

PERSONNEL MANAGEMENT INFORMATION SYSTEM

A CASE STUDY OF

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

BY

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(PGD/MCS/159/96)

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

MARCH 1998

APPROVAL SHEET

This research project has been examined and found acceptable in partial fulfillment of the requirement for the Post-Graduate Diploma in Computer Science of the Department of Mathematics/Computer Science, Federal University of Technology, Minna.

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DEDICATION

, Dedicated to the Almighty God.

ACKNOWLEDGEMENT

First and foremost, I would like to give praise to Almighty God for giving me the strength and wisdom to pursue this programme.

My special gratitude goes to my supervisor, Mr. L. N. Ezeako for his input into this project work.

My gratitude also go to the Head, Department of Mathematics/Computer Science, Prof. K. R. Adeboye and the course coordinator, Prince R. O. Badmus for their contribution.

My special thanks to Dr. Yomi Aiyesimi, Dr. S. A. Reju, Mr. Kola Raheem, Mr. I. K. Adewale, Mr. M. Dogara and other members of staff of the department for their guidance and assistance throughout the period of this programme.

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ABSTRACT

This project work developed a computerized personnel management system for Federal University of Technology, Minna. Presently, records and information are maintained, stored and retrieved manually. This system wastes time in consultation and space in storage.

The project describes the organizational structure of Federal University of Technology, Minna and the overview of the existing system.

The system is designed using Database Management System (DBMS). Specifically, the system is developed using dBase IV. This system is an organised collection of related information designed to meet various needs of the institution. It helps user to create, maintain, update, organise, retrieve and generate report from the database.

CHAPTER ONE

1.0

GENERAL PRELIMINARIES

1.1

INTRODUCTION

The growing presence of computers can be linked with its worldwide application in various fields of study. Its worldwide acceptance is due to the fact that computers help in making an easier, accurate and reliable logical comparison between things than human efforts can comprehend. It has also been found to ease the cumbersome of inflow and outflow of data and information respectively.

A computer as a very powerful machine tool can be applied directly in the area of personnel management. This is due to the fact that its help in efficiently storing, filing and processing of data and information.

Personnel management is a specialized area of management concerned with people at work. It involves soliciting for personnel, motivating them to work, compensating them adequately, providing a conducive working environment and disposing of staff when the need arises. All personnel functions require decision making. Managers are guided by information at their disposal before taking any decision. The computer has been found to be a very useful tool for collecting, storing, analysing and disseminating information on

prospective and serving employees, with a view to taking appropriate decisions. The computer is able to assist the personnel manager because of its ability to process great quantities of personnel data at very fast speed and with a high degree of accuracy.

In view of the benefits derivable from the application of computer to personnel management, this project covers the various procedures in the computerization of personnel management system in a public institution. The Federal University of Technology (FUT), Minna is however chosen as a case study. This is due to the fact that in an organization as diverse as the university, it is quite easy for one to lose control of the number of people which every department is expected to have. The proposed system will facilitate effective control of its large number of employees and forecast the future staffing needs of the institution.

1.2 **HISTORICAL BACKGROUND OF FUT, MINNA**

The federal university of Technology, Minna came into being on 1st February, 1983 as the last of the seven Federal Universities of Technology established by the defunct second Republic in Nigeria.

The University was primarily established with the purpose of realizing the aim of moving the country forward technologically. Specifically, the goals and objectives of the University are stated as follows:

- (i) To encourage the advancement of learning and to hold out to all persons, without distinction of race, creed, sex or political conviction, the opportunity of acquiring a higher education in technology.
- (ii) To develop and offer academic and professional programmes leading to the award of Diplomas, first degrees, postgraduate research and higher degrees which emphasise planning, adaptive, technical, maintenance, development and productive skills in the engineering, scientific, agricultural, medical and allied professional disciplines with the aim of producing socially matured men and women with capability not only to understand, use and adapt existing technology but also improve on it and develop new ones.
- (iii) To act as agents and catalysts, through post-graduate training, research and innovation for the effectiveness and economic utilization, exploitation and conservation of the country's natural, economic and human resources.
- (iv) To offer to the general public, as a forum of general service, the result of training and research and to foster the practical application of these results.
- (v) To establish appropriate with other national institutions involved in training, research and development of technology.

- (vi) To identify technological problems and needs of the society to find solutions to them within the context of overall national development.
- (vii) To provide and promote sound basic scientific training as a foundation for the development of technology and applied sciences, taking into account indigenous culture and the need to enhance national unity.
- (viii) To undertake any other activities appropriate for a university of technology of the highest standard.

Given the above goals and objectives, the philosophy of the university is based on the multi-disciplinary approach to the study of human problems. The academic programmes have been designed to raise the creative capacities and capabilities of staff and students so that they are able to explore and effectively transform natural resources of their immediate environment into marketable goods and services for the general advancement of the country and universal common good.

1.3 **ORGANIZATIONAL STRUCTURE OF FUT, MINNA**

The organizational structure of the university is made up of the Governing council, senate and the various departments. The governing council is headed by a chairman while the senate is headed by the Vice-chancellor. Based on the

university's multi-disciplinary approach, the university is made up of Administrative departments, Service departments and Academic departments.

The Administrative Department comprise of the Vice-Chancellor's office, Registry Department and Bursary Department. The vice-chancellor's office is being headed by the vice-chancellor while the Registry Department is headed by the Registry. Bursary Department is headed by the Bursar.

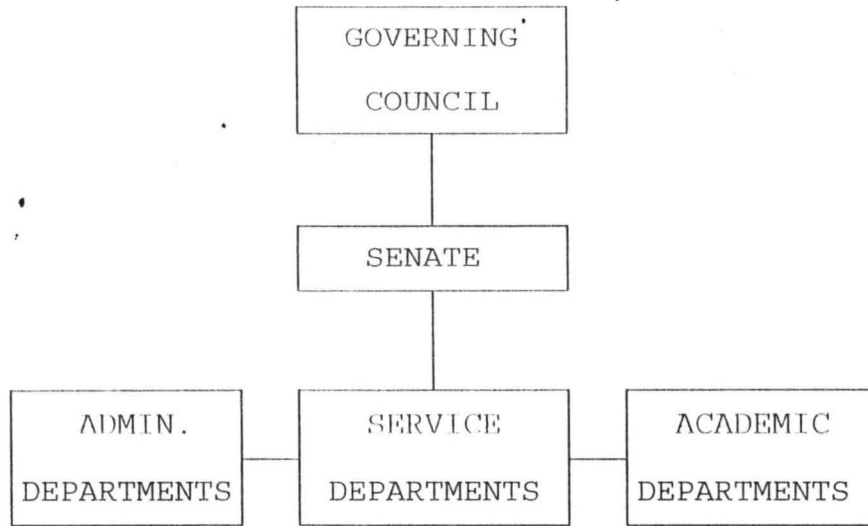
The Service departments are headed by directors. The various units of the service departments are Health service unit, Library service unit, Computer centre and Audio visual centre.

