

COMPUTERISATION OF THE PAYROLL SYSTEM
A CASE STUDY OF CENTRAL BANK OF
NIGERIA, MINNA

BY

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PGD/MCS/105/95/96

DEPARTMENT OF MATHEMATICS/COMPUTER SCIENCE,
FEDERAL UNIVERSITY OF TECHNOLOGY

DECEMBER, 1999

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A PROJECT SUBMITTED TO THE DEPARTMENT OF
MATHEMATICS/COMPUTER SCIENCE, FEDERAL
UNIVERSITY OF TECHNOLOGY, MINNA IN PARTIAL
FULFILMENT OF THE REQUIREMENTS FOR THE
AWARD OF THE POST GRADUATE DIPLOMA IN
COMPUTER SCIENCE.

DECEMBER, 1999

APPROVAL PAGE

This project has been approved by the undersigned, as meeting the requirements of the Department of Mathematics/Computer Science, Federal University of Technology

PRINCE R. BADMUS
PROJECT SUPERVISOR

DATE

DR. S. A. REJU
HEAD OF DEPARTMENT

DATE

EXTERNAL EXAMINER

DATE

DEDICATION

THIS PROJECT IS DEDICATED TO MY IMMEDIATE FAMILY
FOR THEIR LOVE AND CONCERN.

workers as this can be easily exposed. All these reasons necessitated the urgency of computerising the payroll system of the Central Bank of Nigeria.

1.1 PROBLEM DEFINITIONS

The payroll system of the Central Bank of Nigeria, Minna Branch, is at present being processed manually. It involves writing out the salary details of each and every staff and working out the various calculations involved manually.

This is rather very cumbersome way of processing staff salaries at this modern technological age.

The main thrust of this work is to devise a method of handling this important activity through the aid of modern computer, so that all the delays, omissions and over/short payments will be eliminated.

1.2 OBJECTIVES OF THE STUDY

Indeed, the main aims and objectives of the proposed payroll system for this large establishment include: -

- (a) To design a fully computerised payroll system for the bank so that the problems associated with the manual system can be solved.
- (b) To devise a system with universal application if certain minimal alternatives are effected.
- (c) To reduce in its entirety all forms of malpractice and fraudulent manipulations that leads to inflated wage bill in the usual manual system.
- (d) Relieve the staff of doing routine and monotonous work.
- (e) Provision of efficient and effective payment procedures to the entire staff of the establishment.
- (f) To eliminate totally the loss of records usually associated with handling of

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ABSTRACT

The project focuses more at using the relational database approach in designing an effective computerized payroll system for the organisation,

The organisation has been facing a lot of difficulties with the present (Manual) system of paying staff salaries and other allowances.

It is envisaged that full automation of the bank's payroll system will remove all delays. Lapses and problems that are being encountered in the manual system. This effort will be achieved using Dbase programming Language.

ACKNOWLEDGEMENT

To God, all glory is due. Your support over me has been tremendous. I am highly indebted to my project Supervisor, Prince R.O. Badamosi, a man of high intellect. Your concern for the entire students in the program is commendable. Despite your academic work load of imparting knowledge to other, you still found sufficient time to correct, offer suggestions and make the outcome of this work come out well. To our prince, salute your courage and tireless efforts to the huge success of the PGD programme.

I am profoundly grateful to Prof .K. R. Adeboye for his fatherly role to see to the huge success of this program. To the Lecturers who taught me, I salute your efforts and very highly honoured. Thanks for been there for us.

To my classmates, I say bravo. We all started well and ended well. To others too numerous to mention here, I say thanks to everyone.

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CHAPTER ONE

1.0 INTRODUCTION:

The main focus of this work is to introduce computers in the processing of the payroll system in the organization. The reason being that a computerized system is cost-effective and provides better information in terms of importance and speed wherever required.

Computers are able to assist management to project and analyse the effects of various alternative methods of processing information. Office automation systems are computer-based to enhance the effectiveness and productivity of people who work in offices. They need to learn new office skills and different ways of using new equipment's and procedures. Some of the skills they need to lean include; the preparation of the monthly salaries of workers in all the departments of the organization and keeping efficient records of the movement of cash and other valuables.

