

A COMPUTERIZED PAYROLL SYSTEM  
NIGER STATE COLLEGE OF EDUCATION  
MINNA  
BY

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APPROVAL PAGE

THIS PROJECT HAS BEEN READ AND APPROVED FOR THE SCHOOL OF SCIENCE  
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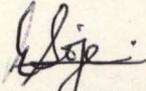
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DECLARATION

This is to certify that this work was undertaken by MR. ERNEST  
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University of Technology, Minna.



SOJE ERNEST FOLORUNSO

DEDICATION

This work is dedicated to my wife Omotayo Omolola Soje and our children:

Osigbodi Soje

and

Osisiyemese Soje

ACKNOWLEDGEMENT

First and foremost, I give the Almighty God the glory for enabling me to carry out this study. This is a demonstration of this grace once again in my life: to him be the glory.

In the same way, I am also grateful to all He has used as instruments in bringing this work to fruition. In particular, I am grateful to Dr. K. R. Adeboye who is my supervisor for taking time to go through every stage of the work despite his crowded schedule of duties and the demand of his new role as head of the department of Mathematics and Computer Science.

Similarly, I am grateful to Mallam Sadiq U. Zubairu and Deacon E. O. Akanni for their valuable suggestions at every stage of the program development.

I also wish to acknowledge the support given by my family for the sacrifice of having to stay several hours without me.

Finally, I wish to express my gratitude to the Bursary Unit of the College of Education for their co-operation in providing me with useful information at every stage of the system development.

May the Almighty God reward you all abundantly. Amen

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ABSTRACT

This Study is aimed at solving the Payroll problem of the Niger State College of Education Minna.

In carrying out this assignment the system life cycle approach was used and this involves activities such as carrying out preliminary investigation to determine system requirements, the design development of software, testing and implementation and evaluation of the system.

A feasibility study was conducted to determine the viability of the proposed system. The report of the study favoured a replacement of the manual payroll calculation with a computerised system.

On the basis of these recommendations a system software was developed with a detail account of the various phases of the software development. The database management system was considered as a language of choice in the writing of the various programmes and its modules. These modules serve as the options available to the operator to either Add Record, View Record, Delete Record, Up date Record and Generate Record or an option of exit. The aforementioned are the facilities provided by the system's software.

Finally, the aim of the work is to provide management and staff with adequate and reliable information about their Payroll, bank summaries, etc. reports.

CHAPTER ONE  
INTRODUCTION

## 1.0

For many organisations, computer information systems are now at the heart of daily activities and a major consideration in corporate decision making. Businesses consider carefully their information systems capabilities when deciding whether or not to enter new markets or when planning a response to competition. Without automated assistance, government organisations would grind to a halt for sheer volume of activities which can overwhelm workers and managers. Also data communications capabilities determine where and when information will flow.

In fact, the world has never been the same since the invention of the transistor in 1948 and the development of integrated circuit and also the introduction of the micro computer has caused a revolution in information processing. The followings are some of the areas of application of computers:

- (i) Electronic data processing which is concerned with a systematic recording, arranging, filling processing and dissemination of facts relating the physical events occurring in an organisation.
- (ii) Personnel application - salary review/promotion list, directories of names and residential address, personnel register, personnel distribution report, retirement and pension list etc.
- (iii) Accounting application - payroll, stock control, sales invoicing, sales ledger etc.
- (iv) Word processing - letters, memos, invitations, proposals.
- (v) Queuing process of putting things in waiting lines and controlling the order in which they are processed or services are performed.

- (vi) Optimization - selecting the magnitudes of courses of action that will achieve the most desired results.
- (vii) Statistical analysis.
- (viii) Computer aided design.
- (ix) Information retrieval.
- (x) Production control which enables a manufacturing organisation to meet all orders placed by customers within time.
- (xi) Maintaining the bank accounts of all customers of a bank.

In education, computers are used as a source of instruction and as an aid to teaching assignments.

The use of computers in these application areas will however depend on a number of criteria which include volume of data to be processed, increased efficiency, accuracy and consistency. Others are complex calculations or processes which can be programmed, speed and ability to access data directly from remote location.

Similarly, repetitiveness, processing cycle that repeats themselves are ideally suited for computers.

However, the development of information systems involves both systems analyst and those who will use the application that emerge - end users. The analysis and design of information systems involves many parts of an organisation and are not limited to the domain of computer specialists.

#### 1.1 HISTORY OF THE COLLEGE AND PAYTROLL IN USE

The Niger State College of Education was established in November, 1975 with a handful of academic and non-academic staff members on its payroll. Over the years, the population has grown in terms of staff and students with an initial population of less than fifty (50) members on its list, it now has about five hundred

(500) staff and fourty-five (45) departments.

Since the establishment of the College, it has been using and still uses the manual payroll system in preparing its staff salary. The payroll system in use was handed down from the ministry and it was developed by ANSON.

It consists of large sheet with rows and columns in which we have some information concerning salaries and deductions. In this system individual staff has what is called payment record card showing the year, the months from January to December. It has other subheadings like earnings, deductions and tax-able and non-taxable payments. Each staff names and other relevant information<sup>s</sup> like the personal sub-head number, the bank account number are contained on this sheet.

Apart from the payment record card, we have also the Payroll Summary Sheet which contains all information as on the payment record card. This allows for a summary of upto ten people for a given payroll summary sheet. All calculations and information as on the payment record card are entered for each staff member. In this Payroll sheet, no alterations of any sort is allowed.

Over the years, the population of the school has grown to an appreciable level interms of numerical strength of the staff on its payroll; consequently the need for an alternative system of payroll has become evident. In other words the present manual system now finds it difficult to meet the challenges of the present situation. In the same vein, certain operational shortcomings have been witnessed over the years as a result of the growth of the population of the staff members on the College Paytroll. Some of these shortcomings include:

1. Delay in Payroll preparation.
2. Complaints about computational errors by banks and staff members.
3. Constant omission of names of staff members from vouchers, allowances etc.
4. Over deduction and sometimes non-deduction in some cases have been witnessed.
5. Duplication of names and inclusion of names of which are non-existent.
6. Over payment of salaries and other numerous/fraudulent Payroll practices.

While it may be accepted that some of these shortcomings are as a result of human error or are deliberate, most of them arise as a result of increasing demand on accounting assistants and other clerical staff charged with the task of payroll preparation.

Similarly, there is now an increasing need for effective information collection and its management as well as increased relief policies and numerous deductions of all forms: all these calls for an automated system of payroll preparation.

## 1.2 STATEMENT OF THE PROBLEM

The result of the above shortcomings coupled with the growing need for effective information collection and its management has made it a relevant issue to search for an alternative method of payroll preparation. Hence the idea of a computerised payroll system. To ascertain the possibility of embarking on this project of system development, a feasibility study was carried out. This is discussed in detail in the next chapter.

### 1.3 OBJECTIVES OF A COMPUTERISED PAYROLL SYSTEM

Before embarking on the design of any system, there is a need to have a clearly defined objective. These objectives will have to reflect goals established by management for the entire organisation. It is also imperative that the system should be able to meet the needs of the organisation, else it will be of little or no value.

