention")
If intAdd = vbYes Then
Adodc1.Recordset.AddNew
Else
MsgBox ("Record is Not Added")
End If

```

```

End Sub
Private Sub cmddelete_Click()
Dim intdelete As Integer
intdelete = MsgBox("Are you sure you want to delete", vbYesNo, "Confirm")
If intdelete = vbYes Then
Adodc1.Recordset.Delete
MsgBox ("Record deleted")
Else
MsgBox ("Record not deleted")
End If
End Sub
Private Sub cmdexit_Click()
Unload Me
End Sub
Private Sub cmdfirst_Click()
If Adodc1.Recordset.BOF = True Then
MsgBox ("already on the first record")
Else
Adodc1.Recordset.MoveFirst
'iblrecno.Caption = 1
End If
End Sub
Private Sub cmdlast_Click()
If Adodc1.Recordset.EOF = True Then
MsgBox ("this is the last record")
Else
Adodc1.Recordset.MoveLast
'iblrecno.Caption = Adodc1.Recordset.RecordCount
End If
End Sub
Private Sub cmdnext_Click()
If Adodc1.Recordset.EOF = False Then
Adodc1.Recordset.MoveNext
' iblrecno.Caption = Val(iblrecno.Caption) + 1
Else
MsgBox "already at the table", vbInformation
Adodc1.Recordset.MoveLast
End If
End Sub
Private Sub cmdprevious_Click()
If Adodc1.Recordset.BOF = False Then
Adodc1.Recordset.MovePrevious
' iblrecno.Caption = Val(iblrecno.Caption) - 1
Else
MsgBox "already at the end of the table", vbInformation

```

```

Adodc1.Recordset.MoveFirst
End If
Exit Sub
End Sub
Private Sub cmdsave_Click()
Dim intsave As Integer
intsave = MsgBox("Are you sure you want to save", vbYesNo, "Confirm")
If intsave = vbYes Then
Adodc1.Recordset.Save
MsgBox ("Record has been saved")
Else
MsgBox ("Record not saved")
End If
End Sub
Private Sub cmdsearch_Click()
Dim strsearch As String
strsearch = InputBox("Enter the serial number here")
Adodc1.Recordset.MoveFirst
While Not Adodc1.Recordset.EOF
If LCase(strsearch) = LCase(Adodc1.Recordset.Fields(0)) Then
MsgBox ("search successful")
Exit Sub
Else
Adodc1.Recordset.MoveNext
End If
Wend
MsgBox ("record not found")
Adodc1.Recordset.MoveFirst
End Sub
Private Sub Command1_Click()
Biodata.Show
End Sub
Private Sub Command2_Click()
dept_details.Show
End Sub
Private Sub Command3_Click()
payments.Show
End Sub
Private Sub Command4_Click()
DataReport2.Show
End Sub
Private Sub Command5_Click()
T5.Text = Str(Val(T1 * T2 + T3 * T4))
End Sub

```

**Login form code**

```
Private Sub cmdlogin_Click()  
Dim username As String  
Dim psword As String  
Dim usernam As String  
Dim pssword As String  
Dim msg As String  
Register.UserInfo.Refresh  
username = txtname.Text  
psword = txtpassword.Text  
Do Until Register.UserInfo.Recordset.EOF  
If Register.UserInfo.Recordset.Fields("USERNAME").Value = username And  
Register.UserInfo.Recordset.Fields("PASSWORD").Value = psword Then  
Unload Me  
MDIForm1.Show  
Exit Sub  
Else  
Register.UserInfo.Recordset.MoveNext  
End If  
Loop  
msg = MsgBox("invalid password,try again", vbOKCancel)  
If (msg = 1) Then  
Form1.Show  
txtname.Text = ""  
txtpassword.Text = ""  
Else  
End  
End If  
End Sub
```

**Department form code**

```
Private Sub cmdadd_Click()  
Dim intAdd As Integer  
intAdd = MsgBox("Are You sure you want to add a new record?", vbYesNo,  
"Attention")  
If intAdd = vbYes Then  
Adodc1.Recordset.AddNew  
Else  
MsgBox ("Record is Not Added")  
End If  
End Sub  
Private Sub cmddelete_Click()  
Dim intdelete As Integer  
intdelete = MsgBox("Are you sure you want to delete", vbYesNo, "Confirm")  
If intdelete = vbYes Then
```