While the Academic department are categorised into four specialised schools viz : School of Agriculture and Agricultural Technology, School of Engineering and Engineering Technology, School of Environmental Technology, and School of Science and Science Education. Each School is being headed by a Dean.

Presently, the university has 345 Academic staff and 1,129 non-academic staff which implies a total of 1,474 staff employed by the university. The resultant effect of this is that the university has 1,474 records in its establishment.

1.4

ORGANISATIONAL CHART FUT, MINNA



VICE CHANCELLOR'S OFFICE	- HEALTH SERVICE UNIT	- SET
	- LIBRARY SERVICE UNIT	- SEET
REGISTRY DEPARTMENT	- COMPUTER CENTRE	- SAAT
BURSARY DEPARTMENT	- AUDIO VISUAL CENTRE	- SSSE
		- PGS

1.5

OBJECTIVE OF THE STUDY

The existing system of maintaining, storing retrieval of personnel records and information in the Federal University of Technology, Minna is by the use of files in the correspondence registries. Also up-dating of the personnel records and information are done manually. This system waste time in consultation and space storage because of the accelerating accumulation of papers, including personnel papers which make their control ever more difficult.

It is in registration of the above problems in that the author decided to carry out the computerization of the personnel record and information of the institution. This system does not require manually going through the files of all staff. The computer does that within seconds depending on the magnitude of record processed.

The advantages of computerisation over the manual system is that it has greater capacity and facility in the use of data. Also there is automatic output in a range of usable forms. In addition, there is savings in clerical labour costs and it tends to eliminate/minimise the incidence of ghost workers.

1.6 **METHODOLOGY OF THE STUDY**

First and foremost, the study is carried out by vividly analysing the existing system. The study was embarked upon to determine whether or not the proposed project is desirable.

Having determined the desirability of the project, the outputs that will be produced under the new system is designed.

The next sequence of activity is the utilization of computer to design the processing steps that will be needed to produce the desired output. The necessary inputs are also designed.

The actual program using database management system was designed incorporating the necessary controls and feedback procedures.

In addition, both the hardware and software requirement are specified. Having determined if the new system is operating properly, cost analyses to show the benefits that can accrue was also prepared.

Specifically, the methods adapted in gathering information on the existing system and other consideration are observation, Record Review and interviewing

1.7 **SCOPE AND LIMITATIONS OF THE STUDY**

Personnel Management is simply the management of people at work and covering all areas of employer-employee relationship such as staffing, training, wages/salaries, appraisal of workforce, labour relations, employee welfare etc.

However, due to time constraint, the project work is restricted to computerised system of storing, maintaining and retrieval of personnel records and information for effective decision making.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 THE CONCEPT OF PERSONNEL MANAGEMENT

Personnel management is the process of obtaining and maintaining a satisfactory and satisfied workforce for, and in an organisation. It is easily one of the most important activities in an organisation. Yet, over the years, it is one that has been handled most unprofessionally and thus most strabbily.

According to Eric Frank (1974), Human Resources Management is a series of activities in which the job, the individual and the organization all interact as each develop and changes. Also Maurice W. Cuming describe personnel management as concerned with obtaining the best possible staff for an organization and having got them, looking after them so that they will want to stay and give in their best to their jobs. from this definition, it is known that the prime task of the Personnel Department is to recruit people of suitable calibre required to meet organization's needs. Getting them would not be enough. Condition have to be created which would make them stay on the job, happy on the job and cope with the demands of the job.

The official definition of the institute of personnel management London (1963) runs thus: "personnel management is a responsibility of all those who

manage people as well as being a description of the work of those who are employed as specialists. It is part of management which is concerned with people at work and with their relationships within an enterprise. It applies not only to industry and commerce but to all fields of employment. Personnel management aims to achieve both efficiency and justice, neither of which can be pursued successfully without the other. It seeks to bring together and develop into an effective organization the men and women who make up an enterprise enabling each to make his own best contribution to its success both as an individual and as member of the working group. It seeks to provide fair terms and conditions of employment and satisfying work for those employed."

Flippo (1983), on the other hand, regards personnel management as the planning and controlling of the procurement, development, compensation, integration, maintenance and separation of human resources to the end that individual, organisation and societal objectives are accomplished.

Having delved into the meaning of personnel management, it is pertinent to examine the personnel functions. The following are the main personnel functions manpower planning: This is the process by which an organization ensures that it has the right number of qualified people available at the right time, performing jobs that are useful to the organization. The planning function includes all managerial activities that ultimately enable an organization to achieve its goals. Training and Development: A fundamental purpose of training

is to provide for the organization's manpower needs. For training to be effective, there is the need to identify the training needs.

APPRAISAL SCHEMES: The purpose of formal appraisal schemes is to gather information about the skills and potential of existing employees. It also help to asses the performance of the employees, so as to reward them. Appraisal schemes are, therefore, means of rewarding, criticizing, encourage and counselling.

CAREER PLANNING: In theory, career planning is an aspect of manpower Planning in which a career structure is mapped out for all employees in an organization.

WELFARE: The purpose of a welfare service is to provide personal advice and assistance to individuals and encourage a positive relationship between the individual and the organization by providing extra security and comforts.

INDUSTRIAL RELATIONS: In many organizations, the single time-consuming task of the personnel department is industrial relations. The size of the task obviously depends on how good or bad these relations are. This involve setting up a good communications system between management and the representatives of organized labour.

CONTROL AND AUDIT FUNCTIONS: Nothing is more to create personnel problems within an organization than inconsistency in the treatment of employees. Personnel policies and procedures governing personnel decision

must be followed consistently by all departments. Transfers, promotions, pay rises and other personnel actions involving employees should be made on a fair, equitable, and uniform basis throughout the organization.

Aside from that of developing and enforcing personnel policy, the personnel department has a responsibility to audit the performance of the various personnel functions to ensure that their intended objectives are being accomplished.

The above represents the major personnel functions which organizations with well-developed personnel management programme are expected to perform.

However, the various personnel functions of the Federal University of Technology, Minna are being performed by the establishment department.

2.2 AIMS OF PERSONNEL RECORDS

Record is the systematic and careful setting (or writing) down of important events or facts either for remembrance or for future reference, or both. Records are, therefore, essential elements in the information systems which support the activities of organizations. Records must contain information and data from which decisions are made, plans developed and control exercised.