Aims or goals are operational measures used to run an organisation. The goals from which objectives are derived represent the results of management future projections. In the same way objectives are vehicles for achieving the goals. Some of the objectives of the proposed payroll system include:

1. To handle data efficiently and provide management with useful and timely information.
2. To meet users needs.
3. To eliminate duplicated conflicting and unnecessary services.
4. To speed up access to and availability of reliable data in the system.

The next chapter discusses the feasibility study carried out on the present system to find out the viability of an automated system or otherwise.

## CHAPTER TWO

## 2.0

LITERATURE REVIEW

The early days of computing were marked by great hopes but many disappointments. Business users complained of broken promises. Sometimes the system was not ready when it was supposed to be operational. When it was operational some of the features that were required were not implemented or it did not work. This meant that there was a large problem of correcting and maintaining these systems. Of the numerous reasons for these problems, there was a main one which was the lack of an acceptable methodology for implementing systems.

During the late 1960's this need for a methodology was appreciated by the computing world. Some of these included the publication by the National Computing Centre (NCC) in 1968 and 1971 of their methodologies for developing system and it was influential in the United States and else where (AVISON DE; 1985).

The NCC package included systems training courses and documentation tools. These helped system analysts to follow a step by step methodology which would lead to the implementation of the system which did conform to the requirements of the users. The result of this effort helped to improve the reputation of computer people and computer application in business.

However the application that were implemented tended to concentrate on computerising manual systems. Thus the standard of data processing systems such as payroll, sales order processing and invoicing used the computer wherever appropriate so as to reduce the clerical burden. In this systems, the computer procedures simulated the clerical procedures and the computer files contained the same facts as their clerical counterpart. Such systems gained some of the advantages of speed and reliability.

In the same vein, over the last few years there has been a number of developments which have made it possible to offer alternative methodology. With database system, it is possible to hold the facts relating to an organisation on a database. The organisation in this sense can be a whole business, an academic establishment, a department or division. The business database could be built up gradually, may be a department at a time, so that eventually the whole organisation is reflected on a database. The various applications can be used as a data source. If the functions changes, the data on the database will still probably be appropriate. If the functions change, the database can be ammended without affecting the application systems. There is an element of data independence between the database and the applications that use it. The hardware and software can also be changed to reflect the technology without requiring substantial changes in the application systems.

The next thing is the data processing development: a major problem is to constraint the model of the organisation to be held on the database. As computers are now used more and more by persons who are not computer professionals, the face of systems development is taking on an additional dimension. According to (Senn James, 1989) these different situations are represented by three distinct approaches to the development of computer information systems. These approaches include:

1. System development life cycle method.
2. Structural analysis development method and
3. System prototype method.

However, of these 3 - methods, the system development life cycle method is adopted in this work. Its activities includes:

Preliminary investigation.

Determination of system requirements.

Design of the system.

Development of software.

Testing, implementation and evaluation of the system.

Though alot of work have been done in the area of computerised Payroll System in different organisations, no work has been done in this area in the Niger State College of Education Minna. To this end, in order to ascertain the viability or otherwise of the project, a feasibility study was carried out. This is with a view to determine whether or not the project should be embarked upon.

The feasibility study looks at the system which is presently operative, consider its problems, and briefly looks at a range of alternative ways of doing the job.

#### 2.1.1 PRELIMINARY INVESTIGATION

During the proposal stage, the following vital questions were raised:

What is the problem?

How significant is the problem?

What does the people in the system feel is the Solution and

What are the alternative solutions?

In response to the questions raised an investigation was conducted into the present system to find out what obtains and the likely problems.

The payroll preparation was identified as one of the numerous functions performed by the bursary department of the college.

Both academic and non-academic members as well as accounting

staff members who are directly responsible for the payroll preparation were interviewed. It was discovered that the problems amongst others, include:-

1. Constant delay in payroll preparation.
2. Omission of staff names.
3. Duplication of names.
4. Inclusion of names of non-existent workers.
5. And other fraudulent practices involved in payroll preparation. It is sad to note that the last two reasons was responsible for the lay off of eight staff members from the Accounts department of the college towards the end of last year.

#### 2.2.2 HOW SIGNIFICANT IS THE PROBLEM

This problem is significant in the sense that many times staff members go to the bank to collect their salary only to discover that their names are omitted from the voucher. In some cases payment is delayed for days due to computation error on the payslip sent to the bank in respect of staff members operating with the particular bank. This usually require that the payslip be sent back to the college for reconcilliation. Similarly the frequency of these problems causes alot of concern and embarrasment to staff members as some of those interviewed put it. Some suggested that something drastic has to be done. While some are of the opinion that more competent hands be employed, others are saying that it will be better to automate the system as this will minimize the above problems to a great extent.

In the course of the investigation, the interview method was used principally side by side with observational techniques. The interview method was so chosen because it gave the analyst the opportunity to interact with the system and its operators. The

observational technique also gave the analyst the opportunity to have a first hand information as regards the problem. Infact, when the analyst went to the bank on Thursday the 4th of March, 1994, he fell a victim as his account number was wrongly posted. It took sometimes before the bank agreed that the salary was in my name but under a different account number, is my own.

### 2.3.1 WHAT IS BEING DONE

In the present system, the preparation of payroll begins with the issuance of an authority for variation in payment (APV) from the administration. This is the authority that tells the people in the Bursary department to go ahead and prepare salary in respect of staff members. The basic information usually required includes staff name, department, nature of employment and grade level. With these and other relevant information from the personal data file a salary card is opened. Payments, allowances and deductions are calculated manually.

At the end of the preparation of vouchers and summaries, they are made to pass through the Senior Accountant, the Internal Auditor and finally the Bursar. At the end these vouchers are sent to the Ministry of Finance for further clearance and authority for cheques to be paid.

A payslip is prepared in respect of staff members operating the same bank and the cheques covering their salaries are sent.

### 2.4 FEASIBILITY STUDY

The project was tested for the 3-all important criteria for feasibility study which include:

Operational feasibility.

Technical feasibility and

Economic or financial feasibility.

### OPERATIONAL FEASIBILITY

Operationally, this project is feasible in the sense that investigation revealed that all those concerned with operation as well as the end users of this system have strongly recommended a desire to have an automated system. In the same vein, no harm will be done to members of staff - the accounting assistants as well as academic and non-academic members when the system is eventually installed.

### TECHNICAL FEASIBILITY

The project is also technically feasible. For example the school already has some IBM PC's and some staff members who are competent to handle the machines. Also the available software and hardware technologies have made it more desirable than the old system. If the school grows in the future as it is being planned now, it will be possible to expand the system.

### ECONOMIC FEASIBILITY

Economically, the project is feasible. This is because from the fact finding, the school management has shown a desire to automate the system. This is with a view to correcting errors of the past and the urge to move with the society in area of information processing. Again, because the school is somehow autonomous, it enjoys grants from government for capital and worth while projects.

Also, since the school already have the required human ware and some of the hardware and softwares, it will be less expensive to carry out the project.