```

Adodc1.Recordset.Delete
MsgBox ("Record deleted")
Else
MsgBox ("Record not deleted")
End If
End Sub
Private Sub cmdexit_Click()
Unload Me
End Sub
Private Sub cmdfirst_Click()
If Adodc1.Recordset.BOF = True Then
MsgBox ("already on the firsts record")
Else
Adodc1.Recordset.MoveFirst
End If
End Sub
Private Sub cmdlast_Click()
If Adodc1.Recordset.EOF = True Then
MsgBox ("this is the last record")
Else
Adodc1.Recordset.MoveLast
End If
End Sub
Private Sub cmdnext_Click()
If Adodc1.Recordset.EOF = False Then
Adodc1.Recordset.MoveNext
Else
MsgBox "already at the table", vbInformation
Adodc1.Recordset.MoveLast
End If
End Sub
Private Sub cmdprevious_Click()
If Adodc1.Recordset.BOF = False Then
Adodc1.Recordset.MovePrevious
Else
MsgBox "already at the end of the table", vbInformation
Adodc1.Recordset.MoveFirst
End If
Exit Sub
End Sub
Private Sub cmdsave_Click()
Dim intsave As Integer
intsave = MsgBox("Are you sure you want to save", vbYesNo, "Confirm")
If intsave = vbYes Then
Adodc1.Recordset.Save

```



```

MsgBox ("Record has been saved")
Else
MsgBox ("Record not saved")
End If
End Sub
Private Sub cmdsearch_Click()
Dim strsearch As String
strsearch = InputBox("Enter the DEPARTMENT ID here")
Adodc1.Recordset.MoveFirst
While Not Adodc1.Recordset.EOF
If LCase(strsearch) = LCase(Adodc1.Recordset.Fields(0)) Then
MsgBox ("search successful")
Exit Sub
Else
Adodc1.Recordset.MoveNext
End If
Wend
MsgBox ("record not found")
Adodc1.Recordset.MoveFirst
End Sub
Private Sub Command1_Click()
Biodata.Show
End Sub
Private Sub Command2_Click()
dept_details.Show
End Sub
Private Sub Command3_Click()
payments.Show
End Sub

```

#### **Employees' bio data form code**

```

Private Sub cmdadd_Click()
Dim intAdd As Integer
intAdd = MsgBox("Are You sure you want to add a new record?", vbYesNo,
"Attention")
If intAdd = vbYes Then
Adodc1.Recordset.AddNew
Else
MsgBox ("Record is Not Added")
End If
End Sub
Private Sub cmdcancel_Click()
Text9.Text = ""
Text8.Text = ""
Text7.Text = ""

```

```

Text6.Text = ""
End Sub
Private Sub cmddelete_Click()
Dim intdelete As Integer
intdelete = MsgBox("Are you sure you want to delete", vbYesNo, "Confirm")
If intdelete = vbYes Then
Adodc1.Recordset.Delete
Text9.Text = ""
Text8.Text = ""
Text7.Text = ""
Text6.Text = ""
MsgBox ("Record deleted")
Else
MsgBox ("Record not deleted")
End If
End Sub
Private Sub cmdexit_Click()
Unload Me
End Sub
Private Sub cmdfirst_Click()
If Adodc1.Recordset.BOF = True Then
MsgBox ("already on the firsts record")
Else
Adodc1.Recordset.MoveFirst
End If
End Sub
Private Sub cmdlast_Click()
If Adodc1.Recordset.EOF = True Then
MsgBox ("this is the last record")
Else
Adodc1.Recordset.MoveLast
End If
End Sub
Private Sub cmdnext_Click()
If Adodc1.Recordset.EOF = False Then
Adodc1.Recordset.MoveNext
Else
MsgBox "already at the table", vbInformation
Adodc1.Recordset.MoveLast
End If
End Sub
Private Sub cmdprevious_Click()
If Adodc1.Recordset.BOF = False Then
Adodc1.Recordset.MovePrevious
Else

```