Personnel records are kept for a variety of reasons, depending on the objectives, functions and environment of the organization.

The following are regarded as the aims of personnel records:

- (i) To furnish the much needed information on organizational manpower, which is useful for both internal and external management of the organizations.
- (ii) To provide accurate information on manpower planning in terms of educational qualifications, experience, knowledge and skills of employees, their potential and placement opportunities.
- (iii) To generate information on human resources research. That is, necessary information is supplied to validate hiring, selection, placement and promotion criteria;
- (iv) To furnish information on employee strengths and weakness, so that appropriate training and development schemes can be designed and implemented in a systematic fashion.
- (v) To provide information on how best to conduct industrial/employee relations;
- (vi) To generate information on the capability and productive profiles of each employee. That is, manpower recognition which will assist in determine bonus payments, advancement/promotion, demotion transfers, etc. and

- (vii) To provide factual data as a basis for decision-making in every area of personnel work, e.g., manpower forecasting and planning, recruitment and selection, training and development and health and safety.

2.3 PROBLEM OF PERSONNEL MANAGEMENT IN AN ORGANISATION

A number of problems associated with the handling of personnel records can be identified. These problems can be summarised below:

- (a). Inaccurate, incomplete and incorrect documentation;
- (b). Explosive volume of records - which is tantamount to over creation or over - generation of data and attendant duplication;
- (c). Lack of safeguards on the confidentiality, accuracy and relevance of personnel information;
- (d). Poor and inadequate storage facilities - as manifested in accommodation and equipment infrastructure;
- (e). Increasing search time - which is a manifestation of poor retention and retrieval procedures;
- (f). Increasing retention of useless and outdated records - which is indicative of absence of regular record census;

- (g). Absence of validation mechanism - which is a function of the problems originally inherent in input data collection to ensure that it is correct, and updating to ensure its currency, reliability and verifiability;
- (h). Uncontrollable access, misplacement and loss of vital documents and
- (i). Low calibre staff are put in charge of records, arising from value attached to records, or misinformation about the value of good record-keeping in organisational life.

In view of the problems identified above, it has become necessary that there should be an attitudinal change to records keeping. This is because of the increasing realization of the fact that records are the products of office work, which are inevitable to effective organisational transitions.

2.4 **COMPUTER APPLICATION TO PERSONNEL MANAGEMENT**

Personnel management has been referred to as a specialised area of management concerned with people at work. The computer has been found to be a very useful tool for collecting, storing, analysing and disseminating information on prospective and serving employees, with a view to taking appropriate decisions. The computer is able to assist the personnel manager

because of its ability to process great quantities of personnel data at very fast speed and with a high degree of accuracy.

Personnel management is that part of management concerned with people' at work and with their relationships within the enterprise. It is that function of any work organisation concerned with providing for its human resources. Basically, personnel management has to do with the development and application of policies governing:

- * Manpower planning, recruitment, selection, placement and termination;
- * Education and Training;
- * Terms of Employment, methods and Standards of remuneration;
- * Working conditions and employee services; and
- * Negotiations and application of agreements on wages and conditions of services.

Of all the factors of production (Land, Labour, Capital and enterprise) it is obvious that labour stands out as the most important and most difficult to manage because of the high degree of unpredictability of human being. Managing people at work to achieve the objectives of the organization is, therefore, by no means a small task.

Managers today have realized that things are changing, and changing very fast. There are technological developments, better production methods and a

high degree of competition. As the information explosion multiples day by day, so the enormous problem of keeping this explosion under control becomes more and more acute. Computers, with their ability to process great quantities of facts at vast speeds, are the most effective and efficient means of creating some, sort of order out of this apparent chaos. Computer can give management, including the personnel manager, the information they need for timely decision-making.

A computer is, therefore, defined as any machine which can accept data in a prescribed form, process the data and supply the results of the processing in a specified format as information or as signals to control automatically some further machine or process. It can be described as a very powerful machine tool which can perform any calculation or analytical process at a very fast speed and with a high degree of accuracy.

Today computer has very wide application. It provides information to personnel manager for decision-making. The ability of the computer to perform these various function is due to the availability of application packages. An application package is a program or set of programs designed to perform a specific type of mark, such as payroll, sales ledger, personnel record, etc These packages include Database, Word processing, spread sheets and integrated Business Packages. All these packages have direct impact on personnel management.

When applied to personnel, a good database management system can process personnel information in a variety of ways. For instance, it could display the information on the screen or by printing a report. Additionally, the record of all employees can be stored and retrieved as required. A computer database system can sort, search for, retrieve and print out data using any field or combination of fields very quickly. To a personnel manager, word processing is very useful to prepare standard texts addressed to employees or applicants. While spreadsheet can be used to determine personnel costs to analyze and plot graphs on the implications of personnel decisions to organizations.

The integrated packages allow for linking of pieces of data between the separate programs. For instance, updating an item in the database will automatically update the same item in the spreadsheet. This makes the integrated very useful for personnel functions as it easily links all other managerial functions in an organization with that of personnel.

CHAPTER THREE

3.0 SYSTEM ANALYSIS AND DESIGN

3.1 INTRODUCTION

The system Analysis and Design stage entails analysing the existing system in order to identify the inherent problems associated with the system. The importance of this stage cannot be over emphasised because of the fact that it will reveal the scope of the new system.

In view of the importance of this stage, this chapter entails the description of the existing system with its associated problem. The choice of the Language used as well as the input and output forms specifications are enumerated in order to attain the desired objectives.

3.2 ANALYSIS OF THE EXISTING SYSTEM

In order to arrive at any meaningful recommendation for the new system, it is pertinent to critically examine the existing system in terms of the administrative set-up and duties performed (undertaken) by the establishment department of the university.

The Establishment Department is in charge of general administration along with personnel functions with the Registrar as its chief scribe.

The functions of this department include

- * Staff Recruitment
- * Staff Training and Development
- * Staff Promotions (Recommendations)
- * Documentation and Maintenance of Individual Staff records
- * Employee Welfare Services
- * Interpretation and Services
- * Proposals for Policy Decisions
- * Interpretation and Implementation of policies made by the Governing council.

For effective execution of these duties, the department has been organized into various sections with the establishment secretary as its head and he's responsible to the Register. From day one of submission of employment of duty to retirement, the establishment application form is known to be the only department that provides to the generality of staff members on a regular basis.

The present system used by the establishment department of the Federal University of Technology, Minna to store and generate useful staff information is not computerized. The present employs the use of file jackets to store needed staff data which is written on paper. Whenever there is a need to access particular staff records, the employee's file jacket is being sought for. This

system is relatively slow and possess other problems which can make the information generated from stored data unreliable.