### SIZE OF PROJECT

Presently the school has about 400 staff on its payroll. This is made up of academic and non-academic staff members whose payroll are prepared monthly. The project is expected to take

a period of 3 months broken down into the following subdivisions of processes, time and people. These are spelt out in this analysis.

PROCESSES	TIME (WEEKS)	NO	OF	PEOPLE
System Analysis and Requirement determination	3		2	
System Design	3		2	
Development and Implementation	<u>6</u>		3	
Total	<u>12</u>			

#### 2.5 COST AND BENEFITS OF THE PROPOSED SYSTEM

The proposed system will use hardware, software and human aware to accomplish its task. The projected cost of development are as follows:-

<u>SYSTEM START-UP COSTS</u>	AMOUNT (₹)
<u>DEVELOPMENT</u>	
System analysis and requirement determination (3 weeks)	6,000.00
System Design (3 weeks)	9,000.00
Development and Implementation (6 weeks)	20,000.00

INDIRECT COST FOR STAFF PERSONNEL

Equipment purchase	100,000
2 IBM PC's 486	
2 Display terminals @ 12,000 naira each	24,000
1 line printer at 10,000	10,000
Computer Furniture	20,000
Installation	5,000
Training Staff	<u>12,000</u>
Total start-up cost	<u>206,000</u>

SYSTEM OPERATING COSTS

Stationaries Supplies	
Ribbon, Paper, Diskette	
Equipment maintenance as well as program maintenance	<u>50,000</u>
Total operating cost	<u>50,000</u>

2.6 SYSTEMS BENEFITS

Though it is not immediately possible to quantify the gains, but definitely it will save cost.

It is also expected to remove data duplication. It will also enhance up to date information about staff members, and the cost for running the school, and other useful information for better planning.

### ALTERNATIVE SOLUTION

While some of the people feel that, an automated system should replace the existing manual system, some are of the opinion that more hands who are equally competent could be employed to correct the errors identified.

Similarly others still feel that the cost of software, hardware and the requirements in the area of training will make the project an uphill task but these group forms the minority.

It is however important to mention here that even when more hands are employed, it will still mean more expenses and the people could still collaborate to get involve in other fraudulent payroll practices which at the end will not have corrected anything.

### 2.7 RECOMMENDATION

Based on the report of the feasibility study, there is a concensus amongst the system analyst and those in the operation of the system on the need to automate the existing manual system of payroll preparation.

Judging from the available human and material resources, the college is in a position to embark on this project.

It is therefore recommended that the project of computerization of the Payroll system of the Niger State College of Education be carried out.

CHAPTER THREE

## 3.0

SYSTEM ANALYSIS

From the report of the feasibility study, it has been concluded that the inefficiency of the manual payroll preparation can be solved by automation that is computerising it. This Chapter is concerned with a detailed analysis of investigation and understanding of the old system to the extent that the analyst is able to assemble facts and recommendations for the design. The fact finding tools or techniques was used to determine the system requirements and its determination.

3.1 SOURCE OF DATA

Findings about basic organisation requirement showed that the Bursary Department of the College is charged with the responsibility of handling the payroll and all forms of financial accounting. It was also revealed that the preparation of the payroll is handled by two accounting assistants under the supervision of a Senior Accountant, Internal Auditor and the Bursar.

The business of payroll preparation starts from the receipt of authority to prepare variation order (APV) from the administration. Once this is received they now go into action by using desk calculators to compute salaries, allowances, deductions as may be reflected on the information provided on the salary record card.

Once these computations are completed, they are entered into the payroll summary sheet which can accommodate up to 10 in a group with all information concerning payment about them.

The vouchers are now passed on to the Internal Auditor who checks and sends it to the Bursar for further checking. When all the entries have been validated, they are now sent to the Ministry

of Finance for approval and issuance of clearance for payment. When the vouchers and cheques prepared are returned and certified, they are now taken to the Provost to sign. After the Provost has signed, the cheques are now distributed to the various banks. Those for cash payments are paid by the accounting assistants. The source of data used are all within the system.

### 3.2 OUT PUT FORM

In its present form, the output is usually in the form of prepared payslips in respect of staff members put together in groups on the basis of the bank with which they operate. The user transaction requirement entails that these payrolls should be done effectively, promptly and error free. It is also a requirement that they generate monthly report interms of bank payments and departmental summaries.

However findings revealed that many times these requirements are short of expectations. This happens in areas of salary exchanges amongst staff, exchange of names and duplication in some cases. Since no payslip is sent to the staff, the staff only go to the bank to face embarrassments of all sort.

To find out the details of payment and deductions for a given staff, that staff has to go to the bursary department. In some cases, the accounting staff members deliberately disappears so that they will not be bordered with having to check details of payment for members of staff. Occassionally when they are available, they are either too tired and atimes do not co-operate with staff members as a result of pressure from members of staff trooping in and out to check their payslip for the month.

### 3.3 INPUT, OUTPUT FOR THE PROPOSED SYSTEM

Based on the detail analysis of data collection and processing using the manual system of payroll preparation, the following input output form is recommended.

#### INPUT

Under the new Input form, payroll data will be obtained from the administration and such data will be keyed into the computer via the keyboard. These data are also to be verified for correctness. This will be done by computer operators who have been trained. Inputs such as earnings, tax loan, etc. will be provided from the staff record and this will consist of all personal file and the payment records.

#### OUT PUT

The out put for the this system will include amongst others one payslip for each staff members, which should include the following details. Staff Name, Department as well as the staff personnel subhead number. Other details will include payments, deductions, and payment history.

Output like report concerning the total salary paid, departmental summaries will also be provided.

### 3.4 SECURITY MEASURE

There is a need for control to solve the problem of authorized persons getting into the computer payroll software.

1. There is need to include (pass word) to prevent access to the program.
2. Similarly important program modules like Edit should not be allowed into except the operator.
3. The Password and the other hand should not be too simple that one can guess at easily.
4. There should be clear instruction on Notice Board preventing non-staff from going to the system.

## 4.0

The system design phase attempts to answer the question "how should the problem be solved"? The starting point occurs at the hardware selection phase which forms the body part of the feasibility study. This chapter now takes up the aspect of stages in software development based on the analysis carried out earlier. Thus the following objectives are important in this study.

1. To specify logical design elements. These includes detailed specification for the new system describing features such as input, output, procedures, files and databases to meet system requirement.
2. To ensure that the new system supports the organisation's performance.
3. To meet users requirements on performing appropriate procedure correctly, present proper form of information, getting result and to be seen as a reliable system.
4. To provide ease of usage and meet up with the expectation.
5. To provide finally software specification.

Similarly to ensure that the system functions effectively the following criteria were also considered. These include:-

Efficiency

Maintainability.

Flexibility and

Security of the system.

In the area of efficiency, controls that ensure that data are entered correctly and validated are provided. Similarly all the system and the accessories are to be the exact specification as recommended by the analyst.

The system is also designed to be user friendly. In this regard it is designed to be MENU driven. This allows the operator

a choice of different transactions for implementation.

On the other hand the criterion of maintainability recommends regular servicing of the hardware as well as replacement of deficient parts and also ensuring that the appropriate spare parts are used all the time.

Also the system is made flexible in the sense that the software is to be installed in IBM PC's.