```

MsgBox "already at the end of the table", vbInformation
Adodc1.Recordset.MoveFirst
End If
Exit Sub
End Sub
Private Sub cmdsave_Click()
Dim intsave As Integer
intsave = MsgBox("Are you sure you want to save", vbYesNo, "Confirm")
If intsave = vbYes Then
Adodc1.Recordset.Save
MsgBox ("Record has been saved")
Else
MsgBox ("Record not saved")
End If
End Sub
Private Sub cmdsearch_Click()
Dim strsearch As String
strsearch = InputBox("Enter the DEPARTMENT ID here")
Adodc1.Recordset.MoveFirst
While Not Adodc1.Recordset.EOF
If LCase(strsearch) = LCase(Adodc1.Recordset.Fields(0)) Then
MsgBox ("search successful")
Exit Sub
Else
Adodc1.Recordset.MoveNext
End If
Wend
MsgBox ("record not found")
Adodc1.Recordset.MoveFirst
End Sub
Private Sub Command1_Click()
Biodata.Show
End Sub
Private Sub Command2_Click()
dept_details.Show
End Sub
Private Sub Command3_Click()
payments.Show
End Sub

```

## APPENDIX D (FORMS)

### NEC FLASH FORM



LicenseTo

NATIONAL ENTERPRISE CORPORATION

**NEC**

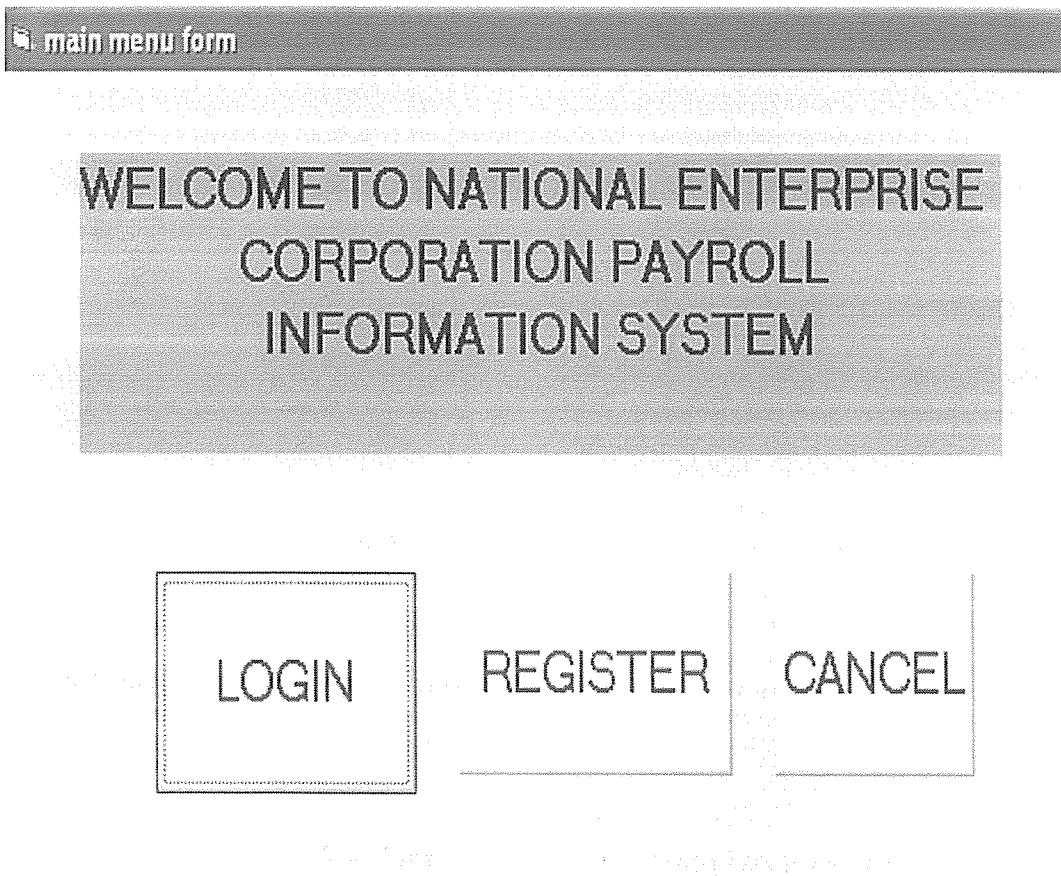
PRESS ANY KEY TO

Version 1.0.0

KIU  
SCHOOL OF COMPUTER

Read instructions carefully

### NEC MAIN MENU FORM

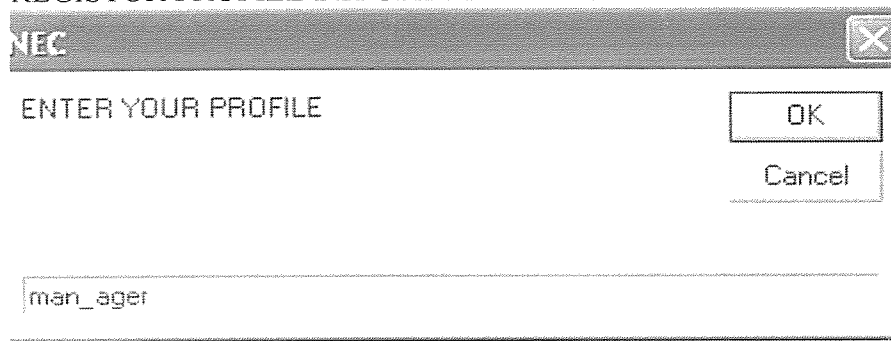


main menu form

WELCOME TO NATIONAL ENTERPRISE  
CORPORATION PAYROLL  