3.3 PROBLEMS ASSOCIATED WITH THE EXISTING SYSTEM

Generally, the problems associated with the present system of storing and generating useful staff information in the Federal University of Technology., Minna include the following:

UNCONTROLLABLE ACCESS:- Staff information can easily be revealed as files are moved from office to office when a particular information requires processing. This movement of files may seldom result in misplacement and loss of vital documents. Also it may result in inaccurate, incomplete and incorrect documentation.

STORAGE PROBLEM:- Duplication of data creates enormous storage problems and waste of resources. The files are poorly and inadequately stored in cabinets. In case of any fire outbreak, the information will be destroyed.

INCREASE IN NUMBER OF PERSONNEL:- Because of the manual nature of the system, more personnel will be required to manage and maintain the system. The present method is associated with increasing search time which is evident in poor retention and retrieval procedures.

3.4

CHOICE OF LANGUAGE

The proposed system is designed using Database Management System (DBMS). A database is an organised collection of related information designed to meet various needs of an organisation or establishment. DBMS is a software used to provide an interface between the user and data contained in a database. It helps users to create, maintain, organise and retrieve information from a database such that it is used by establishments or institutions to manage their data resources.

Specifically, the important functions of a DBMS are as follows:

- create and populate a database.
- Update information in the database.
- Organise the data of the database.
- Retrieve data from the database.
- Generate report from the database.
- Maintain integrity and consistency of data.
- Provide shareability of data amongst users.

Database management software is of various types which include dBASE, Clipper, Foxbase, Informix, Paradox, Oracle and a host of others. Specifically, the new system is developed using the combination of dBASE and Clipper. dBASE is of different versions such as dBASE II, dBASE III, dBASE III + , dBASE

IV and the latest dBASE V. dBASE IV which is the particular dBASE program used in the development of this system has capabilities for programming. As in dBASE, Clipper is also of different versions out of which Clipper Version 5.3 is used for the compilation of the source program designed in dBASE IV.

3.5 FEATURES OF DBMS

In the early days of programming, programs were developed in a file processing environment. In this environment, user's requirements are treated in isolation with application program operating almost independently. Files and records are designed in such a way to satisfy individual operational needs thereby imposing organisational barriers with regards to the data.

However, in most information systems, it is desirable to have the ability to jump over these imposed barriers and access data right across the organisation. This led to the introduction of database environment. In data processing environment, data are viewed as a whole irrespective of their type. Furthermore, the integration of data of different types are linked by logical relationships through a DBMS. The specific features of DBMS are as follows:

- i. **DATA INTEGRATION**:- In a database, information from several files are co-ordinated, accessed and operated upon as if they are in a single file. Logically, the information is centralised, physically, the data may be

located in different files. In addition, it is possible for two or more applications to share compatible data.

- ii. **DATA REDUNDANCY IS ELIMINATED**:- Data redundancy occurs when the same data appears in more than one file. This leads to wastage of storage space and duplication of efforts during data entry. One basic feature of DBMS is that it eliminates data redundancy since it does not allow duplication of data.
- iii. **DATA INDEPENDENCE**:- Another feature of DBMS is that it ensures data independence because application programs are isolated from the physical or logical storage of data. This feature seeks to allow for changes in the content and organisation of physical data without re-programming of applications or vice versa.
- iv. **DATA INTEGRITY**:- This is an important feature of DBMS. Since data is stored once without duplication, the information retrieved is consistent as only one update is enough if there is a change in the data.
- v. **DATA SECURITY**:- The security of data becomes possible because database environment allows for centralisation of data in an organisation. This implies that data storage is not duplicated within different units of the organisation. The expected benefit of this is that the control of data retrieval and confidentiality can be ascertained.

3.6

OUTPUT SPECIFICATION

Output refers to the results and information that are generated by a system. The output from a computer system are required primarily to communicate the results of processing to users or other system or more importantly, to provide a permanent copy of these results for consultation. The design process of the output begins by the identification of the output the system must produce. It is as a result of this that in designing output for the purposed system, the needs of the users were fully considered.

Specifically the output of the proposed system is designed to generate a report to be called Staff List. This report contains the list of employees of the University at any point in time. It contains information such as staff number, name, department, rank, annual salary, salary grade level and step and so on.

3.7

INPUT SPECIFICATION

Having considered the output that need to be generated with the proposed system, there is the need to design the input which will bring about the output. Input refers to the mode of entering data into a system. The consideration for input design is very important because it serves as the point of most contact for the users with the system and it is prove to errors. Based on this, the input design should be made to attain the following objectives:-

- i. To produce a cost effective method of input.
- ii. To achieve the highest level of accuracy.
- iii. To ensure that the input is acceptable to and understood by the users.

Basically the above objectives considered in designing the input for the proposed system which is mainly in an interactive mode. This is done through dialoguing with an online system which the computer system prompts for entry. In data entry, coding method, in which conditions, words, ideas, or relationships are expressed by a code, are developed to reduce input task, control errors, and speed the entire process. Therefore, with code, fewer details are necessary in input without loss of information.

Further more the input is designed to reject non-existing codes and inappropriate data entered. This is again accompanied by a message which gives instructions to the entire users. However, the input data into the system is the personal and official data of the employees. For example, if a new staff is employed, the details of that employee are keyed in to the system by the user.

DATABASE FILES DESIGN

Files design gives a complete descriptions of all the files that are used in a system. This includes the description of the contents and their structures. The proposed computerised system in FUT, Minna consists of five database file namely - STAFF.DBF, DEPT.DBF, RANK.DBF, APPT.DBF, and MARITAL.DBF.

However, the description of contents and structure of some of the above database files are as follows:-

STAFF.DBF:

This file contains the personal details of all the employees in the university. It consist of 24 fields which are described below:-

S/NO	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1.	S_num	Staff number	Character	8
2.	Surname	Surname	Character	18
3.	F_name	First name	Character	18
4.	O_names	Other names	Character	18
5.	Initial	Initial	Character	6
6.	Ms_code	Marital Status Code	Character	1
7.	App_code	Appointment Code	Character	1
8.	T_appt	Appointment Type	Character	1
9.	DD_appt	Date of First Appt	Data	8
10.	Per_sal	Percentage Salary	Numeric	3/0
11.	Inc_Flag	Incremental Flag (Y or N)	Character	1
12.	Dept_code	Department Code	Character	3
13.	Cen_code	Centre Code	Character	1
14.	Rank_code	Rank Code	Character	2
15.	Sal_L	Salary Grade Level	Character	2
16.	Sal_s	Salary Step	Character	2
17.	A_Sal	Annual Salary	Numeric	6/2

DEPT. DBF

This database file contains the list of departments available in Federal University of Technology, Minna and their respective codes. Its structure is given below:-