On the question of security the operator must enter the correct pass word to be able to have access to the records. Again only those who are directly concerned with the preparation of payroll are allowed to have access to the database.

#### 4.1 SELECTION OF LANGUAGE FOR SOFTWARE DEVELOPMENT

In the development of this application software a number of available computer languages was open to the analyst. Some of these computer languages include FORTRAN, COBOL BASIC, PASCAL, ALGOL and DBASE to mention but a few. While it is possible to use any of these languages in developing this application program, the Dbase was selected as the language used. This is because of some of the advantages it has over other languages. It is flexible and easy to understand for both the computer trained mind and the layman. In addition to the above it has the following advantages:-

reduce data duplication and inconsistency

increase data shareability

increase speed in implementing systems

ease file access by programmers

Provide a management view of an organisation and these objectives perfectly agree with the objectives of the organisation  
- the Niger State College of Education Minna.

## 4.2 DESIGN OF THE NEW INPUT AND OUTPUT SYSTEM

### INPUT

Under the New system, we will require complete computerisation. However, data records about individual staff will be entered into the computer via the computer keyboard manually. The data to be entered will include all relevant information about a staff and this will form the database.

The New Input form always prompts the user a question or questions and waits for response. This is done either by pressing key strokes or typing in a few words. The questions come under the following fields. The details of this are shown in Appendix

Staff Name

Personal subhead number (PSN), various allowances and deductions as well as basic information about the staff.

### OUT PUT

On successful response to the above questions, the computer will now prompt the operator to a menu list of options to select from. These options include View record, Add record, Update record, Delete record, Generate report or exit depending on the alternative options selected by the operator. The computer now responds to any of this options. See appendix.

## 4.3 FILE CREATION PROCESS

In creating files, a database structure is first created in which data items are grouped into their data Name, type and width as the case is.

After this, series of programs was now written in modules to generate the required output. Elements that are highly related were kept in the same module in order to maximize Cohesion. The following shows the file names, type, and width as the case is. All these formed the database files.

Data Base Structure

FIELD NAME	TYPE	WIDTH	DEC
1. SURNAME	C	10	
2. OTHER NAMES	C	10	
3. FILE-NO	C	8	
4. HOME ADDRESS	C	25	
5. BIRTH DATE	D	8	
6. QUALIFICATION	C	10	
7. GRADE LEVEL	N	2	
8. STEP	N	2	
9. BASIC SALARY	N	8	2
10. PSN	N	6	
11. DATE EMPLOYED	C		
12. NATURE OF EMPLOYMENT	C	10	
13. DEPARTMENT	C	10	
14. BANK	C	10	
15. BANK-CODE	N	2	
16. ACCOUNT NO	C	10	
17. INCREMENTAL DATE	D	8	
18. RANK	C	10	
19. NATIONALITY	C	10	
20. STATE OF ORIGIN	C	10	
21. NON-NIGERIAN	C	10	
22. LOCAL GOVERNMENT AREA	C	10	
23. NEXT OF KIN	C	15	
24. TRANS. ALLOWANCE	N	8	2
25. MEALS SUBSIDY	N	8	2
26. UTILITY ALLOWANCE	N	8	2
27. EXAM. ALLOWANCE	N	8	2

FIELD NAME	TYPE	WIDTH	DEC.
28. RESEARCH ALLOWANCE	N	8	2
29. L/SOCIETY ALLOWANCE	N	8	2
30. RESPONSIBILITY "	N	8	2
31. SCIENCE/MATHS "	N	8	2
32. TAX	N	8	2
33. UNION DUES	N	8	2
34. LOAN	N	8	2
35. RENT	N	8	2
36. TAX RELIEF	N	8	2
37. TAXABLE GROSS TO DATE	N	8	2
38. RELIEF PAY TO DATE	N	8	2
39. TAX DUE TO DATE	N	8	2
40. TAX PAID SINCE JAN.	N	8	2

A message will now appear on the screen asking the user to supply the current date and time. The date should be typed in American format is month, day and year (mm-dd-yy) and press return. Similarly, the time also should be typed in American format, hour minute and seconds.

After pressing the return key, the dos prompt appear with the blinking underscore called cursor i.e A:> - and C:> - if it is on the hard disk.

In the next step, remove, the DOS diskette in drive A: and insert the application program diskette and type PAYROLL and press Return key.

A working floppy diskette should now be inserted to either drive A: or B: or a directory is needed in the hard disk e.g PAY <DIR> so as to save the current job.

Now that the program is running, the user is welcome to the package and require to press [ENTER key]. A menu now appears asking the user whether to go through the documentation or skip it. Then another message appears reminding the user to type in the PASSWORD. If the correct Password is typed, the main menu of the package would appear with options. However if the user is unable to type the correct Password after three attempts, then a message appears advising the user to seek for permission from the appropriate authority.

The main menu enable the user to select within the range listed below:

a	View	Record
b	Add	"
c	Update	"
d	Delete	"
e	Report	"
f	Exit	"

On successful typing of the first letter of the option, a screen is opened and this will allow the user to view staff record. As the user responds to the appropriate question every time, he can go through the options and each time the computer will instruct the user what to do to exit a particular menu or get back to the dot prompt.

The programs for the various modules are attached in the appendix.

#### 4.4 DOCUMENTATION

This has to do with providing adequate information about a system in terms of its hardware and software components. The hardware selection was dealt with in detail under the system specification. The specification of this application software is as follows:

AUTHOR: MR. SOJE ERNEST FOLORUNSHO  
DEPARTMENT OF MATHEMATICS,  
COLLEGE OF EDUCATION, P.M.B. 39, MINNA.

PROGRAM NAME: COMPUTERISED PAYROLL SYSTEM

INSTALLATION: IBM AND IBM COMPATIBLES

ENVIRONMENT: BOTH SOURCE AND OBJECT COMPUTER

DATE WRITTEN: FEBRUARY 1994

SECURITY: PASSWORD

REMARK: THE PROGRAM IS WRITTEN TO SOLVE GENERAL  
PAYROLL PROBLEM FOR NIGER STATE COLLEGE OF  
EDUCATION AND ANY RELATED ORGANISATION THAT  
MAY FIND THE SOFTWARE USEFUL.

#### HOW IT FUNCTIONS

This application program comes in floppy diskette and it needs to be loaded into the computer memory before operation.

#### Steps

Insert your MS-DOS diskette in drive A and close the drive. On the other hand if MS-DOS is already installed in the hard disk (C:) do not insert in drive A. You can then go to the next step.

In the second step put on the main switch on power from the main socket and then switch on the computer (CPU) and the monitor to boot the system. On the other hand, if in the hard disk, the same procedure should be followed until C:> appears on the screen.

