PERSONNEL RECORDS SYSTEM FOR
PAMBA ENGINEERING LIMITED

THE SYSTEM WAS DEVELOPED AS PARTIAL FULFILMENT FOR THE

REQUIREMENTS OF THE POSTGRADUATE DIPLOMA

IN COMPUTER SCIENCE

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CHAPTER ONE

INTRODUCTION AND TERMS OF REFERENCE

1.0.0 INTRODUCTION

The purpose of this project is to design and implement the computer based Personnel Records System for the department of Manpower Development and Administration of Pamba Engineering Limited (PEL). In the current system of PEL, most of the required personnel records are not reflected and cannot be easily retrieved.

The proposed system is expected to reveal and rectify this malady. After a detailed interview with PEL management it was evident that a computerised personnel system will be of great help to the management in retrieval of the required information. In this aspect the proposed system will enable the Manpower and Administrative department to be central and active in serving other departments with the required information in the most efficient way for effective management.

1.1.0 PAMBA ENGINEERING LIMITED BACKGROUND

Pamba Engineering Limited (PEL) is a medium sized and centralised organisation. PEL is situated in Mwanza town, a Lake Region Zonal town in the western part of Tanzania. PEL is the company that emerged from Tanzania Cotton Marketing Board (TCMB), a parastatal organisation for promotion of cotton growing in the lake region of western part of Tanzania.

PEL was operational since 1989 with an intention of running her business privately, and independent from the mother company, Tanzania Cotton Marketing Board. The company was also under indirect government control on import support. That is, in order to import spares from abroad, the company pays

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local currency to the government (treasury) that covers
the equivalent amount to be paid in foreign currency by
the government. The local currency is normally paid to the
government by instalments. So, it is very important that the
government approves the purchase order before the company
can order from abroad. The main share holders in PEL are
public institutions which include Tanzania Cotton Marketing
Board and Cotton Unions of Western part of Tanzania.

The broad objective of PEL (The former Central Workshop) was to
provide services to the agro based industry especially cotton
in the country. That is to provide a wide range of activities
with more emphasis on providing engineering repairs and
maintenance services, together with replacement of parts for
the cotton ginning and oil mill industries in Tanzania. Also PEL
generally undertake all such technical services as may be
necessary for the operation of those industries. Further the
company provides facilities for training of ginnery and oil
mill personnel, while repair and maintenance of trucks for
cotton haulage (i.e. from villages to ginneries) is performed
by the Garage department of the company.
PEL has been the Central Workshop for TCMB since late
seventies. The Workshop Manager was by then the head of the
department and was reporting to the TCMB Regional Manager.
Efforts leading to establishment of PEL started in mid 1980's
when Tanzania wanted to establish an organization to help develop
the cotton industry in the country. In February 1986, a meeting
chaired by the Tanzania Cotton Marketing Board and attended by

representative from cotton co-operative Unions, decided that an engineering company to cater for the cotton ginneries be incorporated. The result was PEL registered on 17th August 1988 with initial authorized share capital of USD 300,000 which has now expanded to USD 4,500,000 reflecting the expanded activities and asset base of the company. PEL is a dynamic new institution and has room for further investment from partners who can add to its corporate success financially and technically.

1.1.1 ORGANIZATION STRUCTURE

The organizational system structure appears with a Board of Directors focal point at its apex, who appoint the General Manager as a chief executive officer and the senior management executive staff. Furthermore the organization is divisionalized as six departments and a branch office. The six departments include Garage, Engineering, Supplies, Cotton Training, Manpower Development and Administration, and finance department. The six departments are located in the same region (Mwanza) and a branch office in the capital of the country Dar-es-salaam. PEL currently employ 233 employees. For further details refer to Fig. 1.

BOARD OF DIRECTORS

GENERAL MANAGER

COMPANY SECRETARY — — — CHIEF INTERNAL AUDITOR

BRANCH MANAGER -D.S.M

FINANCE	SUPPLIES	ADMINISTRATION	GARAGE	ENGINEERING	TRAINING
FINANCE MANAGER	SUPPLIES MANAGER	MANPOWER DEV & ADMIN. MANAGER	GARAGE MANAGER	ENGINEE-RING MANAGER	MANAGER TRAINING
FINANCE	MAIN STORE NYAKATO	ADMINIST-RATION	HEAVY DUTY VEHICLE	PRODUCTION	GARAGE TRAINING
ACCOUN-TING	INDUSTRIAL STORE	MANPOWER DEV.	LIGHT DUTY VEHICLES	MACHINE SHOP	GINNERY TRAINING
	PURCHA-SING LOCAL	COMPUTER SERVICES	AUTO ELECTRICS	REPAIR SHOP	
	PURCHA-SING FOREIGN	SECURITY	QUICK SERVICE	WELDING AND FABRICATION	

(A)   (A)   (A)   (A)

KEY:-

DEV. - DEVELOPMENT

ADMIN.- ADMINISTRATION

FIGURE 1:- PEL ORGANIZATION STRUCTURE

PEL - ORGANIZATION STRUCTURE

FIGURE1 CONTINUES..

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(A)                    (A)                  (A)                            (A)

CLEARING            DISPENSARY          INJECTOR              ELECTRICAL
AND                                     PUMP                  AND REWIND
FORWADING

                    COSTING             REPAIR ROOM           FIRE AND
                                                              FUMIGATION

                                        PANEL BEATING         MAINTENANCE
                                        AND SPRAYING

                                        CARPENTRY             DESIGN
                                                              AND
                                                              DRAUGHTING

                                        TOOL STORE            TOOL STORE
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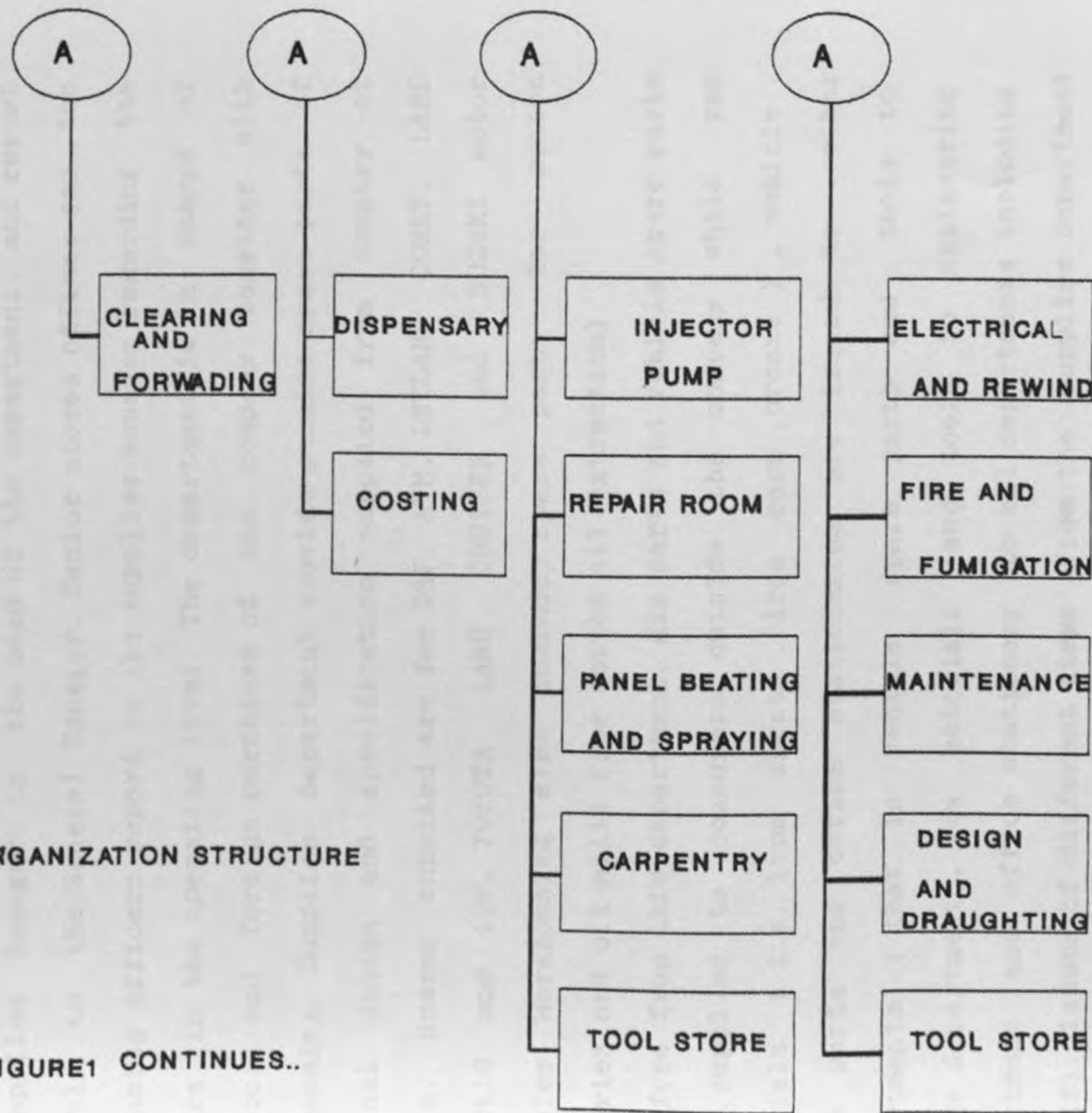
1.1.1.1 SUPPLIES DEPARTMENT

The Supplies Manager is the head of the department, and report directly to the General Manager. Senior stores officer and two purchasing officers report to the supplies manager regarding the matters in the operating level. The department is in charge of all local and foreign purchases of the company together with warehousing. Supplies department provide genuine spare parts of original design and specification supplied from country of origin. Spares supplied are for DAF, AVM, LEYLAND COMET, LAND ROVER110 and 109, TOYOTA LAND CRUISER and SUZUKI motor vehicles. Warehousing also include spare parts for cotton ginneries and oil mills (for cotton oil extraction).

Therefore from this department, gin parts and vehicle spare parts are supplied to consumers outside the company while raw materials (i.e. iron sheets , iron bars ,bronze) , vehicle spare parts and office stationeries are issued to other departments (that is vehicle spare parts and tools to Garage department , raw materials and tools to engineering department and office stationery to all departments including itself). Issues of different items from the supplies department must flow with information documents such as material requisition and issue notes.

1.1.1.2 GARAGE DEPARTMENT

The Garage Manager reports to the General Manager . Under the Garage Manager there is a Garage Engineer and four foremen who reports to the Engineer. The Manager here is being charged with

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responsibility of generating revenue. All types of motor vehicle repair and   maintenances   are   being   performed   by   this department. Although it was established only to cater essentially for the cotton unions, it is able to offer services to the business community in general, and public at large. Activities include   motor vehicle (trucks) body building (wooden)   in carpentry section, injector pump services, engine overhaul, vehicle steam cleaning, panel beating and spraying for all types of motor vehicles, chassis and wheel alignment, gear box and differential overhaul services according to the demand of the customer, wheel balancing, quick service, when one just need a a day´s job such as changing oil or greasing also finally vehicle evaluation and inspection including all aspects of automobile engineering.

1.1.1.3 ENGINEERING DEPARTMENT

Engineering department is headed by Engineering Manager. Under the department manager are four foremen and the technical unit.

A. The production Unit

There are five main areas of operation under this unit. These are:-

I. Repair shop

This   handles general   repair jobs and provide   engine parts , crank shafts, automobile parts and gin parts in general. This section should operate commercially in order to provide more market share for the department.

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II. Machine shop

There is specialized machinery in this section, mainly for the production of ginnery parts. This is done whenever orders are received from ginneries and oil mills.

III. Welding and Fabrication

All types of welding work is undertaken. All accessories for ginneris are fabricated in this section . These include complete suction system, motor fans and their housings , large fuel tank for oil tankers and oil carriers are also fabricated. This section should operate commercially in order to boost the market share for the Engineering department.

IV. Electrical and Motor rewind

The section undertake motor rewinding works, transformer repairs and repair and maintenance of all types of other electrical appliances. Motors of up to 100hp can be handled. This section also should be commercialised in order to increase market share for the Engineering department.

V. Fire and Fumigation

Refilling of fire extinguishers is performed in this section. The section can also undertake fumigation of go-down, particularly cotton go-downs and other large warehouses. This section´s activities should operate commercially, that is since the co-operative unions can not provide the service to themselves they will be obliged to use the services and at the same time some other customers will join the business in order to increase market share for the department´s activities.

B. The Technical Services Unit

This is the three manned section under the technical Engineer,but provides important linkman´s services. One of its major function is to compile a list of all types of spare parts needed by unions for the ginneries and oil mills. It ensures that this list is sent to the ministry of Industries and Trade where the decision of what spares can be locally manufactured and what spares can be imported is made. The Technical Service Engineer has to retrieve this decision with a government vetted list of spares that can be imported and those which should be bought locally. The Technical Service Engineer has the responsibility to ensure that these are ordered in accordance with the confirmed needs to the unions.

Therefore due to the specialisation of services to Cotton co-operative Unions, the engineering Department is facing poor performance. Since the orders from the common customer are not so regular, some machines are idle in most of the time. The department should go commercial.

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1.1.1.4 COTTON TRAINING DEPARTMENT

The department is headed by the Cotton Training Manager. There
are two sections within the department, namely Ginnery
Training section headed by Ginnery Trainer and Garage Training
section headed by Garage Trainer. The two report to the cotton
Training Manager.

The department's activities consist of the following: First
identification of areas of training needs among the co-
operative union employees such as maintenance skills ,
knowledge and aptitude for ginning staff, vehicle mechanics
and management. Secondly decide on courses which are
organised into annual training programme, which are introduced to
the unions, discussed , adjusted until finally accepted by
the unions. Finally , the trainers prepare training materials
while the Training Manager organises training venues.

If biases of provision of training to cotton industry personnel
persists, the department should not operate as a revenue
generating centre. Rather, it should operate as a Research and
Development department.

1.1.1.5 FINANCE DEPARTMENT

The head of this department is Finance manager. Reporting to the latter include two accountants ; one for finance and another for salaries. The Finance department offers support and assistance on the opportunities and profitability of the company.

1.1.1.6 MANPOWER DEVELOPMENT AND ADMINISTRATION DEPARTMENT

The head of the department is the Manpower Development and Administrative manager. Responsible to the head of department are Personnel and Administrative officer, Security officer, Systems officer and company medical officer. Objectives of the department includes provision of efficient administrative support services and sound personnel services to other departments in order to achieve or realise company goals. The department also deals with co-ordination of computer services , medical services to employees and family, security matters and public relations.

1.1.1.7 DAR-ES- SALAAM BRANCH

The branch office is newly established and is headed by the Branch Manager whose responsibility is to make sure that goods are cleared and forwarded the earliest time possible to avoid payment of demurrage charges. The Branch Manager co-ordinates with the head office concerning clearing and forwarding procedures till the delivery of the goods to the head office. Also facilitate co-ordinating with company's local, foreign suppliers and the government . The Branch Manager is also

responsible for public relations and market promotion .
Together with the Branch Manager there is a Stores Officer who
reports to the Supplies Manager.

1.1.1.8 AUDIT SECTION

The section is an independent one headed by the Senior Internal
Auditor. Under Senior Internal Auditor there is an
Internal Auditor and an Auditing clerk. The section is
charged with internal control. Thus the section is primarily
concerned with accounting controls and operational controls of
the company.

Problem justification

The need for the fast retrieval of accurate information relating
to the workmanship and personnel records in PEL is critical.
The personnel and Administration Manager and all departmental
managers need to understand a great deal about the
efforts of pursuing personnel policies and equally require
speedy performance measurements to help them monitor the
scheme they introduce. Management control information in varying
forms is conventional and therefore its extension into the
field of personnel Management is not surprising. However what
is ironic is that the computerised personnel system is
helping to persuade employees that they are not viewed as
toys on the payroll but are recognised as people with enormous
contribution to their work hence highly boosting their job
satisfaction and service. The use of computer in the personnel
field is thus of growing importance in PEL. After being in

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operation the personnel record system is expected to be linked to other systems like the payroll system. Therefore as part of this assignment/project, the current personnel system is to be critically analysed in order to produce a desirable computer design for new personnel records.

1.2.0   TERMS OF REFERENCE

TITLE   :   Design and implementation of a computerised Personnel Records Sytem for Pamba Engineering Limited (PEL).

REASONS :   To facilitate fast information retrieval and ease management of personnel in PEL.

1.2.1   PROBLEM DEFINITION

Present set up of personnel department

Personnel section is headed by the Manpower Development and Administrative manager. All matters related to personnel welfare together with public relations are being performed by the department.

PEL employees personal particulars are being kept in personal files that are being accommodated by metal files cabinets .

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The cabinets are normally locked for security. Formally personal particulars files are to be accessed by the company Chief executive, departmental heads and registry clerks. However misplacement of some personal information on documents and loss of the same has been experienced in the past. This give rise to lack of information security especially if one incorporate this with lack of information back up. The registry is a section in Manpower Development and Administration department. There are a total of 466 staff personal particulars files kept in the personnel section of which 233 are in general files while and the same number are in confidential files.

Average time required to get information from any of the files for managerial action depends on the nature of information required and the volume of files to go through. For example it may take an average of three months to get staff appraisal report for all employees. Leave processing may take one week. Automating and networking the present system will solve the mentioned problems to a great extent.

Personnel to be covered in the system include:-

                    - All department heads
                    - middle cadre staff
                    - Production staff
                    - Supporting staff

1.2.2   METHODOLOGY

1.2.2.1 FACT FINDING

Interviews

Among employees interviewed were:-

The Chief Executive (The General Manager),Finance Manager,

Manpower Development and Administration Manager, and Manpower

Development Officer - The most potential user.

Document Review

The review was performed on different documents that originated

from the Department of Manpower Development and Administration.

Example of documents reviewed include:- (i) Personal Particulars

(ii) Annual Appraisal Report Form (iii) Application For Leave

(iv) Medical Report Form (v) Manpower Requisition Form (vi) Staff

Performance Report Form (for officers confirmed in appointment or

Serving on contract) (vii) Confirmation Report Forms (viii)

Incentive package deductions. This may seem not to be

familiar to the reader. The forms are to be filled on monthly

basis indicating names and amounts to be deducted for employees

who are not qualified to receive the whole package. The reason

for deduction might base on coming late or not coming to work at

all due to different authorised or non-authorized reasons.

(ix) Personnel Status Report Form. Another document reviewed was

Personnel Status Report Form which is normally produced weekly.

Own experience

On addition to the above mentioned fact finding methods is the

authors experience as an employee of the PEL for over three

years.

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1.2.2.2 SYSTEM DESIGN

In the system design, methodology used were E-R modelling, Data Dictionary and HIPO charts (Hierarchy, Input, Process and Output). See chapter four.

1.2.2.3 SYSTEM DEVELOPMENT AND IMPLEMENTATION

System Development and Implementation was performed by using Database Package(dBASE VI)

The following were considered during selection of the package:-

- Easy to use by non - computer personnel. That is have got user friendly features which take care of user carelessness.

- Ergonic design like location of command keys.

- To meet user requirement like provision of acceptable interface.

CHAPTER TWO

INFORMATION REQUIREMENT ANALYSIS

2.0.0 INFORMATION REQUIREMENT ANALYSIS

2.1.0 CURRENT SYSTEM PERFORMANCE

The responsibility for personnel records system rests with the Manpower Development and Administration department and the registry section . Under the Manpower development and Administration are the following sections:-

- Administration
- Manpower Development (personnel)
- Computer services
- Security
- Dispensary

Both Manpower Development and Administration are headed by Personnel and Administrative Officer, while Computer Services is headed by a systems Officer and Dispensary is headed by the company Medical Officer. The Security section is supposed to be headed by the Security Officer but currently the post is vacant and therefore the Head Security Guard reports directly to the Department Manager. All section heads mentioned above report directly to the Manpower Development and Administrative manager.

Activities are performed as follows:-

Administration

-   Repair and maintenance of office machines, furniture and
    buildings.
-   Provide transport services.
-   Maintaining industrial relations of PEL staff as well as
    public relations.

Manpower Development (Personnel)

-   Setting and reviewing employment contracts and conditions
    together with maintenance of personnel records and
    statistics.
-   Introduction of new staff into PEL.
-   Conducting performance appraisal for PEL staff.
-   To provide training of PEL staff.

Security

-   To provide security and protection of properties.

Dispensary

-   To provide health, safety and cleanliness.

Computer Service

Computer service is a newly introduced section . Formal
activities are yet to be established for this section.

The author recommend the following activities for the section:-

-   Carry out training for users and operators.
-   To write documentations for operators where necessary and

test their applicability.

- Installing new software package versions
- Tuning up the operating system on PCs for better performance
- Carry out user information requirement analysis whenever the need for new system automation arises, and sell ideas to top management.
- participate in feasibility studies and implementation.
- Ensure corporate database security i.e. access rights in case there is a corporate database.
- Report hardware/software matters to the respective vendors
- participating in IS budgeting preparation.
- Recommending acceptance /rejection /change of new system. Hence participate in performing benchmarks.
- Keep abreast of the changing technology.

NOTE:- The main objective of Manpower Development and Administration Department is to provide efficient administrative support services and sound personnel services to other departments to achieve and realise the company goals.

As one of employment procedures an employee is required to fill in staff personal particulars form. The required information include the following:-

    (1) Surname
    (2) Other names
    (3) Date of birth

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(4) Nationality

(5) Home/district

(6) Date of employment

(7) Residential address

(8) Home address

(9) Marital status

(10) Children names, sex and date of birth

(11) dependants names

(12) Next of kin name, relationship and address

(13) Present position/designation, department,
     section, salary/month

(14) Nature of employment (permanent/temporary)

(15) Date promoted

(16) Basic education last school attended, from, to

     level attained

(17) Details of ´O´ level and ´A´ level results
     (Division I, II, III, IV or 0)

(18) Further education /training college name,
     from, to, details of qualifications obtained

(19) Previous employment employer name, last

     position   held, from, to, finishing salary.

As can be observed from above, the current personal particulars
form miss some information. For example personnel number (p_no)
which for PEL´s case the author suggest that should be
represented by an identity card number. The p_no or any formally
recognised personnel number is an important component especially
in linking a particular person with other information or systems

holding some other personnel related information like payroll, Dispensary and housing.

Name of spouse for married personnel is also important together with the birth date. The former enables the personnel section to incorporate spouse while calculating leave payments (e.g. bus fare).

The latter is for the Dispensary administrative purposes. It is not enough to address the spouse as one of dependants. Dependants should be other relatives apart from wife/husband and children, because the latter are obvious dependants.

Very often staff complain of being forgotten for confirmation or sometimes promotion. Therefore if we can incorporate information on the date due for confirmation, such complaint will be minimized.

The information on education qualification can be summarised into one block/section instead of three sections as currently is.

The information on leave is also required because it requires one to go through the files and look for information on the last leave taken before one can process leave for staff. It becomes tedious if leaves to process are so many. Also it is important to know paid and unpaid leave(i.e. when is the staff entitled for fare and when is not).

Information on acted posts is also vital, for the purpose of appraising an employee's performance.

A personal particular form is to be filled in by a new employee employed under temporary or permanent basis immediately after recruitment. This document is initiated by

the Personnel and Administration Officer who files the document in the personal file of the new employee.

Changes of information about any employee is normally originated by either an employee him/herself, the respective department, or the personnel and administration department. Such information that can be originated by staff include change of marital status, number of children, next of kin information , dependants etc. Such changes in information are to be authorised by the respective department Manager before it can be effected by the Personnel and Administration Department.

2.1.1 PERSONNEL RECORDS MANAGEMENT

All files for employees are kept together in the file cabinet according to the respective department order. Handling of files as well as their movements is being done by authorised personnel only. Sometimes the required information is being extracted and sent to where it is required.

It should be noted that no transaction is to take place without authority from responsible person (i.e. head of department) as per the company regulations.

2.1.2 UPDATES

As we have already seen before updates of records may originate either from an employee , employee´s department or personnel and administration department.

Having updated the records the Personnel and Administration Department files the document for updates and sends the copy of the same to the respective department.

2.1.3 OTHER SYSTEMS INTERLINKED

Other systems interlinked with current personnel records system includes:-

- Payroll
- Pension scheme
- Dispensary
- Others

payroll

The payroll system is computerised only for permanent employed staff. Casual labourers pay system is manual. All payroll adjustments have got to be originated by Personnel and Administration department. Whenever there is need for salary review , a list of all staff is produced by salary section indicating names and basic salaries. However some of the listing have to be done manually.

Pension Scheme

This is a manual system. Every permanent employed staff is a member of National Provident Fund.

Dispensary

The company dispensary may be interested in the employee´s details of his/her family in order to know who is eligible for treatment and who is not as per company regulations. These details include the names and ages of the spouse, children and dependents.

Others

This includes status of office equipment, vehicle movement and fuel issues. A log book is supposed to be filled for any company vehicle moving from the company for official or private duties . For that matter every company vehicle have got a respective log book. Every head of department is allocated a vehicle. All other vehicles are under personnel and Administration department . Office equipment are allocated departmentwise.

2.1.4 OTHER SYSTEMS NOT YET INTERFACED WITH PERSONNEL

Training

Currently   training   is   being   offered   to   individuals
according to ones initiatives or sometimes is to be initiated
by the respective department head for his staff. There is no any
formal training system. Sometimes   Manpower   Development and
Administration department identifies   courses for   management
staff. Training really is supposed to   be interfaced to   the
personnel   records system by accessing personnel numbers(ID-NO)
in   order to identify staff who are supposed to attend a
particular course, for both senior and junior staff depending   on
the   relevance   of   the   course to the over all company
and hence corporate objectives.

Incentive scheme (Package)

This keeps records on each staff on the basis of   hours   worked
monthly i.e.174.5. If an employee worked during   that   duration
he/she is to be given the whole lot of incentive allowance,
otherwise   the   amount   is   to   be   deducted   accordingly .
The system should produce a list of employees and hour worked
monthly.

2.1.5 INPUTS TO THE SYSTEM

The inputs to the system (personnel records) are mainly in the form of filled forms , usually to be filled by the new employees of PEL for personnel management purposes. Together with the forms are supporting documents which are filed together with the forms. Examples of supporting documents include certificates , staff movement advise, promotions/demotions just to mention a few. Normally employees communicate to Manpower Development and Administration Department through their Department heads, who communicate back to them. Information from outside world include Government Regulations that affects Scheme of Service (ref. fig.2).

2.1.6   INFORMATION FLOW CHART

OUTSIDE WORLD

PENSION SCHEME

PAYROLL SECTION

DISPENSARY

EMPLOYEE

DEPARTMENT HEADS

PERSONNEL SECTION

CREATE RECORDS

UPDATE RECORDS

PRODUCE REPORTS

ACCESS RECORDS

STORE RECORDS

Key:-

(1) ——→ , ←—— Personnel and related
(direction of information)

(2) ←——→ two way information flow

(3) outside world includes:- -Government regulations
that affects scheme of service
-Aplications for job opportunities
-National Provident Fund,Insurance Company e.t.c

Fig.2

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2.1.7 OUTPUTS FROM THE SYSTEM

(1) The most frequent output from the system is personnel status report produced for weekly management meeting which comprises the number of employees in the following:-

- attendance
- coming late
- absent with or without permission
- suspended
- served with a formal warning
- number of patients at the dispensary
- number of casual labourers employed
- on leave and study leave

Attendance

For every department, daily attendance register of employees is submitted to Manpower development (personnel) section. The attendance book shows the names of employees who reported at their place of work in time (i.e. between 1:30 and 8:00 a.m). The registry clerk summarises attendance by adding and representing the attendance and late comers by their respective total numbers departmentwise. The author is wondering whether it makes sense if the same person within the department comes late for the whole week, which means at the end of the week, the report summary will show that five employees came late while it is actually only one person who came late for the whole week (five days). Therefore the report needs rectification. Thus should show the name and frequency of coming late. Of course

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preparing the reports manually might be tiresome and costly in terms of stationeries. Therefore automation is the only solution.

Absent with or without permission

The summary shows the number of employees during the week, and out of those employees how many got normal permission and how many went for prayer(i.e.moslems on friday). The report is just okay in order to display the total number, as it saves time and stationery. But, for a matter of clarification, there should be a list of names of employees in question because a person might have been permitted for the whole week, whereby the report gives an idea that five people (employees) have been absent with permission. The report is compiled departmentwise.

Suspended

The report shows the number of suspended employees. As for other reports,there should be a clarification report which shows name of person/people suspended, date and reason of being suspended.

Served with a formal warning

The report shows the number of employees that received letters of warning. Normally the latter originate either from the head of department or Manpower Development and Administration department manager. The report should also show the reason for being warned, date warned, whether the person have already received other letter/letters of warning and how many times. Of course

without forgetting the name of the person warned.

Number of patients at the dispensary

The report shows the number of employees that got treated at the dispensary. This also should show names and dates treated and and also costs of treatment. This would help in planning for buying medicines and also adjustment of the medical budget if possible, to be used in the next month/period.

Number of casual labourers

This report shows the number of casual labourers that were employed during the week. This should show type of job and amount paid so that at the end of a particular period, the management can try to compare the cost of employing permanently and employing casually for a particular type of job.

On leave and Study leave

This report as other previous reports, shows the total number of employees on normal leave and study leave. This report should show the number as well as names and the last day of leave so that remedial actions can be considered when the day an employee is to report back is exceeded. The mentioned above are the common reports that are produced at the moment. Other reports seems to be tedious and time consuming and therefore are not produced though are to be produced. Even the reports mentioned above are currently not produced due to financial constraints.

(2) Information on vacancies per department in order to advertise for new posts. The advertisement is normally prepared by the Manpower Development and Administration department.

(3) Ad-hoc reports requested by departments are also prepared manually by personnel section. For example a list of employees departmentwise, showing names, and educational qualifications. These reports are being extracted from employees personal data.

Tables which are used for reference include:-

- Night allowances

- Incidental allowances

They are being offered in groups of salary scales.

Others

Other reports that are supposed to be produced by the section and the forms to be filled by staff for that matter are available but not yet utilised even once . Therefore the reports are is not yet produced,and these include the following:-

(4) Staff performance report

The report is to be produced at the end of probationary period, which is currently six months. The same report is to be produced annually to facilitate senior officers confirmation . Thus, after confirmation, the staff in question, whether initially employed on contract terms, temporary terms, or on National provident fund terms, is employed permanently .