S/NO	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1.	Dept_code	Department Code	Character	3
2.	Dept_name	Department Name	Character	34

RANK DBF:-

It is a file that contains different ranks available in the university and their respecting codes. Its structure is shown below:-

S/NO	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1.	Rank_code	Rank Code	Character	2
2.	Rank_Desc	Rand Description	Character	17

APPT. DBF

This is a file that contains the list of the type of appointments being offer to any employee by the university and their respective codes. The format of this file is given below:-

S/NO	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1.	Appt_code	Appointment Code	Character	1
2.	Appt_Desc	Appt. Description	Character	17

MARITAL. DBF

It is a file which contains the available types of marital status and their respective code. Its structure is as shown below:-

S/NO	FIELD NAME	FIELD DESCRIPTION	FIELD TYPE	FIELD WIDTH
1.	Ms_code	Marital Status Code	Character	1
2.	Ms_Desc	Marital Status Descr.	Character	10

3.9 THE PHYSICAL DESIGN OF THE SYSTEM

This section has to do with program specification for files, input, output and processing into computer software. It deals with the physical construction of the logical design described above. The designing of the software is important to ensure that the actual progress produced perform all task as intended and to allow for future modifications to be performed in an efficient manner and with a minimum destruction to the design of the system.

CHAPTER FOUR

4.0 SYSTEM IMPLEMENTATION

4.1 INTRODUCTION

After the physical system has been discussed as contained in the last chapter, the next stage is to turn the design into a working system and then to monitor the operation of the system to ensure that it is working efficiently and effectively. Therefore system implementation is the stage of system development when the conceptual requirement of the new system and the overall objectives are to be transformed into physical reality. This stage is very important because it is the most crucial stage in achieving a successful new system and in giving the users confidence that the new system will work and be effective.

However, for proper analysis of the tasks of implementation, this chapter begins with the description of the proposed system and into hardware requirements. This is followed by system testing before it goes further to discuss the mode of system conversion. Finally, this chapter discusses the procedures that will be required in carrying out amendment on the system.

HARDWARE REQUIREMENT

The new system is designed to work on a standard microcomputers. Specifically, the computer configuration should include microcomputers, printers and Uninterrupted Power Supply, (UPS).

(i) **COMPUTER HARDWARE**

Three microcomputers which will be used is expected to be a Pentium 166 MHZ (megahertz) microprocessor with a minimum RAM (Random Access Memory) of 16MB (megabyte) and a hard disk capacity of about 2.1GB* (gigabyte). The above essence of the proposed microcomputer is to ensure speedy retrieval of information and also to meet up the future computer needs in the university.

(ii) **PRINTERS**

Printers are required to make hard copies of the reports that will be generated. In the proposed system, three printers are required for the computerised procedures with the combination of two dot matrix printers (Epson LQ-1170). The Epson printers which are expected to be of a near letter quality feature and speed of about 1200 lines per minute with a maximum width of 160 characters per line is recommended.

(iii) **UPS**

This is regarded as Uninterrupted Power Supply and it is used to ensure constant power supply to the computer and its environment. It has the capability for automatic provision of power in case there is power failure in order to allow for continuity of job. This is considered very important because of the prevalent erratic power supply in this nation. For the available computer hardware, there should be two UPS with each not less than 500 volts.

4.3 **SOFTWARE REQUIREMENT**

In addition, the establishment will also require the installation of software for other purposes. The introduction of a computerised system for managing personnel in FUT, Minna is expected to facilitate the activities of the department. This is because computers can be used for purposes like text preparation and other forms of data processing. This, mostly requires the use of application packages. Application packages are ready made programs developed by experts for specific applications. They have the advantages of flexibility, relatively being cheap and ease of use.

Specifically, the recommended software dBASE IV, WordPerfect (a word processing package) and Lotus 1-2-3 (a spreadsheet package). The dBASE IV are needed to allow for the modification and compilation of the suite of programs of the new system since they were developed in the environment. For the word processing package, the WordPerfect for Windows will be used to produce text document which will be of immense importance to the Office. The Lotus 1-2-3 is expected to aid some calculations and analysis which will be required in the organisation as a matter of necessity.

4.4

SYSTEMS TESTING

Systems testing is the stage of implementation which is aimed at ensuring that the system works accurately and efficiently before life operation commences. The logical and the physical designs should be thoroughly and continually examined on paper to ensure that they will work when implemented. Therefore, the systems testing in implementation should serve as a confirmation that all is right and affords an opportunity to show the user that the system works correctly.

However, this proposed system was fully tested to confirm its reliability. Specifically, a user acceptance testing was performed. This type of testing involves the users of the program in testing to confirm that the system is doing what is required to be done. The testing was done using a set of carefully selected test data which was entered into the system. The result was compared with the result obtained from the previous run and they were found to be the same. In view of this, it is then concluded that the newly developed systems is working accordingly.

4.5 **SYSTEMS CHANGEOVER**

This stage involves file conversion, file setup and changeover procedures. File conversion requires changing the old (existing) system files to the format and content required by the new system. File setup is the process of setting up the converted files on the computer. Changeover is the full replacement of all the old procedures by the new ones.

The changeover could be in any of the following three forms:

- (i) PARALLEL CHANGEOVER:- This requires the old and new system to run concurrently for some time using the same inputs. The output of the two

systems are compared. This will continue until the new system is confirmed to be working satisfactorily.

- (ii) DIRECT CHANGEOVER:- In this case, the new system becomes operational immediately.
- (iii) PILOT CHANGEOVER:- This requires changing to the new system on a piece meal basis.

All the above highlighted procedures of a system conversion can be adopted for the new system. It should be noted that the file conversion and file set-up can be performed by a computer operator under a close supervision. However, a parallel changeover method for the full conversion of the system is recommended. This is to ensure that within the period of changeover, the store activities in terms of storage and information retrieval are not, in any way affected.

CHAPTER FIVE

5.0 DOCUMENTATION AND CONCLUSION

5.1 DOCUMENTATION

Documentation is the description of how a system works. This is done to ensure better understanding of the system by the users in case of any problem. Therefore, in documenting the proposed system, the mode of starting the new system and the description and linkage of the menu structure would be stated.

5.1.1 STARTING THE SYSTEM

As stated earlier, the new system is developed using dBASE IV. For the system to work at all, there is need to install dBASE IV on the computer to be procured. If this is done, the program would be started by typing "DO FUT". This would lead into the first level of menu in which user would select from the choice available.

5.1.2 DESCRIPTION OF THE MENU STRUCTURE

The menu structure will be discussed using the diagram in Appendix A. Note that the diagram represent the screen design of the proposed system.