## \*\*\*\*\*MAIN MENU PROGRAM\*\*\*\*\*

```
set talk off
set status off
set echo off
set bell off
DO WHILE .T.
CHOICE = " "
SET COLO TO W/B+
@1,10 TO 3,70 DOUBLE
@2,12 SAY "ADD"
@2,18 SAY "DELETE"
@2,26 SAY "UPDATE"
@2,35 SAY "VIEW"
@2,43 SAY "REPORT"
@2,51 SAY "EXIT"
SET COLO TO R+
@2,12 SAY "A"
@2,18 SAY "D"
@2,26 SAY "U"
@2,35 SAY "V"
@2,43 SAY "R"
SET COLO TO W/B+
@12,25 SAY "ENTER YOUR CHOICE" GET CHOICE PICT "@A!"
READ
DO CASE
CASE CHOICE = "A"
DO ADDPROG
CASE CHOICE = "D"
DO DELET
CASE CHOICE = "U"
DO UPDATE
CASE CHOICE = "V"
DO VIEW
CASE CHOICE = "R"
DO RMENU
CASE CHOICE = "E"
EXIT
OTHERWISE
LOOP
ENDCASE
ENDDO
CLOSE DATABASES
RETURN
```

\*\*\*\*\*PROGRAM THAT ADD RECORD\*\*\*\*\*

```

SET TALK OFF
SET ECHO OFF
SET BELL OFF
SET STAT OFF
SET SCOR OFF
CLEAR
SELECT 1
USE PERSONNE
SELECT 2
USE PROCESS
*SELECT 3
*USE BANKFILE
MORE = .T.
DO WHILE MORE
CLEA
STORE SPACE(25) TO MHADDRESS
STORE SPACE(15) TO MSNAME,MONAMES,MDEPT,MNEMPLMT , MNKIN , MRANK,MQUALIF
STORE SPAC(10) TO MNATION,MSORIGIN,MLGA
STORE SPACE(8) TO MFNO , MACCT
STORE CTOD(" / / ") TO MBDATE , MDEMPLD , MINCREMT
MBNAME=SPACE(15)
MNPAY=0
MBCODE=0
MBSAL=0
MPSN = 0
MSTEP = 0
MGRDLEVEL =0
DO WHILE .T.
ENTR = " "
DO ADDFMT
READ
@24,25 SAY " ENTRY CONFIRMED ? (Y/N) " GET ENTR PICT "A"
READ
IF UPPER(ENTR) = "N"
LOOP
ELSE
IF UPPER(ENTR) = "Y"
EXIT
ENDI
ENDI
ENDDO
SELECT 1
APPE BLANK
REPL SNAME WITH MSNAME
REPL ONAMES WITH MONAMES
REPL FILENO WITH MFNO
REPL HADDRESS WITH MHADDRESS
REPL BIRTHDATE WITH MBDATE
REPL QUALIF WITH MQUALIF
REPL GRDLEVEL WITH MGRDLEVEL
REPL STEP WITH MSTEP
REPL PSN WITH MPSN
REPL DEMPLD WITH MDEMPLD

```

```

REPL NEMPLMT WITH MNEMPLMT
REPL DEPT WITH MDEPT
REPL RANK WITH MRANK
REPL BNAME WITH MBNAME
REPL ACCTNO WITH MACCT
REPL INCREDATE WITH MINCREMT
REPL SORIGIN WITH MSORIGIN
REPL NATIONAL WITH MNATION
REPL LGA WITH MLGA
REPL NOFKIN WITH MNKIN
REPL BSAL WITH MBSAL
SELECT 2
USE PROCESS
  APPE BLANK
    REPL PSN WITH MPSN
*SELE 1
  IF MGRDLEVEL >= 1 .AND. MGRDLEVEL <= 6
    REPL TAX WITH (0.01*BSAL)/100
  ENDIF
  IF MGRDLEVEL >= 7 .AND. MGRDLEVEL <= 15
    REPL TAX WITH (0.1*BSAL)/100
  ENDIF
*SELE 2
*APPE BLANK
*REPL PSN WITH MPSN
  IF MGRDLEVEL >= 15
    REPL UTILITY WITH 100.00
  ENDIF
  IF MGRDLEVEL = 14 .OR. MGRDLEVEL = 15
    REPL UTILITY WITH 80.00
    REPL MSUBSIDY WITH 200.00
  ENDIF
  IF MGRDLEVEL >= 13
    REPL TRANS WITH 304.50
    REPL RENT WITH 555.00
    REPL MSUBSIDY WITH 100.00
    REPL RESEARCH WITH 125.00
  ENDIF
  IF MGRDLEVEL < 13 .AND. MGRDLEVEL >= 9
    REPL TRANS WITH 243.00
    REPL RENT WITH 477.45
  ENDIF
  IF MGRDLEVEL <= 13 .AND. MGRDLEVEL = 12
    REPL UTILITY WITH 60.00
  ENDIF
  IF MGRDLEVEL = 11 .OR. MGRDLEVEL = 12
    REPL RESEARCH WITH 104.00
  ENDIF
  IF MGRDLEVEL = 10 .OR. MGRDLEVEL = 11
    REPL UTILITY WITH 40.00
  ENDIF
  IF MGRDLEVEL <= 12 .AND. MGRDLEVEL = 6
    REPL MSUBSIDY WITH 90.00
  ENDIF
  IF MGRDLEVEL <= 8 .AND. MGRDLEVEL = 6

```

```
REPL TRANS WITH 211.50
ENDIF
IF MGRDLEVEL <=8 .AND. MGRDLEVEL = 7
  REPL RENT WITH 370.50
ENDIF
IF MGRDLEVEL <=9 .AND. MGRDLEVEL = 6
  REPL UTILITY WITH 25.00
ENDIF
IF MGRDLEVEL <= 9 .AND. MGRDLEVEL = 7
  REPL RESEARCH WITH 83.33
ENDIF
SELE 3
APPE BLANK
  REPL SNAME WITH MSNAME, PSN WITH MPSN, ONAMES WITH MONAMES
  REPL BCODE WITH MBCODE, NPAY WITH MNPAY, BNAME WITH MBNAME
  @23,25 CLEA TO 23,55
  @24,25 SAY " ANY MORE ENTRY?[Y/N]" GET MORE
  READ
  ENDDO
CLOSE DATABASES
CLEA
RETURN
```

\*\*\*\*\*PROGRAM TO DELETE A RECORD\*\*\*\*\*

```

CLEA
SET TALK OFF
SET STATUS OFF
SET ECHO OFF
SET BELL OFF
CLEA
DO WHILE .T.
  SELE 1
  USE PERSONNE
  SELE 2
  USE PROCESS
  MPSN = 0
  SET COLOR TO W/R+,W/B+
  CLEAR
  @12,25 SAY "ENTER STAFF P S N" GET MPSN PICT "999999"
  READ
  LOCATE FOR PSN=MPSN
  SET COLOR TO G/R+
  IF FOUND()
    CLEA
    @10,6 SAY "STAFF PSN IS: "+STR(PSN)
    WAIT""
    SET COLO TO W/B+
    @15,6
    PROMPT=.T.
    ACCEPT "ARE YOU SATISFY (Y/N) " TO PROMPT
    SET COLO TO
    IF PROMPT="Y"
      DELETE
      PACK
      CLEA
      Return
    ELSE
      CLEA
      LOOP
  ENDI
ELSE
  CLEA
  SET COLO TO W/B*
  @10,6 SAY "RECORD NOT FOUND "
  SET COLO TO
  @20,25 SAY "Press ANY key to continue..."
  SET CONSOLE OFF
  WAIT
  SET CONSOLE ON
  CLEA
  AN=""
  @15,6
  ACCEPT "DO YOU WANT TO TRY AGAIN (Y/N) " TO AN
  IF AN="Y"
    CLEA
    LOOP
  ELSE
    CLEA