(5) Staff annual appraisal report

All staff are supposed to be appraised annually in order to promote or get recommended by their respective heads of departments for further training. However, forms had never been offered to staff as supposed to be. Therefore the report had never been produced. This is because it is quite cumbersome to prepare such reports. The section currently employs one person only who is supposed to prepare the reports in question . Therefore they might be time consuming and also very costly in terms of stationery and efforts. Thus the reports are prone to errors. For the reports refer fig.3

2.1.8 PERSONNEL REPORTS
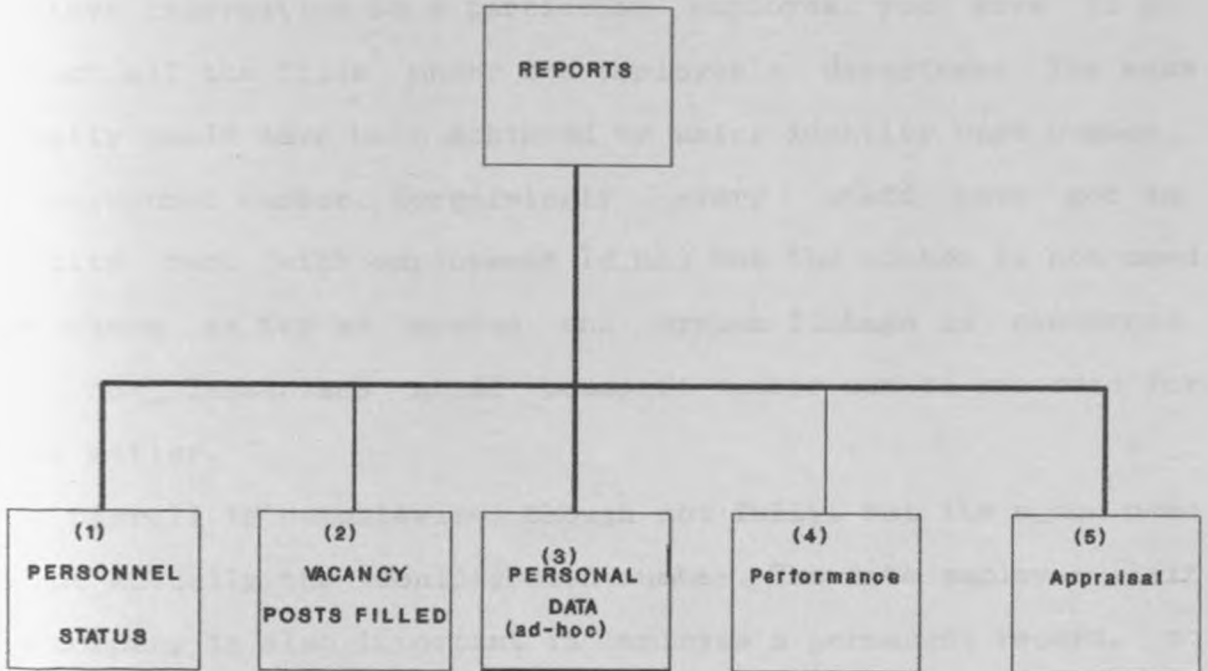
Fig.3

NOTE:-
Capital lettered report - reports currently produced manualy

Small lettered Report - Reports not yet produced/used

2.1.9 HANDICAPS OF THE CURRENT SYSTEM

The current system is so loose that it can not uniquely identify a particular employee as an entity. For example, in order to retrieve information on a particular employee, you have to go through all the files under the employee's department. The same actually could have been achieved by using identity card number, or personnel number. Surprisingly every staff have got an identity card (with employment Id_no) but the number is not used any where as far as system and system linkage is concerned. For non_ Tanzanians staff passport number can be recorded for that matter.

The payroll is computerised though not fully, but the p_no used is not actually the identity card number. The date employee left the company is also important in employee's permanent record, so that his/her monthly salary can be stopped immediately and effect pension. There should be, cards one per staff to hold permanent records for improved retrieval of personal particulars. Whereby the file (folder) has to be frequently changed in particulars this should be written in pencil though this may have a disadvantage of loosing historical information if not carefully handled.

CHAPTER THREE

SYSTEMS ANALYSIS

3.0.0 SYSTEMS ANALYSIS

3.1.0 DESCRIPTION OF EXISTING PROBLEM

As discussed earlier in the introduction, it is not easy to prepare summary reports about personnel . Preparing the reports is time consuming and expensive since it requires a lot of stationary . Even if prepared this can never represent up to date information. Employees might leave the company, get promoted , join the company etc. but it is not easy to keep track of all these changes and produce a monthly or rather quarterly report on the same.

(1) flow of information about employees can not be easily traced or retrieved. When fast need for personnel information arises the retrieval is normally done manually after the Personnel Officer or registry clerk have gone through the files.

Ad-hoc queries can not be efficiently handled.

(2) The personnel records system (which is being handled manually), is never in step with payroll system, since the former cannot accommodate changes immediately like salary changes . Thus immediate salary reviews and promotions are delayed, which results into a personnel system not truly reflecting the current situation and is several weeks out of date. Frequent updating of files would require much more papers which makes files bulky and much more costly to maintain.

(3) Department managers can not easily access details of their own staff from the personnel department. Obviously this objective is difficult to achieve manually without duplication of information involving a lot of paper work, and recording efforts and the associated problems of reconciliation between records.

(4) Security and confidentiality levels are not very satisfactory at the moment.

3.2.0 ORGANIZATIONAL ANALYSIS

3.2.1 KEY SUCCESS FACTORS OF PEL

Key success factors, imply critical factors that influence success of the organisation . For the company to be in better competitive position it should anchor its business activities to the key success factors.

These includes the following:-

(1) **Delivery schedule of trucks/vehicles and gin/oil mills spare parts.** The information regarding delivery of the mentioned machinery should be reliable and therefore efficiently managed.

(2) **Better quality of staff,product, and services.**

With qualified and well trained staff, better quality control methods ; the resultant quality of services will provide PEL with a good basis for locking in customers and therefore explore large market shares.

It is therefore very important to perform frequent staff appraisal in order to have better quality of staff in an operative Personnel System.

(3) **lower operational costs.**

One of the key objectives of any private company is financially viable (profitable) reflecting enormous profits and not losses. Therefore, in order to achieve this while keeping other factors for profit generation constant , operational costs should be kept as minimum as possible. Also product prices should be comparable to market prices.

(4) **Availability of raw materials.**

As a manufacturing company, PEL should not face shortage of raw materials and spares parts . The garage department that utilises vehicle spare parts is more often contributing the highest amount of revenue to the Company . The supplies department should also make good revenue out of spares sold. Further more the Engineering department that consumes raw material is also challenged to become a more income generating department.

(5) **Timely processing of invoices and collection of outstanding debts from company debtors.**

PEL´S prime customers are Cotton co-operative Unions. Therefore strategies   for debt collection should be reinforced, otherwise the company can end up in an enormous amount of bad debts. At the same time efforts   for markets penetration as is already in force, should be extended.

3.2.2 COMPANY WEAKNESSES IN COMPUTERISING ITS ACTIVITIES

Computerisation in itself is an expensive activity. The company have no enough funds to computerise its activities on its own. It used to entirely depend on donor support funds. In this aspect computers have been donated under the Cotton Rehabilitation Programme, which in turn decided what to computerise and what not etc. Therefore it is   not quite clear as to where the computerisation activity is heading to, now that donors are likely to withdraw at any time. Generally as observed, the level of computerisation is very low. Currently   only   inventory management and   payroll are computerised, using database package and gwbasic respectively.

Final accounts reports, Garage and Engineering work in progress, are presented using spreadsheet package(lotus 1-2-3). Three other PCs are used   mainly for secretarial activities.

3.2.3 THREATS TO THE COMPUTERIZATION

The main threat in company business computerisation is withdrawal
of donor support at the time when automation of business is
indeed critical. In the neighbourhood, there is a company
running similar business and at higher lever of computerisation,
and this is another threat.

Though the information section (computer services section) is
defined in the organization structure, there is little or no
realisation by PEL management that information for internal use
is non-depleting. It is not realised that information is
inseparable in context from resources but as a major indicator
and medium for managing the resources.

In PEL each department, especially finance and supplies are
trying to keep track of information related to their
responsibilities and duties. Since the concept is diluted by
separation, this somehow creates conflict during managing
the computer based information systems. At one time the price
difference was an example, of the by product of these conflicts,
where by the Accounts section provided an invoice which was
conflicting from the supplies section on the same registered work
order.

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3.2.4 POTENTIAL STRENGTH IN COMPUTERIZING ACTIVITIES

In addition to activities already computerised, the company is also determined to computerised the Accounts manual, Garage/Engineering spare parts consumption, Personnel Records (staff movements) and local purchases. The intention is to computerise all vital activities, hence creating the need for having a corporate database.

Fortunately a consultancy firm is currently performing information analysis, which will culminate towards solving the said problem. Furthermore the company has already trained all computer operators and secretaries, this being an added advantage to computerisation of business activities.

The company is now having eight (8) PCs ranging between 286 and 386 - IBM compatibles. This constitute a very big advantage given a good plan for computerisation.

3.2.5 OPPORTUNITIES IN COMPUTERIZING ACTIVITIES

Since the government had emphasised computerisation of business and services among government institutions,parastatal organisations and private companies, quite a number of companies have computerised their activities. These are inter-alia Tanzania Electrical supplies Company Limited (TANESCO), Bank Of Tanzania (Central Bank), National Bank Of Commerce (NBC) and the Treasury. Other major institutions have the computerization process on drawplans to be soon implemented.

Basic computer courses are being offered widely in the country, and opportunities for training in this field are increasingly been widened.

Fortunately all co-operative unions which are shareholders in PEL have acquired computer. PEL is thus obliged to offer computer training courses for users in the Unions.

3.2.6 STRATEGIC IMPACT OF COMPUTERIZATION

Information is currently considered as a source of power that improves and speed up the decision making process of managers.

In PEL however the decision making process is unstructured, hence subject to risks. The importation of spare parts and fluctuations in exchange rates and prices are examples of main risks.

The company sometime sets selling prices of imported spare parts or even for locally supplied items/spare parts, without involving actual reflectors due to inflation.

The resulting losses may be prevented by improved risk management emanating from good decisions.

There is need of having forecasting model of prices for the future which reflect the decision of buying at risk. This forecasting model of a spot price in future has a strategic impact because it gives the organization the ability to reduce risk while making good decisions.

Increase of prices without carefully calculating risks involved have many negative impacts e.g. putting off a number of good

customers as is now the case in PEL. Hence rapid analysis of information system may greatly reduce the said risks.

3.3.0 PLANNED INFORMATION ANALYSIS
3.3.1 AIMS OF SOLUTION TO THE PROBLEM

The project objective was to develop a computerised personnel system for PEL. The expected computerised system will:-

(1) Store personal details of employees and enable modifications or addition to historical data held against a person on the file. E. g valuable historic characteristics to be held by the system like employee Identity card number(p-no), salaries and accommodation status.

(2) Enhance file security and also information/data security by the use of backups and passwords respectively in order to restrict data and therefore information accessibility.

(3) Be able to produce the list of all staff by department, showing for each employee a synopsis of the information held on the master file in order to make it easy for departmental heads access details of their own staff from personnel section.

(4) Ease access to personnel records and processing within a minimum time.

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3.3.2 POTENTIAL USERS

     (1) Manpower Development and Administration department

          Personnel section

          - To be used for Personnel management as follows:-

               - Recruitment

               - Staff appraisal and promotions

               - Training

          Dispensary

               - Staff treatment entitlement

     (2) Finance department

               - To be used by payroll section

     (3) Department heads

3.3.3 FEASIBILITY STUDY

Economic Feasibility Study

Benefits

The new system is expected to deliver reports that were difficult to get and time consuming. Department managers will be able to access information of their employees in a minimum time duration. However it requires full dedication from personnel section people who are responsible for data entry.

In order to achieve this, the database should be designed to replace the manual work.

Generally dBase as a fourth generation language it is easy to use for non computer personnel with little experience in dBase. Furthermore, by using dBase in computerisation the company will benefit from the following:-

- Data duplication will be minimized or rather eliminated.

- Data access is improved. The improvement is actually performed by the database management system (DBMS).

A database management system(DBMS) consist of a collection of interrelated data and a set of programs to access that data. The collection of data is usually referred to as the database. The primary goal of a DBMS is to provide an environment that is both convenient and efficient to use in retrieving information from and storing information into the database.

DBMS also provide basic function in order to support various higher level software components. These components, mostly built-in applications . They are subdivided into the following categories:-

- Data communication
- Data dictionary
- Data representation
- Application generation just to mention a few.

With database package, when performing updates it is to be done once by Database Administrator (DBA).

Data security and integrity are easily implemented by database

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package. These are to be under the control of DBA.
Another important feature of dBase is that of data independence.
Thus with data independence, there is separation of structural
information and the data from the program which manipulate
,use data, and the provision for multiple views.

Furthermore other benefits include:-
- Improved Personnel Management
- Enhance more security and hence confidentiality to the
  Personnel Information
_ Provide ease in keeping track of staff movement

Technical feasibility

In order to have Personnel Records System running in PEL,
Installation of dBASEIV package is required. Together with this,
a person conversant with dBASEIV is required, who will take full
responsibility regarding data entry, updating and presentation of
reports. The company is currently training computer operators.

Organizational feasibility

As already mentioned earlier in section 3.2.1 part two (2). The
system will contribute in achieving one of the Key Success
Factors. Further support Management decision making.

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3.3.4 SCOPE OF PLANNED SYSTEM

In order to deliver a meaningful system this system will be limited only within a defined scope . The limitation is due to the allocated time for this assignment. Thus the output of the system are limited to be delivered from the personnel data stored which is on personal particulars form. The daily reports on personnel status will remain manual.
therefore the personnel system will be expanded in the near future in order to incorporate the following applications:-

- Training

- Pensions

- Dispensary

- Integration with Payroll

- incentive scheme

3.3.5 INPUT TO THE SYSTEM

The following will form input to the system:-

(1) Person number/ Id number (or passport number for non Tanzanian), (2) Surname and Other names, (3) Date of birth, (4) Place of birth;, (5) Sex;(6) Nationality;(7) Home/ District (8) Home address;(9) Residential address; (10) Marital status (11) Name of spouse, (12) Number of children , names,sex,ages (13) Number of dependants , names , relationship , address , (14) Next of kin name,address,relationship;(15) Medically fit (y/n); (16) Nature of handicap ; (17) Appointed date; (18) Medical exam form number;(19) Designation , scale , basic salary/year; (20) Department, section; (21) Nature of employment

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(permanent, contract, temporary, none of the three) ; (22) Date due for confirmation ; (23) Date last promoted; (24) Education qualification (college/school name, certificate name, award date, grade) ; (25) Previous employer's name, last position held, from,to, qualifications; (26)Date of retirement; (27) Last day of service ;(28)Date contract expiry(contract or temporary basis); (28)Pay increment ; (29) Leave (type,from,to);(30) Housing code(housing allowance, house by the company,none of the two); (31) House number; (32) Date of work permit;(33) Date of expiry; (34) Acted posts(from,to)

The above mentioned personal particulars require frequent updates whenever there is a change in any staff personal particulars file.

3.3.5.1 SOURCE OF INPUTS TO THE SYSTEM

- To be originate by the staff immediately after employment

- From other departments/sections like promotions

- From administration department/personnel

3.3.6 SYSTEM PROTECTION

Software and equipment protection that will be applied in PEL can be classified as follows:-

Physical protection (security)

A computer and its software are vulnerable to damage from many hazards. These include thieves, intruders, disaffected members of staff and people who just can not resist playing with every piece of equipment they come across. Also natural disasters are to be

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considered as well. These includes fire, water, heat, dust, damp, magnetic fields and power supply.

Following measures will be considered in order to provide physical security:-

(1) To provide means for keeping people out, in order to protect property and to deal in some way with fire. These means are things such as lockable doors and windows, receptionist/security guards at the entrance, fire and intruder alarms, together with fire extinguishers.

In PEL there are small computers only, that do not have their own special premises. Therefore, it will not be practical to provide special physical protection for the computer, and instead, protective measures are to be applied for the building as whole.

Notes: If the cost of fixing an alarm system is higher than the cost of replacing the computer if it is stolen, or damaged, this protection is not justified.

(2) Magnetic storage media (diskettes and disks) are vital components in operating a computer system in PEL.

Therefore they need to be locked. They also need protection of a suitable environment and should be stored in the same conditions of temperature and humidity as a computer on which they will be used. These should be kept away from un authorised users in a lockable fire-proofed box or cabinet. Also backup information should be kept in the neighbourhood.

Access security

The theft of data via copying or reading is just as much as it is physical theft. To prevent that, access control will be exercised. System authorised users are supposed to use passwords in order to access the system.

3.3.7 HARDWARE AND SOFTWARE REQUIREMENTS

- IBM compatible personal computer with hard disk and preferably 3.5´´ and 5.25´´ diskette drive and respective peripherals. An intel 80286 and above are of much more advantage.

- Database management package (dBase IV)

- Word processing (word star/wordperfect)

- Spreadsheet package (lotus 1-2-3)

3.3.8 PROCESSING

This will involve the delivery of up-to-date reports from the stored data. The report should originate from validated data.

3.3.9 SYSTEM OUTPUTS

Normally the report is expected to be produced as demanded. For example a department manager might ask for the list of his / her people on bio-data basis.
The envisaged reports to be produced are as follows:-

- Employee personal details
- Confirmations
- leave report
- Age report
- Bio-data
- Expected dates for promotion
- Retirements
- Number of posts filled/vacant per dept
- Breakdown of number of personnel in each grade

CHAPTER FOUR

SYSTEM DESIGN

4.0.0 SYSTEM DESIGN

4.1.0 DATA MODELLING

Before proceeding any further, following is an important technique of data analysis called Entity-Relationship modelling. The entity relationship (E_R) data model is based on perception of a real world which consist of a set of basic objects called entities and relationships among these objects. It was developed in order to facilitate database design by allowing the specification of an enterprise scheme. Such scheme represents the overall logical structure of the database.

In order to make the product user friendly,more emphasis here will be on the use of relational models.

Why relational modelling

Relational models are considered to be easy to follow for any non computer personnel, since the relational is the conceptual file and not the storage file(but not all conceptual files are relations).

Moreover,the relational model does not depend on the way the data can be accessed from storage media. The relational model is not machine based , be it main frame, minicomputer, or microcomputer. In each case the model remains the same. Therefore this adds an advantage of flexibility for future changes.

This type of modelling will start by identifying entity and relationship types and then use these to construct a framework into which attributes may be slotted. This model reflect how

personal data exist and also how data items relate to each
other. An entity is not data itself but something about which
data should be kept. Here the aim therefore is to define entities
that enables one to describe this system.

After entities and their relationship, normalisation of data is
to be performed in order to eliminate redundancies within the
system and also remove repeated groups (e.g. previous employment)

A model for the proposed personnel system is shown
below. Relationship is indicated by using numbers and letters of
the alphabet,for example the relationship between an employee and
children is 1-n (one to many).

4.1.1 RELATIONSHIP AMONG DIFFERENT ENTITIES

(1) An employee is related to the Department through department _code.

(2) Department is related to section through department_code.

(3) Department is related to established post through department_code.

(4) An employee is related to the spouse,next of kin, child, dependant and previous employer through personnel number(p_no).

(5) An employee is related to designation and salary scale through personnel number and designation number.

(6) An employee is relate to education qualification through personnel number (p_no) (ref. the following diagram).

(7) An employee is related to leave through Personnel number (p_no).

(8) An employee is relate to Medical Record through employee number and Medical Form number.

(9) An employee is related to Acting Posts through personnel number (p_no).

Other input will include adjustments of the above particulars. In the near future the NPF (National Provident Fund numbers can be accommodated by the system). For further details refer figures 4.1.1.1 and 4.1.1.2.

4.1.1.1   RELATIONSHIP AMONG DIFFERENT ENTITIES CONTINUES...

(1)

| EMPLOYEE | M | EMPLOYED BY | 1 | DEPARTMENT |

(2)

| DEPARTMENT | 1 | CONSISTS OF | M | SECTION |

(3)

| DEPARTMENT | 1 | OFFERS | M | ESTABLISHED POSTS |

(4)

| EMPLOYEE | 1 | HAS | 1 | FAMILY |

(5)

| EMPLOYEE | 1 | HAS | M | CHILD |

(6)

| EMPLOYEE | 1 | DECLARES | 1 | NEXT_OF_KIN |

(7)

| EMPLOYEE | 1 | HAS | M | DEPENDANT |

Fig.6

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(8)

EMPLOYEE	WAS EMPLOYED BY	PREVIOUS EMPLOYER
	1 ———————————— M	

(9)

EMPLOYEE	TITLED BY	DESIGNATION
	1 ———————————— 1	

(10)

EMPLOYEE	OBTAIN	EDUCATION
	1 ———————————— M	

(11)

EMPLOYEE	GOES ON M	LEAVE
	1 ——————————	

(12)

EMPLOYEE	HAS	MEDICAL
	1 ———————————— 1	

(13)

EMPLOYEE	PERFORM	M ACTING POSTS
	1 ————————————	

Fig.7

PERSONNEL ENTITY RELATIONSHIP (E-R) DIAGRAM

Fig.8

4.1.3 KEY ATTRIBUTES

Following are the entities with key attributes enclosed in brackets.

PERSON (p_no,surname...); CHILD (p_no,child's name...);DEPENDANT (p_no,dependant's name,relationship...); NEXT OF KIN (p_no,next of kin's name,...); DEPARTMENT (dept_no,dept name,...); SECTION (sect_no,dept_no,...); EDUCATION QUALIFICATIONS (p_no,school/college name,certificate,...); PREVIOUS EMPLOYER (p_no,name of previous employer,...); DESIGNATION + SCALE (designation name,p_no,...); FAMILY (p_no,spouse name...); ESTABLISHED POSTS (desig_no_no,designation code,designation name,...).

LEAVE (p_no,leave_type...); MEDICAL (p_no, medical form no...),

Personal Particulars before normalization

PERSON(p_no, passport_no, p_name, birth date, birth place, sex, nationality, home address, home district, marital status, service terms, confirmed date, date of retirement, basic salary/month ,engaged date, last day of service, contract expiry date(under contract or temporary basis), promoted date, medically fit(y/n), nature of handicap(if un-fit), Medical form number, work permit date, expiry date, increment date, residential address, house code, house number, number of children, number of dependant, acting posts(desig_no, designation name,...), leave(type,from...) department (dept_no, department name...), section (sect_no, section name...),designation + scale(desig_no, designation name,...), education qualification(school/college...), previous employer(name, position held...), spouse(name,date of birth...), children(name, date of birth...), dependant(name, relationship...),

next of kin(name,address...).

4.1.4 ENTITIES WITH COMPLETE SET OF ATTRIBUTES
(Key attributes have been underlined)

PERSON (P no, Passport_no(for non_citizen) p_name, sex, birth date, birth place, nationality, home district, home address ,marital status, confirmed date, highest level of education attained, department_code, medically fit (y/n), nature of handicap, medical form number, increment date, promoted date, home address, terms of service, contract expiry date(under contract or temporary basis), engagement date, last day of service, retirement date , housing code, house number, residential address, salary(p.m.), work permit date(non-citizen) , expiry date (non-citizen),number of children,number of dependants, designation + scale(desig_no, designation name...), spouse(name, date of birth...),next of kin(name, address...), father's name, mother's name)).

CHILD (p no,child's name,sex,birth date).

DEPENDANT (p no,dependant name,dependant relationship,dependant
          address).

DEPARTMENT (dept no,dept name,number of sections).
SECTION (sect no,dept no,sect_name,number of employees).

EDUCATION QUALIFICATION(p no,school/college name,certificate
                       name,award date, pass grade).

PREVIOUS EMPLOYER (p no,name of employer,last position
                   held,from,to,salary).

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ACTING POSTS (p no,p code,post name,from,to).

LEAVE (p no,surname,leave nature,from,to)

ESTABLISHED   POSTS(Designation-code,department-code,designation
        total posts,filled posts).

Since 4.1.4 above does not have repeating group,it is already in
the first normal form. Thus a relation is said to be in the first
normal form if there are no repeating groups in the relation.

Second normal form(2NF)

The relation is said to be in the second normal form (2NF),if
it is in the first normal form and every non- key attribute is
fully dependent on the key attribute.

PERSON   (p no,p name, birth date, birth place, sex,
nationality, home district, home address, marital status,
salary(p.m.), terms of service, confirmed   date, highest level
of education attained (education qualifications) promoted date,
department code, salary p/m, increment date, retirement date,
house code, house number, contact expiry date, work permit date,
expiry date,).

CHILD   (p no,child name,sex,age); PERSON´S FAMILY (p no,name   of
          wife/husband,number   of   children,number   of
dependants,residential   address);   NEXT   OF   KIN   (next   of
kin   name,p no,next   of   kin   address,next   of   kin
relationship);   DEPENDANTS   (dependant   name.p no   dependant
relationship,dependant   address);   DEPARTMENT
(dept no.,dept   name,number   of   sections,name   of
department   head);   SECTION   (sect no,dept no,sect
name,number of employees, section head); DESIGNATION + SCALE
(designation name,p no scale, engagement date, promoted date,
last day of employment, department   code, department name,
section code, section name);   PREVIOUS   EMPLOYER (pervious
p name,p no,last position held,from,to);
LEAVE   (leave   name   ,p no   from,to);ACTING   POSTS
             (des code,p no,des_name,from,to).
MEDICAL(form no,p no,medical fit(y/n),nature of handicap).

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Third normal form

The following represent relations in the third normal form (2NF).The relation is said to be in the third normal form if it is in the second normal form and there is no transitive dependence among non_key attributes.

PERSON (p no,p_name, birth date, birth place, sex, nationality, home district, home address, marital status, salary(p.m.), terms of service, confirmed date, highest level of education attained (education qualifications) promoted date, department code, salary p/m, increment date, retirement date, house code, house number, contact expiry date, work permit date, expiry date,)

DEPARTMENT (dept no, dept _ name, number of sections, name of department head)

SECTION (sect no,dept no,sect_name,number of employees,section head)

DESIGNATION (des no,p no, scale, engagement date, promotion ,last day of service, dept_no, dept_name, sect_no, sect_name,retirement day);

CHILD (p no,child name,sex,date of birth);

FAMILY (p no,name of wife/husband, birth date of wife/husband, number of children, number of dependants,residential address);

NEXT OF KIN (next of kin name,p no,next of kin address,next of
            kin relationship);

DEPENDANT (dependant name,p no ,dependant relationship,dependant
            address);

PREVIOUS   EMPLOYERS(previous   emp name,p no,last   position
held,from,to).
ACTED POSTS(desg code,p no,des_name,from,to)
MEDICAL(form no,p no,medical fit(y/n),nature of handicap)

4.1.5 DATA DICTIONARY

During the design of the Data Dictionary, the reference was made to the following database locations:-

DATABASE NAME	LOCATION
PERSON	PE
DESIGNATION	DE
SECTIONS	SE
LEAVE	LE
EDUCATION	ED
EST_POST	ES
DEPARTME	DM
CHILD	CH
FAMILY	FA
NXT_OF_K	NX
ACT_POST	AP
MEDICAL	ME
PREV_EMPL	PR
DEPENDANT	DP

NAME	DESCRIPTION	ALIASES	TYPE	LENGTH	LOCATION
PERSONNEL NUMBER	A UNIQUE NUMBER THAT IDENTIFIES AN EMPLOYEE	P_NO	NUMERIC	6	PE,DE,DP,SE,ED NX,PA,ME,PR CH,FA
PASSPORT NUMBER	IT IS APPLICABLE FOR NON_CITIZEN	PASSPOR_NO	CHARACTER	9	PE
SURNAME	LAST NAME	SURNAME	CHARACTER	15	PE
FIRST NAME	EMPLOYEE'S FIRST NAME	F_NAME	CHARACTER	15	PE
SECOND NAME	EMPLOYEE'S SECOND NAME	S_NAME	CHARACTER	15	PE
SEX	EMPLYEE'S GENDER	SEX	CHARACTER	1	PE
BIRTH DATE	EMPLOYEE'S DATE OF BIRTH	BIRTH_DATE	DATE	8	PE
BIRTH PLACE	EMPLOYEE'S PLACE OF BIRTH	BIRTH_PLAC	CHARACTER	20	PE
NATIONALITY	EMPLOYEE'S NATION OF ORIGIN	NATIONALIT	CHARACTER	22	PE
HOME ADDRESS	EMPLOYEE'S HOME ADDRESS	HOME_ADDR	CHARACTER	44	PE
HOME DISTRICT	EMPLOYEE'S HOME DISTRICT	HOME_DISTR	CHARACTER	10	PE
MARITAL STATUS CODE	EMPLOYEE'S MARITAL STATUS CODE(M,S,W, OR D) REF 4.1.6	MARST_CODE	CHARACTER	1	PE
SERVICE TERMS	EMPLOYEE'S EMPLOYMENT TERMS (P,C,OR T) REF.4.1.6	SERV_TERMS	CHARACTER	1	PE
CONFIRMATION DATE	EMPLOYEE'S DATE FOR CONFIRMATION	CONFR_DATE	DATE	8	PE

NAME	DESCRIPTION	ALIASES	TYPE	LENGTH	LOCATION
CONFIRMATION DATE	EMPLOYEE'S EDUCATION QUALIFICATION	EDUC_QUAL	CHARACTER	40	
DEPARTMENT CODE	ENPLOYEE'S DEPARTMENT CODE	DEPT_NO	CHARACTER	5	PE,DE,DM
BASIC SALARY	EMPLOYEE'S BASIC SALARY (ANNUAL)	BASIC_SAL	NUMERIC	12	PE
DATE OF INCREMENT	EMPLOYEE'S (DUE) DATE FOR INCREMENT	INCRME_DAT	DATE	8	PE
HOUSE CODE	EMPLOYEE'S HOUSING STATUS (H.C.OR N)	HOUSE_CODE	CHARACTER	1	PE
HOUSE NUMBER	EMPLOYEE'S HOUSE NUMBER IF STATUS="C"	HOUSE_NO	CHARACTER	11	PE
CONTRACT EXPIRY DATE	EMPLOYEE'S CONTRACT EXPIRY DATE IF SERVICE TERMS="C"	CON_EX_DAT	DATE	8	PE
WORK PERMIT DATE	EMPLOYEE'S DATE THAT WORK PERMIT BEGINS	WOR_PEMDA	DATE	8	PE
EXPIRY DATE	EMPLOYEE'S DATE FOR WORK PERMIT EXPIRY IF NOT CITIZEN	EXP_DATE	DATE	8	PE

NAME	DESCRIPTION	ALIASES	TYPE	LENGHT	LOCATION
DESIGNATION TITLE	EMPLOYEE'S TITLE OF EMPLOYMENT	DESIG_NAME	CHARACTER	29	DE
SCALE_CODE	EMPLOYEE'S SALARYSCALE CODE	SCALE_CODE	NUMERIC	2	DE
ENGAGEMENT DATE	EMPLOYEE'S DATE OF ENGAGEMENT TO WORK	ENG_DATE	DATE	8	DE
RETIREMENT DATE	EMPLOYEE'S (DUE) DATE FOR RETIREMENT	RETIRE_DAT	DATE	8	DE
DATE PROMOTED	EMPLOYEE,S(DUE) DATE FOR PROMOTION	PROMOT_DAT	DATE	8	DE
DATE LEFT	DATE ON WHICH AN EMPLOYEE LEFT THE COMPANY	LEFT_DATE	DATE	8	DE
SPOUSE NAME	THE NAME OF WIFE /HUSBAND OF AN EMPLOYEE	SPOUSE_NAM	CHARACTER	25	FA
SPOUSE BIRTH DATE	EMPLOYEE'S WIFE /HUSBAND DATE OF BIRTH	S_BRTH_DAT	DATE	8	FA
NUMBER OF CHILDREN	EMPLOYEE'S NUMBER OF CHILDREN	NO_OF_CHILD	NUMERIC	2	FA
OF NUMBER DEPENDANTS	EMPLOYEE'S NUMBER OF DEPENDANTS	NO_OF_DEPE	NUMERIC	1	FA

DATA DICTIONARY CONTINUES...