Specifically, the new system is composed of FIVE options in the main menu as represented by Diagram i in the Appendix. These options are ADD STAFF RECORD, CHANGE STAFF RECORD, VIEW STAFF RECORD, CANCEL STAFF RECORD, STAFF LIST REPORT and SYSTEMS EXIT. Each of these options has a code which is used for selection. The options are discussed in turns as follows:

- i. **ADD STAFF RECORD**:- This option enables the user to enter details of new employee into the system. The screen design is as represented in Diagram ii.
- ii. **CHANGE STAFF RECORD**:- This option enables the user to modify the details of an existing employee in the system. The screen design is as represented in Diagram iii.
- iii. **VIEW STAFF RECORD**:- This option enables the user to display the details of an existing employee in the system. The screen design is as represented in Diagram iv.
- iv. **CANCEL STAFF RECORD**:- This option enables the user to delete the details of an existing employee from the system. The screen design is as represented in Diagram vi.

- v. **STAFF LIST REPORT**:- This option is use to extract a hard copy from the system.
- vi. **SYSTEM EXIT**:- This is used to move out of the system completely. It takes the user back to the dBASE IV do prompt.

5.2

CONCLUSION

The continued substitution of computer based system for manual procedures has in modern days, become a world wide affairs. This is due to its relevance in virtually all aspects of human endeavour. This interest is, however, intensified by the capability of computers in performing a given set of procedures with all the necessary accuracy. It is not subjected to committing errors, and Its ability of accomplishing any task with high speed.

Therefore, it could be stated that the introduction of a computer based system for the management of personnel operations in Federal University of Technology, Minna would solve all the Highlighted problems and any future ones.

RECOMMENDATIONS

The need for the installation of the proposed system is to ensure the maximization of its benefits. However, for the system to be of immense benefits, the following recommendations should be adopted.

1. **MANPOWER REQUIREMENT**:- The use of computer in Registry Department requires a review of the personnel presently available. Some staff like the typist will have to be trained to the use of WordProcessor and new staff will have to be employed.
3. **SECURITY**:- In any computer based system, there is the need for security in order to avoid both logical and physical problems. In view of this, people (both staff and outsider) should not be given any access into the computer room.
4. **COMPUTER ENVIRONMENT**:- Normally, a computer environment should be air-conditioned. This is expected in order to provide a good cooling environment for the computer so as to ensure its durability of the system.

However, it should be realised that the above recommendations need to be adopted in order to fully maximize the importance of a computer based system.

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APPENDIX I

FEDERAL UNIVERSITY OF TECHNOLOGY - MINNA

PERSONEL INFORMATION MANAGEMENT SYSTEM

MAIN MENU

=====

A	.....	ADD STAFF RECORD
B	.....	VIEW STAFF RECORD
C	.....	CHANGE STAFF RECORD
D	.....	DELETE STAFF RECORD
E	.....	STAFF LIST REPORT
Q	.....	SYSTEM EXIT

Pick your choice ... :

PERSONNEL MANAGEMENT INFORMATION SYSTEM

DATA ENTRY FORM

AFF NUMBER: 00543

DATE: 26/12/99

SURNAME	FIRST NAME	OTHER NAMES	INITIALS
NUSO	RASHEED	OLAYINKA	R.O.

RITAL ST. CODE: M DEPARTMENT CODE: 10 SCHOOL CODE: RANK CODE: 5

DATE OF FIRST APPOINTMENT	APPOINTMENT CODE	TYPE OF APPOINTMENT
12/12/92		1

UNIVERSITY SALARY LEVEL	SALARY STEP	ANNUAL SALARY
11	3	#54456.00

BANK CODE: 11 BANK NUMBER: 11111 ANNUAL FREEPAY: # 4456.00

(S)ave (R)epeat (A)bandon ...

PERSONNEL MANAGEMENT INFORMATION SYSTEM

CHANGE STAFF RECORD

STAFF NUMBER: 00543

DATE: 26/12/99

SURNAME	FIRST NAME	OTHER NAMES	INITIALS
BANUSO	RASHEED	OLAYINKA	R.O.
MARITAL ST. CODE: M	DEPARTMENT CODE: 10	SCHOOL CODE:	RANK CODE: 5
DATE OF FIRST APPOINTMENT 12/12/92	APPOINTMENT CODE	TYPE OF APPOINTMENT 1	
UNIVERSITY SALARY LEVEL 11	SALARY STEP 3	ANNUAL SALARY #54456.00	
BANK CODE: 11	BANK NUMBER: 11111	ANNUAL FREEPAY: # 4456.00	

(S)ave (R)epeat (A)bandon ...

PERSONNEL MANAGEMENT INFORMATION SYSTEM

VIEW STAFF RECORD

STAFF NUMBER: 00543

DATE: 26/12/99

SURNAME	FIRST NAME	OTHER NAMES	INITIALS
ANUSO	RASHEED	OLAYINKA	R.O.
MARITAL ST. CODE: M	DEPARTMENT CODE: 10	SCHOOL CODE:	RANK CODE: 5
DATE OF FIRST APPOINTMENT 12/12/92	APPOINTMENT CODE	TYPE OF APPOINTMENT 1	
UNIVERSITY SALARY LEVEL 11	SALARY STEP 3	ANNUAL SALARY #54456.00	
BANK CODE: 11	BANK NUMBER: 11111	ANNUAL FREEPAY: # 4456.00	

PRESS ANY KEY TO CONTINUE

PERSONNEL MANAGEMENT INFORMATION SYSTEM

DELETE STAFF RECORD

AFF NUMBER: 00543

DATE: 26/12/99

SURNAME	FIRST NAME	OTHER NAMES	INITIALS
NUSO	RASHEED	OLAYINKA	R.O.
RITAL ST. CODE: M	DEPARTMENT CODE: 10	SCHOOL CODE:	RANK CODE: 5
TE OF FIRST APPOINTMENT	APPOINTMENT CODE	TYPE OF APPOINTMENT	
12/12/92		1	
IVERSITY SALARY LEVEL	SALARY STEP	ANNUAL SALARY	
11	3	#54456.00	
BANK CODE: 11	BANK NUMBER: 11111	ANNUAL FREEPAY: # 4456.00	