```

```
    RETURN  
  ENDI  
ENDIF  
ENDD  
SET TALK ON  
SET STATUS ON  
SET BELL ON  
CLEA  
RETURN
```

\*\*\*\*\*PROGRAM TO UPDATE STAFF RECORD\*\*\*\*\*

```

SET TALK OFF
SET ECHO OFF
SET BELL ON
SET STATUS OFF
SET SCOR OFF
CLEA
USE PERSONNE
MORE =.T.
NO=" "
@10,20 SAY "DO YOU WANT TO UPDATE A RECORD?(Y/N)" GET MORE
READ
DO WHILE MORE
CLEA
@12,20 CLEA TO 18,60
@13,22 SAY "EDIT PERSONNEL RECORD"
@16,22 SAY "ENTER PERSONNEL CODE"
MPSN=0
@18,25 GET MPSN
READ
LOCATE FOR MPSN =PSN
IF .NOT. FOUND()
@ 16,22 CLEA TO 17,59
EF=0
@15,25 SAY "NO SUCH RECORD"
DO WHILE EF<=50
EF=EF+1
ENDDO
CLEA
?
?
WAIT
LOOP
ENDIF
CLEA
DO WHILE .T.
@1,1 TO 23,78 DOUBLE
@2,20 SAY "NIGER STATE COLLEGE OF EDUCATION MINNA"
@5,2 SAY "SURNAME:" GET SNAME
@5,35 SAY "OTHER NAMES:" GET ONAMES
@7,2 SAY "FILE NO:" GET FILENO
@7,22 SAY "DATE OF BIRTH:" GET BIRTHDATE
@7,47 SAY "QUALIFICATION:" GET QUALIF
@9,2 SAY "HOME ADDRESS:" GET HADDRESS
@9,50 SAY "DATE EMPLOYED:" GET DEMPLD
@11,2 SAY "NATURE OF EMPLOYMENT:" GET NEMPLMT
@11,48 SAY "DEPARTMENT:" GET DEPT
@13,2 SAY "RANK:" GET RANK
@13,24 SAY "GRADE LEVEL:" GET GRDLEVEL
@13,43 SAY "STEP:" GET STEP
@15,35 SAY "BNAME" GET BNAME
@17,60 SAY "P S N : " GET PSN PICT "999999"
@13,56 SAY "ACCOUNT NO:" GET ACCTNO
@15,2 SAY "INCREMENTAL DATE:" GET INCREDATE

```

READ  
ENDDO  
CLOSE DATABASES  
SET TALK ON  
SET BELL ON  
SET STATUS ON  
RETURN

\*\*\*\*\*PROGRAMME TO VIEW RECORD\*\*\*\*\*

```

SET TALK OFF
SET ECHO OFF
SET BELL ON
SET STATUS OFF
SET SCOR OFF
CLEA
USE PERSONNE
MORE =.T.
NO=" "
@10,20 SAY "DO YOU WANT TO VIEW RECORD?(Y/N)" GET MORE
READ
DO WHILE MORE
CLEA
@12,20 CLEA TO 18,60
@13,25 SAY "VIEWING RECORD"
@16,22 SAY "ENTER PERSONNEL CODE"
MPSN=0
@18,25 GET MPSN
READ
LOCATE FOR MPSN =PSN
IF .NOT. FOUND()
@ 16,22 CLEA TO 17,59
@15,28 SAY "NO SUCH RECORD"
@16,25 SAY "PRESS ANY KEY TO CONTINUE"
WAIT " "
LOOP
ENDIF
CLEA
@1,1 TO 23,78 DOUBLE
@2,20 SAY "NIGER STATE COLLEGE OF EDUCATION MINNA"
@5,2 SAY "SURNAME:" + SNAME
@5,35 SAY "OTHER NAMES:" + ONAMES
@7,2 SAY "FILE NO:" + FILENO
@7,25 SAY "DATE OF BIRTH:" + DTOC(BIRTHDATE)
@7,50 SAY "QUALIFICATION:" + QUALIF
@9,2 SAY "HOME ADDRESS:" + HADDRESS
@9,50 SAY "DATE EMPLOYED:" + DTOC(DEMPLD)
@11,2 SAY "NATURE OF EMPLOYMENT:" + NEMPLMT
@11,55 SAY "DEPARTMENT:" + DEPT
@13,2 SAY "RANK:" + RANK
@13,24 SAY "GRADE LEVEL:" + LTRIM(STR(GRDLEVEL))
@13,46 SAY "STEP:" + LTRIM(STR(STEP))
@15,35 SAY "BNAME" + BNAME
@11,40 SAY "PSN:" + LTRIM(STR(PSN)) PICT "999999"
@13,58 SAY "ACCOUNT NO:" + ACCTNO
@15,2 SAY "INCREMENTAL DATE:" + DTOC(INCREDATE)
@17,2 SAY "NATIONALITY:" + NATIONAL
@17,30 SAY "S-ORIGIN:" + SORIGIN
@19,2 SAY "LOCAL GOVERNMENT AREA:" + LGA
@19,42 SAY "NEXT OF KIN:" + NOFKIN
@15,60 SAY "BANKCODE:" + STR(BCODE)
@23,25 CLEA TO 23,55
@23,25 SAY "ANY MORE RECORD TO VIEW? (Y/N)" GET MORE

```

```
@17,2 SAY "NATIONALITY:" GET NATIONAL
@17,30 SAY "S-ORIGIN:" GET SORIGIN
@19,2 SAY "LOCAL GOVERNMENT AREA:" GET LGA
@19,42 SAY "NEXT OF KIN:" GET NOFKIN
@15,60 SAY "BANKCODE:" GET BCODE
READ
@23,25 SAY "ENTRY CONFIRMED ? (Y/N) " GET NO
READ
IF UPPER(NO)= "N"
LOOP
ELSE
IF UPPER(NO) = "Y"
EXIT
ENDIF
ENDIF
ENDDO
@23,25 SAY "ANY MORE RECORD TO EDIT ? (Y/N)" GET MORE
READ
ENDDO
CLOSE DATABASES
SET TALK ON
SET BELL ON
SET STATUS ON
```