In all establishments, payment of workers salaries is done through the payroll system. The procedures of processing salaries of workers differs from our establishment to the other, however the process is basically the same.

In the processing of staff salaries, large amounts of data are being handled and from time to time, new records are added, some deleted while others are completely updated.

Besides, the personnel emolument cards and other payroll records are subjected to dust, wear and tear when office assistants are conveying them from accounts department to audit department for cross-checking. Also there is the problem of security for the data in the bin cards which contain details of salaries of various

staff salary cards every month.

1.3 METHODOLOGY

The project focuses more on the following procedures:-

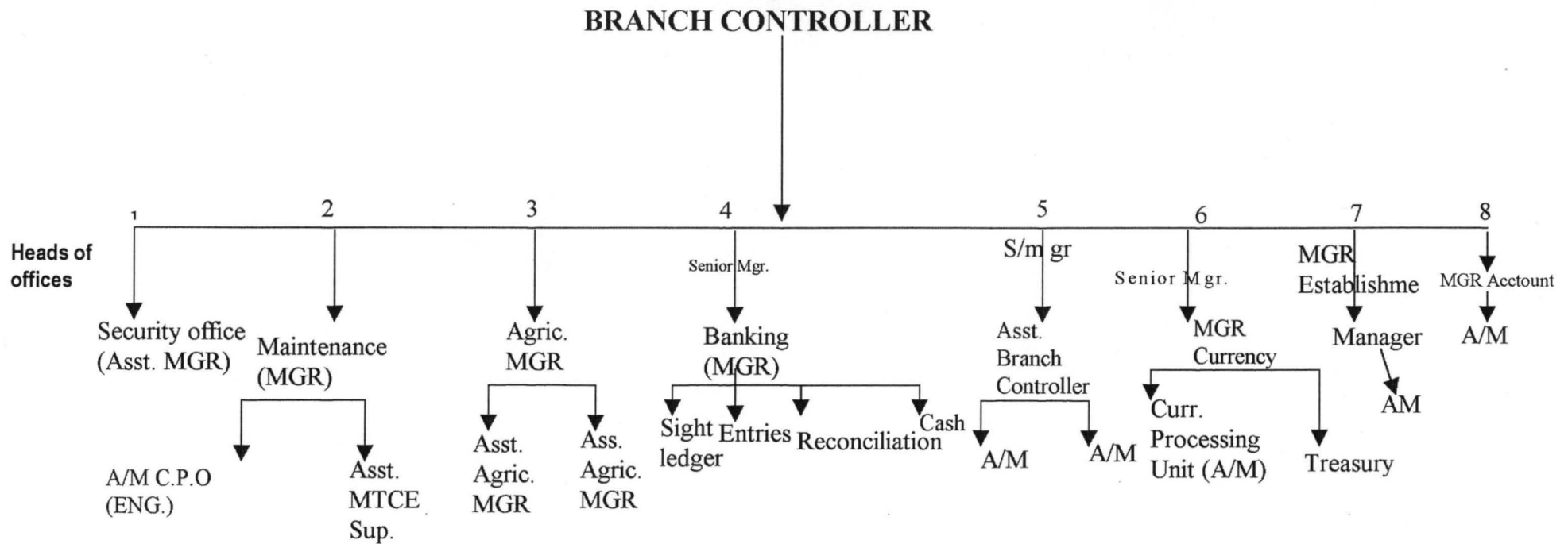
- (a) Examining the current system of payroll pattern in the Central Bank of Nigeria.
- (b) Determining what is wrong with this system and comparing alternative methods of achieving the same results at a faster rate.

1.4 SCOPE AND LIMITATIONS

This project mainly examined and analysed the urgent need for a computerised payroll system that will replace the existing manual operation.

However, this project will be limited by certain factors such as: - Finance, which will be much required to meet up with the requirements of this important part of the programs. Also, there is the problem of insufficient time to carry out effective work. There is also the problem of management full cooperation to give/allow sufficient staff to seriously start work on the computerization process of the payroll section for the establishment.