TO DELETE THIS RECORD

APPENDIX II

```
set colo to
set scor off
set dele off
set stat off
set echo off
set safe off
set talk off
set bell off
set date brit
do while t.
  clea
  @ 1,10 to 24,69 doub
  @ 0,18 to 2,61 doub
  @ 3,19 to 5,60 doub
  @ 6,11 to 6,68
  @ 1,19 say " FEDERAL UNIVERSITY OF TECHNOLOGY - MINNA "
  @ 4,20 say " PERSONEL INFORMATION MANAGEMENT SYSTEM "
  @ 8,35 say 'MAIN MENU'
  @ 9,35 say repl('=',9)
  @ 10,21 to 22,58
  @ 11,23 say "A ..... ADD STAFF RECORD"
  @ 13,23 say "B ..... VIEW STAFF RECORD"
  @ 15,23 say "C ..... CHANGE STAFF RECORD"
  @ 17,23 say "D ..... DELETE STAFF RECORD"
  @ 19,23 say "E ..... STAFF LIST REPORT"
  @ 21,23 say "Q ..... SYSTEM EXIT"
```

```
ma=0
do while ma=0
  ma=inkey()
  if upper(chr(ma)) $ "ABCDEQ"
    exit
  endi
  ma=0
endd
do case
  case upper(chr(ma)) $ "A"
    clear
    do addp
  case upper(chr(ma)) $ "B"
    clea
    do viewp
  case upper(chr(ma)) $ "C"
    clea
    do editp
  case upper(chr(ma)) $ "D"
    clea
    do deletep
  case upper(chr(ma)) $ "E"
    clea
    do deletep
othe
  @ 12,2 clea to 21,27
exit
```

```
endc
endd
clea all
clea
retu
```

ADDP.PRG

```
use staff1
today = date()
do while .t.
  clea
  restore from mem_add addi
  use staff1
  * control = 'N'
  @ 2,20 SAY "PERSONNEL MANAGEMENT INFORMATION SYSTEM"
  @ 4,30 say " ADD STAFF RECORD"
  @ 3,25 TO 5,53
  @ 1,13 to 3,65 doub
  @ 0,0 to 24,79 doub
  @ 0,19 say "FEDERAL UNIVERSITY OF TECHNOLOGY - MINNA"
  @ 6,4 SAY 'STAFF NUMBER (Enter "*****" to Exit):'
  do whil .t.
    @ 6,42 GET MS_NUMB
  read
  if ms_numb = "*****"
```

```

    exit
endi
ms_numb = rtrim(ms_numb)
n = len(ms_numb)
if n < 5
    n1 = 5 - n
    ms_numb = repl("0", n1) + ms_numb
endi
if .not. eof()
    LOCA FOR S_NUMB = MS_NUMB
    * seek ms_numb
    if found()
        ? chr(7)
        @ 23, 15 say "STAFF NUMBER already exist !!! - Press any key ..."
        set cons off
        wait
        set cons on
        @ 23, 15 say spac(55)
        ms_numb = spac(5)
        loop
    endi
endi
exit
endd
if ms_numb = "*****"
    exit
endi

```

```

@ 6,4 say space(45)
@ 6,4 say "STAFF NUMBER:" get mş_ numb
@ 6,53 say "DATE:"
set colo to n/w
@ 6,58 say dtoc(today)
set colo to
clea gets
@ 20,1 to 20,78
do while ,t.
  do add_scr1,
  @ 23,21 say "(S)ave (R)epeat (A)bandon ..."
  a=0
  do while a=0
    a=inkey()
    if upper(chr(a)) $ "SRA"
      exit
    endif
    a=0
  enddo
  if upper(chr(a)) $ "R"
    @ 8,1 clea to 23,78
    mcontrol = 'Y'
    loop
  endif
  exit
enddo
if upper(chr(a)) $ "S"

```

```
use staff1 index staff1
appe blan
do repl1a
endi
rele all like m*
endd
rele all
clos all
retu
```

ADD_SCR1.PRG

```
@ 8,8 SAY "SURNAME      FIRST NAME      OTHER NAMES
INITIALS"
@ 11,4 SAY "MARITAL ST. CODE:"
@ 11,24 SAY "DEPARTMENT CODE:"
@ 11,44 SAY "SCHOOL CODE:"
@ 11,60 SAY "RANK CODE:"
@ 13,4 SAY "DATE OF FIRST APPOINTMENT  APPOINTMENT CODE
TYPE OF APPOINTMENT"
@ 16,4 SAY "UNIVERSITY SALARY LEVEL  SALARY STEP  ANNUAL
SALARY"
@ 19,4 SAY "BANK CODE  BANK NUMBER      ANNUAL
FREEPAY"
if mcontrol = 'Y'
do loop1
```


endi

@ 9,4 GET MSURNAME pict '@A!!!!!!!!!!!!!!'

@ 9,23 GET MF_NAME pict '@!'

@ 9,42 GET MO_NAMES pict '@!'

@ 9,62 GET MINITIAL pict '@!'

read

@ 11,21 GET MMS_CODE pict '!'`

READ

@ 11,40 GET MDEPT_CODE pict '99'

READ

@ 11,70 GET MRANK_CODE pict '999'

READ

@ 14,11 GET MDF_APPT

READ

@ 14,60 GET MT_APPT

READ

@ 17,14 GET MSAL_L pict '99'

read

@ 17,38 GET MSAL_S pict '99'

read

@ 17,51 SAY "#"

@ 17,52 GET MA_SAL pict '99999.99'

@ 19,4 SAY "BANK CODE:" GET MBANK_CODE PICT '99'

@ 19,19 SAY "BANK NUMBER:" GET MBANK_NO

@ 19,46 SAY "ANNUAL FREEPAY: #" GET MA_FPAY pict '99999.99'

READ

set cons off

```
wait  
set cons on  
retu
```

```
EDITP.PRG
```

```
use staff1  
today = date()  
do while .t.  
  clea  
  restore from mem_add addi  
  use staff1  
  * control = 'N'  
  @ 2,20 SAY "PERSONNEL MANAGEMENT INFORMATION SYSTEM"  
  @ 4,30 say "CHANGE STAFF RECORD"  
  @ 3,25 TO 5,53  
  @ 1,13 to 3,65 doub  
  @ 0,0 to 24,79 doub  
  @ 0,19 say "FEDERAL UNIVERSITY OF TECHNOLOGY - MINNA"  
  @ 6,4 SAY 'STAFF NUMBER (Enter "*****" to Exit):'  
  do whil .t.  
    @ 6,42 GET MS_NUMB  
    read  
    if ms_num = "*****"  
      exit  
    endi
```

```

ms_numb = rtrim(ms_numb)
n = len(ms_numb)
if n < 5
  n1 = 5 - n
  ms_numb = repl("0", n1) + ms_numb
endi
if .not. eof()
  LOCA FOR S_NUMB = MS_NUMB
  * seek ms_numb
  if found()
    ? chr(7)
    @ 23,15 say "STAFF NUMBER already exist !!! - Press any key ..."
    set cons off
    wait
    set cons on
    @ 23,15 say spac(55)
    ms_numb = spac(5)
    loop
  endi
endi
exit
endd
if ms_numb = "*****"
  exit
endi
@ 6,4 say space(45)
@ 6,4 say "STAFF NUMBER:" get ms_numb