NAME	DESCRIPTION	ALIASES	TYPE	LENGTH	LOCATION
RESIDENCE ADDRESS	EMPLOYEE'S ADDRESS FOR PLACE OF RESIDENCE	RESIDE_ADD	CHARACTER	30	FA
FATHER,S NAME	EMPLOYEE'S FATHER'S NAME	FATHR_NAME	CHARACTER	25	FA
MATHER'S NAME	EMPLOYEE'S MOTHER'S NAME	MOTHR_NAME	CHARACTER	25	FA
DATE STARTED ACTING	DATE ON WHICH AN EMPLOYEE STARTED ACTING	ACT_FROM	DATE	8	AP
LAST DATE OF ACTING	DATE ON WHICH AN EMPLOYEE LAST ACTED	ACT_TO	DATE	8	AP
CHILD NAME	EMPLOYEE,S CHILD NAME	CHILD_NAME	CHARACTER	25	CH
CHILD SEX	EMPLOYEE'S CHILD GENDER	CHILD_SEX	CHARACTER	1	CH
CHILD AGE	EMPLOYEE'S CHILD AGE	CHILD_AGE	NUMERIC	2	CH
DEPENDANT SURNAME	EMPLOYEE'S DEPENDANT LAST NAME	DEPEN_SNAM	CHARACTER	25	DP
DEPENDANT'S OTHER NAMES	EMPLOYEE,S DEPENDANT OTHER NAMES	DEPEN_ONAM	CHARACTER	25	DP
DEPENDANT RELATIONSHIP	THE RELATIONSHIP BETWEEN DEPENDANT AND EMPLOYEE	DEPEN_REL	CHARACTER	9	DP

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NAME	DESCRIPTION	ALIASES	TYPE	LENGTH	LOCATION
DEPENDANT ADDRESS	EMPLOYEE'S DEPENDANT CURRENT ADDRESS	DEPEND_ADD	CHARACTER	35	DP
SCHOOL/ COLLEGE	NAME OF SCHOOL OR COLLEGE FROM WHICH AN EMPLOYEE WAS AWARDED CERTIFICATE	SCH_COLLEG	CHARACTER	15	ED
CERTIFICATE NAME	EMPLOYEE'S TITLE OF CERTIFICATE	CERT_NAME	CHARACTER	20	ED
AWARD DATE	EMPLOYEE'S DATE OF CERTIFICATE AWARD	AWARD_DATE	DATE	8	ED
GRADE	THE GRADE OBTAINED BY THE EMLOYEE	GRADE	CHARACTER	9	ED
POSTS AVAILABLE	TOTAL POSTS AVAILABLE FOR THE PARTICULAR DESIGNATION	TOT_POSTS	NUMERIC	2	TP
POSTS FILLED	POSTS ALREADY FILLED	FIL_POSTS	NUMERIC	3	TP
NAME OF NEXT OF KIN	EMPLOYEE,S NEXT OF KIN'S NAME	NEK_NAME	CHARACTER	29	NE
NEXT OF KIN ADDRESS	CURRENT ADDRESS FOR EMPLOYEE'S NEXT OF KIN	NEK_ADDR	CHARACTER	35	NE

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NAME	DESCRIPTION	ALIASES	TYPE	LENGTH	LOCATION
NEXT OF KIN RELATION	EMPLOYEE'S RELATIONSHIP WITH NEXT OF KIN	NEK_RELAT	CHARACTER	9	NE
PREVIOUS EMPLOYER NAME	EMPLOYEE'S PREVIOUS EMPLOYER'S NAME	EMP_NAME	CHARACTER	29	PR
POST HELD	EMPLOYEE'S POST POST WHEN WITH PREVIOUS EMPLOYER	POST_HELD	CHARACTER	9	PR
THE LAST DATE FOR THE ABOVE POST	DATES WHEN AN EMPLOYEE WAS GIVEN THE ABOVE MENTIONED POST	POS_HLD_FR	DATE	8	PR
TYPE ON LEAVE	TYPE OF LEAVE TAKEN BY EMPLOYEE	LEAVE_TYPE	CHARACTER	20	LE
DATE ON WHICH LEAVE COMMENCE	THE DAY AN EMPLOYEE WENT ON LEAVE	LEAVE_FROM	DATE	8	LE
LAST DAY WENT ON LEAVE	THE LAST DAY ON WHICH THE ABOVE MENTIONED LEAVE ENDS	LEAVE_TO	DATE	8	LE
DEPARTMENT NAME	THE NAME OF DEPARTMENT	DEPT_NAME	CHARACTER	20	DM,DE
DEPARTMENT HEAD SURNAME	DEPARTMENT HEAD'S LAST NAME	HED_SURNAME	CHARACTER	15	DM

NAME	DESCRIPTION	ALIASES	TYPE	LENGHT	LOCATION
DEPARTMENT HEAD FIRST NAME	DEPARTMENT HEAD'S OTHER NAMES	HED_ONAME	CHARACTER	25	DM
NUMBER OF SECTIONS	NUMBER OF SECTIONS IN THE DEPARTMENT	NO_OF_SECT	NUMERIC	2	DM
SECTION NAME	THE NAME OF SECTION	SECT_NAME	CHARACTER	20	SE
SECTION CODE	SECTION CODE	SECT_NO	CHARACTER	4	SE
SECTION HEAD SURNAME	SECTION HEAD LAST NAME	SHED_SNAME	CHARACTER	15	SE
SECTION HEAD OTHER NAMES	SECTION HEAD'S OTHER NAMES	SHED_ONAME	CHARACTER	25	SE

4.1.6 INPUT AND OUTPUT DESIGN

Input Forms

An input form in other words represent an input screen for an employee record. Though the Author had represented field by empty boxes, (refer pages 76 & 77) the actual formats are represented as follows:-

Key type	Representation
A	Alphabetic character
X	Any character
!	Any character,but if alphabetic should be in upper case
9	Numeric

Code design

Code design helps in minimizing the space to be occupied by input data. Hence minimum storage space to be declared by input data. Also an Author do not want to diverge from the payroll for example like Personnel number. But P_no here reflects personnel number (i.e. identity card number) and not the one used by the payroll. For that matter the personnel number is supposed to introduced to the Payroll in order to be linked to the Personnel system.

- Marital status code
This is a one character code for four types of marital status (i.e. married,single,divorced and widowed).

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- Designation + scale code

This will be introduced in order to make reporting easy like when one wants to have information about the established posts on particular department, and check for over staffing or under staffing (i.e. managerial,senior,middle cadre and junior staff) to be represented by their scale codes.

- Department code

This was to be adapted from the Payroll. But the code which is currently linking the Department to the Payroll system,is actually the account number for the respective Department. For that matter,the Author had introduced a five character Department code.

The system is to be interlinked to the Payroll system in the near future. Therefore personnel number is to be adapted from the current Payroll system which is computerised.

However the Author does not agree with the current payroll number used (p/no).Well, p/no can be there,but the personnel number should be used by Payroll and a personnel systems.

- Employment terms code

This is a single digit alphabetic, to represent permanent,on contract,and temporary employment(P,C,T, respectively)

- Housing code

This is a single character alphabetic to represent the following:-

'H' - house allowance

'C' - housed by the company

'N' - none of the above

- Section code

It is four characters code. The first two characters are picked from the Department initials while last two from section initials.

PAMBA ENGINEERING LIMITED
PERSONAL PARTICULARS FORM 1

PERSONNEL_NO: [ ]   **PASSPORT_NO(FOR NON_CITIZEN):** [ ]

SURNAME: [ ]   **FIRST NAME:** [ ]

SECOND NAME: [ ]   **SEX(F/M):** [ ]   **BIRTH DATE:(DD/MM/YY)** [ ]

BIRTH PLACE: [ ]   **NATIONALITY:** [ ]

HOME DISTRICT: [ ]   **HOME ADDRESS:** [ ]

RESIDENTIAL ADDRESS: [ ]

NO_OF_CHILDREN: [ ]   **MARITAL STATUS CODE:** [ ]   **NO_OF_DEPENDANTS:** [ ]

NAME OF SPOUSE: [ ]   **DATE OF BIRTH(DD/MM/YY):** [ ]

NEXT OF KIN NAME: [ ]   **RELATIONSHIP:** [ ]

ADDRESS: [ ]

DESIGNATION: [ ]   **CODE:** [ ]   **SCALE:** [ ]

EDUCATION QUALIFICATIONS: [ ]

DEPARTMENT CODE: [ ]   **SECTION CODE:** [ ]

EMPLOYMENT TERMS CODE(P,C,T): [ ]   **BASIC SALARY(P.M):** [ ]

Fig.4

PAMBA ENGINEERING LIMITED
PERSONAL PARTICULARS FORM 2

HOUSING CODE: [ ]   HOUSE NUMBER: [ ]

APPOINTED DATE(DD/MM/YY): [ ]   (DUE)CONFIRMATION DATE: [ ]

MEDICALLY FIT(Y/N): [ ]   (IF UNFIT)HANDICAP NATURE: [ ]

MEDICAL FORM_NO: [ ]   HIGHEST ED.LEVEL(SCHOOL/COLLEGE): [ ]

CERTIFICATE NAME: [ ]   AWARD DATE:D(DD/MM/YY) [ ]   GRADE: [ ]

PREVIOUS EMPLOYER: [ ]   LAST POST HELD: [ ]

FROM: [ ]   TO: [ ]   SALARY(P.M): [ ]

DATE OF RETIREMENT:(DD/MM/YY): [ ]   LAST DAY OF SERVICE: [ ]

ACTING POST NAME: [ ]

ACTING POST FROM: [ ]   ACTING POST TO: [ ]

STUDY LEAVE FROM: [ ]   PAID LEAVE FROM: [ ]

STUDY LEAVE TO: [ ]   PAID LEAVE TO: [ ]

FOR NON_CITIZEN   FARE PAID LEAVE: [ ]

DATE OF WORK PERMIT: [ ]   DATE OF CONTRACT EXPIRY: [ ]

DATE OF EXPIRY(DD/MM/YY): [ ]

Fig.5

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Output Design

The output for Personnel system is expected to be both on screen display and as a printed report(according to user specification).

Screen   Design

The input from Personnel System is not different from the input form so that the report/information is meaningful.

4.2.0 SYSTEM DESIGN METHODOLOGY

The design documentation is to be performed using HIPO (Hierarchy plus Input,process,output) technique .

H (Hierarchy) chart:

This is a tree - like representation of all the processes. It shows what must be done before what and also shows how to get to different destinations. Relationship between different activities are also shown.

IP(Input Process Output) chart:

The IPO chart takes the hierarchy chart, break it into Input, Process and Outputs. The input part shows the **Inputs** to the system, the **Output** part shows the output from the system while the **Process** part shows processes including conditional statements and branching.

A series of different HIPO charts taken together , constitute a valuable documentation and design aid (instead of using bubble charts and data flow diagrams).

The higher lever of HIPO charts is used when considering the overall system . A complete set of HIPO charts (often called a package) is constructed on top down design principles,so that each level of chart in the package is a sub-set of the level above.

There are three levels of chart in the typical HIPO package:- The visual table of contents,overview diagrams and detail

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diagrams.

4.2.1   DATABASE FILES TO BE ACCESSED

- Person records file
- List of Departments and corresponding posts
- Personnel master
- Family database
- Leave database
- Child database
- Medical database
- Next of kin database
- Dependant database
- Designation database
- Section database
- Acting posts database
- Previous employment database

Following are the database mentioned above.

4.2.1.1 DATABASE DESIGN

```
                      ┌─────────────────────┐
                      │     PERSONNEL        │
                      │  DATABASE    0.0     │
                      └──────────┬──────────┘
                                 │
         ┌──────────────┬────────┴────────┬──────────────(A)
         │              │                 │              │
┌────────────────┐┌────────────────┐┌──────────────┐┌──────────────┐
│  PERSON.DBF    ││  DESIGNTI.DBF  ││  FAMILY.DBF  ││  CHILD.DBF   │
│          1.0   ││          2.0   ││         3.0  ││         4.0  │
└────────────────┘└────────────────┘└──────────────┘└──────────────┘

                               (A)
                                │
         ┌──────────────┬───────┴─────────┬──────────────(A)
         │              │                 │              │
┌────────────────┐┌────────────────┐┌──────────────┐┌──────────────┐
│ DEPARTME.DBF   ││ SECTIONS.DBF   ││ DEPENDAT.DBF ││ NXT_OF_K.DBF │
│          5.0   ││          6.0   ││         7.0  ││         8.0  │
└────────────────┘└────────────────┘└──────────────┘└──────────────┘
```

Elaboration on each of the database structures will follow on the next pages

DATABASE DESIGN CONTINUES...

```
┌──────────────┬──────────────────┬──────────────────┬──────────────────┐
(A)                                                                    (A)
┌──────────────┐ ┌──────────────┐ ┌──────────────┐ ┌──────────────┐
│ MEDICAL.DBF  │ │ EDUCATIN.DBF │ │  LEAVE.DBF   │ │ EST_POST.DBF │
│         9.0  │ │        10.0  │ │       11.0   │ │        12.0  │
└──────────────┘ └──────────────┘ └──────────────┘ └──────────────┘
```

```
┌──────────────────────┐
(A)
┌──────────────┐          ┌──────────────┐
│ PREV_EMP.DBF │          │ ACT_POST.DBF │
│        13.0  │          │       14.0   │
└──────────────┘          └──────────────┘
```
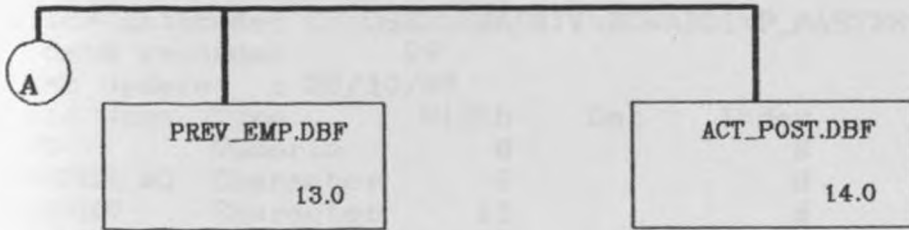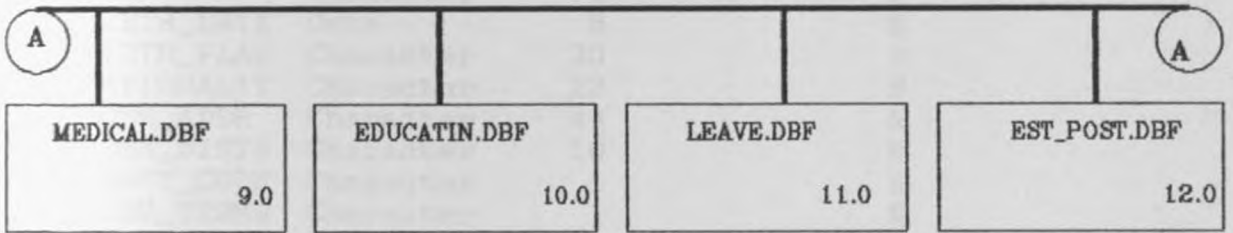
Elaboration on each of the database structures will follow   next page

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4.2.1.2 DATABASE STRUCTURES

```
Structure for database: C:\USER\DBASEIV\EDWARDI\PERSON.DBF
Number of data records:        18
Date of last update   : 19/10/93
Field   Field Name  Type        Width   Dec   Index
    1   P_NO        Numeric         6           N
    2   PASSPOR_NO  Character       9           N
    3   SURNAME     Character      15           N
    4   F_NAME      Character      15           N
    5   S_NAME      Character      15           N
    6   SEX         Character       1           N
    7   BIRTH_DATE  Date            8           N
    8   BIRTH_PLAC  Character      20           N
    9   NATIONALIT  Character      22           N
   10   HOME_ADDR   Character      44           N
   11   HOME_DISTR  Character      10           N
   12   MARST_CODE  Character       1           N
   13   SERV_TERMS  Character       1           N
   14   CONFR_DATE  Date            8           N
   15   EDUC_QUAL   Character      40           N
   16   DEPT_NO     Character       5           N
   17   INCRME_DAT  Date            8           N
   18   BASIC_SAL   Numeric        12     2.     N
   19   HOUSE_CODE  Character       1           N
   20   HOUSE_NO    Character      11           N
   21   CON_EX_DAT  Date            8           N
   22   WOR_PEM_DA  Date            8           N
   23   EXP_DATE    Date            8           N
** Total **                       277
```

```
Structure for database: C:\USER\DBASEIV\EDWARDI\P_MASTER.DBF
Number of data records:        29
Date of last update   : 20/10/93
Field   Field Name  Type        Width   Dec   Index
    1   P_NO        Numeric         6           N
    2   PASSPOR_NO  Character       9           N
    3   SURNAME     Character      15           N
    4   F_NAME      Character      15           N
    5   S_NAME      Character      15           N
    6   SEX         Character       1           N
    7   BIRTH_DATE  Date            8           N
    8   BIRTH_PLAC  Character      20           N
    9   NATIONALIT  Character      22           N
   10   HOME_DISTR  Character      10           N
   11   HOME_ADDR   Character      44           N
   12   MARST_CODE  Character       1           N
   13   CONFR_DATE  Date            8           N
   14   EDUC_QUAL   Character      40           N
   15   DEPT_NO     Character       5           N
   16   DEPT_NAME   Character      20           N
   17   SECT_NO     Character       4           N
```

18	SECT_NAME	Character	20		N
19	BASIC_SAL	Numeric	12	2	N
20	INCRME_DAT	Date	8		N
21	RETIRE_DAT	Date	8		N
22	HOUSE_CODE	Character	1		N
23	HOUSE_NO	Character	11		N
24	CON_EX_DAT	Date	8		N
25	WOR_PEM_DA	Date	8		N
26	EXP_DATE	Date	8		N
27	DESIG_NO	Character	7		N
28	DESIG_NAME	Character	29		N
29	SCALE_CODE	Numeric	2		N
30	ENG_DATE	Date	8		N
31	SERV_TERMS	Character	1		N
32	PROMOT_DAT	Date	8		N
33	LEFT_DATE	Date	8		N
34	SPOUSE_NAM	Character	20		N
35	S_BRTH_DAT	Date	8		N
36	NO_OF_CHLD	Numeric	2		N
37	NO_OF_DEPE	Numeric	1		N
38	RESIDE_ADD	Character	30		N
** Total **			452		

Structure for database: C:\USER\DBASEIV\EDWARDI\FAMILY.DBF
Number of data records: 0
Date of last update   : 14/09/93

Field	Field Name	Type	Width	Dec	Index
1	P_NO	Numeric	6		N
2	SPOUSE_NAM	Character	25		N
3	S_BRTH_DAT	Date	8		N
4	NO_OF_CHLD	Numeric	2		N
5	NO_OF_DEPE	Numeric	1		N
6	RESIDE_ADD	Character	30		N
7	FATHR_NAME	Character	25		N
8	MOTHR_NAME	Character	25		N
** Total **			123		

Structure for database: C:\USER\DBASEIV\EDWARDI\DESIGNTI.DBF
Number of data records: 16
Date of last update   : 20/10/93

Field	Field Name	Type	Width	Dec	Index
1	DESIG_NO	Character	7		N
2	P_NO	Numeric	6		Y
3	DESIG_NAME	Character	29		N
4	DEPT_NO	Character	5		N
5	SCALE_CODE	Numeric	2		N
6	DEPT_NAME	Character	20		N
7	SECT_NO	Character	4		N
8	SECT_NAME	Character	20		N
9	ENG_DATE	Date	8		N
10	RETIRE_DAT	Date	8		N
11	PROMOT_DAT	Date	8		N
12	LEFT_DATE	Date	8		N
** Total **			126		

```
Structure for database: C:\USER\DBASEIV\EDWARDI\SECTIONS.DBF
Number of data records:         15
Date of last update    : 24/09/93
Field  Field Name  Type        Width    Dec     Index
    1  SECT_NO     Character       4                N
    2  DEPT_NO     Character       5                N
    3  SECT_NAME   Character      20                N
    4  EMPLOYEES   Numeric         3                N
    5  SHED_SNAME  Character      15                N
    6  SHED_ONAME  Character      25                N
** Total **                      73


Structure for database: C:\USER\DBASEIV\EDWARDI\DEPARTME.DBF
Number of data records:          9
Date of last update    : 30/09/93
Field  Field Name  Type        Width    Dec     Index
    1  DEPT_NO     Character       5                N
    2  DEPT_NAME   Character      20                N
    3  NO_OF_SECT  Numeric         2                N
    4  HED_SURNAM  Character      15                N
    5  HED_ONAMES  Character      25                N
** Total **                      68

Structure for database: C:\USER\DBASEIV\EDWARDI\EDUCATIN.DBF
Number of data records:         10
Date of last update    : 11/10/93
Field  Field Name  Type        Width    Dec     Index
    1  P_NO        Numeric         6                Y
    2  SCH_COLLEG  Character      15                N
    3  CERT_NAME   Character      20                N
    4  AWARD_DATE  Date            8                N
    5  GRADE       Character       7                N
** Total **                      57


Structure for database: C:\USER\DBASEIV\EDWARDI\NXT_OF_K.DBF
Number of data records:          0
Date of last update    : 30/09/93
Field  Field Name  Type        Width    Dec     Index
    1  NEK_NAME    Character      29                N
    2  P_NO        Numeric         6                N
    3  NEK_ADDR    Character      35                N
    4  NEK_RELATN  Character       9                N
** Total **                      80
```

```
Structure for database: C:\USER\DBASEIV\EDWARDI\ACT_POST.DBF
Number of data records:        3
Date of last update   : 13/09/93
Field   Field Name  Type        Width    Dec    Index
    1   DESIG_NO    Character      7              N
    2   P_NO        Numeric        6              N
    3   DESIG_NAME  Character     29              N
    4   ACT_FROM    Date           8              N
    5   ACT_TO      Date           8              N
    6   COMMENTS    Memo          10              N
** Total **                       69

Structure for database: C:\USER\DBASEIV\EDWARDI\CHILD.DBF
Number of data records:        9
Date of last update   : 17/09/93
Field   Field Name  Type        Width    Dec    Index
    1   P_NO        Numeric        6              N
    2   CHILD_NAME  Character     25              N
    3   CHILD_SEX   Character      1              N
    4   CHILD_AGE   Numeric        2              N
** Total **                       35

Structure for database: C:\USER\DBASEIV\EDWARDI\DEPENDAT.DBF
Number of data records:        0
Date of last update   : 14/09/93
Field   Field Name  Type        Width    Dec    Index
    1   DEPEN_SNAM  Character     15              N
    2   DEPEN_ONAM  Character     25              N
    3   P_NO        Numeric        6              N
    4   DEPEN_REL   Character      9              N
    5   DEPEN_ADD   Character     35              N
** Total **                       91

Structure for database: C:\USER\DBASEIV\EDWARDI\PREV_EMP.DBF
Number of data records:        0
Date of last update   : 10/09/93
Field   Field Name  Type        Width    Dec    Index
    1   EMP_NAME    Character     27              N
    2   P_NO        Numeric        6              N
    3   POS_HELD    Character      9              N
    4   POS_HLD_FR  Date           8              N
    5   POS_HLD_TO  Date           8              N
** Total **                       59
```

```
Structure for database: C:\USER\DBASEIV\EDWARDI\EST_POST.DBF
Number of data records:        6
Date of last update     : 11/10/93
Field   Field Name  Type        Width   Dec    Index
    1   DESIG_NO    Character      7                N
    2   DEPT_NO     Character      5                N
    3   DESIG_NAME  Character     29                N
    4   TOT_POSTS   Numeric        3                N
    5   FIL_POSTS   Numeric        3                N
** Total **                      48


Structure for database: C:\USER\DBASEIV\EDWARDI\MEDICAL.DBF
Number of data records:        0
Date of last update     : 10/09/93
Field   Field Name  Type        Width   Dec    Index
    1   MEDFORM_NO  Character      7                N
    2   P_NO        Numeric        6                N
    3   MED_FIT     Logical        1                N
    4   HANDICAP    Character     22                N
** Total **                      37


Structure for database: C:\USER\DBASEIV\EDWARDI\EDUCATIN.DBF
Number of data records:       10
Date of last update     : 11/10/93
Field   Field Name  Type        Width   Dec    Index
    1   P_NO        Numeric        6                Y
    2   SCH_COLLEG  Character     15                N
    3   CERT_NAME   Character     20                N
    4   AWARD_DATE  Date           8                N
    5   GRADE       Character      7                N
** Total **                      57
```

DATABASE ACCESS METHODS
DESCRIPTION:- PEL-PERSONNEL SYSTEM

The following strategy was used during program design to access the database
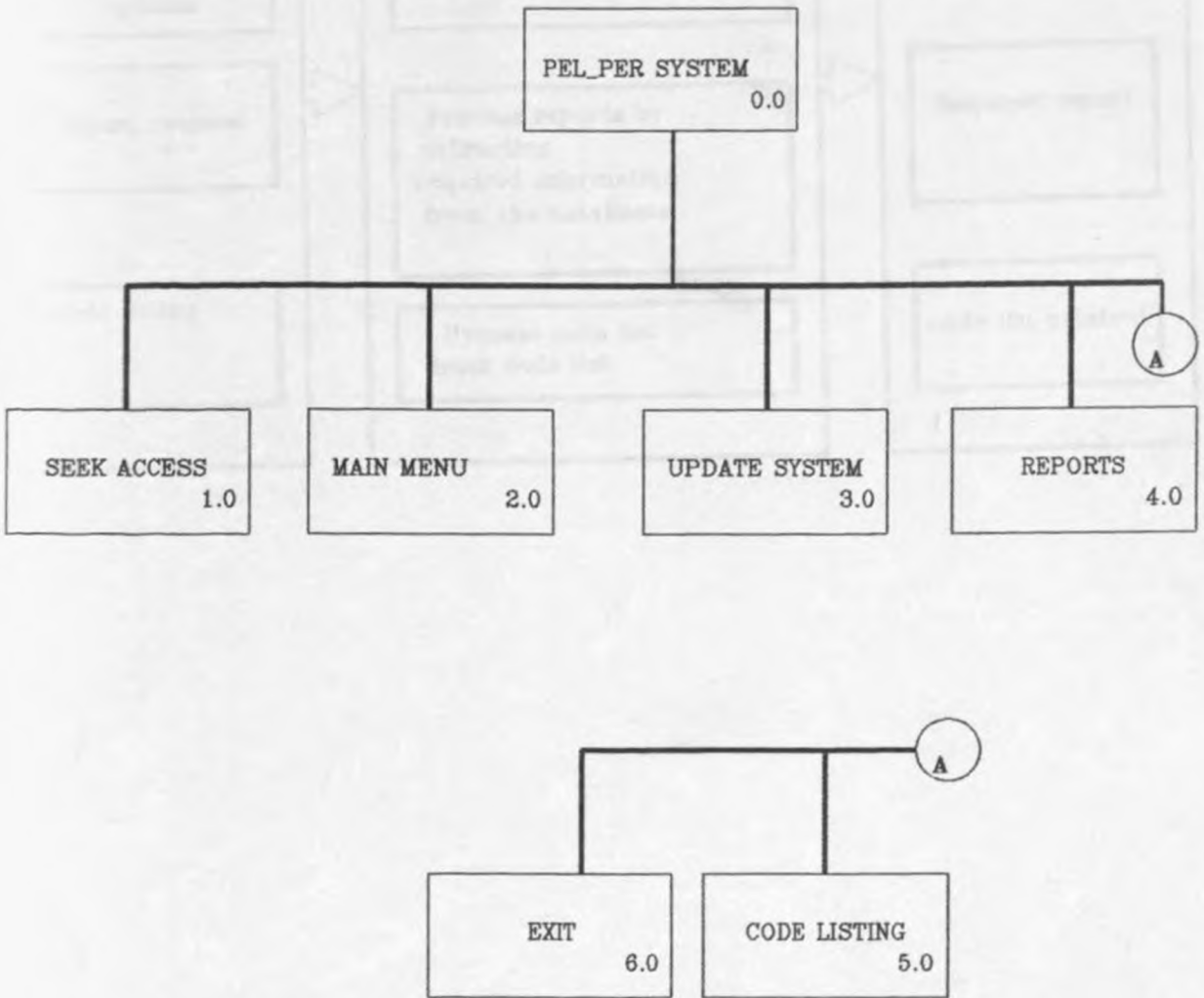
DIAGRAM 0.0:-