INFORMATION SYSTEM

LOGIN REGISTER CANCEL

## REGISTOR PROFILE BEFORE ENTERING THE REGESTOR FORM



REGISTRATION

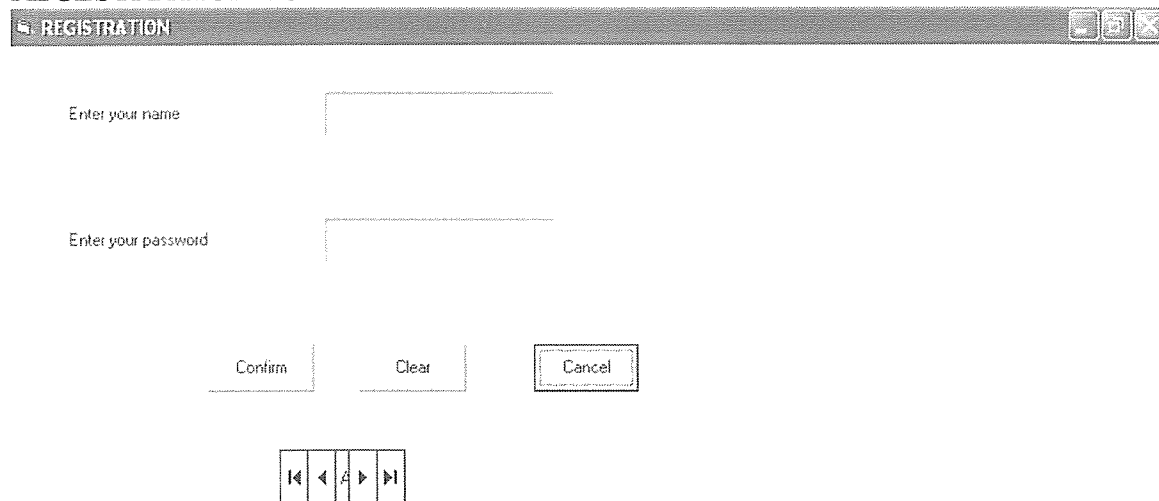
ENTER YOUR PROFILE

OK

Cancel

man\_ager

## REGISTRATION FORM



REGISTRATION

Enter your name

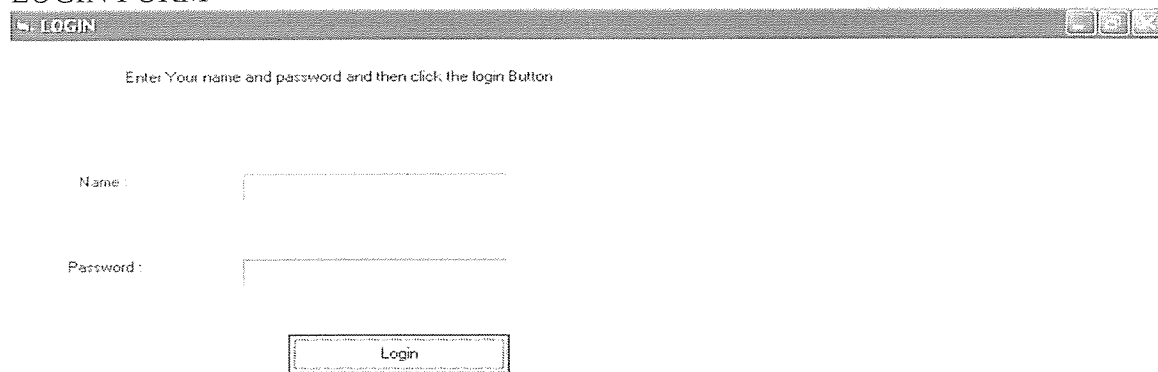
Enter your password

Confirm Clear Cancel

⏪ ⏩ ⏴ ⏵



## LOGIN FORM



LOGIN

Enter Your name and password and then click the login Button

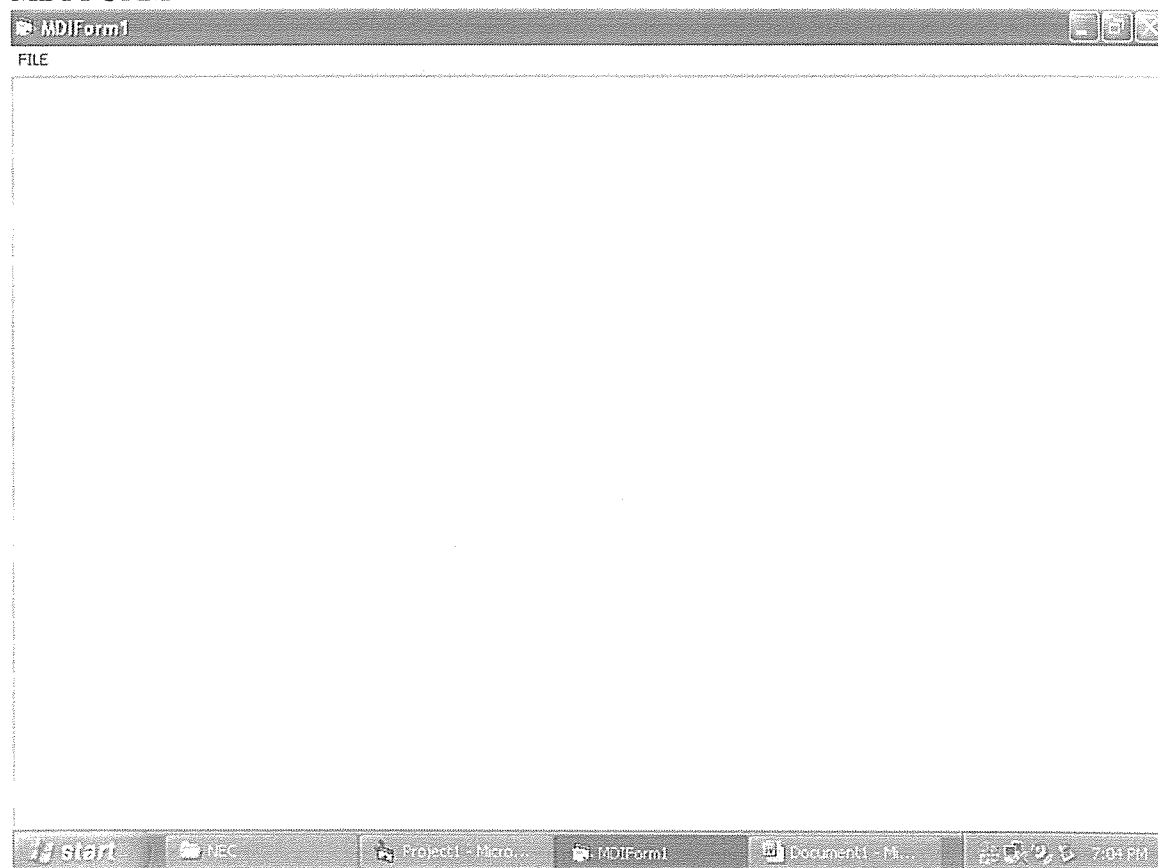
Name :

Password :

Login



## MDI FORM



MDIForm1

FILE



## MDI FORM

MDIForm1

FILE

OPEN

CLOSE

MNUBIODATA

PAYMENTS

WAGES

DEPARTMENT DETAILS

start

NEC

Project1 - Micro...

MDIForm1

Document1 - M...

7:05 PM

## EMPLOYEES' BIO DATA FORM

MDIForm1 - [EMPLOYEE BIO DATA]

FILE

Employee bio data

dept information

payment information

FIRST NAME

ALINDA

LAST NAME

KALEB

EMPLOYMENT ID

NEC001

DESIGNATION

MANAGER

GENDER

MALE

TEL NO

0782207785

DATE OF BIRTH

7/8/2009

DATE OF APPOINTMENT

5/4/2004

add record

First record

Save data

Next record

Delete record

Previous record

Exit application

Last record

start

NEC

Project1 - Micro...

MDIForm1 - [EM...

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7:07 PM