```

```
@ 6,53 say "DATE:"
set colo to n/w
@ 6,58 say dtoc(today)
set colo to
clea gets
@ 20,1 to 20,78
do while .t.
  do add_scr1
  @ 23,21 say "(S)ave (R)epeat (A)bandon ..."
  a=0
  do while a=0
    a=inkey()
    if upper(chr(a)) $ "SRA"
      exit
    endif
    a=0
  enddo
  if upper(chr(a)) $ "R"
    @ 8,1 clea to 23,78
    mcontrol='Y'
    loop
  endif
  exit
enddo
if upper(chr(a)) $ "S"
  use staff1 index staff1
  appe blan
```

```
do repl1,a
endi
rele all like m*
endd
rele all
clos all
retu
```

VIEWP.PRG

```
use staff1
today = date()
do while .t.
  clea
  restore from mem_add addi
  use staff1
  * control = 'N'
  @ 2,20 SAY "PERSONNEL MANAGEMENT INFORMATION SYSTEM"
  @ 4,30 say " VIEW STAFF RECORD"
  @ 3,25 TO 5,53
  @ 1,13 to 3,65 doub
  @ 0,0 to 24,79 doub
  @ 0,19 say "FEDERAL UNIVERSITY OF TECHNOLOGY - MINNA"
  @ 6,4 SAY 'STAFF NUMBER (Enter "*****" to Exit):'
do whil .t.
  @ 6,42 GET MS_NUMB
```

```

read
if ms_num = "*****"
  exit
endi

ms_num = rtrim(ms_num)
n = len(ms_num)
if n < 5
  n1 = 5 - n
  ms_num = repl("0", n1) + ms_num
endi

if .not. eof()
  LOCA FOR S_NUMB = MS_NUMB
  * seek ms_num
  if found()
    ? chr(7)
    @ 23,15 say "STAFF NUMBER already exist !!! - Press any key ..."
    set cons off
    wait
    set cons on
    @ 23,15 say spac(55)
    ms_num = spac(5)
    loop
  endi
endi
exit
endd
if ms_num = "*****"

```

```

exit
endi
@ 6,4 say space(45)
@ 6,4 say "STAFF NUMBER:" get ms_num
@ 6,53 say "DATE:"
set colo to n/w
@ 6,58 say dtoc(today)
set colo to
clea gets
@ 20,1 to 20,78
do while .t.
  do add_scr1
  @ 23,27 say "PRESS ANY KEY TO CONTINUE"
  a=0
  do while a=0
    a=inkey()
    if upper(chr(a)) $ "SRA"
      exit
    endif
    a=0
  enddo
  if upper(chr(a)) $ "R"
    @ 8,1 clea to 23,78
    mcontrol='Y'
  loop
endif
exit

```

```
enddo
if upper(chr(a)) $ "S"
  use staff1 index staff1
  appe blan
  do repl1 a
endi
rele all like m*
endd
rele all
clos all
retu
```

DELETEP.PRG

```
use staff1
today = date()
do while .t.
  clea
  restore from mem_add addi
  use staff1
  * control = 'N'
  @ 2,20 SAY "PERSONNEL MANAGEMENT INFORMATION SYSTEM"
  @ 4,30 say " DELETE STAFF RECORD"
  @ 3,25 TO 5,53
  @ 1,13 to 3,65 doub
  @ 0,0 to 24,79 doub
```



```

@ 0,19 say "FEDERAL UNIVERSITY OF TECHNOLOGY - MINNA"
@ 6,4 SAY 'STAFF NUMBER (Enter "*****" to Exit):'
do while ,t.
  @ 6,42 GET MS_NUMB
  read
  if ms_numb = "*****"
    exit
  endi
  ms_numb = rtrim(ms_numb)
  n = len(ms_numb)
  if n < 5
    n1 = 5 - n
    ms_numb = repl("0",n1) + ms_numb
  endi
  if .not. eof()
    LOCA FOR S_NUMB = MS_NUMB
    * seek ms_numb
    if found()
      ? chr(7)
      @ 23,15 say "STAFF NUMBER already exist !!! - Press any key ..."
      set cons off
      wait
      set cons on
      @ 23,15 say spac(55)
      ms_numb = spac(5)
      loop
    endi
  endi
endwhile

```

```

endi
exit
endd
if ms_numb = "*****"
    exit
endi
@ 6,4 say space(45)
@ 6,4 say "STAFF NUMBER:" get ms_numb
@ 6,53 say "DATE:"
set colo to n/w
@ 6,58 say dtoc(today)
set colo to
clea gets
@ 20,1 to 20,78
do while .t.
    do add_scr1
        @ 23,27 say "TO DELETE THIS RECORD"
        a=0
        do while a=0
            a=inkey()
            if upper(chr(a)) $ "SRA"
                exit
            endif
            a=0
        enddo
        if upper(chr(a)) $ "R"
            @ 8,1 clea to 23,78

```

```
mcontrol = 'Y'  
loop  
endif  
exit  
enddo  
if upper(chr(a)) $ "S"  
  use staff1 index staff1  
  appe blan  
  do repl1 a  
endi  
rele all like m*  
endd  
rele all  
clos all  
retu
```

*** MULTIPLE REGRESSION ***

MULTIPLE REGRESSION ANALYSIS OF GROUNDNUT

Dependent Variable.. Y

Block Number 1. Method: Enter X1 X2

Variable(s) Entered on Step Number

1.. X2
2.. X1

Multiple R .90518
R Square .81936
Adjusted R Square .77420
Standard Error 48.22206

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	84380.19835	42190.09917
Residual	8	18602.93647	2325.36706

F = 18.14341 Signif F = .0011

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
X1	-1.270963	.881400	-.876344	-1.442	.1873
X2	1.793167	.630654	1.728001	2.843	.0217
(Constant)	-11.504726	42.725016		-.269	.7945

*** MULTIPLE REGRESSION ***

Dependent Variable.. Y

Block Number 1. Method: Enter X2 X1

Variable(s) Entered on Step Number

1.. X1
2.. X2

Multiple R .85399
R Square .72930
Adjusted R Square .66162
Standard Error 148.30830

Analysis of Variance

	DF	Sum of Squares	Mean Square
Regression	2	474062.45356	237031.22678
Residual	8	175962.81441	21995.35180

F = 10.77642 Signif F = .0054

----- Variables in the Equation -----

Variable	B	SE B	Beta	T	Sig T
X2	2.057780	.443658	.869032	4.638	.0017
X1	-.232219	.215573	-.201831	-1.077	.3128