Visual Table of Contents For PEL_PERSONNEL SYSTEM

DESCRIPTION:-PROGRAM MAIN

INPUT	PROCESS	OUTPUT

Personnel records /other records updates	Enter updates and process updates	Update Personnel file (master)and other updates
Report request	Process reports by extracting required information from the databases	Required report
Code listing	Process code list from code list	code list printout
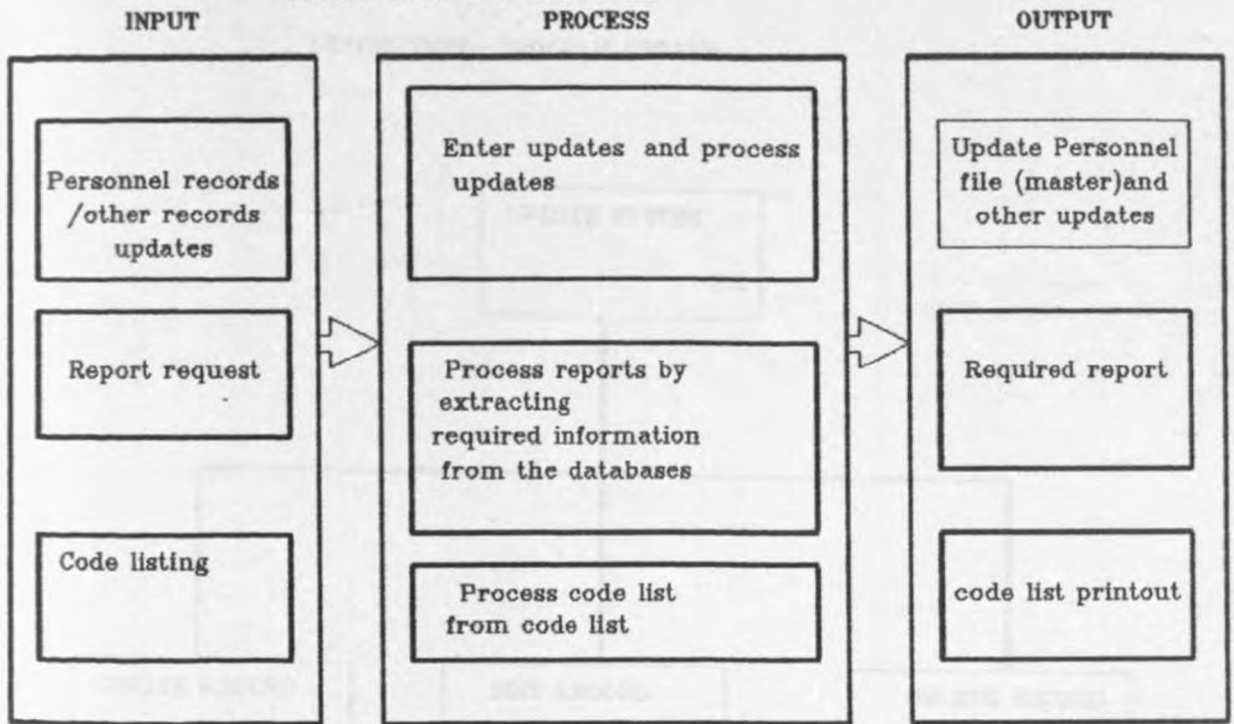
DIAGRAM 0.0:-

- An overview diagram of a simplified PERSONNEL RECORDS PROCESSING main procedure

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DESCRIPTION:-PROGRAM UPDATE

```
                    ┌──────────────────────┐
                    │ UPDATE SYSTEM        │
                    │                      │
                    │                 3.0  │
                    └──────────┬───────────┘
                               │
         ┌─────────────────────┼─────────────────────┐
         │                     │                     │
┌────────────────┐   ┌────────────────┐   ┌────────────────┐
│ CREATE RECORD  │   │ EDIT RECORD    │   │ DELETE RECORD  │
│                │   │                │   │                │
│          3.1   │   │          3.2   │   │          3.3   │
└────────────────┘   └────────────────┘   └────────────────┘
```
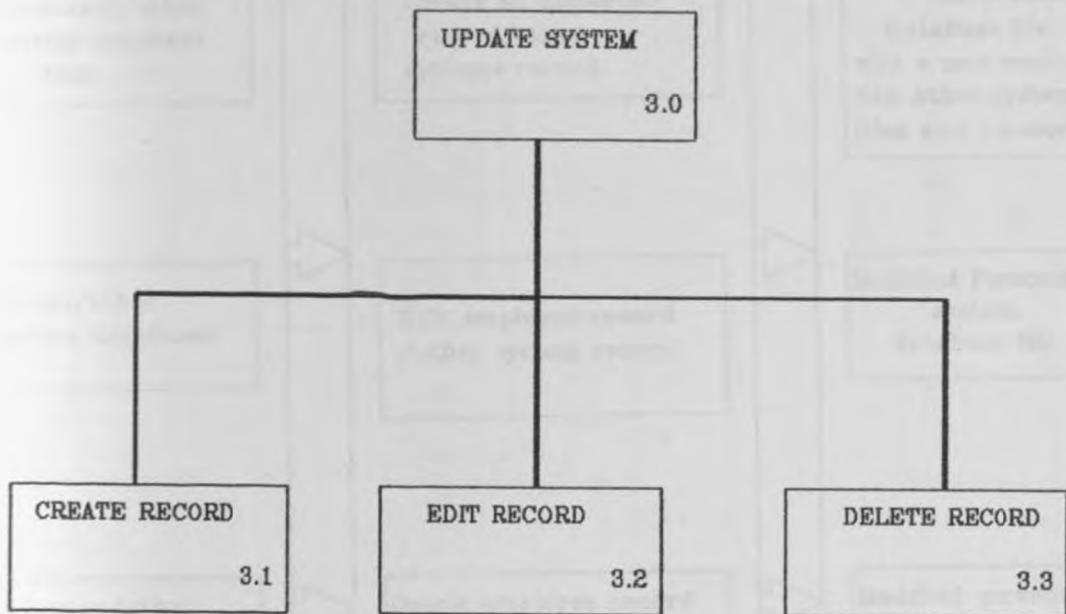
DIAGRAM 3.0:- Visual Table Of Contents for Procedure-Update

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DESCRIPTION:-UPDATE PROGRAM

INPUT	PROCESS	OUTPUT
Personnel/other system database files	Create an employee record/other systems record	Old Person database file and a new record/ Old other system files and a record
Person/other system databases	Edit employee record /other system record	Modified Personnel system database file
Person/other system database files	Delete employee record /other system record	Modified personnel database file /other system with a deleted record

Diagram 3.0:-Overview diagram of procedure — Update

DESCRIPTION:- PROGRAM CREATE RECORD

```
                        +-------------------+
                        | CREATE RECORD     |
                        |               3.1 |
                        +-------------------+
                                 |
         +---------------+-------+--------+------------------+
         |               |                |                 |
+------------------+ +------------------+ +--------------------+   (A)
| CREATE A         | | CREATE A         | | CREATE A           |
| PERSONNEL RECORD | | SECTION RECORD   | | PREVIOUS EMP.REC   |
|            3.1.1 | |            3.1.4 | |              3.1.6 |
+------------------+ +------------------+ +--------------------+
         |               |          |
+--------------------+ +---------------+ +---------------+
| CREATE A           | | CREATE A      | | CREATE A      |
| DEPARTMENT RECORD  | | FAMILY RECORD | | CHILD RECORD  |
|              3.1.2 | |         3.1.3 | |         3.1.5 |
+--------------------+ +---------------+ +---------------+
```

KEY:-

EMP.-EMPLOYER

```
                        (A)
                         |
         +---------------+---------------+
         |               |               |
+----------------+ +----------------+ +--------------------+
| CREATE         | | CREATE         | | CREATE             |
| EST_POST       | | EDUCATION      | | PREVIOUS EMP.      |
| RECORD   3.1.7 | | RECORD   3.1.8 | | RECORD       3.1.9 |
+----------------+ +----------------+ +--------------------+
```
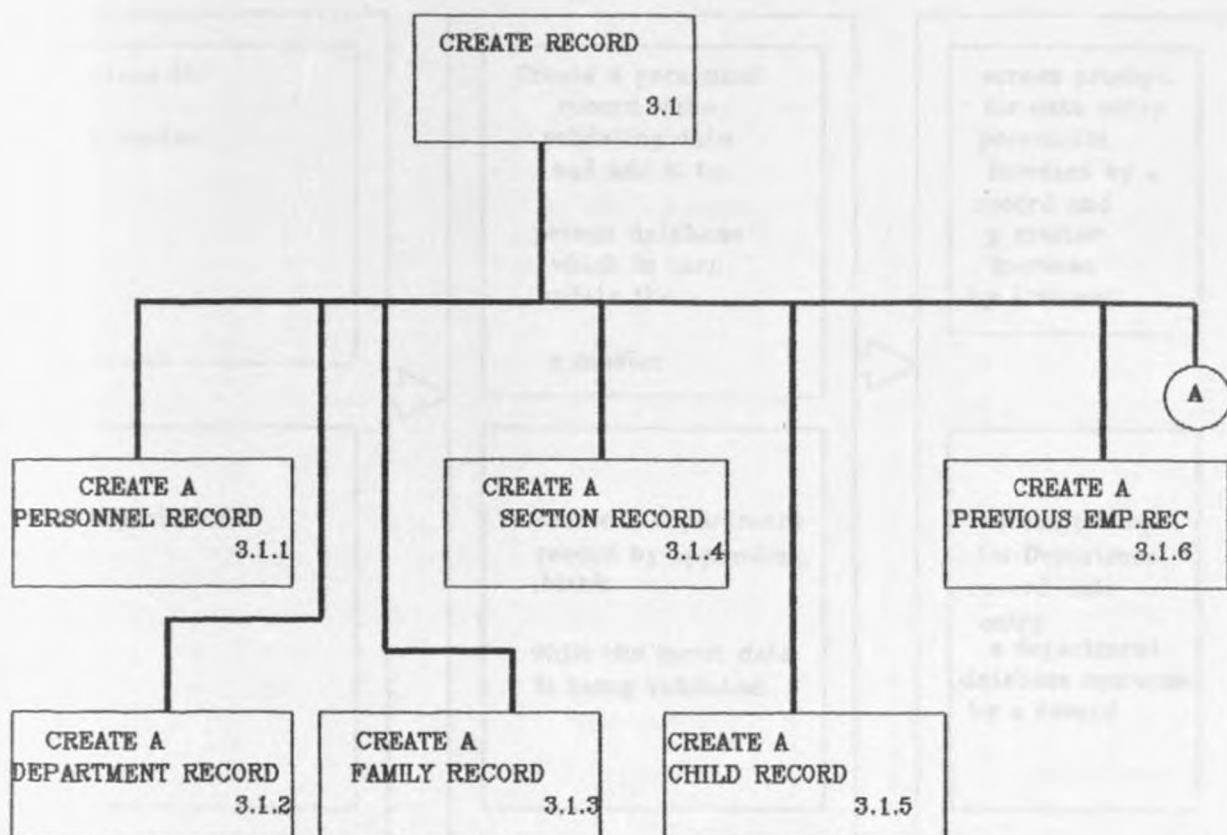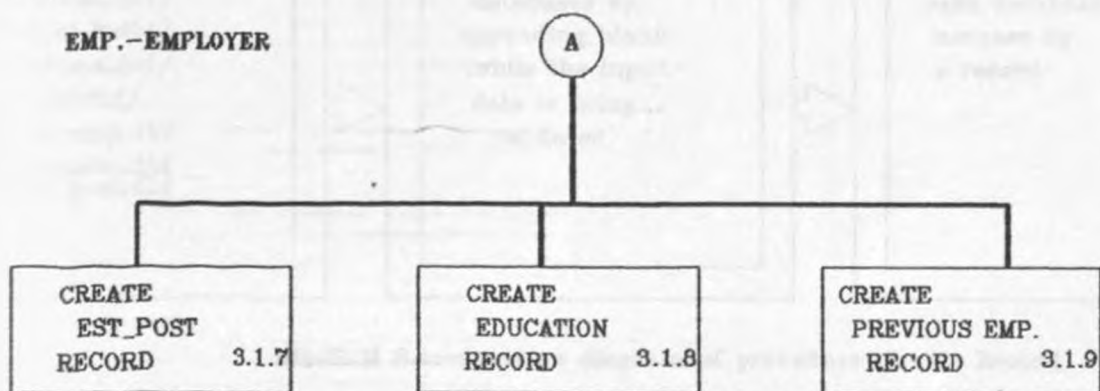
DIAGRAM 3.2:-Visual Table Of Contents-create record

DESCRIPTION: CREATE RECORD PROGRAM

INPUT	PROCESS	OUTPUT
person.dbf p_master	Create a personnel record while validating data and add it to person database which in turn update the p_master	screen prompt for data entry person.dbf increase by a record and p_master increase by a record
Departme.dbf	create a Department record by appending blank while the input data is being validated	screen prompt for Department record data entry a department database increase by a record
Section.dbf /Leave.dbf Educatin.dbf/ Nxt_of_k.dbf/ Departme.dbf/ Medical.dbf/ Prev_emp.dbf /Dependat.dbf /Act_post.dbf	create a new record for each of the databases by appending blank ,while the input data is being validated	screen prompt for input and each database increase by a record

DIAGRAM 3.1:-Overview diagram of procedure-Create Record

INPUT	PROCESS	OUTPUT
Family.dbf, Designti.dbf	Create a new record validate person details,and inturn update p_master	Screen prompt for respective records data entry Also they got increase by a record
Est_post.dbf Dept_no Sect_no	Check against Est_post.dbf file whether the post exists and vacant If not vacant	Screen prompt for data entry Display"record do not exist"

DIAGRAM 3.1:– Overview diagram of Procedure – Create Record

VISUAL TABLE OF CONTENTS CONTINUES...

DESCRIPTION:- PROGRAM EDIT RECORD
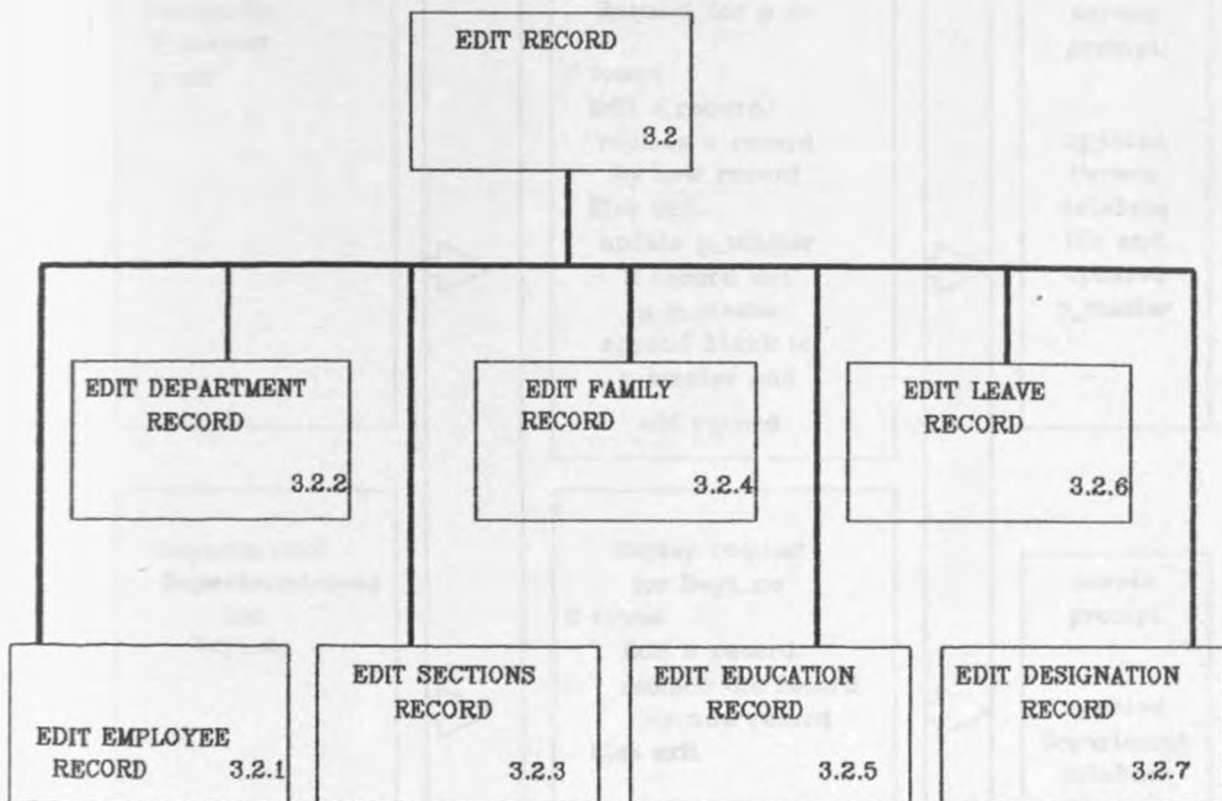
Dagram 3.2:- Visual table of contents for Edit record

DESCRIPTION:- PROGRAM EDIT RECORD

INPUT	PROCESS	OUTPUT
Person.dbf P_master p_no	Request for p_no If found Edit a record replace a record by new record Else exit update p_master If record not in p_master append blank to p_master and add record	screen prompt updated Person database file and updated p_master
Departme.dbf Department code list Dept_no	display request for Dept_no If found Edit a record reolace old record by new record Else exit update p_master	Screen prompt updated Department database file and updated Department codes list

Diagram 3.2:- Overview diagram of Procedure- Edit Record

VISUAL TABLE OF CONTENTS CONTINUES...

DESCRIPTION:- PROGRAM EDIT RECORD CONTINUES...

INPUT	PROCESS	OUTPUT

Sestions.dbf
Sections codes listing
Sect_no
	Display a request for sect_no
	If found
	  edit a record
	Else exit
	  Replace old record
	  by new record
	
	  Update sections
	  codes listing
		Screen prompt
		
		updated Sections.dbf
		updated sections codes list

Family.dbf
/designti.dbf
p_master
P_no
	Display request for P_no
	If found
	  Edit a record
	Else exit
	  replace old record
	  by new record
	  update p_master
	  If record not
	  found in P_master
	  append blank to
	  p_master and add
		Screen prompt
		
		updated Family.dbf/ designti.dbf
		
		updated p_master

Educatin.dbf/
Leave.dbf
	Display request for p_no
	If found
	  Edit a record
	Else,exit
	  replace old record
	  by new record
		Screen prompt
		Edited database

Dagram 3.2:- Overview diagram of procedure – Edit Record

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VISUAL TABLE OF CONTENTS CONTINUES...
DESCRIPTION:- PROGRAM DELETE RECORD

Diagram 3.3:- Visual table of contents - Delete Record

VISUAL TABLE OF CONTENTS CONTINUES...

DESCRIPTION:– PROGRAM DELETE RECORD

INPUT	PROCESS	OUTPUT
Person.dbf P_master p_no	Display request for p–no If found,delete a record copy to Mpito.dbf for deleted(),pack delete from P_master,pack Else,exit	screen prompt Person.dbf decrease by a record P_master decrease by a record
Departme.dbf Department codes list dept_no	Display request for dept_no If found Delete a record,copy to Mpito1.dbf for deleted() pack Delete from Department codes list,pack Else,exit	Screen prompt Departme.dbf decrease by a record Department list decrease by a record

Sections.dbf
Section codes
list
sect_no
	Display request for sect_no
	If found
	  Delete a record
	   copy to Mpito2.dbf for
	deleted(),pack
	  Delete from Section codes
	list,pack
	Else,exit
		Screen prompt
		Sections.dbf
		decrease by
		a record
		Sections
		codes listing
		decrease
		by a record

Educatin.dbf
 	
p_no
	Display request for p_no
	If found
	  Delete a record
	   copy to Mpito4.dbf for
	   deleted(),**pack**
	Else,exit
		Screen prompt
		Educatin.dbf
		decrease by
		a record

Diagram 3.3:– Overview diagram of Procedure – Delete Record

DESCRIPTION:- PROGRAM DELETE RECORD CONTINUES...

INPUT	PROCESS	OUTPUT

Family.dbf
P_master
 	
p_no
	Display request for p_no
	If found
	   Delete a record
	   copy to Mpito3.dbf
	   for deleted(),pack
	   Delete from P_master
	
	   pack
	Else,exit
		Screen prompt
		Family.dbf
		decrease by a
		record
		
		P_master
		decrease by
		a record

Designti.dbf
 	
Designation
 	
codes list
 	
desig_code
	Desplay request for
	design_code
	If found
	   Delete a record
	   copy to Mpito5.dbf
	   for deleted(),pack
	
	   Else,exit
		Screen prompt
		Designti.dbf
		decrease by
		a record
		Designation
		codes
		listing
		decrease by
		
		a record

Est_post.dbf
desig_no
dept_no
	display request for
	desig_no and dept_no
	If found
	   Delete a record
	   copy to Mpito6.dbf
	   deleted(),pack
	   Delete from
	   Designation codes
	   list,pack
	Else,exit
		Screen prompt
		Est_post.dbf
		decrease by
		a record
		designation
		code listing
		decrease by
		a record

Diagram 3.3:- Overview diagram of Procedure - Delete Record

DESCRIPTION:- PRODUCE REPORTS

```
                        ┌─────────────────────┐
                        │                     │
                        │   REPORTS           │
                        │              4.0    │
                        │                     │
                        └──────────┬──────────┘
                                   │
          ┌────────────────┬───────┴────────┬────────────────┐
          │                │                │                │
┌─────────────────┐ ┌─────────────────┐ ┌─────────────────┐ ┌─────────────────┐
│ BIO_DATA        │ │ CONFIRMATION    │ │ LEAVE           │ │ POSTS           │
│ REPORT          │ │ REPORT          │ │ REPORT          │ │ REPORT          │
│            4.1  │ │            4.2  │ │            4.3  │ │            4.4  │
└─────────────────┘ └─────────────────┘ └─────────────────┘ └─────────────────┘
```
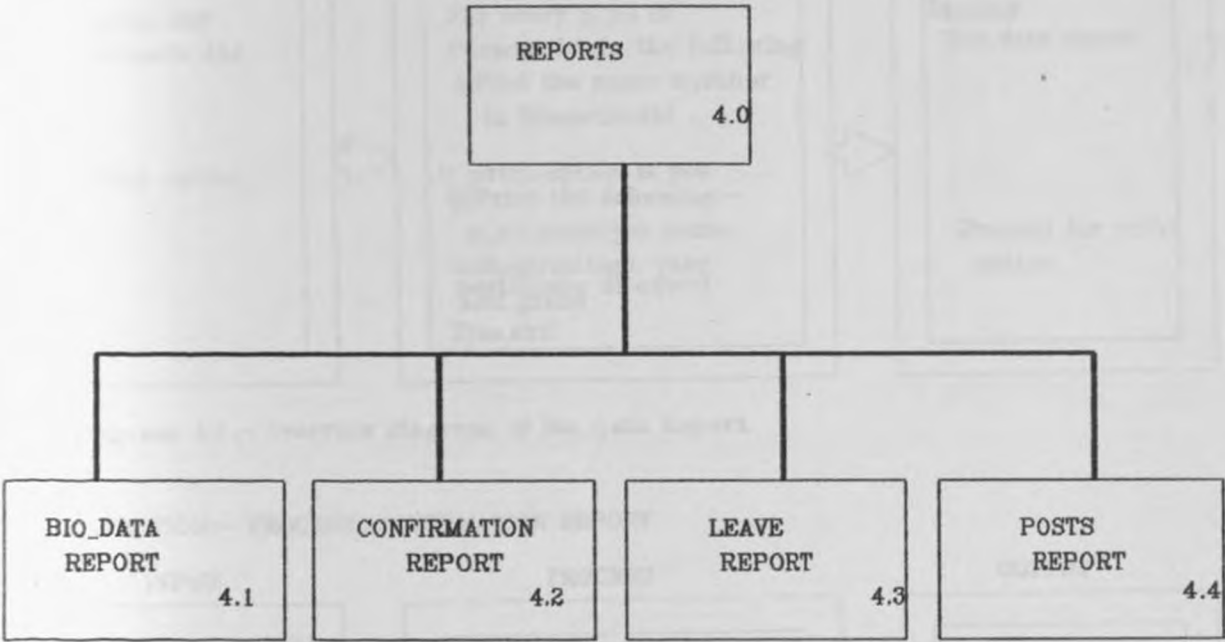
DIAGRAM 4.0:- Visual table of contents- Produce Reports

DESCRIPTION:- PROCESS BIO_DATA REPORT

INPUT	PROCESS	OUTPUT

Person.dbf
Educatin.dbf
 	
Print option
	For every p_no in
	Person.dbf do the following
	i)Find the same number
	  in Educatin.dbf
	
	If print option is yes
	ii)Print the following;-
	  p_no,employee name,
	  school/college, year
	  certificate of award
	  and grade
	Else,exit
		Display
		  Bio_data report
		
		Prompt for print
		option
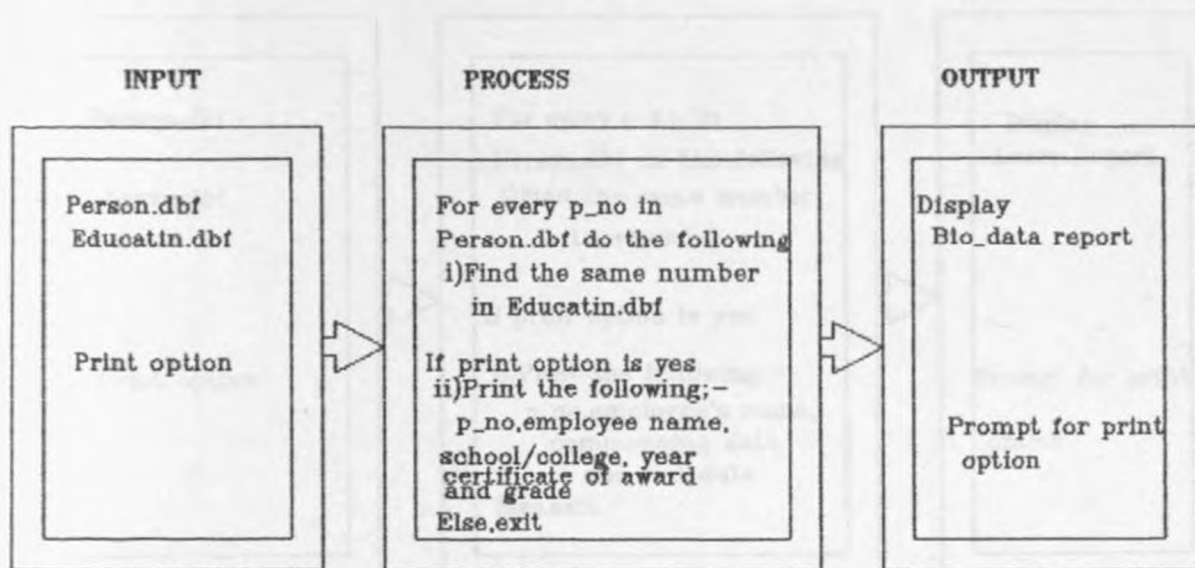
Diagram 4.1:- Overview diagram of Bio_data Report

DESCRIPTION:- PROCESS CONFIRMATION REPORT

INPUT	PROCESS	OUTPUT

Person.dbf
Designti.dbf
 	
Print option
	For every p_no in
	Person.dbf,do the
	  following:-
	i)Find the same number
	  in designti.dbf
	
	If print option is yes
	ii)Print the following:-
	  p_no,employee name
	  ,appointment date
	  date of confirmation
	Else,exit
		Display staff
		confirmation
		report
		
		Prompt for print
		option
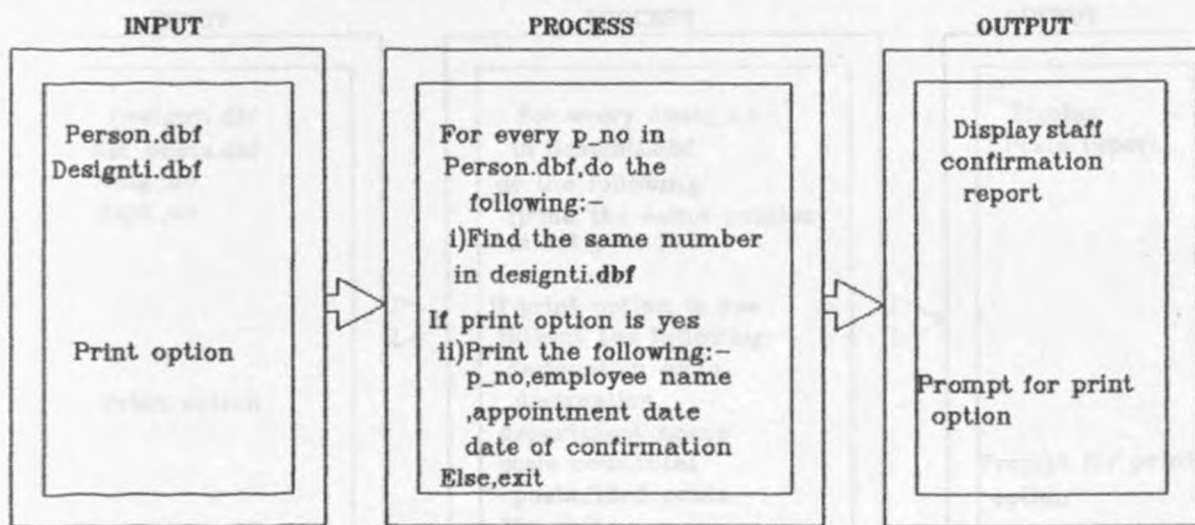
Diagram 4.2:- Overview diagram of Confirmation Report

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VISUAL TABLE OF CONTENTS CONTINUES...

DESCRIPTION:- PROCESS LEAVE REPORT

INPUT	PROCESS	OUTPUT

Person.dbf
 	
Leave.dbf
 	
Print option
	For every p_no in
	Person.dbf do the following
	i)Find the same number
	   in Leave.dbf
	
	If print option is yes
	
	ii)Print the following:-
	   p_no,employee's name,
	     commencing date,
	       and end date
	Else,exit
		Display
		Leave Report
		
		Prompt for print
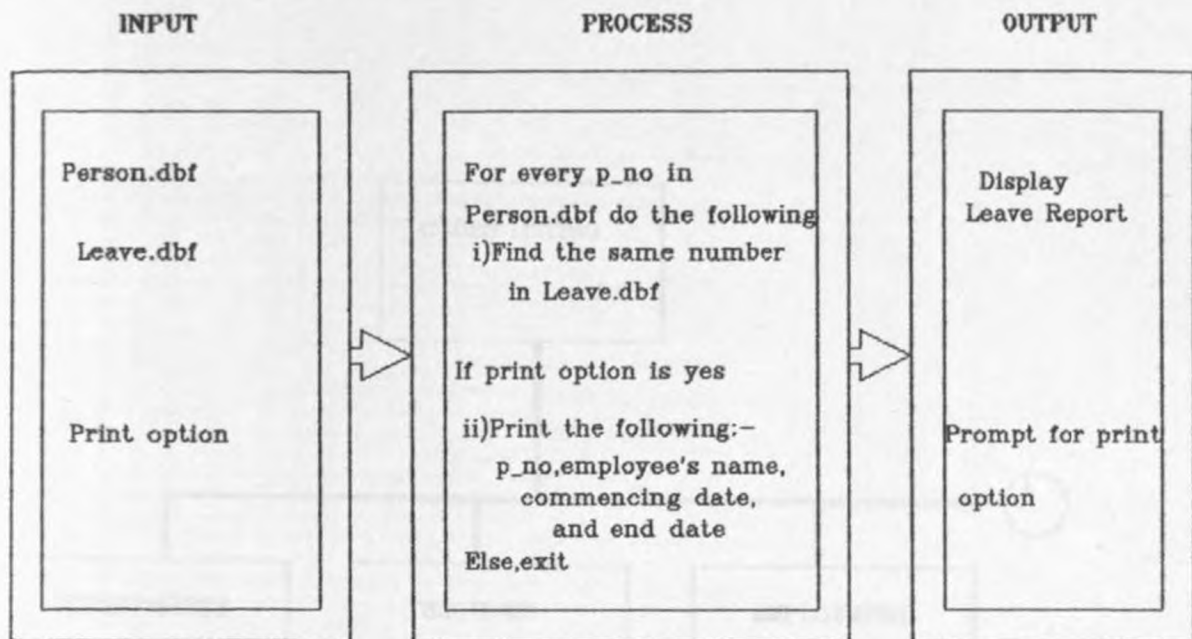		
		option

Diagram 4.3:-Overview diagram of Leave Report

DESCRIPTION:- PROCESS POSTS REPORTS

INPUT	PROCESS	OUTPUT

Designti.dbf
Est_posts.dbf
Desig_no
dept_no
 	
Print option
	For every desig_no
	  in Designti.dbf
	  do the following:-
	   i)Find the same number
	   in Est_post.dbf
	
	If print option is yes
	ii)Print the following:-
	   designation code,
	    designation,
	   department name
	   scale code,total
	    posts,filled posts
	Else,exit
		Display
		Posts report
		
		Prompt for print
		option
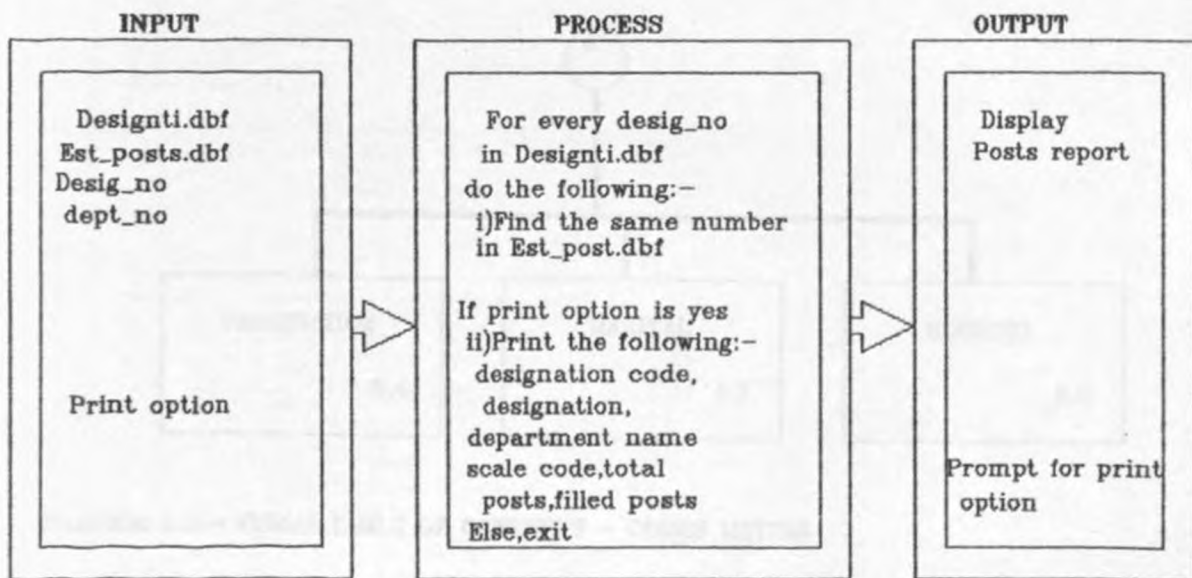
Diagram 4.4:- Overview diagram of Posts Report

VISUAL TABLES OF CONTENTS CONTINUES...

DESCRIPTION:- CODES LISTING
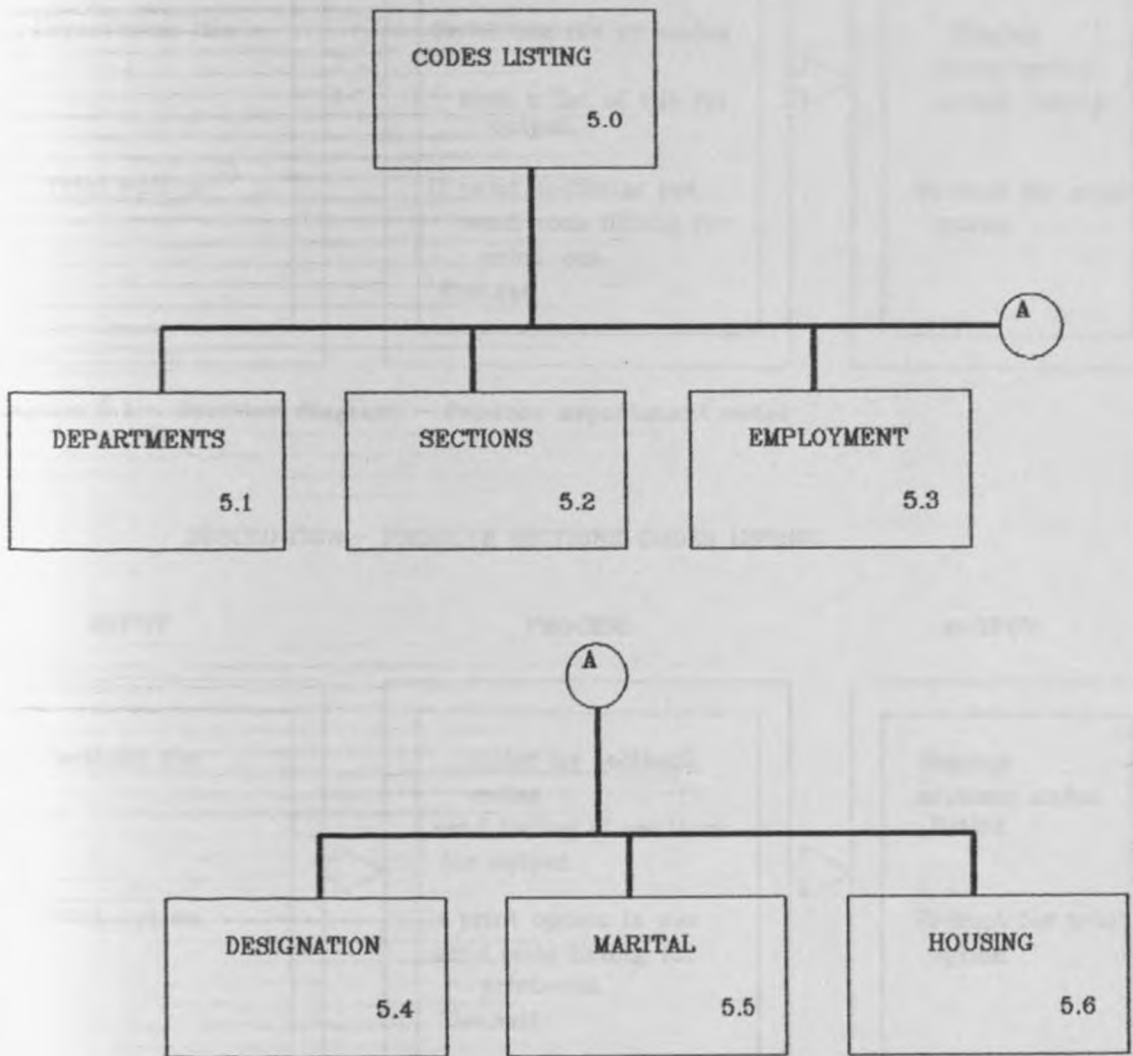
DIAGRAM 5.0:- VISUAL TABLE OF CONTENTS - CODES LISTING

DESCRIPTION:– PRODUCE DEPARTMENTS CODES LISTING

INPUT	PROCESS	OUTPUT

Department file
 	
Print option
	Order the file by codes
	
	send a list of file for output
	
	If print option is yes
	   send code listing for
	   print–out
	Else,exit
		Display departments codes listing
		
		Prompt for print option
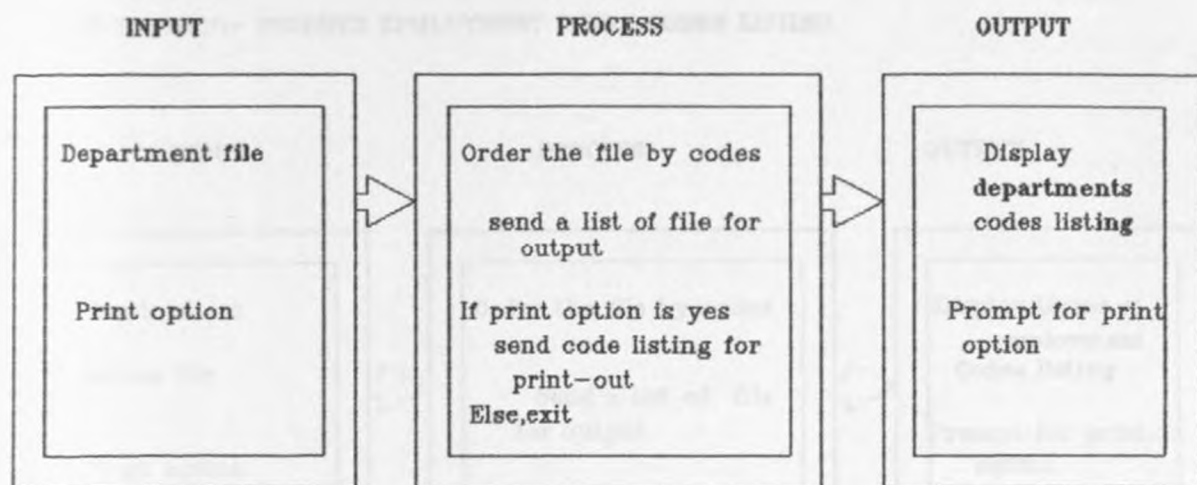
Diagram 5.1:– Overview diagram – Produce department codes

DESCRIPTION:– PRODUCE SECTIONS CODES LISTING

INPUT	PROCESS	OUTPUT
Sections file Print option	Order by sections codes send listing of sections for output If print option is yes send code listing for print–out Else,exit	Display sections codes listing Prompt for print option
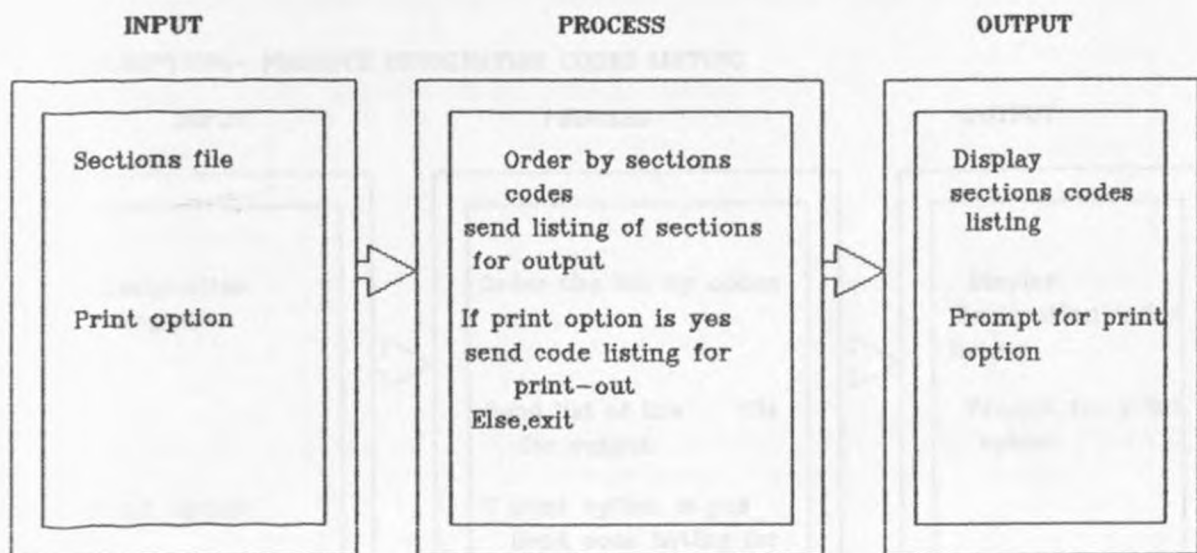
Diagram 5.2:– Overview diagram – Produce sections codes

VISUAL TABLES OF CONTENTS CONTINUES...

DESCRIPTION:- PRODUCE EPMLOYMENT TERMS CODES LISTING

INPUT	PROCESS	OUTPUT
Employment terms file Print option	Order the file by codes Send a list of file for output If print option is yes send codes listing for print-out Else.exit	Display terms of employment Codes listing Prompt for print option
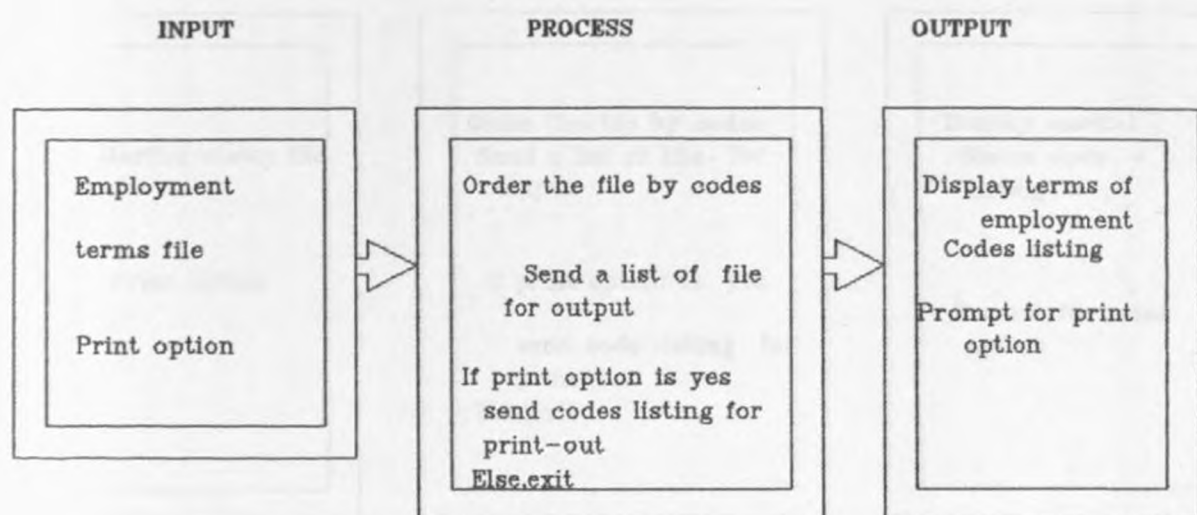
Diagram 5.3:-Overview diagram-Produce employment terms codes list

DESCRIPTION:- PRODUCE DESIGNATION CODES LISTING

INPUT	PROCESS	OUTPUT
Designation listing file Print option	Order the file by codes Send list of the file for output If print option is yes Send code listing for print-out else.exit	Display Designation codes listing Prompt for print option
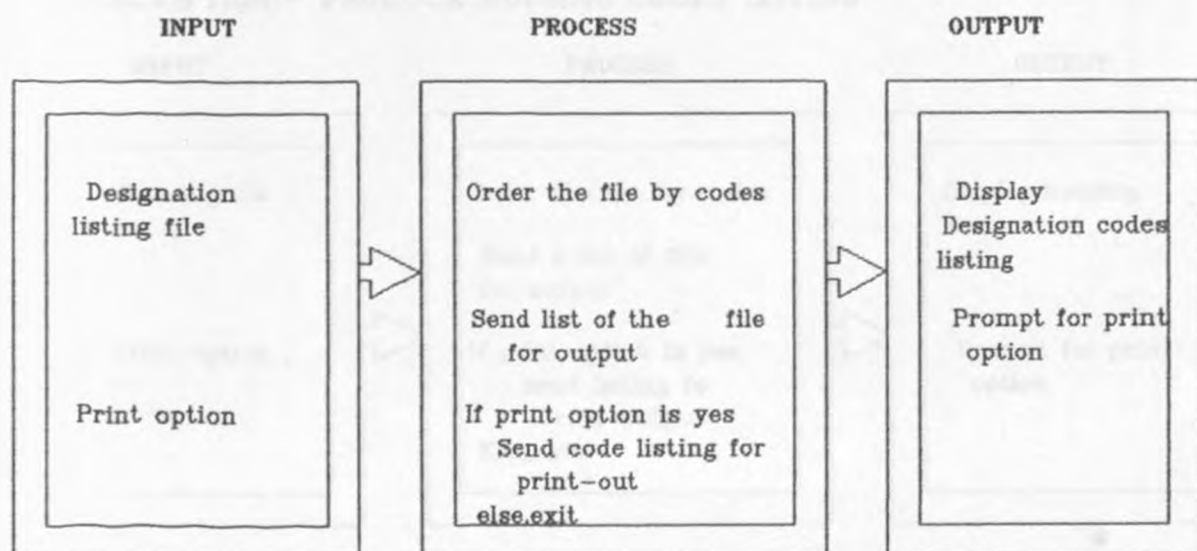
Diagram 5.4:- Overview diagram - Produce designation codes list

VISUAL TABLES OF CONTENTS CONTINUES...

DESCRIPTION:- PRODUCE MARITAL STATUS CODES LISTING

INPUT	PROCESS	OUTPUT
Marital status file Print option	Order the file by codes Send a list of file for output If print option is yes send code listing for print—out Else,exit	Display marital Status code listing Prompt for print option
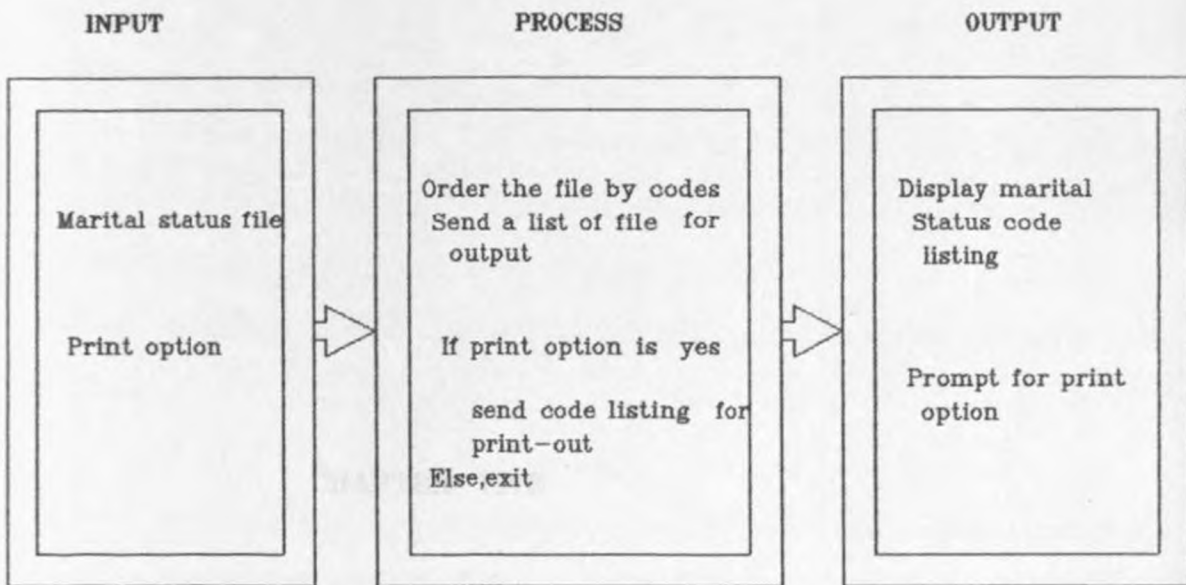
Diagram 5.4:- Overview diagram —Produce marital status codes list

DESCRIPTION:- PRODUCE HOUSING CODES LISTING

INPUT	PROCESS	OUTPUT
Housing file Print option	Order the file by codes Send a list of file for output If print option is yes send listing fo Print—output Else,exit	Display housing codes Prompt for print option
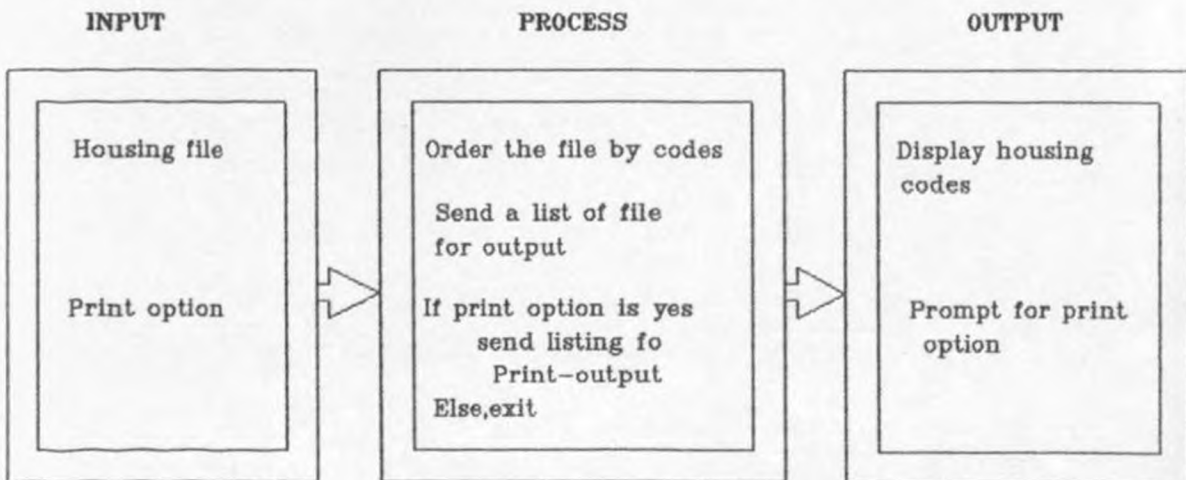
Diagram 5.6:- Overview diagram — Produce housing codes list

CHAPTER FIVE

SYSTEM IMPLEMENTATION

5.0.0 SYSTEM IMPLEMENTATION

5.1.0 PROGRAM DEVELOPMENT

The language chosen was dBASEIV. Factors for the choice are as follows:-

- Database systems are designed to manage large bodies of information. The management of data involves both the definition of structures for storage of information, and the provision of mechanism for the manipulation of information.

- Having designed the database, it means duplication of data is minimized.

- with a database, there is no need of voluminous paper files prepared by hand. Hence, accurate and up to-date information is available on demand at any time.

- The computer can retrieve and change data much faster than a human can. Moreover, ad-hoc queries can be answered quickly with no need for time consuming searches.

- It can form a good start for centralized database (corporate database).

The software package (dBASEIV) is capable of interfacing with other software packages (spreadsheet,and wordprocessor)

The coding approach was "top- down", whereby the over all system is controlled by one program. Each program that is being called by the main program, have got sub-programs each of which is an element of the calling program (second level). The main calling module was the first one to be developed, followed by the second level (called by the main module), and finally third level (called by second level modules).

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5.2.0 SYSTEM CONTROLS

In order to make sure that the resulting report for the system are not errorneous, validation of input is being performed during data entry. An example for such validation is character and picture checks. Such validation includes data type checks and range checks. Condition for editing a given field are also included. For example, if 'employment (service) terms' is equal to 'contract', the user is not prompted to edit 'increment date' field. Also for the new data to be created, the system checks whether the same record is already in the database. Before editing the record, the system checks whether the personnel number exists in the database. If does not exist, the message is displayed to inform the user that 'the record does not exist'. Before master can be updated, the system checks whether the record exists, if not, the new record is being create.

system protection is already discussed (ref.3.3.6).

5.3.0 FILES TYPES AND THEIR EXTENSIONS

File extensions are being automatically assigned for every file created under dBASEIV. Such file extensions are as follows:-

FILE TYPE	FILE EXTENSION
Database file	.DBF
Programs	.PRG
Screen format	.SCR
Index file	.NDX
Format file for screen forms	.FMT
Report file	.FRM
Query file (view)	.QBE
Executable extensions	.DBO,.FMO,.QBO, .FRO.
Report program for the report files	.FRG

5.4.0 PROGRAM DESIGN DOCUMENTATION

The program modules for PEL - Personnel Records System, are represented by the following HIPO chart. They are actually arranged in the way they call each another. (see the following page).

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PROGRAM DOCUMENTATION DESIGN CONTINUES...

DESCRIPTION:- PEL - PERSONNEL SYSTEM PROGRAMS

```
                    ┌──────────────────────────────┐
                    │         LOGIN.PRG            │
                    │ (welcomes the user to the    │
                    │   system)                    │
                    │                         1.0  │
                    └──────────────────────────────┘
                                   │
                    ┌──────────────────────────────┐
                    │        PASSWORD.PRG          │
                    │ (allows the user to enter the│
                    │   password)             2.0  │
                    └──────────────────────────────┘
                                   │
                    ┌──────────────────────────────┐
                    │         MAIN.PRG             │
                    │ (allows the user to choose 3.0│
                    │  any of the four options     │
                    │  update,reports,codes or exit)│
                    └──────────────────────────────┘
                                   │
      ┌───────────────┬────────────┴────────┬────────────────┐
      │               │                     │                │
┌───────────┐  ┌───────────┐      ┌──────────────┐   ┌───────────────┐
│UPDATE.PRG │  │  REPORTS  │      │CODES LISTING │   │     EXIT      │
│           │  │           │      │              │   │               │
│(allows one│  │(produces  │      │ (List codes) │   │(Exit the      │
│to make    │  │ reports)  │      │              │   │ program)      │
│changes    │  │           │      │              │   │               │
│to the     │  │      3.2  │      │        3.3   │   │          3.4  │
│system) 3.1│  └───────────┘      └──────────────┘   └───────────────┘
└───────────┘
```
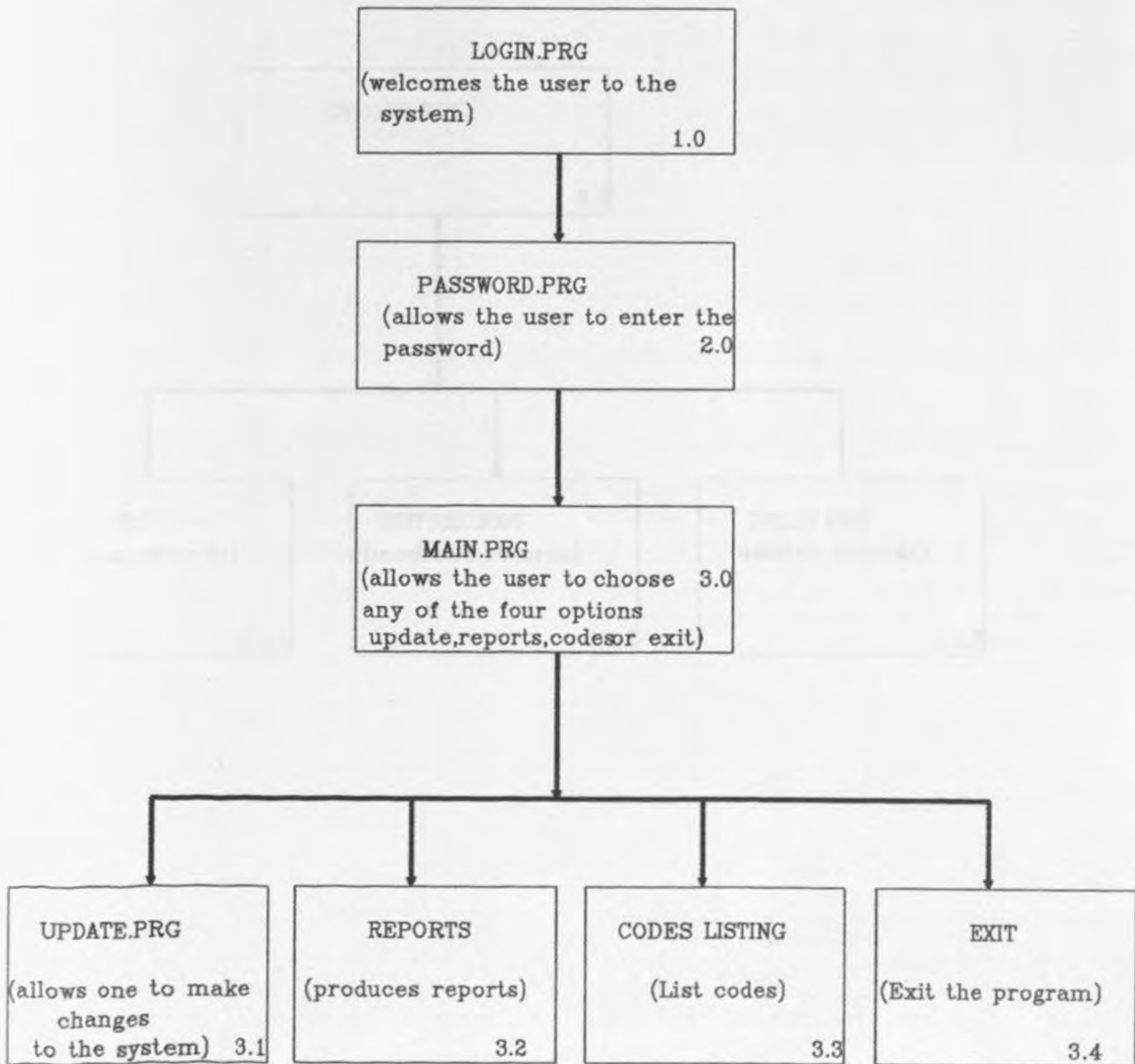
Diagram 3.0:- PEL - PERSONNEL Programs hierarchy

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PROGRAM DESIGN DOCUMENTATION CONTINUES...

DESCRIPTION:– PROGRAM UPDATE (make changes to the system)

```
                    ┌─────────────────────────────┐
                    │  UPDATE.PRG                 │
                    │                             │
                    │                      3.1    │
                    └─────────────────────────────┘
                                  │
        ┌─────────────────────────┼─────────────────────────┐
        │                         │                         │
┌───────────────────┐   ┌───────────────────┐   ┌───────────────────┐
│ ADD.PRG           │   │ EDITREC.PRG       │   │ DELET.PRG         │
│ (creates records) │   │ (modifies records)│   │ (deletes records) │
│                   │   │                   │   │                   │
│            3.1.1  │   │            3.1.2  │   │            3.1.3  │
└───────────────────┘   └───────────────────┘   └───────────────────┘
```
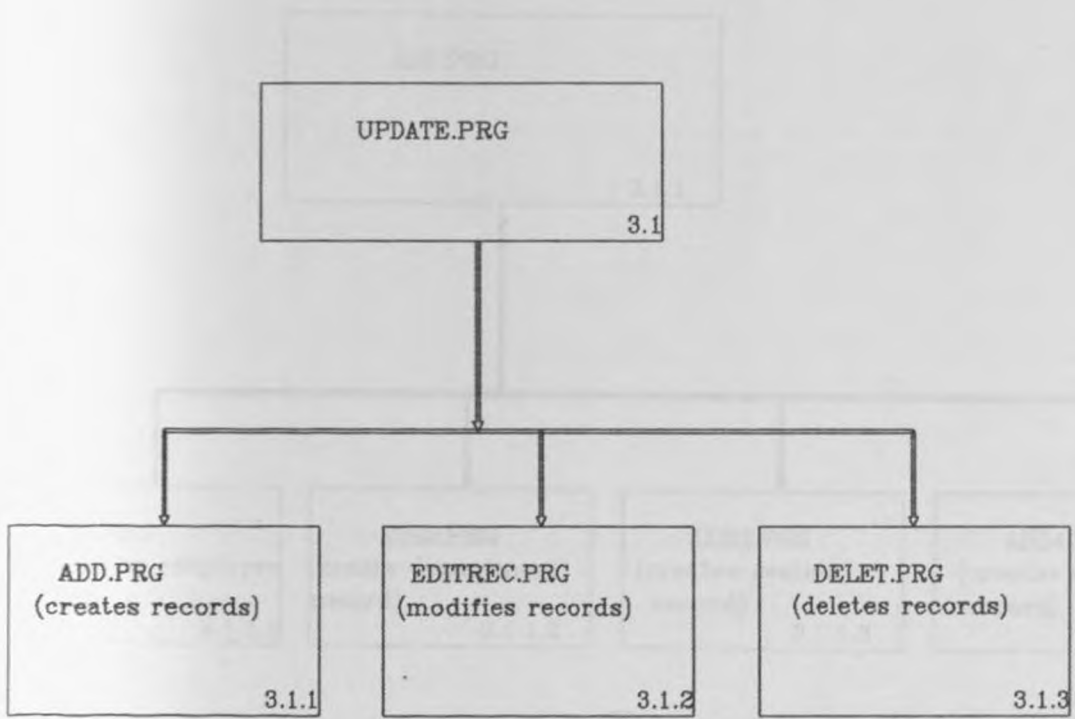
Diagram 3.0 continues...

PROGRAM DESIGN DOCUMENTATION CONTINUES...

DESCRIPTION:- PROGRAM ADD (Creates new records)
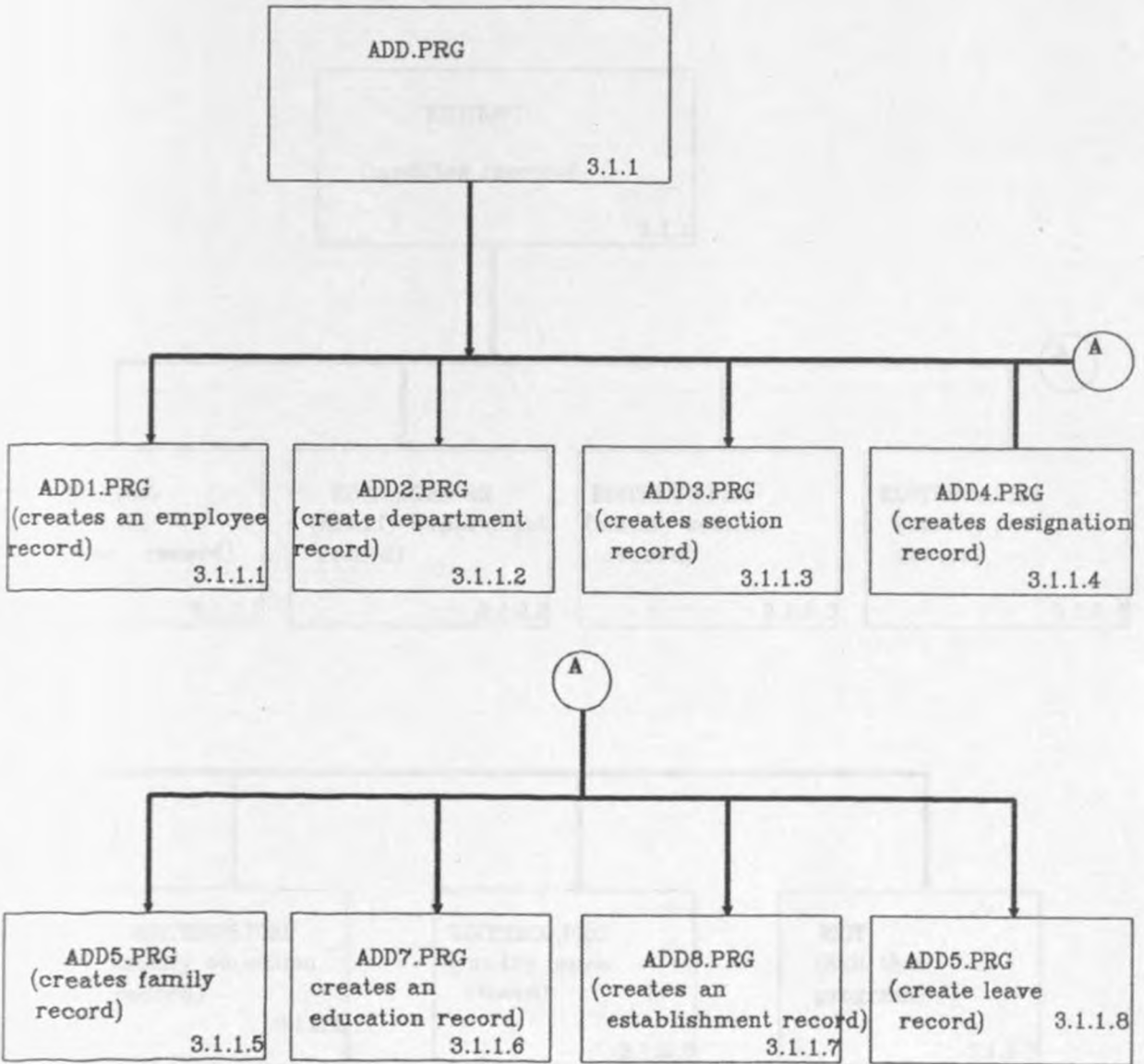
```
                    ┌─────────────────────────┐
                    │  ADD.PRG                 │
                    │                          │
                    │                  3.1.1   │
                    └─────────────────────────┘
```

```
┌────────────────────┐  ┌────────────────────┐  ┌────────────────────┐  ┌────────────────────┐
│ ADD1.PRG           │  │ ADD2.PRG           │  │ ADD3.PRG           │  │ ADD4.PRG           │
│ (creates an employee│ │ (create department │  │ (creates section   │  │ (creates designation│
│ record)            │  │ record)            │  │ record)            │  │ record)            │
│         3.1.1.1    │  │         3.1.1.2    │  │         3.1.1.3    │  │         3.1.1.4    │
└────────────────────┘  └────────────────────┘  └────────────────────┘  └────────────────────┘
```

(A)

```
┌────────────────────┐  ┌────────────────────┐  ┌────────────────────┐  ┌────────────────────┐
│ ADD5.PRG           │  │ ADD7.PRG           │  │ ADD8.PRG           │  │ ADD5.PRG           │
│ (creates family    │  │ creates an         │  │ (creates an        │  │ (create leave      │
│ record)            │  │ education record)  │  │ establishment record)│ │ record)    3.1.1.8 │
│         3.1.1.5    │  │         3.1.1.6    │  │         3.1.1.7    │  │                    │
└────────────────────┘  └────────────────────┘  └────────────────────┘  └────────────────────┘
```

Diagram 3.0 continues...

PROGRAM DESIGN DOCUMENTATION CONTINUES...

DESCRIPTION:- PROGRAM EDITREC (makes changes to the system)
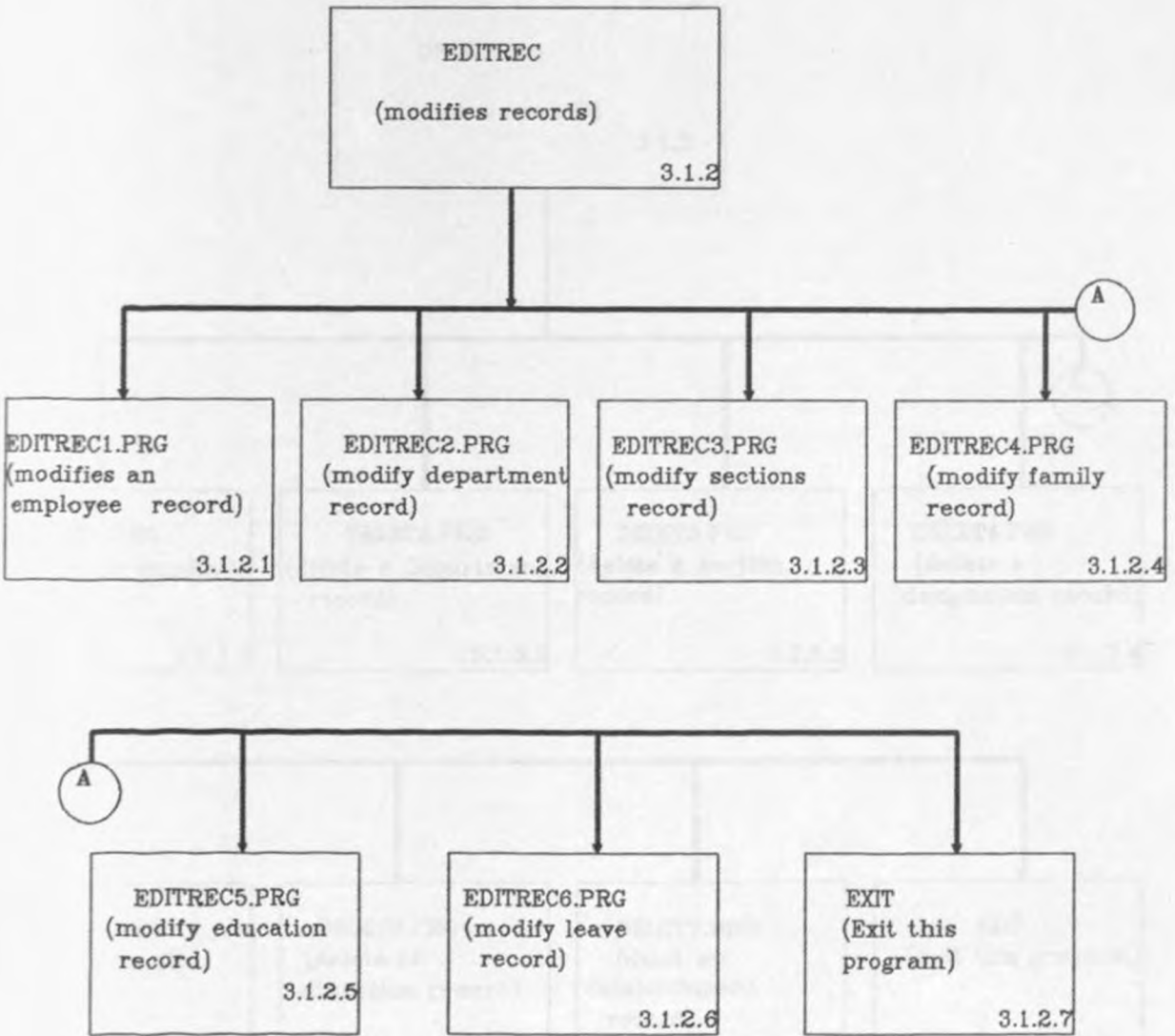
Diagram 3.0 continues...

PROGRAM DESIGN DOCUMENTATION CONTINUES...

DESCRIPTION:- PROGRAM DELET (Delete records)

```
                    ┌─────────────────────────┐
                    │      DELET.PRG          │
                    │                         │
                    │   (deletes records)     │
                    │              3.1.3      │
                    └─────────────────────────┘
```

DELET1.PRG	DELET2.PRG	DELET3.PRG	DELET4.PRG
(delete an employee record)	(delete a department record)	(delete a section record)	(delete a designation record)
3.1.3.1	3.1.3.2	3.1.3.3	3.1.3.4

DELET5.PRG	DELET6.PRG	DELET7.PRG	EXIT
(delete a family record)	(delete an education record)	(delet an establishment record)	(exit this program)
3.1.3.5	3.1.3.6	3.1.3.7	3.1.3.8

Diagram 3.0 continues...

116
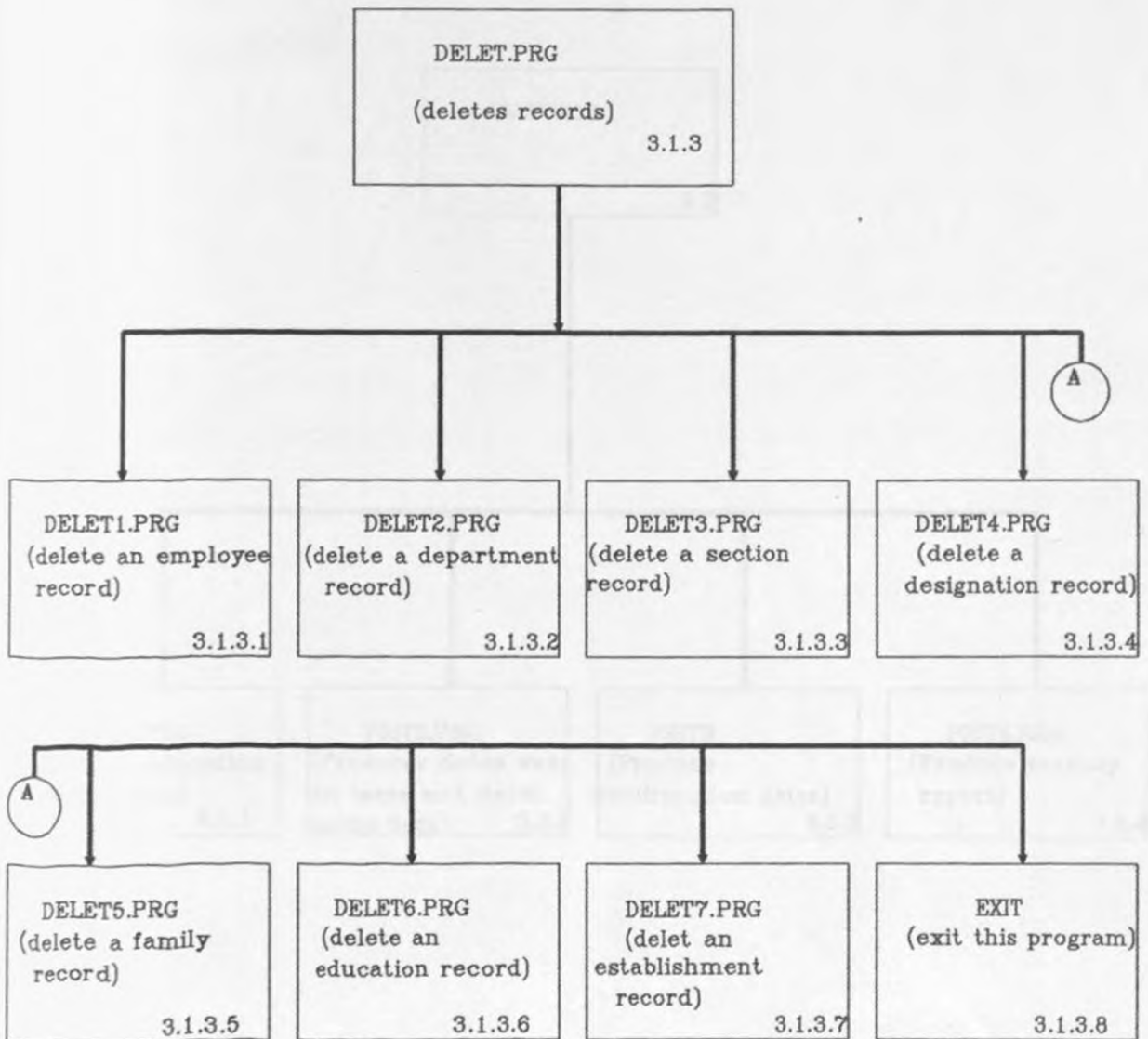
PROGRAM DESIGN DOCUMENTATION CONTINUES...

DESCRIPTION:- REPORTS
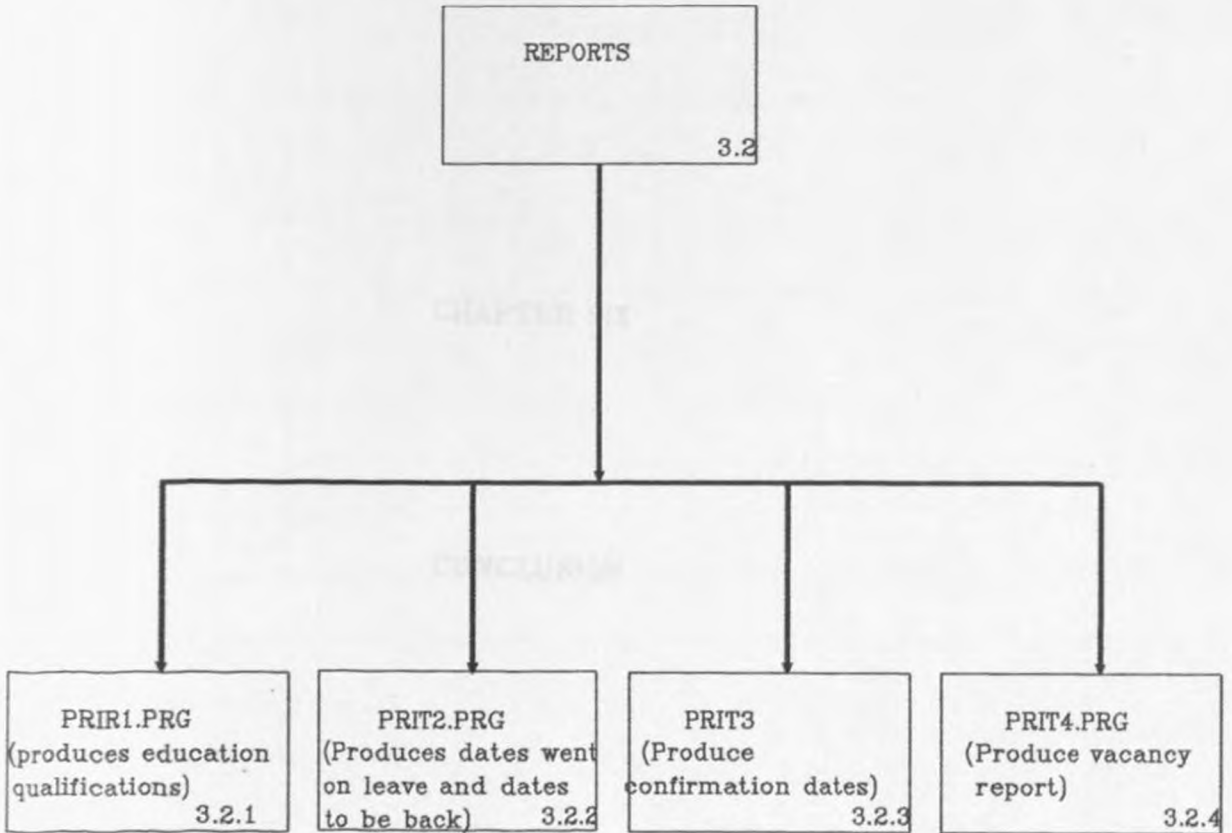
```
                    ┌─────────────────────┐
                    │      REPORTS        │
                    │                     │
                    │                3.2  │
                    └──────────┬──────────┘
                               │
        ┌──────────────┬───────┴───────┬──────────────┐
        │              │               │              │
┌───────▼──────┐ ┌─────▼────────┐ ┌────▼────────┐ ┌───▼──────────┐
│ PRIR1.PRG    │ │ PRIT2.PRG    │ │ PRIT3       │ │ PRIT4.PRG    │
│(produces educ│ │(Produces date│ │(Produce     │ │(Produce vacan│
│ation         │ │s went        │ │             │ │cy            │
│qualifications│ │on leave and  │ │confirmation │ │report)       │
│)             │ │dates         │ │dates)       │ │              │
│        3.2.1 │ │to be back)   │ │       3.2.3 │ │       3.2.4  │
│              │ │        3.2.2 │ │             │ │              │
└──────────────┘ └──────────────┘ └─────────────┘ └──────────────┘
```

Diagram 3.0 continues...

CHAPTER SIX

CONCLUSION

6.0.0 CONCLUSION

As stated earlier, the main objective was to design and implement a computerised Personnel Records System for PEL. This system will be a stepping stone for designing of company (corporate) database.

6.1.0 WHAT HAS BEEN DONE SO FAR

(i) Analysis of the system

(ii) Design and implementation of databases

(iii) Main procedures for updating the system

(iv) Design and implementation of menus

Menus that expected to be clear to the user (see appendix), have been designed and implemented. Thus from the main menu you can select any procedure that you want to run (ref.procedures in 5.4)

6.2.0 WHAT IS REMAINING

(i) To add another option/ procedure for viewing databases.

(ii) To write more programs, as required by the system especially for reports production.

(iii) To train staff on how to use the system and run the system with them.

(iv) Data verification is required before one can enter data to the system. Also good source documents, that can minimise input errors is expected to be used. These will help in preperation of meaningful reports.

(v) Interlinking the system with other systems is expected to be performed in the future. Such systems to be interlinked include:- Dispensary, Pension scheme, Payroll and Incentive scheme.

6.3.0 PROBLEMS ENCOUNTERED

Problems the author faced during system development were as follows:-

Information gathering

The personnel officer who is incharge of Personnel section was

newly employed, and he has been there only for three months. The registry clerk who would have helped, was on leave.

Programming language used

The author had never developed a system using dBASEIV package before, and neither does she had any knowledge of dBASE. Therefore much time was used to debug programs. Running out of disk space was another problem that was frequently encountered, as the result of the said problem, some of the programs were being corrupted.

Allocated time for the project

The time was not enough for the project to be completed.

Funds

There were no funds allocated for the project, so I had to use money from my own pocket for travelling to and back from Tanzania. Moreover, I had to buy stationaries like diskettes and others, required for the project.

APPENDICES

APPENDIX   A

INPUT FORMS USED IN THE MANUAL SYSTEM

APPENDIX   A

INPUT FORMS USED IN THE MANUAL SYSTEM

DEPARTMENT	ADMIN.	GARAGE	ENGINEERING	FINANCE	SUPPLIES	TRAINING	GM	AUDIT
EMPLOYEE								
LATE COM...								
PERMISSION — NORMAL								
PERMISSION — PRAYER								
TRAINING								
SAFARI								
PATIENTS								
EDS								
LEAVE								
C. LABOURE...								
DISMISSED								
SUSPENDED								
WARNED								
THEFT CAS...								
VISITORS								
REMARKS								

PREPARED BY

SIGNED BY

DATE

AT

Date: ,,,,.,,.........

STAFF PERSONAL PARTICULARS

Surname .... Other names ....

Date of birth .... home/District ....

Nationality ....

Date of Employment ....

Residential Address ....

....

Home Address: ....

....

....

Maritual Status: .... (Married/Single)

CHILDREN	SEX	DATE OF BIRTH

DEPENDANTS

....

....

....

....

Next of Kin ....

Relationship ....

Address: ....

....

....

....

A2

PRESENT POSITION/DESIGNATION	DEPARTMENT		SALARY DRAWN
		SECT...	...5. P.M.
STATE WHETHER OF TEMPORARY SECONDMENT OR PERMANENT TRANS...	DATE	PROMOTED	

...

Last School Attended	From	To	Level Attained
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....

DETAILS OF "O" AND "A" LEVEL RESULTS

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

...CATION/ TRAINING

College	From	To	Details of Qualifications obtained
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....
....	....	....	....

PREVIOUS EMPLOYMENT

Employer	Last Position held	From	To	Finishing salary
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....
....	....	....	....	....

A3

MEDICAL REPORT FORM

1. NAME IN FULL

   MR/MRS/MISS..

2. DATE OF

   BIRTH ....

3. PERSONAL MEDICAL

   HISTORY ....

      i. Serious illness...

     ii. Accidents ....

                     ....

                  ....

   iii. Operation...

                  ....

                 ....

                ....

4. PRESENT CONDITION

   (a) Circulatory System

       (i) Pulse .... (ii) Blood Pressure...........

     (iii) Heart................... (iv) Vessels...............

       (v) .... (vi) ....

   (b) Respiratory System

       (i) Nose................... (ii) Throat................

     (iii) Lungs................... (iv) ....

   (c) Vision...

   (d) Any Evidence of General Diseases

       (i) Gonorhea...

      (ii) Syphilis..

     (iii) Aids...

   (e) Laboratory Tests

       (i) Urine...

      (ii) Blood Test...

A4

DOCTORS OPINION

I have examined

Mr/Mrs/Miss. ....
Own handwriting and to the best of my knowledge. I find that he/she
is medically fit/unfit for employment in Pamba Engineering Ltd.   He/She
is on treatment/not on treatment be continued.

Dr...
Address. ....

Signature......................... Rubber Stamp.........................

A5

<u>PHELPS DODGE LIMITED</u>

Simu: 40915   S.L.P. 9196,
                                                     KAKOLA

Kumb. Na.   Tarehe:

Ndugu

Posta

S.L.P.

N.N.N.

Ndugu,

                    YAH: <u>UTHIBITISHO KAZINI</u>

    Tuna furaha kukuarifu kuwa baada ya muda wako wa majaribio ya miezi sita
umefanya vizuri, hivyo unathibitishwa kazini kuanzia tarehe _____
kuwa _____

    Kuthibitishwa kazini kutakuwa chini ya masharti yale yaliyotajwa
kwenye barua ya ajira yenye Kumb. Na. _____ ya tarehe
_____ hali ukishikilia taaluma na dhima ya mwajiri kazi
litumike tangu tarehe ya kuajiriwa.

    Hiu utaratibu wako wa kufanya kazi utaendelea kubaki kama na
utumishi wako wa sasa kuendelea.

    Tkisho tunaomba upokee barua hii yote wake kazi za kazi
uliohusuka nathibitisho huu.

                              Wako,
                    _____

                         S.S. Citola
    kny.   MENEJA WADHU

ROYAL MOZAMBIQUE AIRWAYS

ALIEN ... .

(to be filled in duplicate by applicant)

1. Mr./Mrs./Miss ....sh to
apply for ... .
Nationality/ .... or
(... .. ..
..../travel
....,

2. Travelling to: ....

3. Intended stay there: ....

4. Contact address: ....

5. Quality for class one/two/three travel (delete as ....
appropriate).

6. Designation: ....

1. Spouse: .... 2. .... children ....
....

       NAME   Date of birth

3. 1. ....

   2. ....

   3. ....

   4. ....

4. Salary per month: ....

5. I request my leave salary: (a) to be paid to me before
                              I depart ....
                        (b) be paid into my Bank Account
                        No. ....
                        Bank ....

A7

I do/do not recommend this application: my reason being ....

Signature: ....

C: ....
     ....

a)   ....

b)   Days of leave without pay ....
     'totalling .... days.

c)   Days not counted for leave earning ....
     therefore leave earning paid remain ....
     days with this form.

d)   Therefore he is due for ....
     .... 19 ....

e)   was given travel warrant/cash or at for his leave
     taken from .... 19 .... to .... 19 ....

     Signature: .... Date: ....

     Personnel/Administrative Officer

D: ....
     General Manager/Authorised Officer

IAWU/zk

A8

STAFF PERFORMANCE REPORT

For the period .... to.............................

GENERAL NOTES:

Read carefully these notes as well as notes before each separate part of this form.

(i)   Complete this form in ink or type script in the sequence in
       which it is presented.

(ii)   It should be completed by Officers serving on probation at
       the end of six months service.

(iii) It should also be completed annually as at the 31st December by
       all Officers on permanent terms (i.e. Officers confirmed in
       appointments or serving on contract or provident fund terms)
       as well as Officers serving on temporary terms.

(iv)   Operational service and daily rated employees are not required
       to complete this form.

PART A - PERSONAL AND SERVICE PARTICULARS
(to be completed in person by the Officer
reported on)

Name (in full).................................. Present Station..................

Department ....

Division.. Section.........................

Present Substantive Post..

Basic Salary Shs. .... p.a. Salary Scale...............

Date of Birth........................ Marital Status......................Incremental

Date.. * TANZANIAN/NON TANZANIAN

Terms of Service........................... Period served under the present

Reporting officer.............. ....months

Nature of work on which engaged during the reporting period:	Nature of work preferred:
	Brief Account of any outstanding contribution or achievement e.g. publications, articles, etc

Date..................................:9......

Signature of the Officer being Reported

A9

PART D—AN ASSESSMENT OF PERSONNEL ... ...

S:-

This part as well as Parts, C.D, and E, as appropriate, ... to be
completed by the reporting officer who has supervised the officer
reported upon and must be familiar in detail with the work of that officer

Guard against any tendency to over
mark. To do so is both unfair to
the officers as the Service. Do not
shrink from giving a low marking,
when this is deserved. Discuss with
your staff their drawbacks. There
performance is rated below grading "C"
the reporting officer should state
what steps have been taken to
improved the performance.

	GRADINGS
A	Exceptionally good
B	Better than average
C	In keeping to the standard required
D	Leaves something to be desired otherwise tolerable
E	Unsatisfactory
NA	No opportunity to assess

Assess the capacities of the officer under sub factos and inser "X" in the
appropriate column. Any marking under "D" should be brought to the notice
of the officer reported in writing and a copy of such communication together
with any reply received should be attached to this report. Sections marked*
are applicable to relevant grades only. The reporting officer should sign
this report below and put the over-all grading in the bar provided.