## \*\*\*\*\*PROGRAM THAT PRINT PAYSLIP\*\*\*\*\*

```

SET BELL OFF
SET SCOREBOARD OFF
SET ECHO OFF
SET TALK OFF
MONT = CTOD(" / / ")
OUT = " "
@12,20 TO 18,60
@13,22 SAY "PRINT STAFF PAYSLIP "
@15,22 SAY "ENTER DATE OF PAYMENT " GET MONT
@16,22 SAY "SEND OUTPUT TO PRINTER " GET OUT
READ
CLEA
SELECT 1
USE PERSONNE
SELECT 2
USE PROCESS
IF OUT = "Y"
SET DEVI TO PRINT
ENDIF
SELECT 1
DO WHILE .NOT. EOF()
SELE 1
R=1
@ROW(),10 SAY "NIGER STATE COLLEGE OF EDUCATION MINNA:"
@ROW()+2,15 SAY "PAYSLIP FOR "
@ROW(),28 SAY CMONTH(MONT) + ", " + STR(YEAR(MONT),4)
@ROW()+2,10 SAY "DEPARTMENT:" + LTRIM(DEPT)
@ROW()+2,10 SAY "BNAME      " + BNAME
@ROW()+1,10 SAY "PSN:      " + LTRIM(STR(PSN))
@ROW(),25 SAY "STAFF NAME:" + LTRIM(SNAME) + TRIM(ONAMES)
@ROW()+2,5 SAY "PAYMENTS:"
@ROW(),20 SAY "AMOUNT"
@ROW(),30 SAY "DEDUCTIONS"
@ROW(),42 SAY "AMOUNT"
@ROW(),50 SAY "PAYMENT HISTORY"
@ROW(),67 SAY "AMOUNT:"
@ROW()+2,5 SAY "BASIC SALARY:"
@ROW(),20 SAY STR(BSAL,6)
SELE 2
@ROW(),30 SAY "TAX:"
@ROW(),40 SAY TAX
@ROW(),50 SAY "TAX RELEIF:"
@ROW(),65 SAY TRELIEF
@ROW()+1,5 SAY "TRANS ALLOCE:"
@ROW(),18 SAY TRANS
@ROW(),30 SAY "CAR REFURB:"
@ROW(),40 SAY CREFURB
@ROW(),50 SAY "TAX DUE DATE"
@ROW(),65 SAY PH_TAX_DAT
@ROW()+1,5 SAY "MEAL SUBSIDY:"
@ROW(),20 SAY MSUBSIDY
@ROW(),30 SAY "UNION DUE"
@ROW(),40 SAY UDUUE
@ROW(),50 SAY "PH_DATE"

```

```
@ROW(),65 SAY PH_RE_DATE
@ROW()+1,5 SAY "UTILITY"
@ROW(),20 SAY UTILITY
@ROW(),30 SAY "RENT"
@ROW(),40 SAY RENT
@ROW(),50 SAY "TAX TO DATE"
@ROW(),65 SAY PH_TAX_DD
@ROW()+1,5 SAY "EXAM ALLOCE"
@ROW(),20 SAY EXAM
@ROW(),50 SAY "PH_TAX_SINCE JAN"
@ROW(),65 SAY PH_TPSJA
@ROW()+1,5 SAY "RESEARCH ALLOCE"
@ROW(),20 SAY RESEARCH
@ROW()+1,5 SAY "LEARNED SOCIETY"
@ROW(),20 SAY LSOCIETY
@ROW()+1,5 SAY "RESPONSI ALLOCE"
@ROW(),20 SAY RESPONSI
@ROW()+1,5 SAY "SCMATH ALLOCE"
@ROW(),20 SAY SCMATH
WAIT
CLEAR
A=0
SELE 1
A=A+BSAL
SKIP
SELE 2
A =A+TRANS+UTILITY+MSUBSIDY+EXAM+RESEARCH+LSOCIETY+RESPONSI+SCMATH
B=0
B= TAX+UDUE+CREFURB
C=0
C=A-B
@ROW()+1,45 SAY "NET PAY = " + LTRIM(STR(C,8))
SKIP
ENDDO (WHILE .NOT. EOF())
SET DEVI TO SCREEN
RETURN
```

## \*\*\*\*\*BANK SUMMARY PROGRAM\*\*\*\*\*

```

CLEA
SET TALK OFF
SET BELL OFF
SET ECHO OFF
SET STATUS OFF
SELE 2
USE PERSONNE
SELE 3
USE PROCESS
GO TOP
SELE 2
SET FILTER TO BCODE=PERSONNE->BCODE
set safety off
set safety on
CLEA
SET COLO TO GB+
@ 3,25 SAY "NAME OF BANK :"+PERSONNE->BNAME
@ 4,25 SAY REPL("=",18)
@ 7,2 SAY "S/NO"
@ 8,2 SAY REPL("=",4)
@ 7,10 SAY "SURNAME "
@ 8,10 SAY REPL("=",7)
@ 7,30 SAY "BCODE"
@ 8,30 SAY REPL("=",9)
@ 7,50 SAY "DEPT"
@ 8,50 SAY REPL("=",10)
@ 7,65 SAY "NETPAY"
@ 8,65 SAY REPL("=",8)
A=10
GO TOP
N=0
BS=0
DO WHILE .NOT. EOF()
SELE 2
@ A,2 SAY STR(RECNO(),2)
@ A,10 SAY TRIM(SNAME) + " " + ONAMES
@ A,30 SAY BCODE
@ A,50 SAY DEPT
@ A,65 SAY NPAY
A=A+1
N=N+1
BS=BS+NPAY
SKIP
ENDD
@A+2,5 SAY "TOTAL:"
@A+1,2 SAY N
@A+2,62 SAY BS
SET COLO TO
CLOSE DATA
RETURN
SET TALK ON
SET BELL ON
SET STATUS ON
RETURN

```

## CHAPTER FIVE

## 5.0

SYSTEM IMPLEMENTATION

The implementation phase has to do with the actual execution of the design. This is to allow for a test of the effectiveness or otherwise of the Input and Output data items used in the system. Under the system implementation, the needs for training, hardware, software supports and conversion plans are discussed.

5.0.1 TRAINING

This involves the training needs to be provided to some personnel who will operate the new system. At the feasibility phase we identified that the college already has some manpower in some areas of operation. However, there is still a need for training the following:

- (a) A Computer Operator
- (b) Data Entry Personnel and
- (c) A Programmer

This is to complement the efforts of existing staff members in these areas.

5.1 HARD WARE SUPPORT

These are the physical components found in the computer environment. Their support is important for the execution of this application program. They include:

1. Micro Computer P C's, configuration of IBM compatibles.
2.  $3\frac{1}{2}$  and  $5\frac{1}{4}$  floppy drive and floppy diskettes are also required to process the job.
3. Computer stationaries such as computer papers for processing hard copy of the processed data.
4. An uninterrupted power supply (UPS) stabliser for regulating power supply.
5. The laser printer for print out.

## 5.2 SOFTWARE SUPPORT

Without the software, a computer system cannot function. [Ogundele, 1993] put it this way [Software] to the computer is like fuel to a care. It is made up of operating software which is made up of Programmes.

Operating software include transporting programmes (Compiler, Assembler) Development aids are various utilities (subroutines) service programs, diagnostic routines and Edit routines.

The DISK Operating System (DOS). A disk operating system uses program and procedure written to run a computer system. It is a series of programmes such that when executed controls the operating of the computer.

### FUNCTIONS OF THE OPERATING SOFTWARE (DOS)

1. It communicates with computer operators by means of the keyboard.
2. It supervises multi-programing operations such as running of each program, protecting each program's working store from overwriting.
3. It allocates peripherals to programs and checks for availability.
4. It warns operators when peripheral unit requires attention.