ORGANISATIONAL CHART OF CENTRAL BANK OF NIGERIA MINNA BRANCH



THE ROLES OF THESE OFFICERS

1. **SECURITY**: Safeguards the properties of the bank with the assistance of the mobile Police team.
2. **MAINTENANCE**: Ensures regular function of fittings and fixtures e.g electrification and electronic appliances, sewage and water supply.
3. **AGRICULTURAL OFFICE**: Monitors the disbursement of guarantee loan scheme and the recovery.
- 4 **BANKING**: Operates retail banking to Government ministries and parastatals.
5. **BRANCH CONTROLLERS REPRESENTATIVE**: Plays the role of receiving deposit into treasury in conjunction with Currency office for purpose of dual control.
6. **CURRENCY** : Acts as the custodian of the currency by issuing and receipt of deposit. They operate a dual control with Branch Controllers representative.
7. **ESTABLISHMENT**: Is in charge of personnel and material.
8. **ACCOUNTS**: Keeps tracks of fund disbursement and accounting records, personal and contract cheques are raise by this office including salaries of personnel.

staff salary cards every month.

1.3 METHODOLOGY

The project focuses more on the following procedures:-

- (a) Examining the current system of payroll pattern in the Central Bank of Nigeria.
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Miscellaneous expenses	=	<u>N60,000:00</u>
		<u>N527,000:00</u>
(2) <u>DEVELOPMENT COST</u>		
Systems Analysis And Design for 3weeks		N80,000:00
Software Development		N30,000:00
4 Personal Computers		N320,000:00
Installations		<u>N55,000:00</u>
		<u>N 485,000:00</u>
Grand Total of 1 and 2		<u>N1,012, 000:00</u>

3.8 BENEFITS OF THE PROPOSED SYSTEM

- (1) Faster preparation of all expenses.
- (2) Timely production of information when required
- (3) Reduction in the use of paper work.
- (4) Automatic updating of records and maintenance.
- (5) Elimination of many repetitive work of book keeping.

INPUT SPECIFICATION

This describes the way in which data enters the system for processing. The main input specification for this work involves certain number of data based files which are being used. This includes: -

- (1) Master .Dbf
- (2) Bank. Dbf
- (3) Dept. Dbf
- (4) Rank. Dbf

OUTPUT SPECIFICATION

One of the most relevant features of an information system for users is the output it

produces. The output specifications include: -

- (1) Pay Advice Slip
- (2) Payroll Total
- (3) Annual/Monthly returns of PAYE.

CHAPTER FOUR

SOFTWARE/PROGRAM DEVELOPMENT

4.0 INTRODUCTIONS: -

Programming is the preparation of a detailed sequence of operating instruction for particular problem to be run on a computer. It involves identification of the problem into a program flow chart, testing and running the programs. In programming, input and output must be specified because the output can always be determined by the inputs.

4.1 CHOICE OF LANGUAGE

In developing this system DBASE IV programming language is used. This is due to numerous facilities available.

4.2 FEATURES OF LANGUAGE CHOSEN

- (1) It provides a full relational database environment to users.
- (2) Using dbase iv, one can design databases, manipulate and edit records and files, generate reports, perform database query, design labels, and browse database without the use of command language.
- (3) Data can be verified automatically as they are entered into fields. Up to 255 fields can be specified per record.
- (4) Pop-up menus and windows can be designed.
- (5) It has a larger number of memory variables, user define functions up to 99 files can be opened at a time.

4.3 HARDWARE REQUIREMENTS

The proposed system requires the following:-

Personal Computer 386 main processor.

RAM - 16MB

Floppy Disk Drive - 3.5 / 5.25

SVGA Monitor

LaserJet Printer (6L)

Stabilizer 250VA

UPS 1000VA

4.4 SOFTWARE REQUIREMENT

MS - DOS 6.0 Version

DBASE IV

WINDOW 98 Version

4.5 STAFF TRAINING

The amount and period of training for this system will depend upon its complexity and the available skill on the ground presently. The proposed system will be users friendly. However, it is necessary to have an In-house training for the various personnel in the payroll section.