FACTORS	SUB-FACTORS	SUB-FACT.GRADINGS						MAIN F.CT.GRADINGS					
		A	B	C	D	E	N	A	B	C	D	E	NA
KNOWLEDGE WORK EXPERIENCE	(a) How well does he understand his work?												
	(b) Has he sufficient knowledge to discharge his work efficiently?												
	(c) Has he adequate experience?												
EXPRESSION	(a) How does he express in writing?												
	(b) How does he express orally?												
PERFORMANCE QUALITY	(a) Is he accurate and neat in his work?												
	(b) Is he painstaking and thorough in his work?												
PERFORMANCE ABILITY	(a) What is his constant rate of out-put?												
	(b) Can he handle work?												
CONDUCT AND ATTITUDE	(a) How sound in his observe instructions personal character?												
	(b) How well does he observe instructions and regulations?												
	(c) How is his appearance and manner of approach?												
	(d) Does he work harmoniously with staff of all grade?												
RESPONSIBI LITY	(a) How well does he accept and fulf responsibility												

MAIN FACTORS	SUB-FACTORS	A	B	C	D	E	NA	A	B	C	D	E	NA
6.	(b) How loyal and reliable is he?												
	(c) How good is he in dealing with public?												
7. JUDGEMENT	(a) Does he foresee developments and draw sound conclusions?												
	(b) What is his ability to make quick and right decisions?												
8. INITIATIVE AND CREATIVE ABILITY	(a) Can he do his work independently?												
	(b) How good is he at creating original ideas and taking action?												
9. SUPERVISION*	(a) How good is he at assigning and getting work done?												
	(b) How well can he supervise his staff?												
10. ADMINISTRATION ABILITY*	(a) How good is he at planning organizing co-ordinating work?												
	(b) Is he good at training his staff?												
11. TECHNICAL/ PROFESSIONAL ABILITY*	How good is his technical/ professional knowledge and competence?												

I certify that in my opinion the standard of performance and efficiency of the above named officer are as marked above and that on the whole

he/she deserves grade _____

Date................ Designation................. Signature............

PART 3 - SUITABILITY FOR PERMANENT CAREER

NOTE:-

This part is to be completed only when reporting on an Officer serving on probation at the end of 6 months when the question of his confirmation in appointment or otherwise has to be considered. Of the markings (a), (b), and (d) below, delete whichever is inapplicable.

I certify that in my opinion the standard of performance and efficiency of the above and that:

(a) he has not yet completed his probationary period and is, therefore, not due for confirmation.

(b) The officer is suitable in every respect for a permanent carreer in the PEL and I recommend that the Officer be confirmed in the permanent service with effect from..................

(c) the officer is not yet suitable for a permanent carreer in the PEL for the reasons stated below and I recommend that the probationary period be extended for..........months.

(d) the Officer is not suitable for a permanent carreer in the PEL but ....

Date............... Designation....

A11

PART D — SUITABILITY FOR PROMOTION AND GRANT OF INCREMENT

NOTE:—

(1)   This part should be completed when reporting on Probationary Officer.

(2)   Part B of this report deals with the Officers qualities and performance in this present grade. Para E in this report asks for his/her suitability for performing duties in a higher grade and is therefore distinct.

I hereby certify that in my opinion the standard of performance and efficiency of the officer are as stated in Part B and that therefore:—

(a)   the Officer is capable of assuming the duties and responsibilities of the post of.......................... as specified in Part E below and is therefore recommended for promotion to that grade.

(b)   the Officer is suitable for advancement within his/her grade by increment and therefore his/her next increment due on.............. be granted.

(c)   the performance of the Officer does not warrant grant of next increment

Date..................   Designation.........................   Signature...............

PART E — DESCRIPTION OF DUTIES AND RESPONSIBILITIES OF THE POST TO WHICH THE OFFICER IS RECOMMENDED FOR PROMOTION

(Only to be completed in the event of the officer being recommended for promotion)

Title of the Post:

List of Major duties and responsibilities

Financial, equipment and material responsibilities

Supervision and training responsibilities

Supervision received from

Regulations and instructions used to accomplish the work

Personal contacts with other organisations giving frequency and brief purpose of such contact

Qualifications required   Educational
for the post   Experience

PART F - REPORT BY GENERAL MANAGER

NOTES:-

This part when completed should be distributed as follows:

(1) Personal File of the Officer assessed
(2) Accounts Department
(3) Personnel/Administrative Dept.

I hereby certify that: *(a)   I agree with the above markings as follows
                              and have instructed that the increment
                              be *granted/stopped.

                      (b)   I disagree with the above markings for the
                              reasons stated below and have instructed
                              that the increment should be *granted/stopped*

General Remarks: (if any)

Date................19......... Designation..................... Signature...........

*Delete whichever is inapplicable

A13

PAMBA ENGINEERING LIMITED

ANNUAL MIDDLE CADRE APPRAISAL FORM

A: TO BE COMPLETED BY EMPLOYEE

1. Name:
    Mr/Mrs/Miss ....
                         (Surname first)

2. Date of
    Birth: ....

3. Designation: ....

4. Department/Section ....

5. Years/Months in PEL employment ....
    Date of Employment ....

6. Years/Months in Present Position ....
    Date appointed ....

7. Highest Education
    Attainment ....

    School/College etc. ....

8. Professional/Technical
    Qualification(s) ....

    ....

9. Acting Appointments (if any)

    Post: From: To:

    _____   _____   _____

    _____   _____   _____

    _____   _____   _____

10. Studies/Examinations currently taking (if any)

Course/Examination   Date (s):

....

....

Date ....
                                Signature of employee

A15

PART B: TO BE COMPLETED BY HEAD OF DEPARTMENT AND DISCUSSED
WITH THE EMPLOYEE.

1. Strengths: Indicate specific observations wherein
outstanding performance was shown by the employee
since the last review.

....

....

....

2. Areas of Improvement: Indicate the weaknesses
shown by the employee

....

....

....

3. Recommendation:

Indicate whether you recommend the employee for
promotion, merit increase, training or disciplinary
action:

Increments to

PEL SS .... Effective ....

Others ....

Date ....
                                   Signature

                          Position: ....

JAMHURI YA MUUNGANO WA TANZANIA   FOMU NPF. 24

HATI YA KUACHISHWA KAZI

HABARI ZA MWAJIRI

Jina kamili. ....

(HERUFI KUBWA)

Anuani..

....

....

Nambari ya Uandikishaji..

HABARI ZA MWANACHAMA.

Jina kamili..

N.P.F. Nat..

Jina la Baba..

Jina la Mama..

Tarehe ya kuzaliwa..

Taifa/Kabila..

Tarehe ya kuajiriwa...

Tarehe ya kuanza michango...

Tarehe ya kuacha kazi...

Sahihi na Muhuri wa Mwajiri...............

NPM/ep.

A17

SHIRIKA LA AKIBA YA TAIFA YA WAFANYAKAZI

Ofisi ya Akiba
Mkoa/Wilaya,

S.L.P. _____

_____

Tarehe _____ 19 ____

ORODHA YA MICHANGO YA WANACHAMA

Jina la Mwanachama _____

Nambari ya Mwanachama _____

Jina la Mwajiri _____

Nambari ya Mwajiri _____

Tarehe ya Michango _____

Tarehe ya Michango ilipokoma _____

Tarehe ya kuacha kazi _____

MWEZI WA MICHANGO	KIASI CHA MICHANGO		NA. YA RISITI (NPF. 16) NA TAREHE	NAMBA YA UANACHAMA ILIYOTUMIKA KUTUMA MICHANGO
	SHS.	CTS.		

AMBA ENGINNERING LIMITED

INTIVE PACKAGE DEDUCTIONS. DEPARTMENT_____ MONTH ____MDAO?__

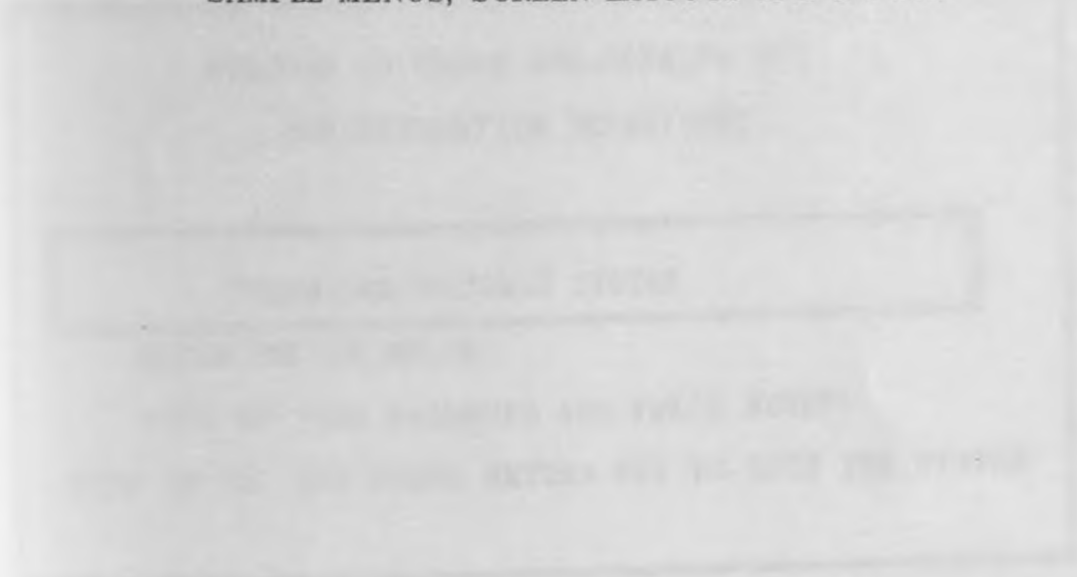| NO.	EMPLOYEE NAME	DATE____	DATE____	DATE____	DATE____	TC

APPENDIX B

SAMPLE MENUS, SCREEN LAYOUTS AND INPUTS

```
WELCOME TO THE PERSONNEL SYSTEM

                 OF

         PAMBA ENGINEERING LIMITED

         THE TIME AND DATE ARE:

             TIME IS: 12:41:38
             DATE is: 29/10/1993


             to CONTINUE   press 1
             to EXIT press 0
             ENTER YOUR CHOICE:
```

```
        WELCOME TO PAMBA ENGINEERING LTD
             ADMINISTRATION DEPARTMENT

         PERSONNEL RECORDS SYSTEM

      ENTER CHOICE BELOW

      TYPE IN YOUR PASSWORD AND PRESS ENTER:

    TYPE IN "Q" AND PRESS RETURN KEY TO QUIT THE SYSTEM
```

B1

```
┌────────────────────────────────────────────────────────────────┐
│      PAMBA ENGINEERING LIMITED  -   PERSONNEL RECORDS SYSTEM     │
└────────────────────────────────────────────────────────────────┘

Update Records          Print Records          Codes Listing        Exit

┌──────────────────────────┐
│ Create a New Record      │
│ Edit current Record      │
│ Delete Marked RecordS    │
│                          │
│                          │
└──────────────────────────┘
```

Update - Press first letter or RETURN Key

```
┌────────────────────────────────────────────────────────────────┐
│      PAMBA ENGINEERING LIMITED  -   PERSONNEL RECORDS SYSTEM     │
└────────────────────────────────────────────────────────────────┘

Update Records          Print Records          Codes Listing        Exit

                       ┌──────────────────────────┐
                       │ Bio-data Report          │
                       │ Confirm Report           │
                       │ Leave Report             │
                       │ Posts Report             │
                       │                          │
                       │                          │
                       └──────────────────────────┘
```

Print Reports-Press 1st letter or RETURN Key

B2

```
╔══════════════════════════════════════════════════════════════╗
║ PAMBA ENGINEERING LIMITED -  PERSONNEL RECORDS SYSTEM ║
╚══════════════════════════════════════════════════════════════╝
```

Update Records   Print Records   Codes Listing   Exit

```
                                        ┌────────────────────┐
                                        │ Departments        │
                                        │ Sections           │
                                        │ Employment         │
                                        │ Designation        │
                                        │ Marital            │
                                        └────────────────────┘
```

(faint/greyed-out underlying text)

CREATE RECORD MENU
1   Create an employee record
2   Create a Department record
3   Create a Section record
4   Create a Designation record
5   Create a Family record
6   Create an Education record
7   Create an Establishment record
8   Create a Leave record
9   Exit Program

List of Codes - Press 1st letter or RUTURN Key

(faint) Press number or RETURN Key

```
╔══════════════════════════════════════════════════════════════╗
║ PAMBA ENGINEERING LIMITED -  PERSONNEL RECORDS SYSTEM ║
╚══════════════════════════════════════════════════════════════╝
```

Update Records   Print Records   Codes Listing   Exit

```
                                                              ┌────────┐
                                                              │ Exit   │
                                                              │        │
                                                              └────────┘
```

Exit This Program

```
CREATE RECORD MENU
1  Create an employee record
2  Create a Department record
3  Create a Section record
4  Create a Designation record
5  Create a Family record
6  Create an Education record
7  Create an Establishment record
8  Create a Leave record
9  Exit Program
```

Press number or RETURN Key

```
PEL-PERSONNEL RECORDS SYSTEM
DATA ENTRY FORM FOR PERSONAL PARTICULARS

PERSONNEL NUMBER:      0        PASSPORT NUMBER(For non-citizen).

SURNAME:                            FIRST NAME:

OTHER NAME:            SEX(F/M):        DATE OF BIRTH:  / /

PLACE OF BIRTH:               .     NATIONALITY:

HOME ADDRESS:

HOME DISTRICT:

MARITAL STATUS CODE(M,S,W,D):              SERVICE TERMS(P,C,T):

DATE FOR CONFIRMATION:  / /    CONTRACT EXPIRY DATE(terms=C):  / /
```

Enter Personnel number

QUALIFICATION:

DEPARTMENT CODE: BASIC SALARY: 0.00   INCREMENT DATE: / /

HOUSING CODE(H,C,N):   HOUSE NUMBER(If Housed by Company):

WORK PERMIT DATE(For non-citizen):   / /   EXPIRY DATE: / /

Enter for highest level attained

Enter Personnel number to Edit: 800000

B5

```
EDIT RECORD MENU
1 Edit Employee's Record
2 Edit Department Record
3 Edit Sections Record
4 Edit Family Record
5 Edit Education Record
6 Edit Leave Record
7 Exit Program
```

Press number or RETURN Key

```
Enter Personnel number to Edit: 600000
```

```
┌──────────────────────────────────┐
│ PEL-PERSONNEL RECORDS SYSTEM       │
│ DATA ENTRY FORM FOR PERSONAL PARTICULARS │
└──────────────────────────────────┘

PERSONNEL NUMBER: 600000        PASSPORT NUMBER(For non-citizen):

MSURNAME:MR CHANG'A                      FIRST NAME: LUKAS

OTHER NAME: L.H.CHANG'A        SEX(F/M): M        DATE OF BIRTH: 17/04/1960

PLACE OF BIRTH: IRINGA            NATIONALITY: TANZANIA

HOME ADDRESS: P.O.BOX 5432 MALANGALI-IRINGA

HOME DISTRICT: MUFINDI

MARITAL STATUS CODE(M,S,W,D): S                SERVICE TERMS(P,C,T): C

DATE FOR CONFIRMATION: 02/12/1990    CONTRACT EXPIRY DATE(terms=C):  / /
```

LOGIN ▌C:\...edwardi\PERSON   ▌Rec 1/20   ▌File ▌   ▌ NumCaps

Enter Personnel number

```
EDUCATION QUALIFICATION: TRADE TEST GRADE I

DEPARTMENT CODE: OOOOD  BASIC SALARY:   180,000.00  INCREMENT DATE: 09/02/1991

HOUSING CODE(H,C,N): H      HOUSE NUMBER(If Housed by Company):

WORK PERMIT DATE(For non-citizen):  / /              EXPIRY DATE:  / /
```

LOGIN ▌C:\...edwardi\PERSON   ▌Rec 1/20   ▌File ▌   ▌ NumCaps

Enter for highest level attained

```
DELETE RECORD MENU
1  Delete an employee record
2  Delete a Department record
3  Delete a Section record
4  Delete a Designation record
5  Delete a Family record
6  Delete an Education record
7  Delete an Establishment record
8  Exit program
```

Press number or RETURN Key

```
A PERSONNEL RECORD IS TO BE DELETED

TYPE IN A PERSONNEL RECORD NUMBER:600000
```

```
┌──────────────────────────────────────────────┐
│        PEL-PERSONNEL RECORDS SYSTEM            │
│        DATA ENTRY FORM FOR PERSONAL PARTICULARS│
└──────────────────────────────────────────────┘

PERSONNEL NUMBER: 600000        PASSPORT NUMBER(For non-citizen):

NSURNAME:MR CHANG'A                     FIRST NAME: LUKAS

OTHER NAME: L.H.CHANG'A       SEX(F/M): M        DATE OF BIRTH: 17/04/1960

PLACE OF BIRTH: IRINGA            NATIONALITY: TANZANIA

HOME ADDRESS: P.O.BOX 5432 MALANGALI-IRINGA

HOME DISTRICT: MUFINDI

MARITAL STATUS CODE(M,S,W,D): S              SERVICE TERMS(P,C,T): C

DATE FOR CONFIRMATION: 02/12/1990   CONTRACT EXPIRY DATE(terms=C):   / /
```

Press ctl-End to continue

```
┌──────────────────────────────────────────────┐
│                                                │
│                                                │
│ EDUCATION QUALIFICATION: TRADE TEST GRADE I    │
│                                                │
│ DEPARTMENT CODE: 0000D  BASIC SALARY:   180,000.00  INCREMENT DATE: 09/02/1991 │
│                                                │
│ HOUSING CODE(H,C,N): H      HOUSE NUMBER(If Housed by Company): │
│                                                │
│ WORK PERMIT DATE(For non-citizen):   / /          EXPIRY DATE:   / / │
│                                                │
│                                                │
│                                                │
│                                                │
│                                                │
│                                                │
└──────────────────────────────────────────────┘
```

Press CTL-END to continue

B9

IS THE DISPLAYED RECORD THE ONE TO BE DELETED?(Y/N): N

DO YOU WANT TO DELETE ANOTHER?(Y/N):

APPENDIX C

SAMPLE OUTPUTS

```
┌─────────────────────────────────────┐
│  PEL - PERSONNEL RECORDS SYSTEM      │
│       BIO - DATA  REPORT             │
└─────────────────────────────────────┘
```

Page No: 1
DATE : October 28, 93

P_NUMBER	NAME	OTHER NAMES

600000 MR CHANG´A,LUKAS   L.H.CHANG´A

SCHOOL/COLLEGE	CERTIFICATE	DATE	GRADE
GOGOLO	STV.VII	09/08/67	PASS
MALANGALI	"O" LEVEL	12/12/78	DIV.III
MKWAWA	"A" LEVEL	09/08/83	DIV.VI

600003 MR ISAAC,JENIA   DAVID.T.M

SCHOOL/COLLEGE	CERTIFICATE	DATE	GRADE
KARWOSHE P/S	STD.VII	08/04/79	PASS
NGANZA SEC.SHOO	"O" LEVEL CERTIFICST	02/12/90	DIV.II
JANGWANI	"A" LEVEL	08/07/92	DIV III
UDSM	BSC(MATHS,STAT)	09/09/96	UP.II

600007 MISS MAMIRO,MARTHA   THOMAS D.R

SCHOOL/COLLEGE	CERTIFICATE	DATE	GRADE
KIBOSHO P/S	STD.VII	12/12/88	PASS
WERUWERU	"O" LEVEL	09/01/92	DIV.I
TAMBAZA	"A" LEVEL	31/07/93	DIV.II

C1

PEL - PERSONNEL RECORDS
CONFIRMATION REPORT FOR THE NEXT HALF OF THE YEAR

Page No.   1
Date   October 28, 93

P_ NO	DATE ENGAGED	NAME		OTHER NAMES	CONFIRMATION DATE	DEPARTMENT
670000	02/08/89	MISS MAGANGA,	BENEDICTA	J.M.MARY	09/08/94	ENGINEERING
2345	30/09/90	MRS ITETE,	RAMSA	MOHAMAD A	06/08/94	TRAINING
250000	09/04/89	MR BARNABAS,	AUDAX	O.D.FELIX	30/07/94	SUPPLIES
680001	02/08/90	MS MAHIGA,	AGNES	D.P.DAMSON	30/07/94	TRAINING

```
┌─────────────────────────────────────────┐
│        PEL - PERSONNEL RECORDS SYSTEM     │
│              LEAVE REPORT                 │
│                                           │
└─────────────────────────────────────────┘
```

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DATE : October 28, 93

P-NUMBERER NAME   OTHERS NAMES
═══

600000   MR CHANG'A,   LUKAS   L.H.CHANG'A

          LEAVE TYPE   COMMENCING DATE   END DATE
          ANNUAL/PAID LEAVE   07/06/91   24/08/91
          FARE/PAID LEAVE   12/06/92   30/08/92

450000   MR MUKOMA,   CHRISTOPHER D.T.MWAKATOBE

          LEAVE TYPE   COMMENCING DATE   END DATE
          PAID LEAVE   30/12/90   05/02/91
          FARE PAID LEAVE   08/08/92   12/09/92
          STUDY LEAVE   27/10/93   02/12/94

600007   MISS MAMIRO, MARTHA   THOMAS D.R

          LEAVE TYPE   COMMENCING DATE   END DATE
          UNPAID LEAVE   03/07/89   25/07/89
          PAID LEAVE   30/07/90   05/09/90

  2345   MRS ITETE,   RAMSA   MOHAMAD A

          LEAVE TYPE   COMMENCING DATE   END DATE
          PAID LEAVE   21/03/89   04/05/89

  2367   MS ABDU,   JENIFFER   AHMAD A.M

          LEAVE TYPE   COMMENCING DATE   END DATE
          STUDY LEAVE   01/11/90   05/03/94
```

```
┌─────────────────────────────────────────┐
│      PEL - PERSONNEL RECORDS SYSTEM       │
│          POSTS      REPORTS               │
└─────────────────────────────────────────┘
```

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October 28, 93

CODE	DEPT_CODE	DESIGNATION TITLE	TOTAL POSTS	FILLED	DEPARTMENT	VACANCY
FICAT07	0000A	SALARIES ACCOUNTANT	1	1	FINANCE	0
GMMRR01	00000	MESSENGER_GM'S OFFICE	2	1	GENERAL MANAGER	1
FICAL03	0000A	ACCOUNTS CLERK_ACCOUNTING	5	3	FINANCE	2
SUMS006	0000A	STORE'S OFFICER_MAIN STORE	2	1	FINANCE	1
SUPL005	0000B	PURCHASING OFFICER_LOCAL	2	1	SUPPLIES	1
			=====	======		=====
		TOTAL	12	7		5

APPENDIX D

SAMPLE PROGRAMS

```
******************************************************************
* The purpose of this program is to welcome the user to the PEL-*
* Personnel Records System the program is calling the password  *
* module   as well.                                             *
* Program by E. B. Ngaiza - 1993                                *
******************************************************************

CLEAR
CLOSE ALL
SET BELL OFF
*SET ESCAPE OFF
SET SCOREBOARD OFF
SET CONFIRM ON
SET SAFETY OFF
SET TALK OFF
SET STATUS OFF
SET CENTURY ON
SET DATE BRITISH
DO WHILE .T.
    CLEAR
    STORE ' ' TO CHOICE
    @  0,3 to 24,59 double
    @ 3,16 say 'WELCOME TO THE PERSONNEL SYSTEM'
    @ 5,29 say ' OF '
    @ 7,19 say 'PAMBA ENGINEERING LIMITED'
    @ 10,20 say 'THE TIME AND DATE ARE:'
    @ 11,11 to 20,51
    @ 13,23 say 'TIME IS:'
    @ 13,32 say TIME()
    @ 14,23 say 'DATE is:'
    @ 14,32 say DATE()
    @ 17,23 say 'to CONTINUE  press 1'
    @ 18,23 say 'to EXIT press 0'
    @ 19,23 say 'ENTER YOUR CHOICE:'
    @ 19,42 GET CHOICE COLOR R
    READ
    @ 21,23 to 23,47 double
    @ 22,28 say '**** THANKS ****'
    *WAIT ' ' TO CHOICE
    ?
    DO CASE
       CASE CHOICE ='0'
            EXIT
       CASE CHOICE ='1'
            DO PASSWORD.PRG
    ENDCASE
ENDDO
set century off
CLEAR
RETURN
```

```
****************************************************************
*main.prg__displays the main menu                             *
*This program calls all other programs of the system          *
*Program by E. Ngaiza 1993                                    *
****************************************************************
SET TALK OFF
SET SCOREBOARD OFF
*set status off
CLEAR
@ 0,2 to 20,76 double
@ 2,14 TO 4,70 double
@ 3,16 SAY "PAMBA ENGINEERING LIMITED -  PERSONNEL RECORDS SYSTEM"
DEFINE MENU MAIN
DEFINE PAD Update OF Main PROMPT "Update Records" at 6,4
DEFINE PAD Print OF Main PROMPT "Print Records"at 6,26
DEFINE PAD Codes OF Main PROMPT " Codes Listing " at 6,48
DEFINE PAD Exit OF Main PROMPT "Exit" at 6,68
*DEFINE PAD Exit OF Main PROMPT "Exit" at 3,74

* To activate Pop-ups for each defined pad
*ON PAD View OF Main ACTIVATE POPUP ViewPU
ON PAD Update OF Main ACTIVATE POPUP UpdatePU
ON PAD Print OF Main ACTIVATE POPUP PrintPU
ON PAD Codes  OF Main ACTIVATE POPUP CodesPU
ON PAD Exit OF Main ACTIVATE POPUP ExitPU

* To define pop - up menu ViewPU and three pop-up menu bars
*DEFINE POPUP ViewPU FROM 4,4 TO 9,21  MESSAGE "File Options"
*DEFINE BAR 1 OF ViewPU PROMPT "View Files"
*DEFINE BAR 2 OF ViewPU PROMPT "View Structure"
*DEFINE BAR 3 OF ViewPU PROMPT "List First Field"

* To define pop-up menu Update and four pop-up menu bars

DEFINE POPUP UpdatePU FROM 7,4 TO 13,26 MESSAGE "Update - Press;
first letter or RETURN Key"
DEFINE BAR 1 OF UpdatePU PROMPT "Create a New Record"
DEFINE BAR 2 OF UpdatePU PROMPT "Edit current Record"
*DEFINE BAR 3 OF UpdatePU PROMPT "Insert  New Record"
DEFINE BAR 3 OF UpdatePU PROMPT "Delete Marked RecordS"

* To define pop-up menu print
DEFINE POPUP PrintPU FROM 7,26 TO 13,47 MESSAGE "Print Reports-;
Press 1st letter or RETURN Key"
DEFINE BAR 1 OF PrintPU  PROMPT "Bio-data Report"
DEFINE BAR 2 OF PrintPU PROMPT "Confirm Report"
DEFINE BAR 3 OF PrintPU PROMPT "Leave Report"
DEFINE BAR 4 OF PrintPU PROMPT "Posts Report"

* To define pop-up menu Codes
DEFINE POPUP CodesPU FROM 7,48 TO 13,63 MESSAGE "List of Codes -;
Press 1st letter or RUTURN Key"
DEFINE BAR 1 OF CodesPU PROMPT "Departments "
```

```
DEFINE BAR 2 OF CodesPU PROMPT "Sections "
DEFINE BAR 3 OF CodesPU PROMPT "Employment"
DEFINE BAR 4 OF CodesPU PROMPT "Designation "
DEFINE BAR 5 OF CodesPU PROMPT "Marital "
DEFINE BAR 6 OF CodesPU PROMPT "Housing "

*To define pop-up menu Exit and a pop-up menu bar

DEFINE POPUP ExitPU FROM 7,68 TO 12,74 MESSAGE"Exit This Program"
DEFINE BAR 1 OF ExitPU PROMPT "Exit"
* T execute procedure corresponding to  each pop_up menu bar
DO WHILE .T.
CLEAR
@ 0,2 to 20,76 double
@ 2,14 TO 4,70 double
@ 3,16 SAY "PAMBA ENGINEERING LIMITED - PERSONNEL RECORDS SYSTEM"

   *ON SELECTION POPUP ViewPU DO ViewProc
   ON SELECTION POPUP UpdatePU DO UpdateProc
   ON SELECTION POPUP PrintPU DO PrintProc
  * ON SELECTION POPUP CodesPU DO CodeslistProc
   ON SELECTION POPUP EXITPU DO ExitProc
   ACTIVATE MENU MAIN
ENDDO
*Procedure corresponding to pop-up ViewPU and each bar
*PROCEDURE ViewProc
*DO  CASE
 *   CASE BAR()=1
     * DEFINE POPUP P1 FROM 9,20 TO 18,50 PROMPT FILES  LIKE *.DBF
      ACTIVATE POPUP P1
  * CASE BAR()=2
     * DEFINE POPUP P1  FROM 9,20 TO 18,50 PROMPT STRUCTURE
      *ACTIVATE POPUP P1
   *CASE BAR()=3
     * DEFINE POPUP P1 FROM 9,20 TO 18,50 PROMPT FIELD NAME
     * ACTIVATE POPUP P1
*ENDCASE
*RELEASE POPUP P1
*RETURN
*Procedure corresponding to pop-up UpdatePU and each bar
PROCEDURE UpdateProc
DO CASE
  CASE BAR()=1
    DO ADD

CLEAR
@ 0,2 to 20,76 double
@ 2,14 TO 4,70 double
@ 3,16 SAY "PAMBA ENGINEERING LIMITED - PERSONNEL RECORDS SYSTEM"

  CASE BAR()=2
    DO EDITREC
CLEAR
@ 0,2 to 20,76 double
@ 2,14 TO 4,70 double
```

```
@ 3,16 SAY "PAMBA ENGINEERING LIMITED - PERSONNEL RECORDS SYSTEM"

*   CASE BAR()=3
 * INSERT BEFORE
  CASE BAR()=3
    DO DELET
ENDCASE
DEACTIVATE MENU
RETURN

PROCEDURE PrintProc
DO CASE
   CASE BAR()=1
     do prit1
   CASE BAR()=2
      do Prit2
   CASE BAR()=3
      do Prit3
    CASE BAR()=4
      do Prit4
    CASE BAR()=5
      do Prit5
ENDCASE
CLEAR
@ 0,2 to 20,76 double
@ 2,14 TO 4,70 double
@ 3,16 SAY "PAMBA ENGINEERING LIMITED - PERSONNEL RECORDS SYSTEM"


deactivate menu
return
PROCEDURE ExitProc
  CLOSE DATABASE
  CANCEL
  clear
RETURN
```