## 5.3 CONVERSION

This entails changing from the old system to the newly developed one. There are four main methods of carrying out this phase each with its own merit and de-merits.

The methods are .'. Parallel Method

Direct or Cut over

Pilot approach and

phased system method: Though each method has its own advantages and disadvantages of the Method.

### PARALLEL METHOD

In Parallel conversion approach, the old system is run side by side with new using exactly the same data. The result should be identical for a given complete processing circle.

This approach has a disadvantage in that two systems are operated simultaneously which means more expenses. Though expensive, the consequences of an untried system may be colossal and more expensive in the long run.

On the other hand, the approach has an advantage of the organisation being protected from an untried system. This is possible as the existing system still provides information necessary to the management.

### DIRECT APPROACH

In this kind of approach, the existing system is dismantled completely for the new system to replace. It has the advantage that when the old system is seriously inadequate or radically different from the new system, and the condition is so rapid it will not disrupt operations.

### PHASED CONVERSION

This approach integrates components of old into the new and vice versa. By this approach, the old system is phased out on a gradual basis. This is most suited to designs that are in hierarchical structure of related processing activities grouped together.

It has an advantage of cost minimisation as two systems are not operated together simultaneously.

Conversion in this sense, is gradual as part of the old system has computer support.

However, it has a major disadvantage of time consumption.

Similarly, the cost of maintenance of two system is enormous.

PILOT APPROACH

In this method, a working part of the new system is installed in part of the old system and depending on the agreement, the rest part is filled later.

RECOMMENDATION

The phase conversion approach is favoured and adopted in this work. This is because cost is minimized on external operators. In as much as the new system has been developed according to specification, because, it has to do with preparation of salaries, the old systems needs to be phased out gradually.

Similarly, the designed programs are in modules. If however, a module fails, it will be possible to correct it without its having adverse effect on the entire system.

Finally, I hereby recommend that the newly developed computerised payroll system be implemented by the college without delay. This is because its implementation will provide the management with accurate and reliable information pertaining to staff members at any given time.

Also, it will minimise to a great extent all fraudulent practices associated with payroll preparations.

## 5.5 CONCLUSION

The task of system development is not an easy one and in the development of this system, alot of huddles had to be scaled through before achieving success.

In this project, automation of the existing manual payroll system of the college was favoured and based on the recommendation of the feasibility study, a detail analysis of the system was done following the analysis, a design of a new system was carried out (the hardware, as well as the software). A database management system was used as the language in the software development. Various files were created, based on the data base structure and programs were written in modules to carry out different functions in the payroll preparation.

The software system has the facility to add record, view record, update record, delete record as well as generate report and finally an option to get exit or return to the DOS prompt.

Under the report generation, it is possible to print staff payslip as well as do bank listing. The bank listing will show at a glance, the number of people operating with a particular bank.

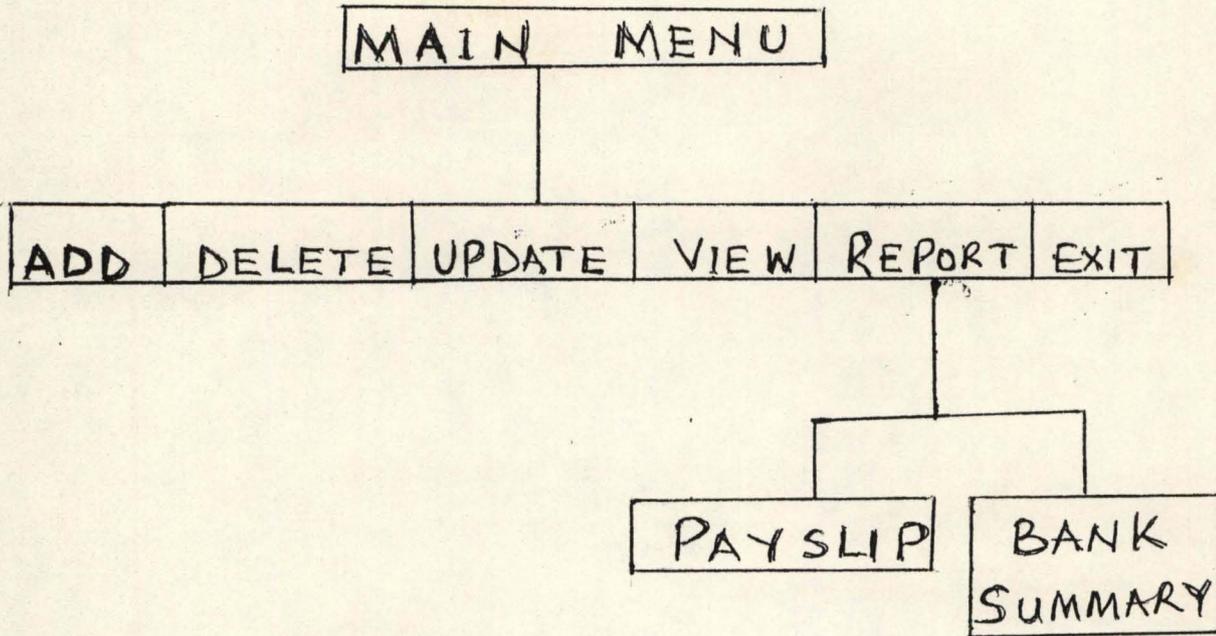
### LIMITATIONS

It would have been possible to offer more facilities using this software but time and finance are constraints and these have limited the number of facilities available to the user.

Finally, it is expected that this work will stimulate further research into improving this system.

# APPENDIX A

## DESIGN FORMAT



The design format shows a Payroll System with the following facilities.

1. View Record
2. Add Record
3. Delete Record
4. Update Record
5. Generate Report
6. Exit.

## APPENDIX B

### DEFINATION OF TERMS:

Constraint - A limitation or condition under which a system operates.

Control - Checks and procedures in a system which protects against the improper or fraudulent use of resources and data.

Feed back - The vehicle by which a system attempts to evaluate its own performance.

Problem Defination:- The segment of the system documentation which defines all the problem areas in an existing system as determined by an analyst.

System Over View - A written and tutorial representation of the Inputs and Outputs employed in a system.

Computer - Any device capable of accepting data information of an output. Store it, manipulate it and finally produce out an useful information in form of an output.

Computer System has three unique components ie.

- 1) Hardware
- 2) Software
- 3) Humanware

Hardware - This term is for all electronic and mechanical components of computer i.e physical components e.g keyboards.

Software - These are instructions or commands given to enable Hardware process data into desired output.

There are two main types of software i.e

- 1) System software
- 2) Application software

System Software: Are programs usually supplied by computer manufacturer e.g.

- 1) Operating System
- 2) Translators
- 3) Editors

BETA TEST: This is using software in a life environment.

CERTIFICATION TEST: This involves software endorsement for correctness.

Application Software: Programs written with a view to solving problems. It may appear in standard packages or locally developed.

Humanware: These are trained professionals operating the computer through the console, light switches, buttons etc.

Code Testing: This involves doing a logic test of a program to ensure its effectiveness.

Alpha Test: This is the execution of software in a simulated environment i.e using some assumptions with the aim of sporting errors.

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