The training will cover areas like Basic computing and operation guidelines for the account staff in general. This training should not exceed three weeks of rigorous practicals in the usage of the packages designed.

4.6 CHANGEOVER PROCEDURE/SYSTEM CONVERSION

The following approaches could be used during conversion: -

- (1) The parallel approach - This is a method whereby the old method is operated simultaneously for some time with the new system. This is to make sure that the new system meets the requirements that the old system has been meeting all along and to determine whether the new system will be

able to stand the test of time.

- (2) Direct Method: - This is a method where the old system is discontinued and the new system becomes operational immediately.
- (3) Piecemeal method: - This is a method whereby changing to a new system is done gradually until the desired result is installed in other parts of the bank gradually. In the case of the Central Bank of Nigeria Minna, the new system will be implemented using the parallel method because of the advantage it has over other methods, since the new system will be operated simultaneously with the old system.

4.7 DATABASE STRUCTURE

MASTER.DBF:

This file contains the personal and payroll informations of all the employees in the organisation. The structure of this file is as stated below:

S/NO	FIELD NAME	FIELD TYPE	FIELD WIDTH	DECIMAL
1	SN	CHARACTER	5	-
2	NAME1	CHARACTER	20	-
3	NAME2	CHARACTER	20	-
4	NAME3	CHARACTER	20	-
5	DC	CHARACTER	2	-
6	RC	CHARACTER	2	-
7	GL	CHARACTER	2	-
8	GLS	CHARACTER	2	-
9	AS	NUMERIC	8	2
10	BC	CHARACTER	2	-
11	AN	CHARACTER	15	-
12	HA	NUMERIC	8	2
13	TA	NUMERIC	8	2
14	MS	NUMERIC	8	2
15	OA	NUMERIC	8	2
16	LA	NUMERIC	8	2

F

17	AA	NUMERIC	8	2
18	RA	NUMERIC	8	2
19	SA	NUMERIC	8	2
20	LTA	NUMERIC	8	2
21	BA	NUMERIC	8	2
22	MT	NUMERIC	8	2
23	UD	NUMERIC	8	2
24	MVL	NUMERIC	8	2
25	HL	NUMERIC	8	2
26	FL	NUMERIC	8	2
27	ER	NUMERIC	8	2
28	WR	NUMERIC	8	2
29	SAD	NUMERIC	8	2
30	RAD	NUMERIC	8	2
31	OVER	NUMERIC	8	2
32	BS	NUMERIC	8	2
33	GP	NUMERIC	8	2
34	DED	NUMERIC	8	2
35	NP	NUMERIC	8	2

BANK.DBF:

This is a database file that contain the list of all the employees in the organisation. Its structure is as given below:

S/NO	FIELD NAME	FIELD TYPE	F FIELD WIDTH	F DECIMAL	F
1	BC	CHARACTER	2	-	
2	BD	CHARACTER	15	-	

DEPT.DBF:

This is a database file that contain the list of all the available departments in the organisation. Its structure is as given below:

S/NO	FIELD NAME	FIELD TYPE	F FIELD WIDTH	F DECIMAL	F
------	------------	------------	---------------------	--------------	---

1	DC	CHARACTER	2	-
2	DD	CHARACTER	15	-

RANK.DBF:

This is a database file that contain the list of all the available ranks in the organisation.

Its structure is as given below:

S/NO	FIELD NAME	FIELD TYPE	F FIELD WIDTH	F DECIMAL
1	RC	CHARACTER	2	-
2	RD	CHARACTER	15	-

OUTPUT.DBF:

The OUTPUT.DBF is a file that contains the result of the monthly payroll processing.