```
******************************************************************
* Following  is  the   module  which  defines  popup   menu   and*
* selection list for Add menu using menu bars                    *
* list for Add menu using menu bars.                             *
* Program by E. B. Ngaiza - 1993                                 *
******************************************************************

SET TALK OFF
SET SCOREBOARD OFF
*SET STATUS OFF
*CLEAR
*@ 2,34 TO 4,70 DOUBLE
*@ 4,36 SAY "PEL - PERSONNEL RECORDS SYSTEM"

DEFINE POPUP ADDREC FROM 8,20 TO 19,70 MESSAGE " Press number or;
or RETURN Key"
DEFINE BAR 1 OF ADDREC PROMPT " CREATE RECORD MENU" SKIP
DEFINE BAR 2 OF ADDREC PROMPT " 1 Create an employee record "
DEFINE BAR 3 OF ADDREC PROMPT " 2 Create a Department record"
DEFINE BAR 4 OF ADDREC PROMPT " 3 Create a Section record"
DEFINE BAR 5 OF ADDREC PROMPT " 4 Create a Designation record"
DEFINE BAR 6 OF ADDREC PROMPT " 5 Create a Family record"
DEFINE BAR 7 OF ADDREC PROMPT " 6 Create an Education record"
DEFINE BAR 8 OF ADDREC PROMPT " 7 Create an Establishment record"
DEFINE BAR 9 OF ADDREC PROMPT " 8  Create a Leave record"
DEFINE BAR 10 OF ADDREC PROMPT "9  Exit Program"

*Following  is  the   DO  WHILE  loop  to  clear,  call  selection
*procedure and Exit of active popup

DO WHILE BAR() <> 10
   CLEAR
   ON SELECTION POPUP ADDREC DO CHOICE
   ACTIVATE POPUP ADDREC
ENDDO
*Procedure for each menu
PROCEDURE CHOICE
*  CLEAR
  DO CASE
     CASE BAR()=2
        DO ADD1
      CASE BAR()=3
        DO ADD2
      CASE BAR()=4
        DO ADD3
    CASE BAR()=5
      DO ADD4
     CASE BAR()=6
       DO ADD5
     CASE BAR()=7
       DO ADD6
     CASE BAR()=8
```

```
          DO ADD7
       CASE BAR( )=9
          DO ADD8
       CASE BAR( )=10
         CLOSE ALL
         SET COLOR ON
         SET COLOR TO
*        RELEASE ALL
         return to master
       CANCEL
     ENDCASE
     DEACTIVATE MENU
     RETURN



****************************************************************
* This procedure is calling other modules for editing records in *
* in different System database. The procedure starts by defining *
* popup menus selection list using menu bars.                    *
* Program by E. B. Ngaiza - 1993                                 *
****************************************************************

SET TALK OFF
SET SCOREBOARD OFF
SET STATUS OFF
CLEAR
DEFINE POPUP EDITREC FROM 8,20 TO 19,70 MESSAGE "Press number or;
RETURN Key"
DEFINE BAR 1 OF EDITREC PROMPT   "EDIT RECORD MENU" SKIP
DEFINE BAR 2 OF EDITREC PROMPT   "1 Edit Employee's Record"
DEFINE BAR 3 OF EDITREC PROMPT   "2 Edit Department Record"
DEFINE BAR 4 OF EDITREC PROMPT   "3 Edit Sections Record"
DEFINE BAR 5 OF EDITREC PROMPT   "4 Edit Family Record"
DEFINE BAR 6 OF EDITREC PROMPT   "5 Edit Education Record"
DEFINE BAR 7 OF EDITREC PROMPT   "6 Edit Leave Record"
DEFINE BAR 8 OF EDITREC PROMPT   "7 Exit Program"

*  Following  is  the  Do WHILE loop  to  clear,  call  selection
*  procedure and Exit of activate popup

DO WHILE BAR( )<> 8
   CLEAR
   ON SELECTION POPUP EDITREC DO CHOICE
   ACTIVATE POPUP EDITREC
ENDDO
DO MAIN
*Procedure for each menu selection
PROCEDURE CHOICE
   CLEAR
   DO CASE
      CASE BAR( )=2
          DO EDITREC1
      CASE BAR( )=3
          DO EDITREC2
```

```
        CASE BAR()=4
            DO EDITREC3
        CASE BAR()=5
            DO EDITREC4
        CASE BAR()=6
            DO EDITREC5
        CASE BAR()=7
            DO EDITREC6
        CASE BAR()=8
            CLOSE ALL
            SET TALK OFF
            SET COLOR ON
            SET COLOR TO
            *RELEASE ALL
            return to master
            CANCEL
        ENDCASE
        Deactivate menu
        RETURN
```

```
***********************************************************************
*  Following is the module  which  defines  popup  menu and *
*  Selection list for Delete menu using menu bars           *
*  This Program is called by the main                       *
*  It is the Program which is calling delete/pack modules    *
* Program by E. B. Ngaiza - 1993                            *
***********************************************************************

SET TALK OFF
SET SCOREBOARD OFF
SET STATUS OFF
CLEAR
DEFINE POPUP ADDREC FROM 8,20 TO 19,73 MESSAGE " Press number or,
RETURN Key"
DEFINE BAR 1 OF ADDREC PROMPT " DELETE RECORD MENU" SKIP
DEFINE BAR 2 OF ADDREC PROMPT " 1 Delete an employee record "
DEFINE BAR 3 OF ADDREC PROMPT " 2 Delete a Department record"
DEFINE BAR 4 OF ADDREC PROMPT " 3 Delete a Section record"
DEFINE BAR 5 OF ADDREC PROMPT " 4 Delete a Designation record"
DEFINE BAR 6 OF ADDREC PROMPT " 5 Delete a Family record"
DEFINE BAR 7 OF ADDREC PROMPT " 6 Delete an Education record"
DEFINE BAR 8 OF ADDREC PROMPT " 7 Delete an Establishment record"
DEFINE BAR 9 OF ADDREC PROMPT " 8 Exit program"
*DEFINE BAR 10 OF DELET PROMPT " 9 Exit Program"

*Following is the DO WHILE loop to clear,call selection procedure
*and Exit of active popup

DO WHILE BAR() <> 9
    CLEAR
    ON SELECTION POPUP ADDREC DO CHOICE
    ACTIVATE POPUP ADDREC
ENDDO
*Procedure for each menu
```

```
PROCEDURE CHOICE
  CLEAR
  DO CASE
     CASE BAR()=2
        DO DELET1
     CASE BAR()=3
        DO DELET2
     CASE BAR()=4
        DO DELET3
     CASE BAR()=5
        DO DELET4
    CASE BAR()=6
       DO DELET5
    CASE BAR()=7
       DO DELET6
    CASE BAR()=8
       DO DELET7
    CASE BAR()=9
      CLOSE ALL
      *SET TALK OFF
      SET COLOR ON
      SET COLOR TO
     *RELEASE ALL
      return to master
     CANCEL
  ENDCASE
  deactivate menu
  RETURN


*******************************************************************
*This program namely ADD1.prg is meant for creating new records *
* by selecting one file from the list of displayed files. *
*The master file is then called and updated by setting relation *
*to the employee master file. It checks for duplication before  *
*it can  create a  new record.                                  *
* Program by:- E.B.Ngaiza - 1993                                *
*******************************************************************

CLEAR
SET TALK OFF
SET DEVICE TO SCREEN
SET ESCAPE OFF
SET STATUS OFF
SET CONFIRM ON
SET SCOREBOARD OFF
set color to wb,w/br
MP_NO=0
MPASSPOR_N=SPACE(9)
MSURNAME=SPACE(15)
mf_name=space(15)
ms_name=space(15)
msex=space(1)
mbirth_dat=date()
mbirth_pla=space(20)
```

```
mnationali=space(10)
mhome_addr=space(44)
mhome_dist=space(10)
mmarst_cod=space(1)
mserv_term=space(1)
mconfr_dat=date()
mcon_ex_da=date()
meduc_qual=space(40)
mdept_no=space(5)
mbasic_sal=0
mincrme_da=date()
mhouse_cod=space(1)
mhouse_no=space(11)
mwor_pem_d=date()
mexp_date=date()

clear
select a
use person index persox
select b
use p_master index  p_master
go top
select a
set relation to p_no into p_master
go top
Select a
store "y" to another
DO WHILE ANOTHER $ "Yy"
   select a
   set index to persox
   reindex
   append blank
   STORE "Y" TO NEXT
   DO WHILE NEXT $ "Yy"
      CLEAR
      do load_fld

      * This procedure checks for  duplicates  and  display  the
      * screen for personnel data entry

      do blk3
      do replace
       clear
       @ 7,21 TO 17,73 DOUBLE
       @ 9,23 SAY "DO YOU WANT TO EDIT YOUR DATA (Y/N)?:"
       @ 9,61 get next picture "y"
       READ
   ENDDO
   clear
   @ 7,21 TO 11,66 DOUBLE
   @ 9,23 SAY "DO YOU WANT TO CREATE ANOTHER RECORD(Y/N)?:"
   @ 9,65 GET ANOTHER PICTURE "Y"
   READ
ENDDO
select b
```

```
set index to p_master
reindex
do mastup
clear
append blank

CLOSE DATABASE
DO ADD
RETURN

* This is the procedure to update the master. The master is being
* updated by Person.dbf

procedure mastup
  append blank
  replace p_no with a->p_no
  replace passpor_no with a->passpor_no
  replace surname with a->surname
  replace f_name with a->f_name
  replace s_name with a->s_name
  replace sex with a->sex
  replace birth_date  with a->birth_date
  replace birth_plac  with a->birth_plac
  replace nationalit with a->nationalit
  replace home_addr with a->home_addr
  replace home_distr with a->home_distr
  replace marst_code with a->marst_code
  replace serv_terms with a->serv_terms
  replace confr_date with a->confr_date
  replace con_ex_dat with  a->con_ex_dat
  replace educ_qual with a->educ_qual
  replace dept_no with a->dept_no
  replace basic_sal with a->basic_sal
  replace incrme_dat with a->incrme_dat
  replace house_code with a->house_code
  replace house_no with a->house_no
  replace wor_pem_da with a->wor_pem_da
  replace exp_date with a->exp_date
return

* This is the procedure to load fields from Person.dbf
* to memory

Procedure load_fld
  mp_no=p_no
  mpasspor_n=passpor_no
  msurname=surname
  mf_name=f_name
  ms_name=s_name
  msex=sex
  mbirth_dat=birth_date
  mbirth_pla=birth_plac
  mnationali=nationalit
  mhome_addr=home_addr
  mhome_dist=home_distr
```

```
      mmarst_cod=marst_code
      mserv_term=serv_terms
      mconfr_dat=confr_date
      mcon_ex_da=con_ex_dat
      meduc_qual=educ_qual
      mdept_no=dept_no
      mbasic_sal=basic_sal
      mincrme_da=incrme_dat
      mhouse_cod=house_code
      mhouse_no=house_no
      mwor_pem_d=wor_pem_da
      mexp_date=exp_date
   return

    * This is  the  procedure  to  replace  fields  from  memory  to
    * the database

   procedure replace
      replace p_no with mp_no
      replace passpor_no with mpasspor_no
      replace surname with msurname
      replace f_name with mf_name
      replace s_name with ms_name
      replace sex with msex
      replace birth_date  with mbirth_date
      replace birth_plac  with mbirth_plac
      replace nationalit with mnationalit
      replace home_addr with mhome_addr
      replace home_distr with mhome_dist
      replace marst_code with mmarst_cod
      replace serv_terms with mserv_term
      replace confr_date with mconfr_date
      replace con_ex_dat with mcon_ex_da
      replace educ_qual with meduc_qual
      replace dept_no with mdept_no
      replace basic_sal with mbasic_sal
      replace incrme_dat with mincrme_dat
      replace house_code with mhouse_cod
      replace house_no with mhouse_no
      replace wor_pem_da with mwor_pem_d
      replace exp_date with mexp_date
   return
```

```
*****************************************************************
* This program namely Add4.prg is meant for creating data into  *
* the designation file and editing  it  while  a  reletion  is  *
* set into the  employee master file. It checks for duplication *
* before can create a  new record.                              *
* Program by E.B.Ngaiza - 1993                                  *
*****************************************************************

CLEAR
SET TALK OFF
*SET DEVICE TO SCREEN
SET ESCAPE ON
SET STATUS OFF
*SET CONFIRM ON
SET SCOREBOARD OFF
SET COLOR TO WB,W/BR
MDESIG_NO=SPACE(7)
Mp_no=0
MDESIG_NAM=SPACE(29)
MDEPT_NO=SPACE(5)
MSCALE_COD=0
MDEPT_NAME=SPACE(20)
MSECT_NO=SPACE(4)
MSECT_NAME=SPACE(20)
MENG_DATE={  /  / }
MRETIRE_DA={  /  / }
MPROMOT_DA={  /  / }
MLEFT_DATE={  /  / }

select a
use designti        && index designx

SELECT b
use p_master index p_master
GO TOP
SELECT a
set relation to p_no into P_MASTER
*Go top
SELECT a
store "y" to another
DO WHILE ANOTHER $ "Yy"
*     APPEND BLANK
      STORE "Y" TO NEXT
      DO WHILE NEXT $ "Yy"
        CLEAR

       * This procedure checks for duplicates and  displays  fields
         DO DESADD
         do DESIUP
          clear
          SELECT b
           SEEK MP_NO
           IF FOUND()
```

D12

```
                    &&
        ELSE
                append blank
                DO MASTUP
        ENDIF
        SELECT a
        @ 7,21 TO 11,64 DOUBLE
        @ 9,23 SAY "Do you want to edit your data (Y/N)?:"
        @ 9,60 get next picture "y"
        read
    ENDDO
    clear
    @ 7,21 TO 11,66 DOUBLE
    @ 9,23 SAY "Do you want to create another record(Y/N)?"
    @ 9,64 get another picture "Y"
    READ
ENDDO
CLEAR
Mp_no=0
close database
RETURN

* This procedure updates the master

PROCEDURE MASTUP
 * APPEND BLANK
  REPLACE DESIG_NO WITH a->DESIG_NO
  REPLACE P_NO WITH a->P_NO
  REPLACE DESIG_NAME WITH a->DESIG_NAME
  REPLACE DEPT_NO WITH a->DEPT_NO
  REPLACE SCALE_CODE WITH a->SCALE_CODE
  REPLACE DEPT_NAME WITH a->DEPT_NAME
  REPLACE SECT_NO WITH a->SECT_NO
  REPLACE SECT_NAME WITH a->SECT_NAME
  REPLACE ENG_DATE WITH a->ENG_DATE
  REPLACE RETIRE_DAT WITH a->RETIRE_DAT
  REPLACE PROMOT_DAT WITH a->PROMOT_DAT
  REPLACE LEFT_DATE WITH a->LEFT_DATE
RETURN

* This procedure is updating designti.dbf by memory fields
PROCEDURE DESIUP
 APPEND BLANK
 REPLACE DESIG_NO WITH M-> MDESIG_NO
 REPLACE P_NO WITH M-> MP_NO
 REPLACE DESIG_NAME WITH MDESIG_NAM
 REPLACE DEPT_NO WITH MDEPT_NO
 REPLACE SCALE_CODE WITH MSCALE_COD
 REPLACE DEPT_NAME WITH MDEPT_NAME
 REPLACE SECT_NO WITH MSECT_NO
 REPLACE SECT_NAME WITH MSECT_NAME
 REPLACE ENG_DATE WITH MENG_DATE
 REPLACE RETIRE_DAT WITH MRETIRE_DA
 REPLACE PROMOT_DAT WITH MPROMOT_DA
 REPLACE LEFT_DATE WITH MLEFT_DATE
```

```
RETURN

********************************************************************
*  Following  is  the  module to edit  a  Personnel record, and *
*  updating the master.                                          *
* It checks for existance of a record before it can edit it.    *
* program by E. B. Ngaiza - 1993                                *
********************************************************************

procedure editrec1
CLEAR
SET TALK OFF
SET DEVICE TO SCREEN
SET ESCAPE ON
SET STATUS OFF
SET CONFIRM OFF
SET SCOREBOARD OFF
  mP_NO = 0
  MPASSPOR_N=SPACE(9)
  mSURNAME=SPACE(15)
  MF_name=SPACE(15)
  ms_name=SPACE(15)
  msex=SPACE(1)
  mbirth_dat=date()
  mbirth_pla=SPACE(20)
  mnationali=SPACE(22)
  mhome_addr=SPACE(44)
  mhome_distr=SPACE(10)
  mmarst_cod=SPACE(1)
  mserv_term=SPACE(1)
  mconfr_dat=date()
  mcon_ex_da=date()
  meduc_qual=SPACE(40)
  mdept_no=SPACE(5)
  mbasic_sal=0
  mincrme_da=date()
  mhouse_cod=SPACE(1)
  mhouse_no=SPACE(11)
  mwor_pem_d=date()
  mexp_date=date()

 do main
 RETURN
 PROCEDURE LOAD_FLD
  MP_NO = P_NO
  MPASSPOR_N=PASSPOR_NO
  mSURNAME=SURNAME
  MF_name=F_NAME
  ms_name=S_NAME
  msex=SEX
  mbirth_dat=BIRTH_DATE
  mbirth_pla=BIRTH_PLAC
  mnationali=NATIONALIT
  mhome_addr=HOME_ADDR
  mhome_distr=HOME_DISTR
```

```
      mmarst_cod=MARST_CODE
      mserv_term=SERV_TERMS
      mconfr_dat=CONFR_DATE
      mcon_ex_da=CON_EX_DAT
      meduc_qual=EDUC_QUAL
      mdept_no=DEPT_NO
      mbasic_sal=BASIC_SAL
      mincrme_da=INCRME_DAT
      mhouse_cod=HOUSE_CODE
      mhouse_no=HOUSE_NO
      mwor_pem_d=WOR_PEM_DA
      mexp_date=EXP_DATE
return
procedure main
CLEAR
SELECT a
USE PERSON INDEX PERSOX
go top
SELECT b
USE P_MASTER INDEX P_MASTER
SELECT a
SET RELATION TO P_NO INTO P_MASTER
select a
STORE "y" TO ANOTHER
DO WHILE ANOTHER $ "Yy"
    @ 7,20 TO 11,65 DOUBLE
    @ 9,23 say " "
    @ 9,23 SAY "Enter Personnel number to Edit:"
    @ 9,55 GET mP_NO PICTURE "999999"
    READ
    seek mp_no
    mpno=mp_no
    clear
   IF FOUND()
      DO LOAD_FLD

      * This procedure displays fields  for editing
      DO C:BLK

      * This procedure is replacing database fields by memory
      * initialized fields

      REPLACE P_NO WITH  MP_NO
      replace passpor_no with mpasspor_n
      replace surname with msurname
      replace f_name with mf_name
      replace s_name with ms_name
      replace sex with msex
      replace birth_date with mbirth_date
      replace birth_plac with mbirth_plac
      replace nationalit with mnationali
      replace home_addr with mhome_addr
      replace home_distr with mhome_dist
      replace marst_code with mmarst_cod
      replace serv_terms with mserv_term
```

```
              replace confr_date with mconfr_dat
              replace con_ex_dat with mcon_ex_da
              replace educ_qual with meduc_qual
              replace dept_no with mdept_no
              replace basic_sal with mbasic_sal
              replace incrme_dat with mincrme_da
              replace house_code with mhouse_cod
              replace house_no with mhouse_no
              replace wor_pem_da with mwor_pem_d
              replace exp_date with mexp_date

              select b
              seek mpno
              if found()
                 *? wait "record exists press any key to continue..."
                 REPLACE P_NO WITH a->P_NO
                 do mastup
              else
                 append blank
                 do mastup
              endif
              clear
       ELSE
                 @ 11,23 say "the record does not exist"
                 wait  space(15) + "Press any key to Revise or quit"
       ENDIF

       @ 7,21 TO 11,78 DOUBLE
       @ 9,23 say "TYPE P_NO TO EDIT ANOTHER(Y/N):"  GET ANOTHER PICTURE
         read
         CLEAR
         store 0 to mp_no
         ENDDO
         close database
DO EDITREC
return



procedure mastup
       * REPLACE P_NO WITH a->P_NO
         replace passpor_no with a->passpor_no
         replace surname with a->surname
         replace f_name with a->f_name
         replace s_name with a->s_name
         replace sex with a->sex
         replace birth_date with a->birth_date
         replace birth_plac with a->birth_plac
         replace nationalit with a->nationalit
         replace home_addr with a->home_addr
         replace home_distr with a->home_distr
         replace marst_code with a->marst_code
         replace serv_terms with a->serv_terms
```

D16

```
            replace confr_date with a->confr_date
            replace con_ex_dat with a->con_ex_dat
            replace educ_qual with a->educ_qual
            replace dept_no with a->dept_no
            replace basic_sal with a->basic_sal
            replace incrme_dat with a->incrme_dat
            replace house_code with a->house_code
            replace house_no with a->house_no
            replace wor_pem_da with a->wor_pem_da
            replace exp_date with a->exp_date
return


*****************************************************************
* This program deletes an  employee  record  and  copy  it into *
* mpito.dbf for archiving purposes before can pack              *
* program by E. B. Ngaiza - 1993                                *
*****************************************************************


CLEAR
SET TALK OFF
CLOSE DATABASES
SET STATUS OFF
SET SCOREBOARD OFF
set status off
mp_no=0
mpasspor_n=space(9)
msurname=space(15)
mf_name=space(15)
ms_name=space(15)
msex=space(1)
mbirth_dat=date()
mbirth_pla=space(20)
mnationali=space(10)
mhome_addr=space(44)
MHOME_DIST=SPACE(10)
mmarst_cod=space(1)
mserv_term=space(1)
mconfr_dat=date()
mcon_ex_da=date()
meduc_qual=space(40)
mdept_no=space(5)
mbasic_sal=0
mincrme_da=date()
mhouse_cod=space(1)
mhouse_no=space(11)
mwor_pem_d=date()
mexp_date=date()
*procedure main
 select a
 USE PERSON INDEX PERSOX
 select b
 use p_master index p_master
 *select c
 *use mpito
```

```
go top
select a
set relation to p_no into p_master
STORE "Y" TO ANOTHER
store "y" to mch
STORE "N" TO DEL
select a
DO WHILE UPPER(ANOTHER)="Y"
  set index to persox
  reindex
   CLEAR
   @ 9,9 TO 13,56 DOUBLE
   @ 10,11 SAY "A PERSONNEL RECORD IS TO BE DELETED"
   @ 12,11 SAY "TYPE IN A PERSONNEL RECORD NUMBER:"
   @ 12,45 get mp_no picture "999999"
   * MESSAGE "Press ctl-End to Continue"
   read
   SEEK mP_NO
   mpno=mp_no
   CLEAR
   IF FOUND()
       do load_fld

       *  This  procedure  displays fields in  order  to  confirm
       *  whether the record is the one to be deleted

       do blk1
       CLEAR
   ELSE
     ? " PERSONNEL NUMBER NOT FOUND - TRY AGAIN"
       WAIT
       CLEAR
       store 0 to mp_no

   ENDIF
   @ 9,9 to 13,66 double
   @ 11,11  say " IS  THE    DISPLAYED    RECORD   THE   ONE   TO  BE;
      DELETED?(Y/N):"get del
   read
   IF UPPER(DEL)="Y"
           delete
           if deleted()
               ? "WAIT... Current record is deleted"
                 select b
                 SEEK MPNO
                 delete
             endif
             count for deleted()
             copy to mpito for deleted()
             set deleted on
             ? "are you sure you want to remove all deleted;
             ?? records? y or n"
             wait to mch
             if upper(mch)="y"
                 ?     "This will take a while..please wait"
```

```
                    GO TOP
                    select a
                    pack
                    *go top
                    select b
                    set index to p_master
                    reindex
                    seek mpno
                    if found()
                        ?  "the record exists in master..."
                       wait
                         delete
                         pack
                      endif
                     set escape on
                 endif
        ENDIF
    CLEAR
    @ 15,10 SAY " "
    ACCEPT "DO  YOU  WANT TO  DELETE  ANOTHER?(Y/N):"  TO  ANOTHER
ENDDO
PACK
CLOSE DATABASE
CLEAR
store 0 to mp_no
RETURN

* This procedure  loads memory initialized variables
* to the database

procedure load_fld

  mp_no=p_no
  mpaspor_n=passpor_no
  msurname=surname
  mf_name=f_name
  ms_name=s_name
  msex=sex
  mbirth_dat=birth_date
  mbirth_pla=birth_plac
  mnationali=nationalit
  mhome_addr=home_addr
  mhome_dist=home_distr
  mmarst_cod=marst_code
  mserv_term=serv_terms
  mconfr_dat=confr_date
  mcon_ex_da=con_ex_dat
  meduc_qual=educ_qual
  mdept_no=dept_no
  mbasic_sal=basic_sal
  mincrme_DA=INCRME_DAT
  MHOUSE_cod=house_code
  mhouse_no=house_no
  mwor_pem_d=wor_pem_da
  mexp_date=exp_date
```

return

APPENDIX E

PERSONNEL RECORD SYSTEM

USER GUIDE MANUAL

USER GUIDE MANUAL

I. HOW TO START UP THE SYSTEM

A. Switch on the computer and go to dBASEIV database management option (This will be selected from the main menu which shows different applications on the machine e.g. GWBASIC,dBASEIII PLUS, LOTUS).

B. Press F10 followed by EXIT to go to "dot prompt"

* If you are running the system from the floppy disk (A, or B), then at the "dot prompt" type:-

"SET DEFAULT TO A:" OR " SET DEFAULT TO B: this will depend on the default diskette drive.

* Press the "RETURN" key and dot prompt appears.
* At the dot prompt type "DO LOGIN". This will prompt the user to the first screen of PEL_PER system.

This option of the diskette will not be used for this system, as the system is occupying two diskettes.

Therefore the system will be installed on the hard disk.

Now continue from "B" above:-

At the dot prompt type "SET DIRECTORY TO C:\dBASE\PEL-PER and press "RETURN" . PEL_PER is the directory which is holding the system (Personnel Records System). Next, will be a dot prompt.

C. At the dot prompt press "F2" (to go to the control centre).

D. At the control centre, move the cursor by using arrows, and place the cursor to the "applications". Select the only application "LOGIN".

You will be prompted to a message ask you whether you really want to run this program. Press "Y" (for yes) to confirm your

choice. You will now be prompted to the first screen that welcomes you to this system.

II. HOW TO USE MENUS

A. Now you are on the first menu of the system. Press "1" as your "CHOICE" to proceed, or "0" as your " CHOICE" to quit.
If your choice is "1", you will then be prompted to the second screen that requires you to input your "password".

B. Type in your correct password. You will now be prompted to the third screen " THE MAIN MENU".

C. Move the cursor to hilight any of the four options (update, reports, codes listing and exit) offered by the system.

 D. On the highlighted option, press the "number" or "RETURN" key to firm your choice. The user should make sure that the choice made is within the range of choices.

Note:- For every option you choose there is always a message displayed at the bottom. Read the message carefully before you can attempt any action.

E. In order to leave the current operation, the user is supposed to choose the number against "Exit" option(that is press the corresponding number of "Exit" option.

F. In order to quit the system, the user should select "Exit" option of the main menu.
   To quit dBASEIV, press "F10" at the "control centre", and

E2

III DATA ENTRY

When the main menu choice is "Update", and if the option is "Create Records", the user is supposed to enter data, as per the data entry screen. For every data element to be keyed in, there is a specific range and and type of characters to be keyed in. The message will always be displayed when the user attempts to input an invalid characters. Therefore, the user should respond to such message as "INVALID FIELD TYPE", by pressing space bar and resuming data entry for such a field, by inputting correct data.

IV. DON´TS

(i) Do not Press "RETURN" key continuously when you are running any of the system operations. This can · end up prompting the user back to the previous screen before the intended operation could be performed. Press "RETURN" key only once when required by the system prompt to do so. However, if such situation occurs, the user should resume the operation from the previous screen.

(ii) Do not ignore system instructions while running any system option, else the required operation will not be performed.

(iii) Do not perform any operation outside the system (i.e. on the dot prompt), else the performed operation will not make changes to other databases of the system. For example if create, or edit a record, the master file will not be updated. If delete and pack a record/records, the master file will not be updated, and the archive file

from the previous screen.

(ii) Do not ignore system instructions while running any system
      option, else the required operation will not be performed.

(iii) Do not perform any operation outside the system (i.e.   on
      the dot prompt), else the performed operation will   not
      make changes to other databases of the system.   For
      example if create, or edit a record, the master file   will
      not be updated. If delete and pack a record/records,   the
      master file will not be updated, and the archive   file
      will not be updated.

(iv) Do not keep backup diskettes outside the storage   box
      neither should touch the exposed surface. Never attempt to
      bend the diskette.

(v)   Do not press "escape" key while running the system, as   this
      will interrupt the over all procedure and require one
      restart up the system.

(vi) Never open computer room windows neither should   the
      computer kept uncovered while not in use. Also do not   put
      on the computer if not in use.

(vii) Never take tea, coffee etc. Do not smoke while in   the
      computer room

(viii) When deleting the record probably realise that the record
       was   not   the one you want to delete. "NEVER" conform
       deletion by typing in "Y" to the message "are you   sure
       you want to remove all deleted records?

V.   LIKELY PROBLEMS AND THEIR POSSIBLE SOLUTIONS:-

(i)   When the user fails to access the system after   inputting

"password".

Solution

Carefully input your correct "password" and press "RETURN"

(ii) When the cursor get stack at a particular field while the user is still inputting data.

Solution

Press the "SPACE BAR" and input the correct data type. The cursor can not move to the next field while the current field is holding invalid data type.

VI. AD-HOC QUERIES"

The user may be required to submit reports that are not in the report option of the system. For that matter, the user can do the following:-

(i) Press "F10" when at the control centre. Choose "Exit to dot prompt" at "Exit" option. From there you can now process your report.

For example, if the user is required to prepare "age" report, should do the following:-

- At the dot prompt, type "USE PERSON" and press"RETURN" key. Type ; list for p_no, surname, fname, lname, date()-{birth_dat}. If required to prepare only for e.g. Training department then add, for dept_no= "OOOOE"

- When required to prepare report for Employees who had left

At the dot prompt type " USE P_MASTER" and press "RETURN" key. Type list for p_no, surname, fname, lname, dept_name, left date for left_date <>{ / / }

- When required to prepare report for employees who are not married. At the dot prompt type "USE PERSON" and press "RETURN" key. Type list for p_no, surname, fname, lname, for marst_code="s"

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