## DEPARTMENT INFORMATION FORM

MDIForm1 - [EMPLOYEE DETAILS]

FILE

Employee bio data	dept information	payment information
dept id	DP001	Bank name
department name	IT	Bank id
Category	MANAGER	Branch name
type of employee	PERMANENT	Account type
salary scale	U5	Account no
Basic salary	600000	Physical address
Other information	NO CHILDREN	

add record   Save data   Delete record   Exit application

First record   Next record   Previous record   Last record

Document1 - Microsoft Word

start   NEC   Project1 - Micro...   MDIForm1 - [EM...   Document1 - M...   7:06 PM

## PAYMENT INFORMATION

MDIForm1 - [PAYMENT DETAILS]

FILE

Employee bio data	Dept information	Payment Information	PAYMENTS REPORT
<b>NEC PAYSIP</b>			
Employee's details		DATE	
SERIAL NO	S001	4/5/9	
NAMES	ALINDA	Deductions	
SALARY SCALE	U5	N.S.S.F	
BASIC PAY	600000	P.A.Y.E	
Allowances		ADVANCE	
HOUSING	100000	Calculated net pay	
C.O.L.A	50000	COMPUTE NET PAY	
UTILITIES	50000	TOTAL	
calculate N.S.S.F	60000	DEDUCTIONS	
CONSOLIDATED MONTHLY	200000		

add record   Save data   Delete record   CLOSE FORM

First record   Next record   Previous record   Last record

start   NEC   Project1 - Micro...   MDIForm1 - [PA...   Document1 - M...   7:09 PM



## WAGE FORM

MDIForm1 - [THE WAGE EARNERS FORM]

FILE

Employee bio data	dept information	payment information	WAGES REPORT
FIRST NAME	Ssenga	add record	First record
LAST NAME	nkobazambo	Save data	Next record
NUMBER OF HOURS	10	Delete record	Previous record
HOURLY PAY	5000	CLOSE FORM	Last record
OVER TIME	3		
OVER TIME PAYMENTS	1000		
COMPUTE TOTAL PAYMENTS	53000		

start | NEC | Project1 - Micro... | MDIForm1 - [TH... | Document1 - MS... | 7:05 PM

## WAGE EARNERS REPORT

DataReport2

Zoom 100%

NATIONAL ENTERPRISE CORPORATION WAGES REPORT						
First Name	Last Name	Number Of Hours	Hourly Pay	Over Time	Over Time Pay	Total Paymnt
Ssenga	nkobazambo	11	5000	3	5000	70000
talemwa	abooki	8	15000	2	20000	160000
mugisha	Benon	4	40000	2	50000	260000

Printed on Thursday, November page 1

start | NEC | 3 - Visual Basic | Document1 - Microsof... | 7:10 PM

NEC SALARY EARNERS REPORT

Zoom 100%

### NATIONAL ENTERPRISE CORPORATION SALARY EARNER'S REPORT

Names	Salary	Basic	Housing	cola	utilities:
<u>ALINDA</u>	<u>U5</u>	<u>600000</u>	<u>100000</u>	<u>50000</u>	<u>50000</u>
GROSS MONTHLY	CONSOLIDATED TOTAL DEDUCTIONS		DATE OF	NET PAY	
<u>60000</u>	<u>200000</u>	<u>470000</u>	<u>4/5/9</u>	<u>130000</u>	

printed on Thursday, PAGE 1

start NEC 3 Visual Basic Document1 - Microsoft... 7:13 PM