The structure of this file is as stated below:

S/NO	FIELD NAME	FIELD TYPE	F FIELD WIDTH	F DECIMAL
1	SN	CHARACTER	5	-
2	NAME1	CHARACTER	20	-
3	NAME2	CHARACTER	20	-
4	NAME3	CHARACTER	20	-
5	DC	CHARACTER	2	-
6	RC	CHARACTER	2	-
7	GL	CHARACTER	2	-
8	GLS	CHARACTER	2	-
9	AS	NUMERIC	8	2
10	BC	CHARACTER	2	-
11	AN	CHARACTER	15	-
12	HA	NUMERIC	8	2
13	TA	NUMERIC	8	2
14	MS	NUMERIC	8	2
15	OA	NUMERIC	8	2
16	LA	NUMERIC	8	2

17	AA	NUMERIC	8	2
18	RA	NUMERIC	8	2
19	SA	NUMERIC	8	2
20	LTA	NUMERIC	8	2
21	BA	NUMERIC	8	2
22	MT	NUMERIC	8	2
23	UD	NUMERIC	8	2
24	MVL	NUMERIC	8	2
25	HL	NUMERIC	8	2
26	FL	NUMERIC	8	2
27	ER	NUMERIC	8	2
28	WR	NUMERIC	8	2
29	SAD	NUMERIC	8	2
30	RAD	NUMERIC	8	2
31	OVER	NUMERIC	8	2
32	BS	NUMERIC	8	2
33	GP	NUMERIC	8	2
34	DED	NUMERIC	8	2
35	NP	NUMERIC	8	2

4.8 SYSTEM DOCUMENTATION

Systems documentation is the description of how a system works. This is required to ensure a better understanding of the system by the users. The documentation of the new system provides information on how the system can be started and its operation.

4.8.1 STARTING THE SYSTEM

The execution of the programs required the installation of dBASE IV into the system. The source program would then be copied into a directory (e.g. PAYROLL) on the hard disk (i.e. drive C). To start the system is as follows:

- * Type CD\PAYROLL + <ENTER> Key
- * Type DBASE + <ENTER> Key
- * At the dot prompt of dbase IV, type DO PAYROLL + <ENTER> Key

The execution of the above steps allows the main menu appear on the screen from which the user would select an appropriate choice using the options under the task code as shown in the various design in the output contain in the Appendix.

4.8.2 DESCRIPTION OF THE SYSTEM MENU

The main menu consists of five options as displayed in Chart 1 in the Appendix.

Each of this is itemised and discussed as follows:

- * Staff Data Record
- * Staff Fringe Benefits
- * Payroll Computations
- * Reports Production
- * Quit

STAFF DATA RECORD

This option contains five sub-options as displayed in Chart II. It is used to manipulate the content of the master file i.e. STAFF.DBF which contain the details of the employees in the organisation. The sub-options are Add New Staff Data for entering new employee record, Edit Existing Staff Data for changing the existing employee record, View Existing Staff Data for viewing the existing employee record. Others are Erase Existing Staff Data for deleting the existing employee record as a result of termination or retirement and Quit for moving out of the sub-option. The screen design for each of these is represented by Chart III – VI in the Appendix.

STAFF FRINGE BENEFIT

This option enables the users to enter and modify allowance and deduction data for all the employees. The menu as shown on Chart VII has four sub-options

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CENTRAL BANK OF NIGERIA, MINNA

COMPUTERISED PAYROLL SYSTEM

MAIN MENU

TASK CODE

TASK

1

STAFF DATA RECORD

2

STAFF FRINGE BENEFITS

3

PAYROLL COMPUTATIONS

4

REPORTS PRODUCTION

5

QUIT

SELECT ANY TASK CODE OF CHOICE:

CENTRAL BANK OF NIGERIA, MINNA

COMPUTERISED PAYROLL SYSTEM

STAFF DATA MENU

<u>TASK CODE</u>	<u>TASK</u>
1	ADD NEW STAFF DATA
2	EDIT EXISTING STAFF DATA
3	VIEW EXISTING STAFF DATA
4	ERASE EXISTING STAFF DATA
5	QUIT

SELECT ANY TASK CODE OF CHOICE:

CENTRAL BANK OF NIGERIA, MINNA

COMPUTERISED PAYROLL SYSTEM

STAFF DATA ENTRY SCREEN

ENTER STAFF NUMBER (OR TYPE 99999 TO EXIT): 06690

DATE: 12/12/99

SURNAME
MAQUAL

FIRST NAME
FELIX

OTHER NAMES
GEORGE

MARITAL STATUS CODE: M SEX: M DEPARTMENT CODE: 03 RANK CODE: 06

DATE OF FIRST APPOINTMENT: 12/06/84 TYPE OF APPOINTMENT: PERMANENT

GRADE LEVEL: 14 GRADE LEVEL STEP: 03 ANNUAL SALARY: # 360,000.00

BANK CODE: 01 ACCOUNT NUMBER: 01944287

SAVE STAFF DATA (Y/N):

CENTRAL BANK OF NIGERIA, MINNA

COMPUTERISED PAYROLL SYSTEM

STAFF DATA VIEWING SCREEN

ENTER STAFF NUMBER (OR TYPE 99999 TO EXIT): 06690

DATE: 12/12/99

SURNAME
MAQUAL

FIRST NAME
FELIX

OTHER NAMES
GEORGE

MARITAL STATUS CODE: M SEX: M DEPARTMENT CODE: 03 RANK CODE: 06

DATE OF FIRST APPOINTMENT: 12/06/84 TYPE OF APPOINTMENT: PERMANENT

GRADE LEVEL: 14 GRADE LEVEL STEP: 03 ANNUAL SALARY: # 360,000.00

BANK CODE: 01 ACCOUNT NUMBER: 01944237

VIEWING STAFF DATA - PRESS ANY KEY TO CONTINUE

CENTRAL BANK OF NIGERIA, MINNA

COMPUTERISED PAYROLL SYSTEM

STAFF DATA DELETING SCREEN

ENTER STAFF NUMBER (OR TYPE 99999 TO EXIT): 06690

DATE: 12/12/99

SURNAME
MAQUAL

FIRST NAME
FELIX

OTHER NAMES
GEORGE

MARITAL STATUS CODE: M SEX: M DEPARTMENT CODE: 03 RANK CODE: 06

DATE OF FIRST APPOINTMENT: 12/06/84 TYPE OF APPOINTMENT: PERMANENT

GRADE LEVEL: 14 GRADE LEVEL STEP: 03 ANNUAL SALARY: # 360,000.00

BANK CODE: 01 ACCOUNT NUMBER: 01944287

DELETE STAFF DATA (Y/N):

19

CENTRAL BANK OF NIGERIA, MINNA

COMPUTERISED PAYROLL SYSTEM

STAFF FRINGE BENEFIT MENU

TASK CODE

TASK

1

ALLOWANCES' DETAILS

2

DEDUCTIONS' DETAILS

3

QUIT

SELECT ANY TASK CODE OF CHOICE:

CENTRAL BANK OF NIGERIA, MINNA

COMPUTERISED PAYROLL SYSTEM

ALLOWANCE ENTRY SCREEN

06690 MAQUAL
STAFF NO. SURNAME

FELIX
FIRST NAME

GEORGE
OTHER NAMES

<u>ALLOWANCE NAME</u>	<u>AMOUNT</u>	<u>ALLOWANCE NAME</u>	<u>AMOUNT</u>
HOUSING ALLOWANCE	12,000.00	ACTING ALLOWANCE	0.00
TRANSPORT ALLOWANCE	7,500.00	RESPONSIBILITY ALLOWANCE	0.00
MEAL SUBSIDY	4,750.00	SHIFT ALLOWANCE	0.00
OVERTIME ALLOWANCE	0.00	LOCAL TRAINING ALLOWANCE	0.00
LEAVE ALLOWANCE	0.00	OTHER ALLOWANCES	9,560.00

SAVE ALLOWANCE DATA (Y/N):

CENTRAL BANK OF NIGERIA, MINNA

COMPUTERISED PAYROLL SYSTEM

REPORTS PRODUCTION MENU

TASK CODE

TASK

1	DETAILS OF ALLOWANCES
2	DETAILS OF DEDUCTIONS
3	BANK SCHEDULE
4	STAFF LIST
5	QUIT

SELECT ANY TASK CODE OF CHOICE: